



CITY COUNCIL MEETING
September 26, 2017
4100 Lakeview Avenue North
Robbinsdale, Minnesota
7:00 p.m.

A G E N D A

CITIZEN PARTICIPATION

The City Council is meeting as a legislative body to conduct the business of the City according to the

RULES OF PROCEDURE AND DECORUM OF THE CITY COUNCIL. Unless so ordered by the Mayor, citizen participation is limited to the following times and always within the prescribed rules of conduct for public input at meetings.

- A) **PUBLIC HEARINGS:** Public hearings are conducted so that the public affected by a proposal may have input into the decision. During hearings, all affected residents will be given an opportunity to speak pursuant to the RULES OF PROCEDURE AND DECORUM OF THE CITY COUNCIL.
- B) **OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE CITY COUNCIL ON MATTERS NOT ON THE AGENDA**

Any member of the public may speak at this time on any item NOT on the agenda. In consideration for the public attending the meeting for specific items on the agenda, this portion of the meeting will be limited to fifteen (15) minutes. Individuals are requested to limit their comments to four (4) minutes or less. If the majority of the Council determines that additional time on a specific issue is warranted, then discussion on that issue shall be continued under Other Business at the end of the agenda. Before addressing the City Council, members of the public are asked to step up to the microphone, give their name, address and state the subject to be discussed. All remarks shall be addressed to the Council as a whole and not to any member thereof. No person other than members of the Council and the person having the floor shall be permitted to enter into any discussion without permission of the presiding officer.

Your participation, as prescribed by the Council's RULES, is welcomed and your cooperation is greatly appreciated.

- 1. CITY COUNCIL MEETING CALLED TO ORDER
- 2. ROLL CALL: Blonigan, Rogan, Selman, Backen, Mayor Murphy
- 3. **MICROPHONE CHECK:** Rogan, Blonigan, Backen, Selman, Mayor Murphy
- 4. OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE CITY COUNCIL ON MATTERS NOT ON THE AGENDA
- 5. APPROVAL OF THE SEPTEMBER 26, 2017, MEETING AGENDA

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6. CONSENT AGENDA: Pursuant to Council rules, one motion, non-debatable, will approve the recommendation noted. Any member of the Council may ask for an item to be taken from the Consent Agenda for discussion and separate action. Such items removed from the Consent Agenda shall be considered immediately following approval of the balance of the Consent Agenda:
 - A. Motion to approve and order placed on file minutes of the regular City Council meeting of 9/5/17, Special City Council Work Session of 9/5/17, and Special City Council Meeting of 9/12/17. 1-13
 - B. Motion to acknowledge receipt and placing on file minutes for the following Commissions and Boards: 14-15
 - Planning Commission Minutes of 7/20/17
 - C. Motion to approve issuance of licenses from list dated 9/26/2017. 16-18
 - D. Motion to approve the Deferral of Special Assessment application for Dawn E. Munt, 3921 Noble Avenue North for deferral of a special assessment related to the Noble Avenue construction project. 19
 - E. Motion to waive the reading and order the adoption of Resolution No. XXXX "A RESOLUTION SUPPORTING APPLICATION FOR TRANSIT ORIENTED DEVELOPMENT GRANT FROM HENNEPIN COUNTY FOR DEVELOPMENT OF MULTI-FAMILY HOUSING." 20-21 (RES. 21)
 - F. Motion to authorize the City Manager and Finance Director to issue a Purchase Order to MTI Distributing of Brooklyn Center, MN for the purchase of a Toro Workman HDX with automatic transmission, a shade canopy and Rahn Groomer under Government Contract #119042 for the net amount of \$25,320.41. 22
 - G. Motion to receive and note the report on quotes received for the Triangle Park Wading Pool. 23-24
 - H. Motion to table consideration of an update to liquor license fees to the October 17th City Council agenda. 25
 - I. Motion to authorize the City Manager and Finance Director to issue a Purchase Order to Motorola Solutions for the purchase 26-28

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of 24 portable radios for fire department personnel and fire ground operations in the amount of \$113,322.08

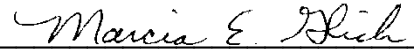
- J. Motion to acknowledge the Deputy Registrar's financial reports for the month of August 2017. 29-30
- K. Motion to acknowledge the Robbinsdale Wine & Spirits financial reports for the month of August 2017. 31-35
- 7. PRESENTATION
 - A. There are no Presentation items scheduled.
- 8. PUBLIC HEARING
 - A. Consideration of Amendments to Robbinsdale's Tobacco License Regulations. 36-59 (Ord. 51)
 - Open the public hearing and receive comments from the public
 - Consider next steps which may include holding the first reading of the Ordinance shown as Exhibit 3 "AN ORDINANCE AMENDING ROBBINSDALE CITY CODE SECTION 1132 TOBACCO AND RELATED PRODUCTS."
- 9. OLD BUSINESS
 - A. There are no Old Business items scheduled.
- 10. NEW BUSINESS
 - A. There are no New Business items scheduled.
- 11. OTHER BUSINESS
 - A. Voucher Request Pending Approval for Disbursement 60
 - Motion to approve disbursement requests for period ending 9/26/2017.
- 12. ADMINISTRATIVE REPORTS
- 13. COUNCIL GENERAL COMMUNICATIONS
- 14. ADJOURNMENT

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15. APPENDIX A 61-150
16. APPENDIX B 151-440



Marcia Glick, City Manager

ITEMS PENDING OR UNDER STUDY FOR COUNCIL CONSIDERATION

ITEM	DEPARTMENT RESPONSIBILITY	ANTICIPATED AGENDA DATE
Recreation Program Update	Recreation	Oct. 3
Assessment Public Hearings	Finance	Oct. 3
Water Plant Feasibility RFP	Public Works	Oct. 17

**City of Robbinsdale
CITY COUNCIL MINUTES
September 5, 2017
Meeting No. 17**

CALL TO ORDER

1. Mayor Murphy called the meeting to order at 7:07 p.m.

ROLL CALL

2. Present: Blonigan, Rogan, Selman, Backen, Mayor Murphy
Staff: Marcia Glick, City Manager; Tom Marshall, Director of Administrative Services; Larry Jacobson, Finance Director

OPPORTUNITY FOR THE PUBLIC

3. Mayor Murphy opened the floor to anyone wishing to speak on any items not on the agenda. No one chose to speak.

APPROVAL OF AGENDA

4. Glick noted an introduced an updated proclamation for item Presentation A and an updated Exhibit 2 for item New Business C.
5. Member Selman **MOVED**, seconded by Member Rogan to approve the agenda with the additions as noted above. **The vote was unanimous and the motion carried.**

CONSENT AGENDA

6. Member Blonigan **MOVED**, seconded by Member Selman to approve the Consent Agenda. **The vote was unanimous and the motion carried.**
7. Items approved are as follows:
 - A. Motion to approve and order placed on file minutes of the regular City Council meeting of 8/15/17, Special City Council Work Session of 8/15/17, City Council Executive Session on 8/15/17 and two Special City Council Work Sessions on 8/29/17.
 - B. Motion to acknowledge receipt and placing on file minutes for the following Commissions and Boards:
 - Parks, Recreation and Forestry Commission Minutes from 6/27/17
 - C. Motion to approve issuance of licenses from list dated 9/5/2017
 - D. Motion to approve the July 2017 payment for credit card charges
 - E. Motion to hold the **SECOND READING** of Ordinance 17-06 "AN

ORDINANCE AMENDING SECTION 850 OF THE CITY CODE, SMALL CELL WIRELESS.”

- F. Motion to hold the SECOND READING of Ordinance 17-07 “AN ORDINANCE AMENDING SECTIONS 505.09, 510.25 SUBD. 2(e) AND 515.01, SUBD. 4(I) ALLOWING WIRELESS SUPPORT STRUCTURES IN PUBLIC RIGHT OF WAY IN THE R-1, SINGLE FAMILY RESIDENTIAL DISTRICT”.
- G. Motion to hold the SECOND READING of Ordinance 17-08 “AN ORDINANCE ESTABLISHING A POLICY FOR THE REMOVAL AND STORAGE OF TEMPORARY TRAFFIC CONTROL MEASURES”.
- H. Motion to schedule a Special City Council Meeting for Tuesday, September 12, 2017 immediately following the regularly scheduled REDA Meeting at 7:00 p.m.
- I. Motion to set a Public Hearing to certify the assessment roll for delinquent utilities for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notice in the official paper of the City and send notices to the affected property owners.
- J. Motion to set a Public Hearing to certify the assessment roll for forced tree removal for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notices to the affected property owners.
- K. Motion to set a Public Hearing to certify the assessment roll for emergency water and sewer repairs, and required sump pump repairs for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notice in the official paper of the City and send notices to the affected property owners.
- L. Motion to set a Public Hearing to certify the assessment roll for unpaid administrative penalties for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notice in the official paper of the City and send notices to the affected property owners.
- M. Motion to set a Public Hearing to certify the assessment roll for unpaid code enforcement costs for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notice in the official paper of the City and send notices to the affected property owners.

- N. Motion to set a Public Hearing to certify the assessment roll for unpaid repeat nuisance call fees for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notice in the official paper of the City and send notices to the affected property owners.
- O. Motion to set a Public Hearing to certify the assessment roll for unpaid housing maintenance code violations for Tuesday, October 3, 2017 at 7 p.m. at Robbinsdale City Hall and authorize the City Clerk to publish the public hearing notice in the official paper of the City and send notices to the affected property owners.
- P. Motion to acknowledge the Deputy Registrar's financial reports for the month of July 2017
- Q. Motion to acknowledge the Robbinsdale Wine & Spirits for the month of July 2017.
- R. Motion to authorize the City Manager and Finance Director to issue a Purchase Order to Loffler Inc., and to authorize the City Manager to enter into a five year lease agreement for Canon equipment for digital multifunction machines located at City Hall, Police, Fire and Public Works in the amount of \$797.14 per month.
- S. Motion to waive the reading and order the adoption of Resolution No. 7583 "A RESOLUTION SUPPORTING APPLICATION FOR TRANSIT ORIENTED DEVELOPMENT GRANT FROM HENNEPIN COUNTY FOR ACQUISITION OF 4205 WEST BROADWAY BY ROBBINSDALE ECONOMIC DEVELOPMENT AUTHORITY".
- T. Motion to approve the most recently revised General Records Retention Schedule for Minnesota Cities as revised by the MCFOA Records Retention Committee and was approved by the State Disposition Panel in April 2017.
- U. Hold the First Reading of Ordinance No. 17-09 "AN ORDINANCE ELIMINATING THE LICENSE REQUIREMENT FOR DRY CLEANING AND LAUNDERING".

PRESENTATION A: Recognizing National Pregnancy and Infant Loss Awareness Day

8. Glick reviewed the staff report and stated the proclamation was requested by a Robbinsdale resident.
9. Member Selman **MOVED** seconded by Member Rogan to ratify the proclamation proclaiming October 15th, 2017 as Pregnancy and Infant Loss Remembrance Day in the City of Robbinsdale, Minnesota. **The vote was unanimous and the motion carried.**

PUBLIC HEARING A: 3913/15 Unity Avenue – Appeal of Code Enforcement Charges

10. Marshall reviewed the staff report.
11. Member Blonigan clarified the procedure for appealing code enforcement charges.
12. Glick noted the City had changed its policy some years ago from sending violations through certified mail to regular US mail with the concurrence of the City Attorney.
13. Mayor Murphy opened the appeal hearing.
14. Brent Gisslen, 3400 Beard Avenue N., Robbinsdale: He stated that he owns several properties in Robbinsdale and owns the duplex where the violation took place. The tenant never received any notice and Mr. Gisslen was out of the country. He proclaims the bill of \$190 for two hours to trim the bush is excessive as it could have taken him 5 minutes to complete the task. Mr. Gisslen pointed out that the contractor didn't trim the bush to code and that Xcel Energy had placed a power pole through the bush in the first place.
15. Mayor Murphy stated that the contractor charges a minimum of an hour for the service.
16. Glick stated that it is the City's practice to mail notice of code enforcement violations to the property owner. A certified letter would not notify the City if the owner's mail is being held, such as is in this case. Suggested the City's practice should now include mailing a letter to the property owner and tenant if a rental.
17. Member Blonigan stated he was persuaded by the only 1 week of time allowed before the trimming was completed. If the owner is out of the country, it is still the tenant's job to complete the task.
18. Mr. Gisslen stated he did receive the notice in the mail, but only after he came back from being out of the country and after the trimming was complete.
19. Member Selman stated he believes both parties should have been notified and that the code enforcement staff did what City Code says, suggesting that Council change

the code. He requested a complete refund from the contractor for a poor job trimming.

20. Member Backen agreed that both parties should receive notice but that the owner is legally obligated for their properties, regardless if they are out of town.

21. Member Selman **MOVED**, seconded by Member Rogan to close the appeal hearing. **The vote was unanimous and the motion carried.**

22. Member Selman **MOVED**, seconded by Member Backen to waive all fines and fees and request a complete refund from the contractor.

23. Member Rogan stated that if the City knows a property is a rental than the new policy should be to notify both the owner and the tenant. He believes 7 days' notice for violation and by US mail is fine.

24. Mayor Murphy said he agrees to start sending letters to both the property owner and tenant and waive the \$140 fee for trimming but doesn't agree to waive the \$50 administrative fee. He stated he never leaves his rental properties unattended if he goes out of town for an extended period of time and that the City has spent a lot of staff time on this appeal.

25. **Ayes: Blonigan, Rogan, Selman, Backen Nays: Mayor Murphy. The motion carried.**

OLD BUSINESS A: Option to Acquire Property to Expand Street Right-of-Way

26. Glick reviewed the staff report. Glick stated that years prior, the City was interested in buying the property however the owner did not want to sell. The expectation would be to acquire the property, remove the structures and leave the property otherwise as is until street reconstruction.

27. Member Selman **MOVED**, seconded by Member Backen to authorize the Mayor and City Manager to execute any documents required for acquisition of 5324 44th Avenue N, Robbinsdale for \$145,000.

28. Member Blonigan stated he believed the neighbors in the area would be against this and that if the City is buying it to hold it, the City should instead try and receive rent from the house to pay for the property until the City has a plan in place to expand the street.

29. Member Selman reiterated that the City is only acquiring the property at this point and a traffic calming measure could be put in place.

30. Glick noted that once the City owns the property, it could look at the possibility of renting the house all though the property owner is expecting to take all the appliances and a set of special windows with them.
31. Mayor Murphy noted that neighbors may not like a rental being next door.
32. **Ayes: Rogan, Selman, Backen, Mayor Murphy Nays: Blonigan. The motion carried.**

NEW BUSINESS A: First Reading – City Code Updates – Restaurants Requirements for Liquor Licensing

33. Glick reviewed the staff report.
34. Member Rogan **MOVED**, seconded by Member Backen to hold the FIRST READING of Ordinance 17-10 "AN ORDINANCE AMENDING CHAPTER 12 OF THE CITY CODE REGARDING REQUIREMENT A FOR RESTAURANTS SEEKING INTOXICATING LIQUOR LICENSES". **The vote was unanimous and the motion carried.**

NEW BUSINESS B: Wicked Wort Event on October 7, 2017

35. Marshall reviewed the staff report.
36. Member Blonigan confirmed with staff that Council has lately been approving 11:30 p.m. event end time.
37. Member Backen **MOVED**, seconded by Member Blonigan to approve the Wicked Wort Brewing Company (4165 West Broadway) temporary liquor, temporary food for grilling by Wicked Wort, and outdoor entertainment license applications for their event on Saturday, October 7, 2017, with the conditions listed in the staff report. **The vote was unanimous and the motion carried.**

NEW BUSINESS C: Proposed 2018 General Fund and Debt Service Net Property Tax Levy

38. Jacobson reviewed the staff report and provided a PowerPoint presentation.
39. Member Selman asked for future reference to see what percent property taxes was to total general fund revenue compared to 10 years ago.
40. Member Blonigan asked about franchise fees and the decreased amount in the general fund budget.

41. Jacobson stated the city allocates a portion of franchise fees to the general fund and the street reconstruction fund which is currently reflected in the proposed budget is a 50/50 split which has not been the same allocation in past years.
42. Glick also noted that the cost of natural gas has also been decreasing, possibly effecting franchise fees.
43. Member Blonigan stated that using \$425,000 from the general fund reserves to balance the budget is not sustainable in the long term. That said, the City usually saves more than projected year after year due to conservative budget practices.
44. Member Rogan confirmed that the decrease in fiscal disparities is 1.54%, leading to the proposed budget having a 6.23% property tax increase and that to have a balanced budget and not draw from general fund reserves would require a property tax levy increase of 13.26%.
45. Jacobson clarified the overall tax levy spread over the last 8 years has been 5.84% which includes all city levies after fiscal disparities.
46. Mayor Murphy asked for clarification on the proposed new Park Attendant position.
47. Glick stated that it will be a summertime position to keep track of parks with plenty of activities and would allow for certain park buildings to stay open during the day. The new position will be in place of the seasonal Triangle Wading Pool attendant with an increase to a 40 hour a week position during the summer.
48. Member Rogan pointed out this is the highest levy increase since he's been on Council but believes it is a sound budget with only minimal changes from the previous year's budget. Most of the levy increase has to do with cost of living increases and maintaining current service levels but noted concern for dipping into reserves over a long-period of time.
49. Member Rogan **MOVED**, seconded by Member Selman to adopt Resolution No. 7584 "A RESOLUTION ADOPTING THE PROPOSED 2018 GENERAL FUND AND DEBT SERVICE NET PROPERTY TAX LEVIES AND CERTIFYING IT TO HENNEPIN COUNTY." **The vote was unanimous and the motion carried.**

NEW BUSINESS D: Proposed 2018 HRA Property Tax Levy

50. Glick reviewed the staff report.
51. Member Rogan **MOVED**, seconded by Member Backen to adopt Resolution No. 7585 "A RESOLUTION ADOPTING THE PROPOSED 2018 HOUSING AND REDEVELOPMENT AUTHORITY (HRA) NET PROPERTY TAX LEVY FOR CERTIFICATION TO HENNEPIN COUNTY."

52. Member Blonigan stated that the City is getting its bang for its buck for what the Robbinsdale Economic Development Authority does to fund community improvements.

53. **The vote was unanimous and the motion carried.**

54. Member Selman clarified a list of cities across the state with their proposed tax levy increase amounts that puts Robbinsdale in the middle.

OTHER BUSINESS A: Motion to approve disbursement requests for period ending 9/5/17.

55. Member Rogan **MOVED**, seconded by Member Selman to approve disbursement requests for period ending 9/5/17.

OTHER BUSINESS B: Enterprise Funds Budget, Capital Project Funds Budget, CIP Plan, Utility Rate and Financial Plan for Street Improvement Projects Work Sessions.

56. Glick reviewed the staff report

57. Member Rogan **MOVED**, seconded by Member Selman to set a series of Work Sessions to discuss the Proposed City Manager's Budget for 2018 Enterprise and Capital Project Funds, 2018-2022 Capital Improvement Plan, and Utility Rate and Financial Plan for one of the dates listed above along with a follow-up session. **The vote was unanimous and the motion carried.**

OTHER BUSINESS C: Scheduling the date for the Truth-in-Taxation Budget Meeting

58. Glick reviewed the staff report.

59. Member Selman **MOVED**, seconded by Member Blonigan to waive the reading and order the adoption of Resolution No. 7586 "A RESOLUTION SCHEDULING THE DATE FOR THE TRUTH-IN TAXATION BUDGET MEETING FOR THE 2018 BUDGET AND PROPERTY TAX LEVY." **The vote was unanimous and the motion carried.**

ADMINISTRATIVE REPORTS

60. Glick reminded Council of the upcoming regular monthly Work Session immediately following the Council meeting. The annual Robbinsdale Chamber of Commerce Meet and Greet is Monday, September 18, 2017

COUNCIL GENERAL COMMUNICATIONS

61. Member Blonigan, currently serving on a League of Minnesota Cities Policy Committee, shared information learned from a presentation he attended by the Ramsey County Assessor regarding tax assessments on big-box retail stores. He then commended the City for agreeing to an Assessment Agreement with Hy-Vee.
62. Mayor Murphy confirmed that on September 12, the City Council will hold a Special City Council meeting at which the Council will accept bids for demolishing the Triangle Wading Pool and the immediate plan for the land is to just have a grass play area.

ADJOURNMENT

63. Member Rogan **MOVED** seconded by Member Selman to adjourn the meeting at 8:50 p.m. **The vote was unanimous and the motion carried.**

John Tingley, Recorder

Regan L. Murphy, Mayor

ROBBINSDALE CITY COUNCIL
WORK SESSION MINUTES
TUESDAY, SEPTEMBER 5, 2017
COMMUNITY MEETING ROOM
CITY HALL

1. The work session was called to order by Mayor Pro Tem Blonigan 8:51 p.m.
2. Councilmembers Present: Rogan, Selman, Backen, Mayor Murphy Mayor Pro Tem Blonigan
Staff Present: City Manager Glick, Assistant to City Manager Tingley.

REVIEW: Welcoming City Resolution Draft

3. Glick reviewed the staff report.
4. Member Rogan made a slight grammatical change on a resolve clause.
5. Council agreed to send the draft with Member Rogan's revision to the Human Rights Commission for their September 28th meeting.

DISCUSSION: Bed and Breakfast Business Operations Addressed by City Code

6. Member Blonigan had brought this to staff after an inquiry from a resident. Staff had looked at language regarding home occupation and determined the City Code and zoning authorization for up to two roomers.
7. Glick suggested having the Planning Commission look at language in the City Code to determine if an update is needed.
8. Member Selman stated that a Bed and Breakfast in the right spot in Robbinsdale could work.
9. Mayor Murphy noted Air B'N'B's already exist in Robbinsdale.
10. Council agreed to send to the Planning Commission.

DISCUSSION: Backyard Flooding

11. Glick stated that a submersible pump has been in place on Chowen Avenue and Lake Drive on daily basis. Mayor Murphy indicated that water has gone down considerably in effected backyards.

MONTHLY UPDATE: 2017-2018 Goal Updates

12. Glick distributed handout that was made part of the agenda. Council agreed to send New Resident Welcome letters to new residents in place of having a quarterly welcoming event.
13. Council reviewed potential landmark signs at 36th Avenue at Noble Avenue and gave preference. The handout has been added to the packet.

14. Glick stated she is applying for a grant through the Minnesota Historical Society to make the lower room in the Historic Robbinsdale Public Library accessible to the community.
15. Council discussed potential grand opening date for the pavilion. Staff will provide an anticipated timeline for the paths and landscaping work.

MONTHLY UPDATE: Problem Properties

16. Glick reviewed the handout which has been added to the agenda.

OTHER BUSINESS:

17. Council briefly discussed reaction from the 6:15 Work Session with tobacco vendors.
18. Mayor Murphy discussed a meeting he had on Monday with other Mayor's and City Manager's along the Bottineau Corridor regarding moving forward with a lobbying contract.

ADJOURNMENT

19. Mayor Pro Tem Blonigan adjourned the work session at 9:32 p.m.

John Tingley, Recorder

William A. Blonigan, Mayor Pro Tem

City of Robbinsdale
CITY COUNCIL SPECIAL MEETING MINUTES
September 12, 2017
Immediately following the regularly scheduled 7:00 p.m. REDA meeting

CALL TO ORDER

1. Mayor Murphy called the meeting to order at 7:24 p.m.
2. Present: Blonigan, Rogan, Selman, Backen, Mayor Murphy
Staff: Marcia Glick, City Manager

NEW BUSINESS A: Accept Quote for Demolition of Triangle Park Wading Pool

3. Glick reviewed the staff report.
4. Members noted concern about the price.
5. Member Selman asked about the funding source for the project.
6. Glick stated that the funding source temporarily is the Parks funds and then will be backfilled with other sources. The pool would be demolished shortly with seeding to happen yet this year.
7. Member Rogan noted that the bids were only \$800 apart.
8. Member Blonigan asked for a short report from the City Engineer to add to the Council Agenda for the meeting on September 26th regarding the demolition cost.
9. Member Rogan **MOVED**, seconded by Member Backen to authorize the City Manager and Finance Director to issue a Purchase Order to Kevitt Excavating LLC of Crystal, MN for the demolition and removal of the Triangle Park Wading Pool for the amount of \$38,900.00. **The vote was unanimous and the motion carried.**

NEW BUSINESS B: Resolution Proposing Change to Fee Schedule

10. Glick reviewed the staff report.
11. Member Rogan noted that a public hearing may be required.
12. Glick stated staff will look at state statute.
13. Member Backen **MOVED**, seconded by Member Selman to table the Resolution until the September 26, 2017 Council meeting.
14. Sylvia Saboutey, studying to be a public health nurse at Bemidji State University attended the meeting as part of her curriculum, asked a couple questions. She asked about why the Council decided to demolish the Triangle Park Wading Pool and why the City is proposing to increase fee for liquor licenses.

15. Mayor Murphy stated that the pool has been in use since the 1950s and was increasingly becoming more expensive to operate while the use of the pool has significantly declined. Looking at the cost of maintaining the pool and the benefit it was providing, the city chose to close the pool. The community has been involved in the process> He noted that another wading pool had been left unused for years and became an eyesore. This will allow the area to be used.
16. Glick stated that the city always tries to keep its license fees in line with what other cities are doing to keep a level playing field for businesses. The fee had not been changed in many years and staff noticed that the fee was lower than surrounding cities. The \$300 increase would bring Robbinsdale more in line. Staff will double check the process.
17. **The vote was unanimous and the motion carried.**

ADJOURNMENT

18. Member Selman **MOVED**, seconded by Member Backen to adjourn the meeting at 7:39 p.m.
The vote was unanimous and the motion carried.

Marcia Glick, Recorder

Regan L. Murphy, Mayor

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**City of Robbinsdale
Planning Commission Minutes
July 20, 2017**

1. **CALL TO ORDER**

The meeting was called to order by Chair Harper at 7:07 p.m.

2. **ROLL CALL**

Present: Stack, Ulbrich, Chair Harper

Absent: Greenberg, Stoneberg

Staff: Rick Pearson, AICP, Community Development Coordinator

3. **MOTION** by Commissioner Harper, seconded by Commissioner Ulbrich to approve the meeting minutes of June 15, 2017. **The vote was 3-0, Absent: Greenberg, Stoneberg**

6. **PUBLIC HEARING : Small Cell ROW Zoning Text Amendment**

7. **MOTION** by Commissioner Stack, seconded by Commissioner Ulbrich to open the public hearing. **The vote was 3-0, Absent: Greenberg, Stoneberg**

8. Pearson reviewed the staff report.

9. Commissioner Harper asked about how right-of-way is zoned.

10. Pearson explained that public right-of-way is zoned by the adjacent property designation. So an example would be that public right-of-way adjacent to R-1 would be zoned R-1. The City Council is taking up separate additions to City Code regarding wireless structures and permit process for small cell wireless facilities.

11. Commissioner Harper inquired about utility poles in the rear of lots and if new poles would be placed in rear alleys.

12. Commissioner Ulbrich said he didn't believe wireless providers would place new poles structures in alleys but rather use existing structures because it's cheaper for them.

13. Pearson noted that alley right-of-way is usually only about 14 feet wide and it may be a tight squeeze for wireless companies to place a structure as the conditional use permit would require the facility to be at least 5 feet from the lot line.

15. **MOTION** by Commissioner Ulbrich seconded by Commissioner Stack to close the public hearing. **The vote was 3-0, Absent: Greenberg, Stoneberg**
16. **MOTION** Commissioner Ulbrich, seconded by Commissioner Harper to recommend City Council adopt amendments to Sections 505.09, 510.25 Subd. 2 (e) and 515.01, Subd. 4(l) allowing wireless support structures in public right-of-way in the R-1, Single family residential district. **The vote was 3-0, Absent: Greenberg, Stoneberg**

#7A OTHER BUSINESS

21. Information Only – Project Updates

#8 ADJOURMENT

MOTION by Commissioner Harper, seconded by Commissioner Stack to adjourn the meeting at 7:22 p.m. **The vote was 3-0, Absent: Greenberg, Stoneberg**



Rick Pearson, AICP, Community Development Coordinator



City of Robbinsdale

MEMORANDUM

TO: Mayor and City Council

FROM: Marcia Glick, City Manager

DATE: September 26, 2017

RE: Approval of Licenses

Background:

As required by City Code, contractor and business licenses issued in the City of Robbinsdale must be approved by the City Council. Attached is a list of applicants requesting a license or license renewal to operate within the City. All appropriate fees have been paid and certificates of insurance and bonds, if required, have been filed with the City Clerk.

Recommendation:

By motion approve issuance of licenses dated September 26, 2017.

Marcia E. Glick

Marcia Glick, City Manager

CONCURRENCE:

Tom Marshall

Tom Marshall, City Clerk

INDIVIDUAL LICENSES FOR COUNCIL APPROVAL

09/26/2017

Current Date: 9/21/2017

<u>Type</u>	<u>Applicant</u>	<u>License Fee</u>
Transient Merchants - Solicitations	Pickles Cafe	50.00

Number of Licenses Requesting Council Approval: 1

BUSINESS LICENSES FOR COUNCIL APPROVAL

09/26/2017

Current Date: 9/21/2017

<u>License Type</u>	<u>Applicant</u>	<u>License Fee</u>
Temporary Liquor	Robbinsdale Historical Society	50.00

Number of Licenses Requesting Council Approval: 1

CONTRACTORS' LICENSES FOR COUNCIL APPROVAL

09/26/2017

<u>Applicant</u>	<u>Type</u>	<u>License Fee</u>
CHESNEY MECHANICAL GROUP (ME)	Mechanical Contractor	50.00
DANA HOAGLAND PLUMBING INC	Plumbing Contractor	50.00
DSM EXCAVATING INC	Sewer/Water Contractor	50.00
E. W. DAY PLUMBING & HEATING INC	Plumbing Contractor	50.00
FAST EDDY'S FLAGS & SIGNS	Sign Contractor	50.00
GUST PLUMBING INC	Plumbing Contractor	50.00
KB SERVICES COMPANY INC	Mechanical Contractor	50.00
KEVITT EXCAVATING LLC (DC)	Demolition Contractor	50.00
MECHANICAL PLUS INC	Plumbing Contractor	50.00
MIDWAY VO-TECH	Plumbing Contractor	50.00
MIKE'S CUSTOM MECHANICAL INC (PL)	Plumbing Contractor	50.00
RANDY LANE & SON'S PLUMBING	Plumbing Contractor	50.00
RICHARD OSNESS CONSTRUCTION INC	General Contractor	50.00
SEMLAK PLUMBING	Plumbing Contractor	50.00
SWENSON HEATING & AIR CONDITIONING INC	Mechanical Contractor	50.00
TEAM MECHANICAL INC (ME)	Mechanical Contractor	50.00
UPTOWN HEATING & COOLING (PL)	Plumbing Contractor	50.00

Number of Contractor Licenses Requesting Council Approval: 17

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City of Robbinsdale

MEMORANDUM

TO: Mayor and City Council
FROM: Marcia Glick, City Manager
DATE: September 26, 2017
RE: Request for Deferral of Special Assessment at 3921 Noble Avenue North

Background

A Deferral of Special Assessment application has been received from Dawn E. Munt, 3921 Noble Avenue North for deferral of a special assessment related to the Noble Avenue construction project. Ms. Munt's application is complete and includes the required documents.

Analysis/Conclusion

Minnesota State Statutes, Sections 435.193 to 435.195, allows any statutory or home rule charter city that makes a special assessment to defer the payment of it for any homestead property owned by a person 65 years of age or older, or retired by virtue of a permanent and total disability, and for whom it would be a hardship to make the payments. In 1977, Robbinsdale City Council adopted Resolution No. 2533 establishing the standards and guidelines for determining the existence of hardship.

The resolution also established that deferral of special assessments should be granted to any person otherwise qualified who shall make proper application claiming that average annual principal and interest due on the assessment is in excess of one and one-half percent of their current annual income. After reviewing the application documents, staff confirmed that Ms. Munt qualifies for the deferral program. If approved by City Council, then staff administers the deferral to Hennepin County Taxpayer Services for recording.

Recommendation

By motion, approve the Deferral of Special Assessment application for Dawn E. Munt, 3921 Noble Avenue North for deferral of a special assessment related to the Noble Avenue construction project.

Marcia Glick, City Manager

CONCURRENCE:

Tom Marshall, City Clerk

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City of Robbinsdale

TO: Mayor and City Council

FROM: Marcia Glick, City Manager

DATE: September 26, 2017

RE: Support for Hennepin County Fall 2017 TOD Grant- Multi-Family

Background:

A development presentation for a multi-family market rate housing development is to be made at a Robbinsdale Economic Development Authority work session just prior to the City Council meeting. The developer, The Beard Group, has made a deposit to cover the cost of preliminary analysis of tax increment potential from the project and is also seeking grant opportunities to cover redevelopment costs.

An application has been submitted to Hennepin County for the Transit Oriented Development Grant opportunity. The request is for \$500,000 towards acquisition and public infrastructure related to real estate development. REDA also submitted a real estate acquisition grant request for \$500,000 for acquisition of the BP station. The opportunity for both grants to be approved depends on the number of suburban applications.

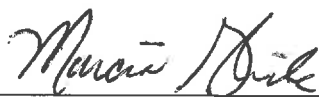
Analysis/Conclusion:

The grant application asks for inclusion of a resolution showing support of the application by the city council. The resolution supporting the grant application does not preempt the planning review process. The submission for planning commission review is being prepared for the October 26th Planning Commission meeting (one week later than normal to avoid school release days.)

The proposal to be presented at the REDA work session is for a 132 unit market rate multi-family development at a site between West Broadway and Lakeland Avenues north and west of Citizens Independent Bank.

Recommendation:

By motion, waive the reading and order the adoption of the Resolution shown as Exhibit 1 "A RESOLUTION SUPPORTING APPLICATION FOR TRANSIT ORIENTED DEVELOPMENT GRANT FROM HENNEPIN COUNTY FOR DEVELOPMENT OF MULTI-FAMILY HOUSING."



Marcia Glick, City Manager

Member _____ moved and Member _____ seconded a motion that the following resolution be read and adopted this 26th day of September, 2017.

RESOLUTION NO.

A RESOLUTION SUPPORTING APPLICATION
FOR TRANSIT ORIENTED DEVELOPMENT GRANT
FROM HENNEPIN COUNTY
FOR DEVELOPMENT OF MULTI-FAMILY HOUSING

WHEREAS, The Beard Group, Inc (the "Developer") has presented a plan for development of a market rate multi-family development with amenities; and

WHEREAS, the site located between West Broadway and Lakeland Avenues just north and west of Citizens Independent Bank at 3700 West Broadway is in an area currently including parking lots no longer needed for the bank operations, an office building that is underutilized, and an adjacent home all of which property is currently controlled by the bank owners; and

WHEREAS, the City Council is in support of the redevelopment of the site, subject to city review of the proposal as it relates to zoning requirements, as an opportunity to provide a type of housing not currently available in the city; and

WHEREAS, redevelopment of this site, which will be considered for inclusion in a new redevelopment district, will take advantage of the nearby public transit and connection to the expected Blue Line light rail transit station;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Robbinsdale supports the Transit Oriented Development Grant application submitted to Hennepin County Housing and Redevelopment Authority seeking assistance in the form of funds to assist in the acquisition of this property and installation of public utilities necessary for development of the site.

The question was on the adoption of the resolution and upon a vote being taken thereon, the following voted in favor thereof:

and the following voted against the same:

WHEREUPON SAID RESOLUTION WAS DECLARED DULY PASSED AND ADOPTED THIS 26TH DAY OF SEPTEMBER, 2017.

Regan L. Murphy, Mayor

ATTEST:

Tom Marshall, City Clerk

MEMORANDUM

TO: Mayor and City Council

FROM: Marcia Glick, City Manager

DATE: September 26, 2017

SUBJECT: Accept Quote for Replacement of Ball Field Drag – City Project 8073

Background:

Included in the approved 2017 Capital Equipment Budget is the scheduled replacement of a Ball Field Drag, used for grooming ballfields throughout the City.

The proposed new vehicle is a Toro Workman HDX with automatic transmission, a shade canopy and a Rahn Groomer. This unit is replacing a 1995 Toro Workman 3100 (Unit # 68) with 3930 hours. The older unit is being traded on the new vehicle (\$ 1,500 value). The proposed new vehicle is a contract item – Government Contract #119042. It is proposed to purchase the vehicle from MTI Distributing of Brooklyn Center, MN for the net price of \$ 25,320.41.

The total approved budget for this vehicle is \$23,000. The slightly higher than budgeted cost received is due to switching from manual to automatic transmission and for remote hydraulics components to operate the Groomer. Staff recommends the purchase of the equipment identified.

Recommendation:

By motion, authorize the City Manager and Finance Director to issue a Purchase Order to MTI Distributing of Brooklyn Center, MN for the purchase of a Toro Workman HDX with automatic transmission, a shade canopy and Rahn Groomer under Government Contract #119042 for the net amount of \$ 25,320.41.



Marcia Glick, City Manager

CONCURRENCE:



Richard McCoy, P.E.
Public Works Director / City Engineer

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MEMORANDUM

TO: Mayor and City Council

FROM: Marcia Glick, City Manager

DATE: September 26, 2017

SUBJECT: Explanation of Quotes Received for Triangle Park Wading Pool Demolition

Background:

At the Council Meeting on September 12, 2017, approval was given to the low quote for removal of the Triangle Park Wading Pool. During discussion of the item, Council Members asked that further information be provided relating to the relatively high cost of the work (compared to house demolitions) and the number of Contractors who were approached to provide prices. This report briefly responds to these questions.

Price – the low price approved by City Council for the work was \$ 38,900.00. This compares to costs in the range of \$ 12,000 - \$ 20,000 typically received for single home demolition. Two prime factors can be put forward for the significant price difference –

Structure – a typical house will have a concrete block foundation / basement area and timber framed structure above. This compares to the thick reinforced concrete construction of the pool which required substantially more effort to break apart and separate for transportation off site (refer to picture below).



Backfill – in a typical house demolition, the basement area is left unfilled, with side slopes being graded to be relatively gentle, with the thought that the replacement structure built on the land will also include a basement. The pool removal required the entire excavated area to be filled back in so that a flat grade could be achieved. Part of the higher cost includes the provision of this fill material.

It should be noted that the two prices received were \$ 723 apart. This represents a difference of only 1.86% relative to the low price.

Contractors – originally 4 contractors that were familiar to staff were approached to provide prices for this work. One declined the invitation, one was non-responsive and two submitted.

Recommendation:

Receive and note the report on the quotes received for the Triangle Park Wading Pool.



Marcia Glick, City Manager

CONCURRENCE:



Richard McCoy, P.E.
Public Works Director / City Engineer



City of Robbinsdale

CONSENT H

MEMORANDUM

TO: City Council
FROM: Marcia Glick
DATE: September 26, 2017
RE: Update Regarding Liquor License Fee Increases

Background

At the September 12th City Council meeting, a resolution recommending to increase the city's Intoxicating Liquor License Fee from \$5,500 to \$5,800 was on the agenda as a consent item. It was pointed out that a public hearing may be required and Council tabled the resolution until the September 26th meeting allowing staff to look at state statute regarding required procedure for liquor license fee increases.

Analysis/Conclusion

Staff found in State Statute that notice of the proposed increase must be mailed to liquor license holders at least 30 days before the date set for the hearing. Staff mailed a notice to on-sale intoxicating liquor license holders on Thursday, September 14th stating a hearing to consider increasing the liquor license fee will be held on October 17th.

Recommendation

By motion, table consideration of an update to liquor license fees to the October 17th City Council agenda.

Marcia Glick, City Manager

CONCURRENCE:

Tom Marshall, City Clerk

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MEMORANDUM

To: Mayor and Council Members
From: Marcia Glick, City Manager
Date: September 26, 2017
Re: Portable Radios for Fire Department

Background

The 2017 Equipment Replacement Fund adopted budget includes \$112,000.00 for the purchase/replacement of 24 portable radios for fire department personnel and fire ground operations. The current portable radios are designated “end of life” and non-supported at the end of 2018 by the Hennepin County Sheriff’s Office (HCSO). The HCSO is responsible for supporting radio communication implementations, repairs and warranty work with multiple agencies for both police and fire services within Hennepin County.

Analysis/Conclusion

The equipment will be purchased from Motorola Solutions, which is recognized as a State of Minnesota communications vendor (MN State Contract #119587) and used by Hennepin County for their supported radio communications platform. The newly purchased radios must be compatible with the county-wide system as directed by Hennepin County radio policy.

The requirements of the fire department, its personnel and the HCSO were reviewed and the attached Bill of Materials (BOM) was created. As with the last purchase/replacement, multiple purchasing options were reviewed and it was determined that the “leasing of radios” option is no longer available via the county.

The total cost of the equipment purchase is \$113,322.08. While this total is slightly over the original estimated budget submittal, pricing discounts and a maximized trade-in allowance of \$566.00 per radio are being utilized for this purchase. The requested purchase order must be placed with Motorola Solutions before the end of the third quarter 2017 or the pricing discounts and trade-in values associated with this quotation (Quote# QU0000416199) are subject to change or cancellation. The Purchase Order must be placed with the vendor before September 29, 2017 in order to maximize the discounts and trade-in offers associated with the quotation.

Recommendation

By motion authorize the City Manager and Finance Director to issue a Purchase Order to Motorola Solutions for the purchase of 24 portable radios for fire department personnel and fire ground operations in an amount of \$113,322.08.


Marcia Glick, City Manager

Concurrence:


Larry S. Jacobson, Finance Director

**MOTOROLA SOLUTIONS**

Quote Number: QU0000416199

Effective: 20 SEP 2017

Effective To: 30 SEP 2017

Bill-To:

ROBBINSDALE, CITY OF
4100 LAKEVIEW AVE N
ROBBINSDALE, MN 55422
United States

Ultimate Destination:

ROBBINSDALE, CITY OF
4101 HUBBARD AVE N
ROBBINSDALE, MN 55422
United States

Attention:

Name: Guy Dorholt
Email: gdorholt@ci.robbinsdale.mn.us
Phone: 763-442-1519

Sales Contact:

Name: Randy Beach
Email: randy.beach@ancom.org
Phone: 763-428-7884

Request For Quote: 24 APX6000XE Model 2.5 w/Accessories - 7 w/Encryption**Contract Number:** MINNESOTA DOT**Freight terms:** FOB Destination**Payment terms:** Net 30 Due

Item	Quantity	Nomenclature	Description	List price	Your price	Extended Price
1	7	H98UCF9PW6BN	APX6000 700/800 MODEL 2.5 PORTABLE	\$3,026.00	\$2,269.50	\$15,886.50
1a	7	H885BK	ADD: 3 YEAR SERVICE FROM THE START LITE	\$90.00	\$90.00	\$630.00
1b	7	QA01648AA	ADD: ADVANCED SYSTEM KEY - HARDWARE KEY	\$5.00	\$3.75	\$26.25
1c	7	H869BZ	ENH: MULTIKEY	\$330.00	\$247.50	\$1,732.50
1d	7	Q625AX	ENH: DES,DES-XL,DES-OFB ENCRYPTION	\$599.00	\$449.25	\$3,144.75
1e	7	Q806BM	ADD: ASTRO DIGITAL CAI OPERATION	\$515.00	\$386.25	\$2,703.75
1f	7	QA01427AB	ALT: IMPACT GREEN HOUSING	\$25.00	\$18.75	\$131.25
1g	7	QA02006AA	ENH: APX6000XE RUGGED RADIO	\$800.00	\$600.00	\$4,200.00
1h	7	H38BT	ADD: SMARTZONE OPERATION	\$1,200.00	\$900.00	\$6,300.00
1i	7	Q361AR	ADD: P25 9600 BAUD TRUNKING	\$300.00	\$225.00	\$1,575.00
2	17	H98UCF9PW6BN	APX6000 700/800 MODEL 2.5 PORTABLE	\$3,026.00	\$2,269.50	\$38,581.50
2a	17	H885BK	ADD: 3 YEAR SERVICE FROM THE START LITE	\$90.00	\$90.00	\$1,530.00
2b	17	QA01648AA	ADD: ADVANCED SYSTEM KEY - HARDWARE KEY	\$5.00	\$3.75	\$63.75
2c	17	Q806BM	ADD: ASTRO DIGITAL CAI OPERATION	\$515.00	\$386.25	\$6,566.25
2d	17	QA01427AB	ALT: IMPACT GREEN HOUSING	\$25.00	\$18.75	\$318.75
2e	17	QA02006AA	ENH: APX6000XE RUGGED RADIO	\$800.00	\$600.00	\$10,200.00
2f	17	H38BT	ADD: SMARTZONE OPERATION	\$1,200.00	\$900.00	\$15,300.00
2g	17	Q361AR	ADD: P25 9600 BAUD TRUNKING	\$300.00	\$225.00	\$3,825.00
3	17	NNTN8575A	AUDIO ACCESSORY-REMOTE SPEAKER MICROPHONE,IMPRES XE RSM XT CABLE GREEN	\$480.00	\$360.00	\$6,120.00
4	7	PMMN4106B	AUDIO ACCESSORY-AUDIO ADAPTER,APX XE500 REMOTE SPEAKER MIC, HIGH IMPACT GREEN	\$550.00	\$412.50	\$2,887.50
5	1	RLN6434A	APX TRAVEL CHARGER	\$111.10	\$83.33	\$83.33
6	10	NNTN8860A	CHARGER, SINGLE-UNIT, IMPRES 2, 3A, 115VAC, US/NA	\$150.00	\$112.50	\$1,125.00
7	10	NNTN8930A	BATTERY PACK,LITHIUM ION,BATT IMPRES 2 LIION TIA4950 R IP68 2650T	\$155.00	\$116.25	\$1,162.50
8	3	NNTN8844A	CHARGER, MULTI-UNIT, IMPRES 2, 6-DISP, NA/LA-PLUG, ACC USB CHGR	\$1,250.00	\$937.50	\$2,812.50

Trade-In Offer & State Contract Match Value- \$566.00 off p/u.**Total Quote in USD**

\$126,906.08

New Total w/Special Offer - \$113,322.08

System ID 740F - PE No. 142265 - PE Amount \$13,584.00 (\$66.00 Off for MN State Contract Price Match and \$500.00 Off for Q317 XTS Trade In Promotion - PO Worksheet Attached - Thank you for your order!! Randy Beach - ANCOM

THIS QUOTE IS BASED ON THE FOLLOWING:

1 This quotation is provided to you for information purposes only and is not intended to be an offer or a binding proposal.

If you wish to purchase the quoted products, Motorola Solutions, Inc. ("Motorola") will be pleased to provide you with our standard terms and conditions of sale (which will include the capitalized provisions below), or alternatively, receive your purchase order which will be acknowledged.

Thank you for your consideration of Motorola products.

2 Quotes are exclusive of all installation and programming charges (unless expressly stated) and all applicable taxes.

3 Purchaser will be responsible for shipping costs, which will be added to the invoice.

4 Prices quoted are valid for thirty(30) days from the date of this quote.

5 Unless otherwise stated, payment will be due within thirty days after invoice. Invoicing will occur concurrently with shipping.

MOTOROLA DISCLAIMS ALL OTHER WARRANTIES WITH RESPECT TO THE ORDERED PRODUCTS, EXPRESS OR IMPLIED INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

MOTOROLA'S TOTAL LIABILITY ARISING FROM THE ORDERED PRODUCTS WILL BE LIMITED TO THE PURCHASE PRICE OF THE PRODUCTS WITH RESPECT TO WHICH LOSSES OR DAMAGES ARE CLAIMED. IN NO EVENT WILL MOTOROLA BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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TO: City Council
FROM: Marcia Glick, City Manager
DATE: September 26, 2017
RE: Deputy Registrar's Monthly Financial Statements

Attached are the Deputy Registrar's financial reports for the month of August 2017 prepared by the finance department. The reports include monthly and year to date amounts for 2017 with comparable amounts to 2016.

Year to date revenues through August are \$360,920 which is \$5,404 higher than the prior year. Expenditures were greater by \$26,616. The main reason for the shift is related to payroll and the department being fully staffed. There is a net income of \$91,619 year to date, which is \$21,212 less than last year.

Passport service has continued to increase in 2017. Passport revenue year to date increased \$22,478, (+18.9%) and motor vehicle fees have decreased \$7,463, (-3.5%).

The express lane for the simple vehicle tab renewals continues to be opened when lines get long.

Staffing levels continue to be reviewed. There was a vacant license center manager position the months of January and February 2016. There is an increase in city contributions to health coverage as some part-time employees shifted to full-time. We will continue to monitor and report monthly results.

Recommendation

Approve a motion to acknowledge the Deputy Registrar's financial reports for the month of August 2017.



Marcia Glick, City Manager

CONCURRENCE:



Larry Jacobson, Finance Director

City of Robbinsdale
Deputy Registrar
Profit and Loss Statement From Operations
For Period Ending August 31, 2017

	<u>Aug-2017</u>	<u>Aug-2016</u>	<u>Year to Date</u>		<u>% Inc (Dec) from Previous Year</u>
			<u>2017</u>	<u>2016</u>	
Notary Fees	10	10	80	20	300.0%
Motor Vehicle Fees	27,671	29,404	206,744	214,207	(3.5%)
Boat/Snow/ATV/ORV Fees	257	323	5,931	5,616	5.6%
Fast Track Fees	-	1,030	5,989	8,591	0.0%
Fish & Game Fees	7	20	139	206	(32.5%)
Passport Fees	14,303	14,795	141,230	118,752	18.9%
Cash Over & Short	9	(3)	489	28	1645.1%
Other Revenue	74	108	318	8,096	(96.1%)
Revenues	<u>42,331</u>	<u>45,687</u>	<u>360,920</u>	<u>355,516</u>	<u>1.5%</u>
Operating Expenses:					
Personal Services	25,352	25,878	225,866	197,829	14.2%
Supplies & Repairs	195	110	2,525	2,542	(0.7%)
Internal Serv Charges	4,636	4,879	37,088	39,032	(5.0%)
Other Charges & Services	253	307	3,822	3,282	16.5%
Depreciation	-	-	-	-	0.0%
Other (Income) Expense	-	-	-	-	0.0%
Total	<u>30,436</u>	<u>31,174</u>	<u>269,301</u>	<u>242,685</u>	<u>11.0%</u>
Operating Income / (Loss)	<u>11,895</u>	<u>14,513</u>	<u>91,619</u>	<u>112,831</u>	
Percent to Revenues	28%	32%	25%	32%	



City of Robbinsdale

CONSENT K

MEMORANDUM

TO: City Council
FROM: Marcia Glick, City Manager
DATE: September 26, 2017
RE: Robbinsdale Wine & Spirits' Monthly Financial Statements

Attached are the Robbinsdale Wine & Spirits' financial reports for the month of August 2017 prepared by the finance department. The report includes monthly and year to date amounts for 2017 with comparable amounts to 2016.

Year to date sales through August are \$2,297,710 which is up \$94,099 from the prior year. Gross profit on sales is at \$613,325 compared with \$568,764 in 2016. Gross profit is at 27% which is a little higher than target. Net income for the year is \$99,653, compared to income of \$63,192 in 2016.

Personnel services costs are expected to fluctuate in 2017 versus 2016 as staffing changes occur at the store. There is an increase in the city contribution to health coverage as part-time employees qualify for coverage. We will continue to monitor and report monthly results.

There was a scheduled rent increase of 4.3% beginning in February 2017.

Recommendation

Approve a motion to acknowledge the Robbinsdale Wine & Spirits financial reports for the month of August 2017.

Marcia Glick, City Manager

CONCURRENCE:

Larry Jacobson, Finance Director

City of Robbinsdale
Robbinsdale Wine & Spirits
Profit and Loss Statement From Operations
For Period Ending August 31, 2017

	Aug-2017	Aug-2016	Year to Date		% Inc (Dec) from Previous Year
			2017	2016	
Sales	314,319	296,125	2,328,322	2,230,036	4.4%
Less Customer Discounts	3,873	3,498	30,612	26,425	15.8%
Net Sales	310,446	292,627	2,297,710	2,203,611	4.3%
Cost of Sales	228,870	216,241	1,684,385	1,634,847	3.0%
Gross Profit	81,576	76,386	613,325	568,764	7.8%
Percent to Net Sales	26%	26%	27%	26%	
Operating Expenses:					
Personal Services	30,400	31,566	266,644	272,184	(2.0%)
Supplies & Repairs	527	927	16,689	8,221	103.0%
Other Charges & Services	14,051	13,137	113,225	116,975	(3.2%)
Rent	8,101	8,107	74,908	65,950	13.6%
Depreciation	5,250	5,217	42,000	41,736	0.6%
Other (Income) Expense	(149)	(29)	206	506	(59.3%)
Total	58,180	58,925	513,672	505,572	1.6%
Operating Income / (Loss)	23,396	17,461	99,653	63,192	57.7%
	8%	6%	4%	3%	

	Current Month Analysis				
	Liquor	Wine	Beer	Misc	Totals
Sales	107,390	53,480	132,939	16,637	310,446
Inventory of August 1	194,765	114,958	68,108	5,908	383,739
Purchases	102,272	38,678	109,140	17,262	267,352
Less Inventory of August 31	217,250	117,008	77,365	10,598	422,221
Cost of Sales	79,787	36,628	99,883	12,572	228,870
Gross Profit	27,603	16,852	33,056	4,065	81,576
Percent to Net Sales	26%	32%	25%	24%	26%

City of Robbinsdale
Robbinsdale Wine & Spirits
Profit and Loss Statement From Operations
For Period Ending August 31, 2017

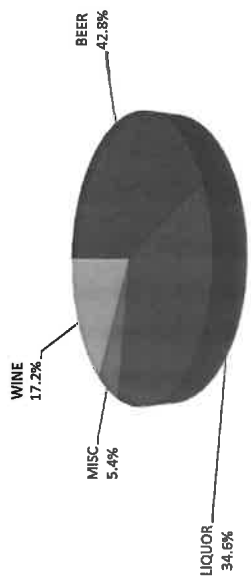
Sales / Cost of Sales Analysis

			<u>Year to Date</u>		<u>% Inc (Dec) from Previous Year</u>
	<u>Aug-2017</u>	<u>Aug-2016</u>	<u>2017</u>	<u>2016</u>	
Liquor Sales	107,390	100,867	826,545	788,678	4.8%
Liquor Cost of Sales	<u>79,787</u>	<u>74,607</u>	<u>608,906</u>	<u>585,791</u>	<u>3.9%</u>
Gross Profit	<u>27,603</u>	<u>26,260</u>	<u>217,639</u>	<u>202,887</u>	<u>7.3%</u>
Percent to Net Sales	26%	26%	26%	26%	
Wine Sales	53,480	50,612	400,026	395,615	1.1%
Wine Cost of Sales	<u>36,628</u>	<u>34,100</u>	<u>268,344</u>	<u>263,462</u>	<u>1.9%</u>
Gross Profit	<u>16,852</u>	<u>16,512</u>	<u>131,682</u>	<u>132,153</u>	<u>(0.4%)</u>
Percent to Net Sales	32%	33%	33%	33%	
Beer Sales	132,939	126,399	957,288	914,480	4.7%
Beer Cost of Sales	<u>99,883</u>	<u>97,250</u>	<u>721,671</u>	<u>708,412</u>	<u>1.9%</u>
Gross Profit	<u>33,056</u>	<u>29,149</u>	<u>235,617</u>	<u>206,068</u>	<u>14.3%</u>
Percent to Net Sales	25%	23%	25%	23%	
Misc Sales	16,637	14,749	113,851	104,838	8.6%
Misc Cost of Sales	<u>12,572</u>	<u>10,285</u>	<u>85,464</u>	<u>77,183</u>	<u>10.7%</u>
Gross Profit	<u>4,065</u>	<u>4,464</u>	<u>28,387</u>	<u>27,655</u>	<u>2.6%</u>
Percent to Net Sales	24%	30%	25%	26%	
Total Sales	310,446	292,627	2,297,710	2,203,611	4.3%
Total Cost of Sales	<u>228,870</u>	<u>216,242</u>	<u>1,684,385</u>	<u>1,634,848</u>	<u>3.0%</u>
Gross Profit	<u>81,576</u>	<u>76,385</u>	<u>613,325</u>	<u>568,763</u>	<u>7.8%</u>
Percent to Net Sales	26%	26%	27%	26%	

Liquor Store Sales - 2016 and 2017

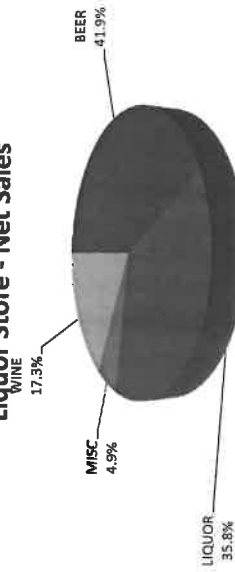
	<u>Jan 16</u>	<u>Jan 17</u>	<u>Feb 16</u>	<u>Feb 17</u>	<u>Mar 16</u>	<u>Mar 17</u>
Liquor	88,286.00	91,141.00	87,439.00	88,931.00	96,960.00	105,414.00
Wine	45,054.00	46,241.00	47,034.00	45,744.00	51,808.00	51,113.00
Beer	87,526.00	90,030.00	91,512.00	95,241.00	102,156.00	107,884.00
Misc	10,317.00	11,038.00	10,369.00	11,062.00	10,961.00	12,529.00
	<u>231,183.00</u>	<u>238,450.00</u>	<u>236,354.00</u>	<u>240,978.00</u>	<u>261,885.00</u>	<u>276,940.00</u>
	<u>Apr 16</u>	<u>Apr 17</u>	<u>May 16</u>	<u>May 17</u>	<u>Jun 16</u>	<u>Jun 17</u>
Liquor	99,624.00	103,081.00	102,676.00	109,580.00	102,306.00	107,509.00
Wine	50,031.00	49,916.00	50,149.00	53,006.00	51,534.00	50,088.00
Beer	116,144.00	113,016.00	122,132.00	131,329.00	126,830.00	140,159.00
Misc	13,034.00	12,848.00	14,462.00	15,580.00	15,062.00	16,141.00
	<u>278,833.00</u>	<u>278,861.00</u>	<u>289,419.00</u>	<u>309,495.00</u>	<u>295,732.00</u>	<u>313,897.00</u>
	<u>Jul 16</u>	<u>Jul 17</u>	<u>Aug 16</u>	<u>Aug 17</u>	<u>Sept 16</u>	<u>Sept 17</u>
Liquor	110,520.00	113,499.00	100,867.00	107,390.00	103,533.00	-
Wine	49,393.00	50,438.00	50,612.00	53,480.00	52,986.00	-
Beer	141,781.00	146,690.00	126,399.00	132,939.00	125,253.00	-
Misc	15,884.00	18,016.00	14,749.00	16,637.00	12,566.00	-
	<u>317,578.00</u>	<u>328,643.00</u>	<u>292,627.00</u>	<u>310,446.00</u>	<u>294,338.00</u>	<u>-</u>
	<u>Oct 16</u>	<u>Oct 17</u>	<u>Nov 16</u>	<u>Nov 17</u>	<u>Dec 16</u>	<u>Dec 17</u>
Liquor	105,314.00	-	109,150.00	-	132,544.00	-
Wine	55,770.00	-	59,894.00	-	75,972.00	-
Beer	122,946.00	-	114,803.00	-	122,023.00	-
Misc	13,041.00	-	13,957.00	-	14,835.00	-
	<u>297,071.00</u>	<u>-</u>	<u>297,804.00</u>	<u>-</u>	<u>345,374.00</u>	<u>-</u>

August 2017 Liquor Store - Net Sales



August 2017		Net Sales per Dept	% Net Sales of Total
BEER	6401.4763	132,939	42.8%
LIQUOR	6401.4761	107,390	34.6%
MISC	6401.4764	16,637	5.4%
WINE	6401.4762	53,480	17.2%
		310,446	

Yearly 2017 Liquor Store - Net Sales



Total 2017		Net Sales per Dept	% Net Sales of Total
BEER	6401.4763	962,015	41.9%
LIQUOR	6401.4761	823,644	35.8%
MISC	6401.4764	113,616	4.9%
WINE	6401.4762	398,461	17.3%
		2,297,736	

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City of Robbinsdale

TO: Mayor and City Council
FROM: Marcia Glick, City Manager
DATE: September 26, 2017
RE: Consideration of amendments to Robbinsdale's Tobacco License Regulations

Background:

On June 6th, the Robbinsdale City Council received a report on the city's tobacco regulations and an audit of tobacco retail outlets located within the city (Exhibit 1) from Hennepin County Public Health representatives. This report is delivered on a regular basis. After the report was presented, the City Council decided to study suggestions for reducing youth access to tobacco.

The Public Health Law Center was asked to assist in preparing a document showing potential updates to the city code addressing the issues identified in work session. With regards to tobacco flavors, the City Council asked for potential flavor restrictions to exempt mint, wintergreen, and menthol. The Public Health Law Center suggestions were reviewed by the City Council on August 15th. That document, shown as Exhibit 2, was shared with the city's licensed tobacco vendors and other interested parties. It was also posted on the city website.

Main changes being discussed are:

- Adding basis for denying a license
- Updating code to conform to state statutes.
- Raising the legal age for tobacco sales from 18 to 21.
- Restricting sale of flavored products (other than menthol, wintergreen, mint) to those retailers who prohibit persons under age 21 (or 18 if the age limit is not changed) and those that derive at least 90 percent of revenues from licensed products.
- Requiring a minimum price and package size for cigars. Proposal is for 5- pack minimum at \$13 (\$2.60/unit) – exception for single cigar at price of at least \$4.
- Requiring child-resistant packaging for liquids containing nicotine.
- Removing local penalties for underage use, possession or purchase
- Adding penalty for underage persons using false identification.

A special work session was held on September 5th to hear from the city's licensed tobacco vendors. Half of the vendors attended in addition to spokespersons for the tobacco and vapor industries. Those present included the four owners of gas stations which offer a wide variety of convenience products, the owner of the Robbinsdale Food Mart, and the owner of Vapor Bunker. The convenience store owners asked the city not to have regulations

different from the surrounding cities. They offered to take actions to move flavored tobacco products to where children can't see them.

Analysis/Conclusion

An ordinance following the recommendations from the Public Health Law Center is included as Exhibit 3.

The first section includes new definitions as well as updates to existing definitions. It includes some references to the suggested age 21 requirement for purchases.]

- The definition of “minor” as under 18 years is deleted throughout the proposed ordinance with the exception of a parent or guardian’s permission to participate in compliance checks [1132.19(e)]. The City Attorney notes that the city doesn’t need to require parental permission by ordinance and this could be accomplished via a police department policy.
- “Flavored product” definition is required if the city chooses to restrict the sales of this product, whether restricting sales to 21+ stores or requiring those product displays to be moved from view by children.
- Other updates to definitions are connected to improved language regardless of whether new requirements are added.

The next section covers general license requirements. The main change is the addition of a basis for denial of a license and noting that renewal is not automatic.

Next is a section describing prohibited acts. This includes an improved description of self-service vending, a change of legal age from 18 to 21, restriction of flavored tobacco sales, requiring bundling of certain cigar sales, and requiring liquid packaging to be in child-proof containers.

- The highlighted section 1132.15(b) points to using state law requirements for determining age for liquor sales as required method for determining age for cigarette sales. This is not an entirely new connection as the current code indicates that use of this method to determine age may be used as a defense to a violation. Of note is that the proposed language includes a requirement to check identification of anyone age 30 or younger. It also requires the city to provide the signage that would be required to be posted at each location.
- The cigar packaging requirement included for discussion is a 4-pack for \$13.00 which is \$2.60/cigar – other policy options include minimum pack size, minimum price. It’s noted in the law center comments that most Minnesota cities have set a minimum price, not package size.

Sections 1132.17 and 1132.19 include changes for increasing the legal purchase age to 21 as well as removing Robbinsdale's current penalties for possession by minors. Rather than a financial penalty, other options including education, diversion programs, and community service are suggested. There is also a new license revocation option. The City Attorney has indicated some concern about the proposed language in regards to legal authority since state law prohibits those under 18 from possessing tobacco products.

Finally a severability section is suggested as an addition. City code which currently have severability clauses include zoning, illicit discharge, telecommunications facilities, and right-of-way management.

Staff followed up with visits to the convenience stores to check on flavored tobacco product displays. Almost all tobacco products were behind the cashier counter. Two had some flavored tobacco next to the cashier on the counter; one of those had the display surrounded by plexiglass. Glass display cases at two stores had a variety of pipes, not tobacco products.

The city has received information in response to the notices about tonight's meeting. This includes letters, emails, published articles, and postcards. All of the information has been added to the agenda as Appendix A.

Recommendation:

1. Open the public hearing and receive comments from the public.
2. Consider next steps which may include holding the first reading of the Ordinance shown as Exhibit 3.

A handwritten signature in dark ink, appearing to read "Marcia Glick", is written over a horizontal line.

Marcia Glick, City Manager

Information presented at June 6th Work Session

City of Robbinsdale

Tobacco environmental scan, 2016

Youth tobacco use is still a problem

- Smoking is the greatest cause of preventable death and disease in Minnesota.¹
- Nearly nine out of 10 smokers start smoking by age 18, and 99% start by age 26.²
- 2,800 kids in Minnesota become new daily smokers each year; 102,000 now under age 18 will die prematurely from smoking.³
- The tobacco industry spends over \$300,000 a day marketing tobacco, most of which is spent in retail stores—the most important channel for reaching kids.⁴
- Annual health care costs in Minnesota directly caused by smoking exceed \$3.2 billion in excess medical costs. This does not include the cost of lost productivity and other costs indirectly attributed to smoking.⁵

Tobacco retailers (Sources: Robbinsdale City Clerk; * FDA Compliance Check Inspections database)

Tobacco retailers	12, or 0.81 per 1,000 residents
Tobacco or e-cigarette shops/lounges	2
Compliance check violations in 2015*	4
Frequency of local compliance checks	2 annually
FDA violations in 2014, 2015, 2016	0, 1, 1**

*Information on these retailers was collected in September 2016. Compliance check data was not available.

**2015 violations for self-serve display; 2016 violation for sale of electronic delivery device to a minor.

Youth tobacco use (Sources: Minnesota Student Survey 2010, 2013, and 2016, Robbinsdale School District)

Percentage of youth who reported using the following products within the past 30 days:	Robbinsdale School District				
	9 th Grade			11 th Grade	
	2010	2013	2016	2013*	2016
Conventional tobacco**	13%	10%	2%	14%	7%
Any tobacco use (includes e-cigarettes)	NA***	NA	8%	NA	11%
Cigarettes	10%	8%	2%	9%	4%
Cigars, cigarillos, little cigars	7%	5%	1%	8%	4%
Electronic cigarettes	NA	NA	7%	NA	7%
Flavored tobacco	NA	NA	4%	NA	3%
Menthol cigarette	NA	NA	2%	NA	5%

*Data is not available for 11th grade in 2010.

**Conventional tobacco use includes cigarettes, chewing tobacco/snuff/dip, or cigars/cigarillos/little cigars.

***NA = Not Asked.

Key findings from Robbinsdale School District's MN Student Survey

- Use of conventional tobacco products continues to decline, however, when electronic cigarettes are factored in, that decline is less dramatic.
- 9th and 11th graders now use e-cigarettes at a much greater rate than conventional cigarettes, with the same percentage of 9th graders using e-cigarettes as those in 11th grade.
- Robbinsdale youth are using menthol and other flavored tobacco products. Flavored products are considered a starter product, and some, such as menthol, are harder to quit.⁶

Sources:

1. MN Department of Health Smoking fact sheet: <https://app.health.state.mn.us/complains/reports>.
2. Centers for Disease Control and Prevention, Youth and Tobacco Use fact sheet: http://www.cdc.gov/tobacco/youth_statistics/tact_sheet/youth_tobacco_use.
3. Campaign for Tobacco-Free Kids, The Toll of Tobacco in Minnesota: <http://www.tobaccofreekids.org/factsheets/toll-in-minnesota>.
4. Ibid.
5. Blue Cross and Blue Shield of Minnesota Center for Prevention, 2012 health care costs and smoking in Minnesota: <http://www.preventminn.com/newsroom/news-articles/2012-health-care-costs-and-smoking-in-mn>.
6. U.S. Department of Health and Human Services, Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General, Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.



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**PUBLIC HEALTH
LAW CENTER**
at Mitchell Hamline School of Law

Retail Tobacco Policy Analysis

City of Robbinsdale - Hennepin County

Hennepin County (County) asked the Public Health Law Center (PHLC) to assess the licensing and zoning laws that may impact tobacco retailers for several cities within the County. Robbinsdale's regulations (including its zoning code) were compared to licensing laws from other jurisdictions in Minnesota and across the U.S. Key findings are summarized below.

Robbinsdale's Retail Tobacco Regulations and Zoning Laws

Minnesota cities have the authority to license retailers and regulate the sale of tobacco and related devices and products within their jurisdictions. Similar to most cities in the County, Robbinsdale has adopted its own tobacco licensing law. Regulating tobacco retailers through licensing is considered a best practice.

Robbinsdale's licensing regulations include some good tobacco control practices. They include:

- A city license is required to sell nicotine or tobacco delivery products.
- The transfer of a license to another person or location is prohibited.
- License holders are responsible for the conduct of their employees.
- The suspension periods for ordinance violations are more significant than the minimums in state law. Strong consequences can provide an incentive for compliance.

There are also a number of elements that could be clarified, strengthened, or added, including:

Align with minimum standards in state and federal law

- Minnesota law requires a local license to sell "electronic delivery devices" – a broad term used to describe what are more commonly referred to as "e-cigarettes." These products (whether they contain nicotine or not) are subject to the same sales regulations that apply to more conventional tobacco products and tobacco-related devices. Cities should update their ordinances to expressly and clearly incorporate all the minimum requirements of state law.
- State law requires that any liquids sold for use in an electronic delivery device must be in child-resistant packaging. This requirement – as well as guidance on compliance – could be added.
- Both state and federal law prohibits the distribution of most free samples. Local jurisdictions can prohibit the distribution and use of all free and/or nominally priced samples.
- Federal law prohibits the sale of single cigarettes (or "loosies"). Robbinsdale could add a "loosies" prohibition to promote awareness and help enforce of this sales restriction.
- Robbinsdale requires vending machines to be "operable only by activation of an electronic switch operated by an employee of an establishment before each sale. State law limits their use to locations where minors are prohibited at all times. Local regulations should not be less restrictive than the minimums of state or federal law.
- Minnesota law restricts open product displays ("self-service") to tobacco-only, adult-only locations. Robbinsdale's self-service restrictions permit minors when accompanied by a parent or legal guardian. Similar to vending machines, cities cannot be less restrictive than state law.
- Kiosks and other movable places of business are ineligible for a tobacco license under state law. Robbinsdale only prohibits the sale of cigarettes at movable places of business. Licensing regulations should reflect all the minimums of state law.

P: 651.290.7506 F: 651.290.7515
W: www.PublicHealthLawCenter.org

875 Summit Avenue, St. Paul,
Minnesota 55105

Effective Administration and Enforcement

- Robbinsdale does not define “tobacco-related devices,” or some of the other terms used in its licensing law. Defining all critical terms is considered a best practice.
- Minnesota law requires at least one compliance check per retailer each year. While compliance checks are discussed, a minimum or mandatory number is not specified. A city or can require multiple checks, as well as re-inspections after violations. Performing additional compliance checks per year can help promote better compliance with youth access laws. Costs for additional-mandated compliance checks can be incorporated into the license fee, with the costs absorbed by the license holders themselves.
- Some cities require retailers train their employees on youth access laws and other licensing requirements. Robbinsdale could require training as a preventative measure for all licensees, and/or as a consequence for underage sales or other violations.
- Robbinsdale could prohibit the use of vending machines and self-service displays.

Fees & Penalties

- The annual license fee is \$250 ([Appendix B - Fee Schedule](#)). Fees should be periodically reviewed to ensure they cover all costs administration, implementation and enforcement costs, including compliance checks. Fees that don't reflect actual costs should be adjusted.
- As written, Robbinsdale's administrative penalties – fines and/or suspensions – are only a consequence for sales to minors. Any license-related violation should be grounds for a penalty.

Additional Licensing Options

Through licensing regulations, Minnesota cities also have the opportunity to:

- Reduce or restrict the number, location, density, and types of retailers.
- Increase product costs through non-tax approaches (such as minimum product pricing, minimum pack sizes, prohibiting coupon redemption, or other price discounting).
- Restrict the sale of flavored products.
- Raise the minimum legal sales age to 21.
- Establish a minimum age for clerks or other employees who sell tobacco and related devices and products.

Other Laws that Impact Tobacco Retailers—Zoning & Sign Restrictions

Robbinsdale's [zoning laws](#) do not create tobacco-specific proximity/density restrictions within its zoning districts. Zoning can be a tool to limit access and exposure to tobacco products.

Signs that obscure windows and block sight lines into stores can create public safety concerns as well as being unattractive. Many sign codes restrict the window and door space covered by signage. Robbinsdale's [sign code](#) restricts the total amount area (by square footage) of walls, doors and window that can be covered by signage. Some cities set a maximum percentage of the window area that may be covered by signs (such as twenty-five or fifty percent).

May 2017

The Public Health Law Center does not lobby, nor does it provide legal representation or advice. Based on our experiences with retail licensing and related sales restrictions, we are able to provide our observations and other educational information for your own evaluation of these issues. This information is for educational purposes only; we do not request that a policymaker take any specific action in regard to our comments, nor should our comments be considered a replacement for legal advice. If you require a legal opinion, we encourage you to consult with local legal counsel.



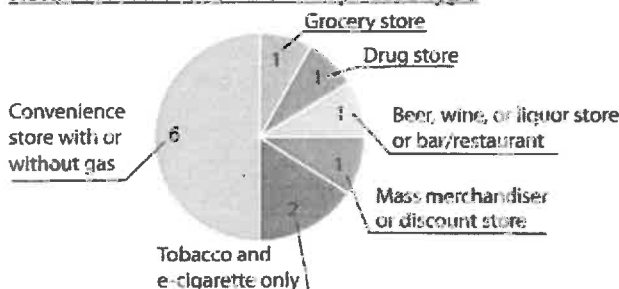
City of Robbinsdale

Summary of tobacco retail audits completed in September 2016

This summary provides key information and data on Robbinsdale's tobacco retail environment. By bringing education and awareness to concerns about places where tobacco is sold, we can work towards strategies that reduce youth exposure to tobacco products and marketing.

In the City of Robbinsdale observational audits were completed at 12 businesses licensed to sell tobacco, in order to understand how tobacco products are being sold in stores.

Retail stores broken down by store type



- There are 12 tobacco retailers in Robbinsdale or 0.81 retailers per 1,000 residents, which is lower than the national average of 1.5. Half of the retailers are convenience stores, but other stores are also accessible to youth.
- 8% of the retail stores are within 1,000 feet, or a couple of blocks, of schools, compared to 23% of Hennepin County's stores. Almost all retailers are within a few blocks of parks, which youth frequent.

Why it is significant: Researchers define "tobacco swamps" as any area that is double the national average (3+ retailers/1,000 residents). Robbinsdale would not be considered a tobacco swamp. Location of retailers near areas that youth frequent increases their exposure to tobacco advertising and promotion. In addition, adolescents are frequent shoppers in convenience stores, with 70% of adolescents visiting a convenience store at least once a week. Research shows that the more cigarette marketing teens are exposed to in retail stores, the more likely they are to smoke.¹ Drug stores and pharmacies are a trusted source of health information, a place people go to buy products for their health or to help them get better when they are sick. Selling tobacco products is inconsistent with this role.

Advertising, product placement, and price promotions

- 6 stores with exterior advertisements.
 - Products most often advertised were cigarettes (menthol and non-menthol), cigarillos/little cigars, and e-cigarette products.
- 7 stores with tobacco ads within 3 feet of the floor.
 - In some cases, there are multiple ads at this level in a store.
- 1 store with tobacco products placed within 12 inches of toys, candy, or soda machines.
- Over 50% of tobacco retailers have price promotions for cigarettes and cigarillos inside the store.

Why it is significant: Even if youth don't enter the store, they are likely to be exposed to tobacco marketing through outdoor advertising at tobacco retailers. When inside, there is often an abundance of tobacco products, ads and price promotions. Children and youth are more likely to see ads and products when they are placed near items they are interested in, such as candy and toys, or when they are placed at their sight level. This begins the process of familiarizing children and youth with products, normalizing tobacco. Tobacco point-of-sale advertising encourages youth initiation, causes their progression, as well as discourages cessation.²

Flavored products

All tobacco retailers sell some type of menthol-flavored tobacco product, and 75% of the stores also sell at least one other-flavored tobacco product.

Tobacco product	# of stores selling product	# of stores selling menthol flavored	# of stores selling other flavor (e.g., candy, fruit)
Cigarettes	11	11	NA*
Little cigars, cigarillos	11	9	9
Large cigars	2	2	1
Chew, snuff	11	11	1
E-cigarette products	4	4	3

*Not applicable

Why it is significant: In 2009, the Federal Tobacco Control Act prohibited flavored cigarettes, except menthol, as they were seen as a gateway for children and youth to become regular smokers. Subsequently, the tobacco industry developed new flavored tobacco products. Those products are increasingly popular among youth. Fruit, candy, and alcohol-flavored products with brightly colored packaging appeal to youth. The flavors mask the harshness and taste of tobacco. Once youth start using one tobacco product, they are more likely to experiment with others.¹⁰ The 2016 MN Student Survey reports that 35% of tobacco users report using menthol products, and 40% of tobacco users reported using a flavor other than menthol.¹¹ Restricting flavored products to adult only tobacco shops will reduce youth exposure to these products and prevent youth from starting.

Price

- All stores, except the e-cigarette store, sell regular and menthol cigarettes. The cheapest pack of cigarettes was \$7 compared to the average price of \$7.90 in the Twin Cities.
- Similarly, all stores except the e-cigarette store sell cigarillos/little cigars.
- 8 stores that sell single cigar products¹²:
 - Price range of cigars in a single pack/item: \$0.99-\$6.79
 - 2 stores that have products advertised for less than \$1.
 - Number of retailers that sell single cigars below the minimum price in some surrounding cities:
 - 6 selling less than Brooklyn Center's \$2.10 minimum cigar price
 - 7 selling less than Minneapolis and some other metro cities' \$2.60 minimum cigar price



Why it is significant: Teens are especially sensitive to price. Every 10% increase in the price of a tobacco product reduces the number of youth who smoke by 6-7%.¹³

Because cigar products are sold in smaller packages, they are cheaper. Raising the prices of tobacco products by requiring a minimum pack size or pricing, or restricting the redemption of coupons, will prevent youth from starting.

E-cigarette and e-cigarette products

- 4 stores that sell e-cigarette and e-juice products.
- It was difficult for auditors to determine if e-juice packaging was child resistant, which is required by Minnesota state law.

Why it is significant: Statewide, nearly 1 in 5 teens now uses e-cigarettes. In Robbinsdale, 7% of both 9th and 11th graders use e-cigarettes, twice that of cigarette use. Products like e-cigarettes often contain liquid nicotine, which is highly addictive, and can harm adolescent brain development. These products are currently unregulated.¹⁴

NOTES:

10. Campaigns for Tobacco-Free Kids. Trends in Tobacco Industry Marketing. Updated April 2015, 2017.
11. Campaigns for Tobacco-Free Kids. Tobacco Company Marketing on Kids. Updated April 2015, 2017.
12. U.S. Department of Health and Human Services. Road to Ending Tobacco Use: 100% tobacco-free products. 100% tobacco-free products are flavored tobacco products without any tobacco. <https://www.hhs.gov/tobacco-products/tobacco-free-products/>
13. Public Health Foundation. Flavored Tobacco Use. 2016.
14. Minnesota Student Survey. Minnesota State Office of Education. Minnesota Student Survey. 2016.
15. Minnesota State Office of Education. Minnesota Student Survey. 2016.
16. Minnesota State Office of Education. Minnesota Student Survey. 2016.
17. Minnesota State Office of Education. Minnesota Student Survey. 2016.

¹² Data on single cigars was collected in May 2017.



20170524

The Public Health Law Center Suggestions for Ordinance Updates –August 15th Work Session

Robinsondale City Code

1132.01 (Rev. 2013)

Section 1132 - Tobacco and Related Products
(Added, Ord. No. 96-08)

1132.01. Definitions. Where used in this section, the following terms have the following meanings:

- (a) "Child-resistant packaging" means packaging that meets the definition set forth in Code of Federal Regulations, title 16, section 1700.15(b), as in effect on January 1, 2015, and was tested in accordance with the method described in Code of Federal Regulations, title 16, section 1700.20, as in effect on January 1, 2015.
- (b) "Cigar" means any roll of tobacco that is wrapped in tobacco leaf or in any other substance containing tobacco, with or without a tip or mouthpiece, which is not a cigarette as defined in Minnesota Statutes, section 297F.01, subdivision 3, as may be amended from time to time.
- (c) "Compliance checks" means the system the city uses to investigate and ensure that those authorized to sell licensed products are following and complying with the requirements of this section. Compliance checks involve the use of persons under the age of 21 who purchase or attempt to purchase licensed products. Compliance checks may also be conducted by the city or other units of government for educational, research, or training purposes or for investigating or enforcing federal, state, or local laws and regulations relating to licensed products.
- (d) "Electronic delivery device" means any product containing or delivering nicotine, lobelia, or any other substance intended for human consumption through the inhalation of aerosol or vapor from the product. Electronic delivery device includes, but is not limited to, devices manufactured, marketed, or sold as e-cigarettes, e-cigs, e-pipes, vape pens, mods, tank systems, or under any other product name or descriptor. Electronic delivery device includes any component part of a product, whether or not marketed or sold separately. Electronic delivery device does not include any product that has been approved or certified by the United States Food and Drug Administration for sale as a tobacco-cessation product, as a tobacco-dependence product, or for other medical purposes, and is marketed and sold for such an approved purpose.
- (e) "Flavored product" means any licensed product that contains a taste or smell, other than the taste or smell of tobacco, menthol, mint, or wintergreen, that is distinguishable by an ordinary consumer either prior to or during the consumption of the product, including, but not limited to, any taste or smell relating to chocolate, cocoa, vanilla, honey, fruit, or any candy, dessert, alcoholic beverage, herb, or spice. A public statement or claim, whether express or implied, made or disseminated by the manufacturer of a licensed product, or by any person authorized or permitted by the manufacturer to make or disseminate public statements concerning such products, that a product has or produces a taste or smell other than tobacco, menthol, mint, or wintergreen, will constitute presumptive evidence that the product is a flavored product.
- (f) "Licensed products" collectively refers to any tobacco product, tobacco-related device, electronic delivery device, or nicotine or lobelia delivery product.
- (g) "Minor" means any natural person who has not reached the age of 18 years.

Comment [PHIC1]: While state and federal law require child-resistant packaging, the enforcement of such can be facilitated at the local level. See new proposed 1132.15(e).

Comment [PHIC2]: See new proposed 1132.15(d).

Comment [PHIC3]: See edits to 1132.15(f).

Comment [PHIC4]: Added to new law requiring local licensure of the retail sale of tobacco and related products in 2014. Minn. Stat. § 161.12 et seq.

Comment [PHIC5]: See new proposed 1132.15(c). Flavored products are a public health concern primarily because they attract youth. This includes menthol, which is one of the most popular flavors not only among youth, but among other marginalized groups such as African Americans, veterans, and the LGBT community. While the FDA has not yet taken action to prohibit menthol products, a menthol exemption is not beneficial to public health and may not be necessary from a legal perspective. Local jurisdictions around the country have adopted flavor restrictions, including menthol, and while some have been challenged, none has been invalidated by the courts. More information about flavor/menthol restrictions can be found at: <http://www.publichealthlawcenter.org/network/policy-coalition/menthol-restrict>

Comment [PHIC6]: Same comment above.

Comment [PHIC7]: Because state law now requires local licensure of the retail sale of four categories of tobacco and related products, the new terms can help streamline code/ordinance drafting and editing.

Comment [PHIC8]: See edits to 1132.15(f).

(h) "Movable place of business" means any form of business operated out of a truck, van, automobile, or other type of vehicle or transportable shelter and not a fixed address, store front or other permanent type of structure authorized for sales transactions.

Comment [PHLC9]: Not previously defined as used in 1132.13. Definition is built on Minn. Stat. § 461.21.

(i) "Nicotine or tobacco delivery product" means any product containing or delivering nicotine or tobacco intended for human consumption, or any part of such a product, that is not tobacco or an electronic delivery device as defined in this section. Nicotine or tobacco delivery product does not include any product that has been approved or otherwise certified for legal sale by the United States Food and Drug Administration for tobacco use cessation or for other medical purposes, and is being marketed and sold solely for that approved purpose.

Comment [PHLC10]: While this term doesn't cover many products currently on the market, it is a catchall for products that have been removed at one point or another, including most recently, synthetic nicotine products. Because state law specifically requires a license to sell this category of products, it is included.

(j) "Self-service merchandising" means a method of displaying tobacco-related products so that they are accessible to the public without the intervention of an employee.

(k) "Tobacco product" means any product consisting, made, or derived from tobacco that is intended for human consumption, whether smoked, snuffed, chewed, swallowed, inhaled, snorted, sniffed, or ingested by any other means, or any component, part, or accessory of a tobacco product, including, but not limited to, cigarettes, cigars, cheroots, stogies, perique, granulated, plug-cut, ~~snuff-cut~~, ready-rubbed ~~leaf~~, or other smoking tobacco, snuff, snuff flower, cavendish, plug and twist tobacco, fine-cut or other chewing tobacco, shorts, refuse ~~snuff~~, ~~snuff~~, clippings, cuttings, and sweepings of tobacco, and other kinds and forms of tobacco. Tobacco product does not include any product that has been approved by the United States Food and Drug Administration for sale as a tobacco-cessation product, as a tobacco-dependence product, or for other medical purposes, and is being marketed and sold solely for such an approved purpose, ~~or used in such a manner as to be suitable for chewing, snuffing, or smoking in a pipe, rolling paper, or other tobacco-related device.~~ (Amended Ord. No. 08-07)

Comment [PHLC11]: Definition is built on Minn. Stat. § 609.605 as cited in § 461.12.

(l) "Tobacco-related device" means any pipe, rolling paper, or other device intentionally designed or intended to be used with tobacco products. Tobacco-related device includes components of tobacco-related devices which may be marketed or sold separately.

Comment [PHLC12]: Definition is built on Minn. Stat. § 609.605 as cited in § 461.12.

(m) _____
(n) _____

"Vending machine" means any mechanical, electrical or electronic, or other type of self-service device which, upon inserting money, tokens or any other form of payment, dispenses tobacco or tobacco-related products for retail sale. (Amended Ord. No. 08-07).

(1132.01)

(o) "Nicotine or tobacco delivery product or other state regulated product" means any product containing or delivering nicotine or tobacco intended for human consumption, or any part of such product, that is not tobacco as defined in this section, not including any product that has been approved or otherwise certified for legal sale by the United States Food and Drug Administration for tobacco use cessation, harm reduction, or for other medical purposes, and which is being marketed and sold solely for that approved purpose. (Added Ord. 13-08)

1132.03. License required. No person shall directly, by coin machine, or otherwise, keep for retail sale, sell at retail, or otherwise dispose of, any ~~snuff, cigarette, cigar, pipe, tobacco, tobacco product, tobacco-related device, electronic delivery device, or any mixture of tobacco delivery products or other state regulated tobacco products~~ at any place in the city unless they have obtained a license therefore as provided herein. ~~(Amended Ord. No. 13-08)~~

1132.05. Application and issuance. Application for such license shall be made to the city clerk and shall state the full name and address of the applicant, the location of the building to be occupied by the applicant

in the conduct of the business, the kind of business to be conducted, and such other information as the city clerk may require. The application shall be presented to the city council for its consideration, and if granted by the council, a license will be issued by the city clerk upon payment of the required fee.

1132.06. Basis for denial of license.

(a) Grounds for denying the issuance or renewal of a license include, but are not limited to, the following:

- (1) The applicant is under 21 years of age.
- (2) The applicant has been convicted within the past five years of any violation of a federal, state, or local law, ordinance provision, or other regulation relating to licensed products.
- (3) The applicant has had a license to sell licensed products suspended or revoked within the preceding 12 months of the date of application.
- (4) The applicant fails to provide any information required on the application, or provides false or misleading information.
- (5) The applicant is prohibited by federal, state, or other local law, ordinance, or other regulation from holding a license.

(b) However, except as may otherwise be provided by law, the existence of any particular ground for denial does not mean that the city must deny the license.

(c) If a license is mistakenly issued or renewed to a person, it will be revoked upon the discovery that the person was ineligible for the license under the ordinance. Notice of the revocation will be given to the entity along with information on the right to appeal.

Comment [PHI C13]: When the minimum legal sales age is raised to 21, the minimum age for the license eligibility can be raised as well.

1132.07. License fee. The fee for a license is set by Appendix B.

1132.09. Term. The issuance of a license is a privilege and does not entitle the holder to an automatic renewal of the license. Licenses expire annually on December 31. Licenses are not transferable. License renewal is subject to the license provisions described in section 1005 Licensing Procedures. (Amended, Ord. No. 02-085)

1132.11. License displayed. The license must be kept conspicuously posted on the premises for which the license is issued and must be exhibited to any person upon request.

1132.13. Location. A license will not be issued for the sale of cigarettes at a movable place of business or for the sale of cigarettes at more than one place of business. Only fixed location businesses are eligible to be licensed.

1132.15. Prohibited acts.

(a) No person shall sell, give away, or otherwise furnish any cigarette, cigarette paper, tobacco, or tobacco product or any machine or label delivery product or other state-regulated tobacco products to any person under the age of 18 years. (Amended Ord. No. 13-08)

(a) In general. No person shall sell or offer to sell any licensed product.

(1) ~~Keep for sale or dispose any tobacco product containing~~ opium, morphine, jimson weed, bella donna, strychna, cocaine, marijuana, or any other controlled substance or deleterious or poisonous drug, except nicotine.

(2) ~~By means of any type of~~

(2) No person shall dispense any tobacco product through the use of a vending machine, unless the vending machine is operable only by activation of an electronic credit operated by an employee of an establishment before each sale.

(3) By means of any type of self-service merchandising whereby the customer may have access to those items without having to request the item from the licensee or licensee's employee and whereby there is not a physical exchange of the licensed product between the licensee or licensee's employee and the customer. All licensed products must be stored behind the sales counter or other area not freely accessible to customers, or in a cabinet or other storage unit not left open and accessible to the general public. Any retailer selling licensed products at the time this subsection is adopted must comply with this subsection within 90 days of its effective date.

(4) ~~By any other means to any other person, or in any other manner or form prohibited by federal, state, or other local law, ordinance, provision, or other regulation.~~

(b) Legal age. No person shall sell any licensed product to any person under the age of 21.

(1) Age verification. Licensees must verify by means of proof of age described in Minnesota Statutes, section 340A.503, subdivision 6, paragraph (a) that the purchaser is at least 21 years of age. Verification is not required for a person over the age of 30. That the person appeared to be 31 years of age or older does not constitute a defense to a violation of this subsection.

(2) Signage. Notice of the legal sales age and age verification requirement must be posted at each location where licensed products are offered for sale. The required signage, which will be provided to the licensee by the city, must be posted in a manner that is clearly visible to anyone who is or is considering making a purchase.

(c) Flavored products. No person shall sell or offer for sale any flavored products. This restriction does not apply to retailers that prohibit persons under 21 from entering at all.

Comment [PHLC14]: See new proposed 1132.15(b)

Comment [PHLC15]: This exemption is less stringent than the exemption provided for in Minn. Stat. § 461.18, Subd. 2 and 21 CFR 1140.14 and 1140.16. While the exemption has been removed entirely, it can be added back and enhanced so long as it complies with state and federal law.

Comment [PHLC16]: Similarly, the existing self-service merchandising exemption is less stringent than the exemption provided for in Minn. Stat. § 461.18, Subd. 1 and 21 CFR 1140.14 and 1140.16. While the exemption has been removed entirely, it can be added back and enhanced so long as it complies with state and federal law.

Comment [PHLC17]: Federal law requires ID verification of those under 21. When the minimum legal sales age is raised to 21, the minimum age for ID verification can be raised as well.

Comment [PHLC18]: Signage provided by the city can help remind store employees what their responsibilities are and give potential underage buyers notice of what the sales age is in this city.

Comment [PHLC19]: A number of policy options exist to restrict the sale of flavored products. While many flavor restrictions to date have contained location exemptions or only apply the sales restriction to a certain area, there are also examples of communities that have no exemptions, including most recently, San Francisco, CA. A list of flavor sales restrictions can be found here: <http://www.retailersdefiance.com/resources/flavor-restrictions/> and <http://www.retailersdefiance.com/resources/flavor-restrictions/>

lines and derive at least 50 percent of their revenues from the sale of licensed products. Any retailer that sells flavored products must provide upon request financial records that document annual sales of licensed products.

(d) Cigars. No person shall sell or offer for sale any cigar that is not within its intended retail packaging containing a minimum of five cigars and for a sales price, after any discounts are applied and before sales tax are imposed, of less than \$4.00 per package. This restriction does not prohibit the sale of a single cigar with a sales price, after any discounts are applied and before sales taxes are imposed, of at least \$4.00.

(e) Liquid packaging. No person shall sell or offer for sale any liquid, whether or not such liquid contains nicotine, which is intended for human consumption and not in an electronic delivery device that is not within its intended retail packaging. Upon request, a licensee must provide a copy of the certificate of compliance or full laboratory testing report for the packaging used.

(f)(i) Licensee responsibility. Licensees shall be responsible for the conduct of its employees while on the licensed premises and any sale or distribution of tobacco products or any nicotine or tobacco delivery products or other state-regulated tobacco products by an employee to a person under 18 years of age shall be considered an act of the licensee for purposes of imposing an administrative fine, license suspension or revocation. (Amended, Ord. No. 12-01, Ord. No. 12-08)

Except for tobacco shops, all tobacco, tobacco products, and tobacco-related devices shall be stored behind the counter or other area not freely accessible to customers and no sales shall be made by means of self-service merchandising. For the purpose of this section, "tobacco shop or shops" shall mean a retail establishment devoted exclusively to the sale of tobacco, tobacco products and tobacco-related devices. No person under the age of 18 shall be permitted in a tobacco shop unless accompanied by that person's parent or legal guardian. (Amended, Ord. No. 02-10, Ord. 12-01)

Comment [PHLC20]: Cigar price restrictions have been popular in Minnesota, and similar to flavor restrictions, there are a number of policy options to consider, including:

- A minimum pack size;
- A minimum price;
- A minimum pack or price; or
- A minimum pack and price.

While this provision does the latter, the most popular approaches in local Minnesota communities have been a minimum price. For more information, see <http://www.tobaccoinstitute.org/boardsandcommittees/philc/philc-agenda-item-10-11-12-13-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000>

Comment [PHLC21]: Moved to new proposed 1132.15

1132.17. Other illegal acts. Unless otherwise provided, the following acts shall be a violation of this section.

(a) ~~Illegal possession.~~ It shall be a violation of this section for any minor to have in their possession any tobacco product or any nicotine or tobacco delivery products or other state regulated tobacco products. (Amended, Ord. No. 13-08)

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(b) ~~Illegal use.~~ It shall be a violation of this section for any minor to smoke, chew, sniff, or otherwise consume any tobacco product or any nicotine or tobacco delivery products or other state regulated tobacco products. (Amended, Ord. No. 13-08)

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(c)(i) **Illegal procurement.** It shall be a violation of this section for any minor to purchase or attempt to purchase or otherwise obtain any tobacco product or any nicotine or tobacco delivery products or other state regulated tobacco products, and it shall be a violation of this section for any person to purchase or otherwise obtain such itemized products on behalf of a minor person under the age of 21. (Amended, Ord. No. 13-08)

(c)(ii) **Use of false identification.** It shall be a violation of this section for any minor person to attempt to disguise their true age by the use of a false form of identification, whether the identification is that of another person or one on which the age of the person has been modified or tampered with to represent an age older than the actual age of the person.

(c)(iii) ~~Illegal sales to tobacco shop minors.~~ No person under the age of 18 years shall enter the premises of a tobacco shop unless accompanied by that person's parent or legal guardian. (Added, Ord. No. 07-02, Sec. 1)

Comment [F4LC22]: When the legal sales age is raised to 21, many communities have redacted some or all ordinance provisions that address the underage use, possession, purchase, etc. (TUP) PUP provisions remain a controversial strategy for reducing underage tobacco use, primarily because they raise concerns about fair enforcement and have not been shown to be effective in reducing youth tobacco use. Inconsistent enforcement that is selectively applied can have a disproportionate burden on individual from certain racial and ethnic groups who are disproportionately introduced to the criminal justice system. While PUP provisions may be removed at the local level, state law still provides for criminal penalties for such acts. See Minn. Stat. § 609.565

1132.18. Responsibility. Every licensee shall be responsible for the conduct of its employees in regard to the sale of licensed products while on the licensed premises, and any sale or other disposition of tobacco/liquid products or nicotine or tobacco delivery products or other state regulated tobacco products by an employee to a person under 18 years of age shall be considered an act of the licensee for purposes of imposing an administrative fine, license suspension, or revocation. (Amended, Ord. No. 13-03, Ord. No. 13-08)

1132.19. Violations.

(a) **Misdemeanors.** Any person who violates this section shall be guilty of a misdemeanor.

(b) **Administrative civil penalties, individuals.** Any person, other than individuals regulated by paragraph (c) of this subsection, found to be in violation of this section who sells any tobacco product or any nicotine or tobacco delivery products or other state regulated tobacco products to a person under the age of 18 years is subject to an administrative penalty, and any person under the age of 18 who attempts to purchase a tobacco related product is subject to an administrative penalty. No penalty shall be imposed until the individual has received notice, served personally or by mail, of the alleged violation and an opportunity for a hearing before the city manager or the city manager's designee. A decision that a violation has occurred shall be in writing. The city council may impose administrative penalties as follows:

First violation: The city council may impose a civil fine of not less than \$50 nor more than \$500.

Second violation within 12 months: The city council may impose a civil fine of not less than \$50 nor more than \$750.

Third violation within 12 months: The city council may impose a civil fine of not less than \$50 nor more than \$1,000. ~~(Amended Ord. No. 08-07, Ord. No. 13-08)~~

~~(c) Underage persons. Persons under 21 years of age who use false identification to purchase or attempt to purchase licensed products may be subject to tobacco-related education classes, diversion programs, community services, or another penalty that the city believes will be appropriate and effective. The city council will consult with the courts, educators, parents, children, and other interested parties to determine an appropriate penalty for underage violations. The penalty may be established by ordinance and amended from time to time.~~

Comment [PHLC23]: Minn. Stat. § 461.12, Subd. 4 requires the consideration of alternative consequences for minors.

~~(4)(d) Administrative civil penalties, licensee. If a licensee or an employee of a licensee is found to have sold tobacco or any nicotine or tobacco delivery products or other state-regulated tobacco products to a person under the age of 18 years, violated this section, the licensee shall be subject to an administrative penalty as follows:~~

Comment [PHLC24]: Edits to match new 100+1131295.

First violation: The city council shall impose a civil fine of not less than \$75 nor more than \$500. The licensee's license may also be suspended for a period of not more than ten days.

Second violation within 24 months: The city council shall impose a civil fine of not less than \$200 nor more than \$750. The licensee's license shall also be suspended for a period of not more than 20 days.

Third violation within 24 months: The city council shall impose a civil fine of not less than \$250 nor more than \$1,000. The licensee's license shall also be suspended for a period of not less than seven nor more than 30 days.

No suspension or penalty shall take effect until the licensee has received notice, served personally or by mail, of the alleged violation and an opportunity for a hearing before the city manager or the city manager's designee. A decision that a violation has occurred shall be in writing. ~~(Amended Ord. No. 08-07, Ord. No. 13-08)~~

~~(4)(e) Defense. It is a defense to the charge of selling tobacco or any nicotine or tobacco delivery products or other state-regulated tobacco products to a person under the age of 18 years, violation of this section, that the licensee or individual, in making the sale, reasonably and in good faith relied upon representation of proof of age described in Minnesota Statutes, section 340A.503, subdivision 6, paragraph (a). ~~(Amended Ord. No. 13-08)~~~~

~~(4)(f) Exemption. A person, no younger than 15 and no older than 21, may be enlisted to assist in the sale of such unannounced compliance checks of each licensed premises at least once per year, provided that written consent from the person's parent or guardian has been obtained and that the person shall at all times act only under the direct supervision of a responsible adult law enforcement or other designated personnel for training, education, research, or enforcement purposes. A person need for the purpose of compliance checks who purchases or attempts to purchase tobacco products or any nicotine or tobacco delivery products or other state-regulated tobacco products while in this capacity is exempt from the penalties imposed by this section and will not be guilty of unlawful purchase, attempt to purchase, possession, use, or transportation when licensed products are obtained as part of the compliance check. ~~(Amended Ord. No. 13-08)~~~~

Comment [PHLC25]: When the legal sales age is raised to 21, many communities also change the age for local compliance checks. Under Minn. Stat. § 461.12, Subd. 5, written consent is only required for minors.

While state law requires a minimum of one unannounced compliance check, multiple checks are common. Checks associated with additional checks can be incorporated into the annual license fee.

~~(a) Revocation. A license may be revoked or suspended by the city council for a violation of the provisions of this subsection after notice and hearing.~~

~~1132.21 Severability. If any subsection or provision of this section is held invalid, such invalidity will not affect other subsections or provisions that can be given force and effect without the invalidated subsection or provision.~~

Member _____ moved and Member _____ seconded a motion that the following Ordinance, which was given its first reading on _____, 2017, be given its second reading this _____ day of _____, 2017, and that it be adopted.

ORDINANCE NO.

**AN ORDINANCE AMENDING ROBBINSDALE CITY CODE
SECTION 1132 TOBACCO AND RELATED PRODUCTS**

THE CITY OF ROBBINSDALE DOES ORDAIN:

Section 1) that City Code Section 1132.01 Tobacco and Related Products is hereby amended and recodified as follows:

1132.01. Definitions. Where used in this section, the following terms have the following meanings:

- (a) “Child-resistant packaging” means packaging that meets the definition set forth in Code of Federal Regulations, title 16, section 1700.15(b), as in effect on January 1, 2015, and was tested in accordance with the method described in Code of Federal Regulations, title 16, section 1700.20, as in effect on January 1, 2015.
- (b) “Cigar” means any roll of tobacco that is wrapped in tobacco leaf or in any other substance containing tobacco, with or without a tip or mouthpiece, which is not a cigarette as defined in Minnesota Statutes, section 297F.01, subdivision 3, as may be amended from time to time.
- (c) “Compliance checks” means the system the city uses to investigate and ensure that those authorized to sell licensed products are following and complying with the requirements of this section. Compliance checks involve the use of persons under the age of 21 who purchase or attempt to purchase licensed products. Compliance checks may also be conducted by the city or other units of government for educational, research, or training purposes or for investigating or enforcing federal, state, or local laws and regulations relating to licensed products.
- (d) “Electronic delivery device” means any product containing or delivering nicotine, lobelia, or any other substance intended for human consumption through the inhalation of aerosol or vapor from the product. Electronic delivery device includes, but is not limited to, devices manufactured, marketed, or sold as e-cigarettes, e-cigars, e-pipes, vape pens, mods, tank systems, or under any other product name or descriptor. Electronic delivery device includes any component part of a product, whether or not marketed or sold separately. Electronic delivery device does not include any product that has been approved or certified by the United States Food and Drug Administration for sale as a tobacco-cessation product, as a tobacco-dependence product, or for other medical purposes, and is marketed and sold for such an approved purpose.

- (e) "Flavored product" means any licensed product that contains a taste or smell, other than the taste or smell of tobacco, menthol, mint, or wintergreen, that is distinguishable by an ordinary consumer either prior to or during the consumption of the product, including, but not limited to, any taste or smell relating to chocolate, cocoa, vanilla, honey, fruit, or any candy, dessert, alcoholic beverage, herb, or spice. A public statement or claim, whether express or implied, made or disseminated by the manufacturer of a licensed product, or by any person authorized or permitted by the manufacturer to make or disseminate public statements concerning such products, that a product has or produces a taste or smell other than tobacco, menthol, mint, or wintergreen, will constitute presumptive evidence that the product is a flavored product.
- (f) "Licensed products" collectively refers to any tobacco product, tobacco-related device, electronic delivery device, or nicotine or lobelia delivery product.
- (g) "Minor" means any natural person who has not reached the age of 18 years.
- (h) "Movable place of business" means any form of business operated out of a kiosk, truck, van, automobile, or other type of vehicle or transportable shelter and not a fixed address store front or other permanent type of structure authorized for sales transactions.
- (i) "Nicotine or lobelia delivery product" mean any product containing or delivering nicotine or lobelia intended for human consumption, or any part of such a product, that is not tobacco or an electronic delivery device as defined in this section. Nicotine or lobelia delivery product does not include any product that has been approved or otherwise certified for legal sale by the United States Food and Drug Administration for tobacco use cessation or for other medical purposes, and is being marketed and sold solely for that approved purpose.

~~"Nicotine or Lobelia Delivery Products or other state regulated products" mean any product containing or delivering nicotine or lobelia intended for human consumption, or any part of such product, that is not tobacco as defined in this section, not including any product that has been approved or otherwise certified for legal sale by the United States Food and Drug Administration for tobacco use cessation, harm reduction, or for other medical purposes, and which is being marketed and sold solely for that approved purpose.~~

- (j) "Self-service merchandising" means a method of displaying tobacco-related licensed products so that they are accessible to the public without the intervention of an employee.
- (k) "Tobacco product" means any product containing, made, or derived from tobacco that is intended for human consumption, whether chewed, smoked, absorbed, dissolved, inhaled,

snorted, sniffed, or ingested by any other means, or any component, part, or accessory of a tobacco product, including, but not limited to cigarettes, cigars, cheroots, stogies, perique, granulated, plug-cut, crimp-cut, ready-rubbed, or and other smoking tobacco; snuff, snuff flower, cavendish, plug and twist tobacco; fine-cut or other chewing tobaccos; shorts, refuse scraps, scripts, clippings, cuttings, and sweepings of tobacco; and other kinds and forms of tobacco. Tobacco product does not include any product that has been approved by the United States Food and Drug Administration for sale as a tobacco-cessation product, as a tobacco-dependence product, or for other medical purposes, and is being marketed and sold solely for such an approved purpose prepared in such a manner as to be suitable for chewing, sniffing or smoking in a pipe, rolling paper or other tobacco-related device.

- (l) "Tobacco-related device" means any pipe, rolling papers, or other device intentionally designed or intended to be used with tobacco products. Tobacco-related device includes components of tobacco-related devices which may be marketed or sold separately.
- (m) "Vending machine" means any mechanical, electrical or electronic, or other type of self-service device which, upon inserting money, tokens or any other form of payment, dispenses tobacco or tobacco-related licensed products.

1132.03. License required. No person shall directly, by coin machine, or otherwise, keep for retail sale, sell at retail, or otherwise dispose of, any ~~cigarette, cigarette wrapper, tobacco or tobacco~~ licensed products ~~tobacco-related device, electronic delivery device, or any nicotine or lobelia delivery products or other state regulated products~~ at any place in the city unless they have obtained a license therefore as provided herein.

1132.05. Application and issuance. Application for such license shall be made to the city clerk and shall state the full name and address of the applicant, the location of the building to be occupied by the applicant in the conduct of the business, the kind of business to be conducted, and such other information as the city clerk may require. The application shall be presented to the city council for its consideration, and if granted by the council, a license will be issued by the city clerk upon payment of the required fee.

1132.06. Basis for denial of license.

- (a) Grounds for denying the issuance or renewal of a license include, but are not limited to, the following:
 - (1) The applicant is under 21 years of age.
 - (2) The applicant has been convicted within the past five years of any violation of a federal, state, or local law, ordinance provision, or other regulation relating to licensed products.

- (3) The applicant has had a license to sell licensed products suspended or revoked within the preceding 12 months of the date of application.
- (4) The applicant fails to provide any information required on the application, or provides false or misleading information.
- (5) The applicant is prohibited by federal, state, or other local law, ordinance, or other regulation from holding a license.
- (b) However, except as may otherwise be provided by law, the existence of any particular ground for denial does not mean that the city must deny the license.
- (c) If a license is mistakenly issued or renewed to a person, it may be revoked upon the discovery that the person was ineligible for the license under this ordinance. Notice of the revocation will be given to the entity along with information on the right to appeal.

1132.07. License fee. The fee for a license is set by Appendix B.

1132.09. Term. The issuance of license is a privilege and does not entitle the holder to an automatic renewal of the license. Licenses expire annually on December 31. Licenses are not transferable. License renewal is subject to the license provisions described in section 1005 Licensing Procedures.

1132.11. License displayed. The license must be kept conspicuously posted on the premises for which the license is issued and must be exhibited to any person upon request.

1132.13. Location. A license will not be issued ~~for the sale of cigarettes at to~~ a movable place of business, ~~or for the sale of cigarettes at more than one place of business.~~ Only fixed location businesses are eligible to be licensed.

1132.15. Prohibited acts.

- ~~(a) No person shall sell, give away, or otherwise furnish any cigarette, cigarette paper, tobacco, or tobacco products or any nicotine or lobelia delivery products or other state regulated tobacco products to any person under the age of 18 years.~~
- (a) In general. No person shall sell or offer to sell any licensed product:
 - (1) ~~No person shall keep for sale or dispense any tobacco product e~~ Containing opium, morphine, jimson weed, bella donna, strychnia, cocaine, marijuana, or any other controlled substance or deleterious or poisonous drug, except nicotine.
 - (2) ~~By means of any type of No person shall dispense any tobacco product through the use of a vending machine, unless the vending machine is operable only by activation of an electronic switch operated by an employee of an establishment before each sale.~~
 - (3) By means of any type of self-service merchandising whereby the customer

may have access to those items without having to request the item from the licensee or licensee-s employee and whereby there is not a physical exchange of the licensed product between the licensee or licensee-s employee and the customer. All licensed products must be stored behind the sales counter or other area not freely accessible to customers, or in a case or other storage unit not left open and accessible to the general public. Any retailer selling licensed products at the time this subsection is adopted must comply with this subsection within 90 days of its effective date.

- (4) By any other means, to any other person, or in any other manner or form prohibited by federal, state, or other local law, ordinance provision, or other regulation.

Note: See Section 1132.19 (e) below - use of the referenced statutory means of identification are a defense to a violation of this section. The referenced section of statutes is for proof of age for purchase of alcohol. Further note: This section requires checking i.d. for anyone age 30 or younger.

- (b) Legal age. No person shall sell any licensed product to any person under the age of 21.
- (1) Age verification. Licensees must verify by means of proof of age described in Minnesota Statutes, section 340A.503, subdivision 6, paragraph (a) that the purchaser is at least 21 years of age. Verification is not required for a person who reasonably appears to be over the age of 30. That the person appeared to be 30 years of age or older does not constitute a defense to a violation of this subsection.
- (2) Signage. Notice of the legal sales age and age verification requirement must be posted at each location where licensed products are offered for sale. The required signage, which will be provided to the licensee by the city, must be posted in a manner that is clearly visible to anyone who is or is considering making a purchase.
- (c) Flavored products. No person shall sell or offer for sale any flavored products. This restriction does not apply to retailers that prohibit persons under 21 from entering at all times and derive at least 90 percent of their revenues from the sale of licensed products. Any retailer that sells flavored products must provide upon request financial records that document annual sales of licensed products.
- (d) Cigars. No person shall sell or offer for sale any cigar that is not within its intended retail packaging containing a minimum of five cigars and for a sales price, after any discounts are applied and before sales taxes are imposed, of less than \$13.00 per package. This restriction does not prohibit the sale of a single cigar with a sales price, after any discounts are applied and before sales taxes are imposed, of at least \$4.00.
- (e) Liquid packaging. No person shall sell or offer for sale any liquid, whether or not such

liquid contains nicotine, which is intended for human consumption and use in an electronic delivery device, that is not contained in child-resistant packaging. Upon request, a licensee must provide a copy of the certificate of compliance or full laboratory testing report for the packing used.

- (d) ~~Every licensee shall be responsible for the conduct of its employees while on the licensed premises and any sale or other disposition of tobacco products or any nicotine or lobelia delivery products or other state regulated tobacco products by an employee to a person under 18 years of age shall be considered an act of the licensee for purposes of imposing an administrative fine, license suspension, or revocation.~~
- (e) ~~Except for tobacco shops, all tobacco, tobacco products, and tobacco-related devices shall be stored behind the counter or other area not freely accessible to customers and no sales shall be made by means of self-service merchandising. For the purpose of this section, "tobacco shop or shops" shall mean a retail establishment devoted exclusively to the sale of tobacco, tobacco products and tobacco-related devices. No person under the age of 18 shall be permitted in a tobacco shop unless accompanied by that person's parent or legal guardian.~~

1132.17. Other illegal acts. ~~Unless otherwise provided, the following acts shall be a violation of this section:~~

Note: highlighted sections are proposed change from current city code related to penalties for minors

- (a) ~~Illegal possession. It shall be a violation of this section for any minor to have in their possession any tobacco product or any nicotine or lobelia delivery products or other state regulated tobacco products.~~
- (b) ~~Illegal use. It shall be a violation of this section for any minor to smoke, chew, sniff, or otherwise use any tobacco product or any nicotine or lobelia delivery products or other state regulated tobacco products.~~
- (a) Illegal procurement. It shall be a violation of this section for any minor to purchase or attempt to purchase or otherwise obtain any tobacco product or any nicotine or lobelia delivery products or other state regulated tobacco products, and it shall be a violation of this section for any person to purchase or otherwise obtain such items licensed products on behalf of a minor person under the age of 21.
- (b) Use of false identification. It shall be a violation of this section for any minor person to attempt to disguise their true age by the use of a false form of

identification, whether the identification is that of another person or one on which the age of the person has been modified or tampered with to represent an age older than the actual age of the person.

- (e) ~~Illegal entrance to tobacco shop premises. No person under the age of 18 years shall enter the premises of a tobacco shop unless accompanied by that person's parent or legal guardian.~~

1132.19. Violations.

- (a) Misdemeanors. Any person who violates this section shall be guilty of a misdemeanor.
- (b) Administrative civil penalties; individuals. Any person, other than individuals regulated by paragraph (c) of this subsection, found to be in violation of this section who sells any tobacco product or any nicotine or lobelia delivery products or other state regulated tobacco products to a person under the age of 18 years is subject to an administrative penalty; and any person under the age of 18 who attempts to purchase a tobacco-related product is subject to an administrative penalty. No penalty shall be imposed until the individual has received notice, served personally or by mail, of the alleged violation and an opportunity for a hearing before the city manager or the city manager's designee. A decision that a violation has occurred shall be in writing. The city council may impose administrative penalties as follows:

First violation: The city council may impose a civil fine of not less than \$50 nor more than \$500.

Second violation within 12 months: The city council may impose a civil fine of not less than \$50 nor more than \$750.

Third violation within 12 months: The city council may impose a civil fine of not less than \$50 nor more than \$1,000.

- (c) Underage persons. Persons under 21 years of age who use false identification to purchase or attempt to purchase licensed products may be subject to tobacco-related education classes, diversion programs, community services, or another penalty that the city believes will be appropriate and effective. The city council will consult with the courts, educators, parents, children, and other interested parties to determine an

appropriate penalty for underage violations. The penalty may be established by resolution and amended from time to time.

- (d) Administrative civil penalties; licensee. If a licensee or an employee of a licensee is found to have ~~sold tobacco or any nicotine or lobelia delivery products or other state regulated tobacco products to a person under the age of 18 years~~ violated this section, the licensee shall be subject to an administrative penalty as follows:

First violation: The city council shall impose a civil fine of not less than \$75 nor more than \$500. The licensee's license may also be suspended for a period of not more than ten days.

Second violation within 24 months: The city council shall impose a civil fine of not less than \$200 nor more than \$750. The licensee's license shall also be suspended for a period of not more than 20 days.

Third violation within 24 months: The city council shall impose a civil fine of not less than \$250 nor more than \$1,000. The licensee's license shall also be suspended for a period of not less than seven nor more than 30 days.

No suspension or penalty shall take effect until the licensee has received notice, served personally or by mail, of the alleged violation and an opportunity for a hearing before the city manager or the city manager's designee. A decision that a violation has occurred shall be in writing.

- (e) Defense. It is a defense to ~~the charge of selling tobacco or any nicotine or lobelia delivery products or other state regulated tobacco products to a person under the age of 18 years~~ an alleged violation of this section, that the licensee or individual, ~~in making the sale,~~ reasonably and in good faith relied upon representation of proof of age as shown on one of the acceptable forms of identification as described in Minnesota Statutes, section 340A.503, subdivision 6, paragraph(a).

- (e) Exemption. A person, no younger than 15 and no older than ~~17~~ 21, may be enlisted to assist ~~in the tests of~~ with unannounced compliance checks for each licensed premises at least once a year, provided that written consent from ~~the person's~~ a minor's parent or guardian has been obtained and that the person shall at all times act only under the direct supervision of a ~~responsible adult~~ law enforcement or other designated personnel for training, education, research, or enforcement purposes. A person used for the purpose of compliance checks ~~who purchases or attempts to purchase tobacco products or any nicotine or lobelia delivery products~~

~~or other state regulated tobacco products while in this capacity~~ is exempt from the penalties imposed this section and will not be guilty of unlawful purchase, attempt to purchase, possession, use, or procurement when licensed products are obtained as part of the compliance check by subdivisions (a) and (b) above.

- (f) Revocation. A license may be revoked or suspended by the city council for a violation of the provisions of this subsection after notice and hearing.

1132.21 Severability. If any subsection or provision of this section is held invalid, such invalidity will not affect other subsections or provisions that can be given force and effect without the invalidated subsection or provision.

Section 3. That the following summary clearly informs the public of the intent and effect of the ordinance and is approved for publication: "The purpose of this ordinance is to amend the city's tobacco licensing regulations

[Need to insert description of ordinance]."

First Reading: YEAS:
NAYS:

Second Reading: YEAS:
NAYS:

Passed by the City Council this _____ day of _____, 2017.

Regan L. Murphy, Mayor

ATTEST:

Tom Marshall, City Clerk
(SEAL)



City of Robbinsdale

MEMORANDUM

TO: City Council
FROM: Marcia Glick, City Manager
DATE: September 26, 2017
RE: Voucher Requests Pending Approval for Disbursement

The check register dated September 26, 2017 reflects the voucher requests pending approval for disbursement.

The check register dated September 6, 2017 through September 26, 2017 is a list of vouchers requiring payment for City funds, Deputy Registrar, liquor, and miscellaneous purchases. The payments are required prior to the next Council meeting.

Recommendation

By motion approve disbursement requests for period ending September 26, 2017.



Marcia Glick, City Manager

CONCURRENCE:



Larry Jacobson, Finance Director

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John Tingley

From: Marcia Glick
Sent: Thursday, September 21, 2017 9:49 AM
To: Julie Ralston Aoki
Cc: John Tingley
Subject: RE: modernizing Robbinsdale's tobacco licensing law

Thanks

We'll add your comments to the council packet.

From: Julie Ralston Aoki
Sent: Thursday, September 21, 2017 8:35 AM
To: Marcia Glick
Subject: modernizing Robbinsdale's tobacco licensing law

Hi Marcia--

As a concerned citizen and strong supporter of health as a human right, I wanted to provide you with some information in response to issues raised at the tobacco retailer's forum and by Abby Sookraj on her website and a letter to the editor to the SunPost that I saw yesterday. I was not able to capture all the numbers and figures that were thrown around at the tobacco vendor forum, and Ms. Sookraj fails to provide any citations to back up her statements. Nonetheless, I have attempted to assemble some facts from verifiable, credible sources, to respond to these claims and assertions,

At the tobacco vendor forum, some of the retailers raised concerns about potential economic impact if flavored products are restricted to specialty stores--I urge you to consider the countervailing economic impact of tobacco-related cancers and other chronic diseases on people and our community. According to MDH, smoking causes \$3.2 billion in medical costs annually across the state. (<http://www.health.state.mn.us/divs/hpcd/tpc/data.html>). Per capita, that translates to about \$8,383,188 in costs for Robbinsdale. These dollar amounts do not take into account the loss in quality of life, and also the fact that these economic impacts fall disproportionately on low-income people.

Regarding e-cigarettes:

According to a fact sheet published by the Minnesota Department of Health earlier this year (available at http://www.health.state.mn.us/divs/hpcd/tpc/topics/ecig_docs/ecigarettes.pdf), e-cigarette use is "an emerging public health threat." This fact sheet reports that e-cigarette use by Minnesota 11th graders is more than double the rate of use of conventional cigarettes.

Also, contrary to representations made about the effectiveness of e-cigarettes as a cessation tool, most adults who use e-cigarettes also continue to use other tobacco products--in other words, they are dual users who do not quit smoking. This fact also comes from the aforementioned MDH fact sheet.

At the retailer forum, repeated reference was made to the UK's Royal College of Physicians and its reported support for use of e-cigarettes as cessation tools. This is a red herring. First, it is important to note that the UK Royal College of Physicians is essentially a trade association ("we are the professional membership body for physicians"--see <https://www.rcplondon.ac.uk/mission-and-strategy-0>). It is not the equivalent of the U.S. Surgeon General, or the National Academies of Science, or the Food and Drug Administration. And, equivalent trade organizations here in the US have issued policy statements that take an opposite view--see, e.g., <https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/Tobacco-and-E-Cigarettes.aspx> (American Academy of Pediatrics policy statement noting that there is no scientific support for treating e-cigarettes as smoking cessation device and also calling for the minimum legal sale age to be raised to 21 years old).

Moreover, the U.S. and the U.K. are obviously two different countries, with different cultures and different regulations. For example, in the U.K. the legal tobacco sales age was only 16 until 2007 (see BBC News, Cigarette Buying Age Set to Rise (Jan. 1, 2007), <http://news.bbc.co.uk/2/hi/health/6216523.stm>). In addition, in the U.K., e-cigarette advertising that targets youth is prohibited; no similar restriction exists in the U.S. (see <https://www.nytimes.com/2015/09/08/opinion/calls-for-stronger-regulation-of-e-cigarettes.html>).

Finally, I note that claiming that e-cigarettes are a cessation device is not legal under federal law because the FDA has not approved them for sale as a cessation device. Indeed, to my knowledge, no e-cigarette manufacturer has actually sought

approval to make that claim legally. This is despite the fact that there is a process under the FDA regulations for them to do so. (See: <https://www.fda.gov/ForConsumers/ConsumerUpdates/ucm198176.htm>; and see generally, 21 USC Ch 9, subch. V (Federal Food, Drug & Cosmetic Act). Indeed, I further note that when e-cigarettes were first starting to be sold in the U.S. and the FDA attempted to regulate them as an unapproved smoking cessation device, e-cigarette manufacturers actually argued in court that e-cigarettes were NOT being marketed as a cessation device. See *Sottera, Inc., v. Food and Drug Administration*, 627 F.3d 891 (D.C. Cir. 2010).

Regarding restricting the sale of flavored products to stores that essentially are tobacco (or e-cigarette) specialty stores that can be entered only by adults who are of the legal sales age:

Most young people who end up becoming addicted tobacco users start with flavored products. See: Bridget K. Ambrose et al., *Flavored Tobacco Product Use Among US Youth Aged 12–17 Years, 2013–2014*, 314 J. Am. Med. Ass’n 1871 (2015), <http://jamanetwork.com/journals/jama/fullarticle/2464690> (“The majority of youth ever-users reported that the first product they had used was flavored, including 88.7% of ever hookah users, 81.0% of ever e-cigarette users, 65.4% of ever users of any cigar type, and 50.1% of ever cigarette smokers. For past 30-day youth tobacco use, the overall proportion of flavored product use was 79.8% (95% CI, 77.3%–82.3%) among users of any product and 89.0% among hookah users, 85.3% among e-cigarette users, 71.7% among users of any cigar type, and 59.5% among cigarette smokers.”).

Tobacco users (particularly youth) may mistakenly assume that flavored tobacco products are safer than other tobacco products. See Merlyn A. Griffiths et al., *Hubble Bubble Trouble: The Need for Education About and Regulation of Hookah Smoking*, 30 J. Pub. Pol’y & Marketing 125 (2011), <http://journals.ama.org/doi/abs/10.1509/jppm.30.1.119?code=amma-site>; and Annette K. Regan et al., *Smokeless and Flavored Tobacco Products in the U.S.: 2009 Styles Survey Results*, 42 Am. J. Prev. Med. 29, 34 (2012), <https://www.ncbi.nlm.nih.gov/pubmed/22176843>.

Finally, the presence of flavors, especially a popular flavor such as menthol, in tobacco products also has been associated with more difficulty in quitting for tobacco users. See Cristine D. Delnovo, et al., *Smoking-Cessation Prevalence Among U.S. Smokers of Menthol Versus Non-Menthol Cigarettes*, 41 Am. J. Prev. Med. 357 (2011).

Menthol in particular is of serious public health concern, due to its popularity with youth, women, GLBTQ communities, and African Americans. Indeed, the tobacco industry's targeted marketing of menthol products to African Americans is well documented, and is strongly linked to the racial disparities between whites and African Americans in tobacco use and the death and disease that result from use of commercial tobacco. MDH reports that “Menthol cigarette marketing practices are targeted more toward younger people and African Americans than older adults and other racial or ethnic groups.[citations omitted] Menthol cigarette marketing has consistently targeted minority and low-income communities.[Citations omitted.] This strategy results in higher smoking rates among these groups.” For more facts and the citations, see <http://www.health.state.mn.us/divs/hpcd/tpc/topics/menthol.html>.

I understand that local governments may view restricting menthol products as somehow radical or too risky; however, I also wanted to say that given the well-documented history and facts of how the tobacco industry has marketed flavored products to specific, vulnerable populations, I believe that not doing so is a perpetuation of structural racism and a social injustice that enables the tobacco industry to continue to prey upon the lives and health of many socially disadvantaged and marginalized peoples.

Regarding increasing the legal minimum sale age to 21 years old:

This is a clear, scientifically supported, evidence-based approach. The information below is adapted from a fact sheet from the Public Health Law Center, found here: <http://www.publichealthlawcenter.org/sites/default/files/resources/phlc-Tobacco-21-Tips-Tools-2016.pdf>

The Institute of Medicine (now the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine) (IOM) released a report in 2015 documenting the evidence of the significant public health benefits of increasing the legal sales age for tobacco products. The Institute examined the scientific literature on several key topics, including tobacco use patterns, developmental biology and psychology, health effects of tobacco use, and national youth access laws. It also did mathematical modeling to predict the likely public health outcomes of raising the minimum legal sales age to 19, 21 and 25 years. The report found that increasing the tobacco sales age helps delay smoking initiation among youth, which leads to lower smoking prevalence rates. In turn, this would significantly increase not just the length, but also the quality, of life across population groups. The IOM report concluded that raising the minimum sales age today to 21 would result in a 12 percent decrease in tobacco use across the nation for those born between 2000 and 2019. See Institute of Medicine, *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products* (2015), http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2015/TobaccoMinAge/tobacco_minimum_age_report_brief.pdf.

Delaying the onset of tobacco use is associated with several long-term health benefits. Not only does it reduce the number of life-years available for tobacco use (and of course, the longer a person uses tobacco, the higher the risk of developing severe health consequences), but delays in onset are also associated with a higher probability of successful cessation efforts later. (See the IOM report cited above; Tammy Tengs et al., *The Public Health Impact of Changes in Smoking Behavior: Results From the Tobacco Policy Model*, 39 Med. Care 1131 (Oct.

2001); Sadik Khuder et al., Age at Smoking Onset and Its Effect on Smoking Cessation, 24 Addict. Behav. 673 (Sept.-Oct.1999); and Jiajian Chen & Wayne Millar, Age of Smoking Initiation: Implications for Quitting, 9 Health Rep. 39 (Spring 1998).

Raising the minimum legal sale age also has been linked to reduced smoking prevalence rates, especially among older youth. For example, when England raised its minimum legal sales age for cigarettes from 16 to 18 years of age in 2007, studies found that this increase was associated with rapid and significant drops in smoking prevalence among 16 and 17 year olds regardless of socioeconomic status, even though smoking by (as opposed to sales to) this age group was not made illegal. See Christopher Millett et al., Increasing the Age for the Legal Purchase of Tobacco in England: Impacts on Socio-Economic Disparities in Youth Smoking, 66 Thorax 862 (Oct. 2011); and Jennifer Fidler & Robert West, Changes in Smoking Prevalence in 16–17-Year-Old versus Older Adults Following a Rise in Legal Age of Sale: Findings From an English Population Study, 105 Addiction 1984 (Nov. 2010).

My son, who is a junior at Armstrong High School, has told me that he has seen high school students vaping in restrooms at school and on/near campus. These students may be 18 years old and able to legally purchase e-cigarettes, or not, I don't know. However, peer-reviewed research indicates that raising the minimum legal age to 21 would help to reduce, if not eliminate, this phenomenon.

Based on studies showing the effectiveness of youth access laws when they are enforced (see, e.g., Joseph DiFranza et al., Enforcement of Underage Sales Laws as a Predictor of Daily Smoking Among Adolescents — A National Study, 9 BMC Pub. Health, <http://www.biomedcentral.com/content/pdf/1471-2458-9-107.pdf> (April 17, 2009)), increasing the minimum legal sales age is likely to be particularly effective in reducing tobacco use by high school-aged youth because it would reduce their access to tobacco products. This is because older underage youth (i.e. those who are closer to age 18) are more likely to succeed in buying tobacco in stores. (See, e.g., Joseph DiFranza et al., Youth Access to Tobacco: The Effects of Age, Gender, Vending Machine Locks, and “It’s The Law” Programs, 86 Am. J. Pub. Health 221 (Feb. 1996). Increasing the minimum legal sale age would not only make it more difficult for older youth to buy tobacco products, but it would reduce the likelihood that a high school student will be of legal age and able to serve as a social source for friends/peers, and buy tobacco products for younger classmates or underage friends.

Ms. Sookraj's unsubstantiated claims:

Ms. Sookraj claims (in the letter to the editor I saw yesterday) that raising the alcohol drinking age to 21 caused an increase in underage drinking. (The drinking age was raised from 19 to 21 in 1986—see <https://www.leg.state.mn.us/lrl/guides/guides?issue=legalage>). She provides no timeframe or context nor any support at all for this argument.

She mentions the restriction on use of fake IDs in an inflammatory way; I note that the restriction on use of fake IDs is part of existing law; the part that is added actually softens the penalties for underage youth who are found to have used a fake ID.

She also refers to a concern about criminalization of smokers—I interpret this as a reference to the fact that a violation of the licensing law could also be a misdemeanor. This is another red herring—as you no doubt know, this language was part of the original law, is very common language in these types of local licensing laws (based on my experience as a public health lawyer) and is not a change.

Finally, I noted that on her website opposing these kinds of measures, Ms. Sookraj alleges that the Association for Non Smokers' Rights in MN is a tobacco-industry funded group. ANSR-MN has long been a champion of smoke-free laws and other tobacco control policies. I have known this organization for 10 years, and Ms. Sookraj's statement is simply untrue. And rather strange.

Thank you for your time and attention to this important public health matter.

Best,
Julie

--
Julie Ralston Aoki



September 20, 2017

The Honorable Regan Murphy and Members of the Robbinsdale City Council

Via E-mail: rmurphy@ci.robbinsdale.mn.us; wablonigan@ci.robbinsdale.mn.us;

dprogan@ci.robbinsdale.mn.us; gbselman@ci.robbinsdale.mn.us; pbacken@robbinsdalemn.com

Dear Mayor Murphy and Members of the City Council:

On behalf of the Local Public Health Association of Minnesota (LPHA) and local government public health leaders throughout the state, I write to commend the City of Robbinsdale on its efforts to prevent youth tobacco use and express our support for the package of updates being considered for the city's tobacco prevention and control ordinance. Specifically, we support:

- Increasing the tobacco sale age to 21
- Restricting flavored tobacco products to adult-only tobacco shops
- Setting a minimum price for cigars at \$2.60

Despite the great progress that has been made, tobacco use among youth is still a problem. Each year tobacco companies spend more than \$115 million to market their products to Minnesotans, and much of this marketing aggressively targets our youth with cheap prices and kid-friendly flavors to build a base of replacement smokers. We know that nearly all adult smokers start smoking before the age of 21, and many kids turn to older friends and classmates as a source of cigarettes.

Increasing the tobacco age to 21, restricting flavored tobacco products to adult-only tobacco shops and setting a minimum price for cigars would help address these challenges by making tobacco less affordable and less accessible to youth. Separately, each policy is firmly backed by evidence and would have a significant impact on reducing youth tobacco use. Adopted as a package, you could expect even greater benefits, saving more lives and helping to drive down excess health care costs.

Your consideration of these policies shows a strong commitment to fostering a healthier future for Robbinsdale youth. We are happy to offer our support and hope for successful passage this fall.

Best regards,

Lorna Schmidt, Director
Local Public Health Association of Minnesota





Sue Schettle, Chief Executive Officer
1300 Godward Street NE, Ste 2000, Minneapolis, MN 55413
612.623.2885 • www.metrodoctors.com

September 18, 2017

Members of the City Council
City of Robbinsdale
4100 Lakeview Avenue North
Robbinsdale, MN 55422

Dear Members of the Robbinsdale City Council,

I am writing on behalf of the Twin Cities Medical Society in support of the proposed amendments to Robbinsdale's existing tobacco policy. The Twin Cities Medical Society is an organization that represents approximately 4,500 physicians and medical students living and working in the seven-county Twin Cities metropolitan area. One of our key missions is advocating for policies that promote public health.

Smoking is still the number one cause of preventable death in Minnesota and e-cigarette use is on the rise among youth. Smoking's burden on our health system reaches over 3 billion dollars a year here in Minnesota alone. We also know that exposure to nicotine while the adolescent brain is still developing increases the risk of mood disorders, permanent lowering of impulse control and other addictions later in life. Restricting the sale of flavored tobacco to adult-only shops, increasing the sales age to 21 and raising the price of cheap cigars are all important steps toward reducing Minnesota youth smoking initiation rates.

Almost 95% of adult smokers pick up the habit before age 21, and increasing the gap between those who can legally purchase tobacco will limit high schooler's access to these products. Flavored tobacco products in particular are cheap and heavily marketed to youth, making them a gateway to a lifetime of nicotine addiction. By limiting access to these products in the stores youth visit daily, Robbinsdale will help prevent another generation from becoming lifelong tobacco users.

These policies are a bold step toward protecting another generation from a lifetime of tobacco addiction, and ultimately disease and premature death. We stand behind this effort and thank you for protecting the public health of Robbinsdale residents.

Sincerely,

A handwritten signature in dark ink, appearing to read "Matt Hunt", with a stylized flourish at the end.

Matt Hunt, MD
President of the Twin Cities Medical Society



Friday, September 8, 2017

Robbinsdale City Council
4100 Lakeview Ave N.
Robbinsdale, MN 55422

Dear Mayor Murphy and Members of City Council,

I am writing on behalf of Partnership for Change, an organization comprised of youth, parents, schools, law enforcement, and community groups that are working together to reduce drug use among youth and young adults in northwest Hennepin County. Our focus is changing the community environment that leads to youth substance use by implementing strategies that will affect behavior around alcohol and other drugs. Effective strategies for reducing the burden of tobacco addiction would be to increase the tobacco age to 21, increase the price of cheap cigars, and restrict the sale of flavored tobacco.

Youth tobacco use is still a problem. E-cigarettes are particularly appealing to youth. They come in bright colors and an array of flavors like chocolate, cherry cola and grape. In the 2016 Minnesota Student Survey, nearly 11% of Robbinsdale 11th graders reported using e-cigarettes in the last 30 days. Increasing the gap between youth and those legally able to purchase tobacco products will help get e-cigarettes and other tobacco products out of the hands of our youth.

Smoking remains the leading preventable cause of death and disease in the state of Minnesota. In Minnesota, tobacco causes more than 6,000 deaths and costs more than \$3 billion each year in healthcare and lost productivity.

We are glad to hear that the City Council will be considering this ordinance at an upcoming study session at the end of September. Thank you for your leadership and ensuring Robbinsdale is a healthy place to live.

Sincerely,

A handwritten signature in blue ink, appearing to read "Amber Smith", is written over the printed name.

Amber Smith
Partnership for Change Coordinator

www.partnership4change.org

September 13, 2017

Mayor Murphy and Members of the Robbinsdale City Council
City Hall
4100 Lakeview Avenue North
Robbinsdale, Minnesota 55422

Dear Mayor Murphy and Robbinsdale City Council Members,

On behalf of the March of Dimes, I would like to thank you for considering an ordinance that increases the tobacco sale age to 21. This is an important step to ensure that Robbinsdale youth live in a safe and healthy community. The mission of the March of Dimes is to improve the health of babies by preventing birth defects, premature birth and infant mortality. Both smoking and exposure to secondhand smoke increase the risk for a wide range of negative pregnancy outcomes for women of childbearing age, pregnant women, and their babies. The March of Dimes strongly supports raising the tobacco sale age to 21 for all Robbinsdale residents, including those in military families.

As you are aware, the minimum age to purchase tobacco is 18 years old. On average, ninety percent of adult smokers begin smoking during teenage years. Raising the minimum age required to purchase tobacco products can significantly improve public health outcomes for women, children, and infants by delaying or preventing altogether the initiation of smoking or use of other tobacco products.

Nationwide, an average of one in every ten pregnant women smokes. For expecting mothers, tobacco use during pregnancy increases the risk of premature delivery in babies and directly affects fetal growth. According to the 2014 Surgeon General's report, in the last 50 years, 10,000 babies have died from sudden infant death syndrome or complications of prematurity, low birthweight, and other conditions as a result of parental smoking.

Increasing the minimum age of access to tobacco will have significant public health benefits for women, children, infants and families by delaying the age at which people begin smoking and preventing them from ever starting. We thank you for your leadership on this important issue and look forward to working with you to ensure that all babies are given the best chance at a healthy start in life.

Sincerely,

Angie Thies
Director of Advocacy and Government Affairs

John Tingley

From: Marcia Glick
Sent: Monday, August 21, 2017 3:46 PM
To: Regan Murphy; John Tingley
Subject: Re: Tobacco 21

We'll add to the green sheet

On Aug 21, 2017, at 2:37 PM, Regan Murphy <rmurphy@CI.ROBBINSDALE.MN.US> wrote:

Not sure if this was sent to the entire council or not.

Regan

Begin forwarded message:

From: Renee Crichlow
Subject: Tobacco 21
Date: August 17, 2017 at 4:59:14 PM CDT
To: <rmurphy@ci.robbednsdale.mn.us>

Dear Mayor Murphy,

As a physician and Robbinsdale resident, I'm writing to express my strong support for the council's current effort to strengthen our tobacco ordinance. Restricting the sale of flavored tobacco to adult-only shops, increasing the sales age to 21, removing tobacco paraphernalia from convenience stores and raising the price of cheap cigars are all effective, evidence-based measures to reduce tobacco use in our community and I applaud the council's bold consideration of all four.

We know that the adolescent brain is not fully developed until age 25, leaving young people especially vulnerable to the developmental and mental health risks associated with nicotine addiction. Aggressive industry marketing tactics of flavored products and their availability in convenience stores and through social sources make these products both appealing and accessible to youth. Policies like Tobacco 21 limit kids access to tobacco by increasing the gap between high schoolers and those who can legally buy tobacco products.

This is remarkable work on the part of our council that will benefit the health of our community, especially young people, for many years to come. Thank you for your leadership in working towards a tobacco free generation in Robbinsdale.

Sincerely,

Renee Crichlow, MD
3914 Crystal Lake Blvd 55422



August 18th, 2017

Dear Robbinsdale City Council Members,

The American Heart Association is the nation's oldest and largest voluntary organization dedicated to building healthier lives free from heart disease and stroke – two of the leading causes of death in the United States. Our non-profit and non-partisan organization includes more than 30 million volunteers and supporters across the country and in Minnesota. Today, one-out-of-three Americans suffer from one or more forms of cardiovascular disease (CVD). We are writing to you today on their behalf and on behalf of the millions of other constituents with, or at risk of developing CVD.

We are asking you to stop the start in Robbinsdale and support raising the minimum sale age for tobacco products from 18 to 21.

We can do more to prevent kids from becoming addicted to tobacco. A national consensus is growing to prevent addictions and future health problems by ensuring that those who sell tobacco products do so to adults who are 21 and older. Let's make Robbinsdale the next city in Minnesota to raise the minimum age to purchase tobacco from 18 to 21!

The National Academy of Medicine reports that there would be a 25 percent reduction in smoking initiation among 15-to-17-year-olds if the age to purchase tobacco was raised to 21. Preventing youth from starting to smoke is essential to reducing smoking prevalence, considering that almost 95 percent of addicted adult smokers started before age 21. Increasing the age gap between kids and those who can legally buy tobacco will help remove access to tobacco products from the high-school environment and stop the start.

Several states and local governments throughout the country have already passed this life-saving policy to protect youth. Hawaii and California were the first states to raise the age to purchase tobacco to 21 and Maine, Oregon and New Jersey recently joined them! And more than 255 municipalities, and growing, in the United States have raised the age to purchase tobacco to 21 including the city of Chicago. In 2005, Needham, MA increased the tobacco purchase age to 21 and saw the smoking rates among high school students fell by nearly half!

That is why we urge you to protect our youth and pass this life-saving policy in Robbinsdale. Let's keep the momentum going in Minnesota and have Robbinsdale be the next city to stop the start!

Justin Bell – J.D.
Government Relations Director
American Heart Association
4701 W 77th St.
Minneapolis, MN 55435

*"Building healthier lives,
free of cardiovascular
diseases and stroke."*

life is why™ es por **la vida™** 全为**生命™**

Please remember the American Heart Association in your will.



John Tingley

From: Regan Murphy
Sent: Wednesday, September 20, 2017 9:34 AM
To: John Tingley
Subject: Fwd: Cigarette Ordinance

Regan

Begin forwarded message:

From: Yasser Abdelrahman
Date: September 7, 2017 at 2:23:59 PM CDT
To: <rmurphy@ci.robbednsdale.mn.us>
Subject: Cigarette Ordinance

Good Afternoon Mayor Murphy,

I was at the council meeting on Tuesday, September 5th regarding the proposed cigarette policy in the city of Robbinsdale. I would like to start off by saying thank you so much for your time and allowing us to voice our concerns and opinions on this ordinance. As a small business, we are willing to cooperate with the city of Robbinsdale with any decision the council will make. Regarding the flavor ban, all businesses are willing to not display them for purchase, if that will help the city reach its goal of this ordinance. However, we were worried about the impact this new policy will have on our business. Would there be a possibility to have all the neighboring cities to take on this ordinance at the same time? I believe this would have a less greater impact on the small businesses' of Robbinsdale city because customers ages 18-20, would not leave our businesses and go somewhere else for their purchases. This would not only be cigarettes but their snacks and groceries. As this being some of my employers only source of income, having these customers leave and go somewhere else will impact our sales and profit negatively. I am not only speaking about my business but about all of the other small businesses in the city of Robbinsdale.

Lastly, I would like to personally thank you for your time reading this email and I would like to thank the city of Robbinsdale for supporting small businesses, such as ours.

Sincerely and humbly,
YMA Inc

YMA Inc
4001 W Broadway Ave,
Robbinsdale MN, 55422

John Tingley

From: Pat Backen
Sent: Wednesday, September 20, 2017 9:03 AM
To: John Tingley
Subject: FW: Robbinsdale's Tobacco Ordinance

From: xfwilson@comcast.net
Sent: Tuesday, September 19, 2017 3:54 PM
To: Pat Backen
Subject: Robbinsdale's Tobacco Ordinance

Hi Pat,

"Thanks for all the work you and the council have put in to potentially strengthening Robbinsdale's tobacco ordinance to protect our youth.

I wanted to let you know that I fully support:

1. Restricting flavored tobacco
2. Setting a minimum price for cigars at \$2.60
3. and raising the sales age to 21.

Do you have concerns about any of the updates being proposed, or can I count on your support for all three of these measures?

Francine Wilson

Sent from XFINITY Connect Mobile App

John Tingley

From: Gretchen J Garman <Gretchen.Garman@hennepin.us>
Sent: Wednesday, September 20, 2017 9:36 AM
To: Marcia Glick; John Tingley
Cc: 'Meaney, Mark'; Ruth S Tripp
Subject: Robbinsdale Tobacco Education Packet #2 - follow-up to retailer input & additional info on T21 & Military tobacco use
Attachments: Robbinsdale 9.20.17 Attachment-follow-up to retailer input & additional info on T21.Military tobacco use.pdf; Tobacco-Control-BMJ-21-Needham-Study.pdf; Robbinsdale Tobacco Education Packet - Policy litigations, T21, Military, Menthol & State law
Importance: High

Hello Marcia & John,

This email is in follow-up to the Council Work session on 9/5, providing additional information in regards to some of the points made by retailers. Rather than put it all in an email, I've summarized it in the attached document, (*Robbinsdale 9.20.17 Attachment-follow-up to retailer input & additional info on T21.Military tobacco use*), hopefully making it easier to include in the council packet. I've also provided links and attachments that provide more detailed information should council members be interested. I've organized this by topic area or questions that came up during the retailer meeting. Lastly, at the end of the document, I've shared some additional information on the military and the Tobacco 21 policy.

Lastly, I also re-attached the email and documents I sent on 8/30, *Robbinsdale Tobacco Education Packet – Policy litigations, T21, Military, Menthol & State law*. Marcia mentioned that the email and documents can also be included in the September 26th packet and referenced in a staff report.

If you can please confirm that you received all of the above information and attachments for the 9/26 Public Hearing I would be appreciative.

Thank you,
Gretchen Garman, MPH
Community Health Specialist
Hennepin County Public Health Department
525 Portland Ave., MC 963
Minneapolis, MN 55415

From: John Tingley [mailto:jtingley@CI.ROBBINSDALE.MN.US]
Sent: Friday, September 15, 2017 10:12 AM
To: Gretchen J Garman
Subject: RE: Tobacco - a few question & request

Gretchen,

For information to be included in the 9/26 Council agenda packet, I would need it by Friday, September 22 at the latest. That is when the agenda packets are published publicly and are sent to Council. Let me know if you have any questions.

Attachment: Robbinsdale follow-up to retailer input and additional information on T21 and military tobacco use

With the various tobacco policies that have been implemented, what has been the impact of access to and use of tobacco products? Tobacco prevention strategies recommended are evidence-based strategies with the data to support their effectiveness. In addition, preventive actions and policies taken at the local and state level (i.e., these policies, tobacco taxes, media campaigns, promotion of cessation services) have an additive effect, making it difficult to measure the impact of a single policy. The MN Student Survey tobacco use data is our primary source of data to determine if preventive actions are working. There is data on the availability of flavored products following policy implementation in Maplewood, St. Paul and Shoreview (if you are interested in these reports, I am happy to share them). This does not show impact on use. This is an example of tobacco policy implementation impact on use and access:

- Needham, MA: first town in the US to enact a law raising the minimum legal sales age to 21. Needham found that tobacco use among high-school students fell by nearly half after raising the age to 21. (*see attached*)

What have Robbinsdale's neighbors done?

Direct neighbors, Brooklyn Center and Minneapolis have policies in place. There is no evidence that residents from a city that has one, or more, of the below tobacco policies in place go to the neighboring city to purchase tobacco.

	Tobacco 21	Flavor restrictions	Minimum pricing/packaging
Bloomington	Under consideration		X
Brooklyn Center			X
Edina	X		
Maplewood			X
Minneapolis		X	X
Plymouth	Under consideration		
Robbinsdale			
Richfield			X
Shoreview		X	
St. Louis Park	X	Under consideration	
St. Paul		X	X

Presentation from vaping representative, quoted many state tobacco statistics:

- Monitoring and reporting 30 day tobacco use among youth is an important public health strategy to continue to reduce youth tobacco initiation and use. Past 30 day use is a national standard that was set many years ago and still applies to younger ages, including young adults.
- Smoking in any capacity—even experimental use—is harmful for youth, and is important from a public health perspective. It's critical to prevent tobacco use among youth who are experimenting – experimental tobacco users risk transitioning to regular smokers.
- For our work, we utilize the following data sources. If you would like a copy, please let me know.
 - MN Student Survey for Robbinsdale School District, compared to Suburban Hennepin County
 - MN Adult Tobacco Survey

Purchase, Use, and Possession provisions:

Comments from Public Health Law Center: When the legal sales age is raised to 21, many communities have redacted some or all ordinance provisions that address the underage use, possession, purchase, etc. (PUP). PUP provisions remain a controversial strategy for reducing underage tobacco use, primarily because they have not been shown to be effective in reducing youth tobacco use and they raise concerns about fair enforcement. Inconsistent enforcement that is selectively applied can have a disproportionate burden on individuals from certain racial and ethnic groups who are then introduced to the criminal justice system. While PUP provisions may be removed at the local level, state law still provides for criminal penalties for such acts. See Minn. Stat. § 609.685.

United Kingdom studies and PATH report were referenced to support e-cigarettes as a harm reduction strategy: The FDA has processes in place to allow products to be approved as modified risk tobacco products or for cessation purposes

that are preferable to anecdotal claims about lowered risk. Recommendations from these studies have been questioned in the U.S. For further information, here is a response to the UK release by a leading researcher, *UK report claiming e-cigarettes are 95% safer than cigarettes based on one industry-linked report questions PHE's scientific credibility..*

- Response: <http://www.bmj.com/content/351/bmj.h4863/rr-1>

Impact of Tobacco 21 on social sources: An 18-year-old is likely a senior in high school. Raising the sale age of tobacco products from 18- to 21-years-old establishes a three-year distance in age so that the legal age of someone who can purchase tobacco is not a senior in high school and is less likely to socialize with youth in high school. The 'social source' for 15-17-year-old students to get tobacco from is removed from their educational environment.

Retailer compliance: When discussing retailer compliance, a comprehensive view is needed, of both FDA and compliance check violations.

- From 2014 to 9/19/17 there have been two FDA violations (*2015 violation for self-serve display; 2016 violation for sale of electronic delivery device to a minor*)
- From 2012 – 2015 there were at least 11 compliance check violations issued by the City of Robbinsdale, ranging from 1-4/year.

E-cigarettes, Vaping & Nicotine Levels:

- [MN Dept. of Health Facts about E-cigarettes & Other Vaping Products](#)
- E-cigarettes are unregulated, so the user has no way of knowing for sure what's in the product.
 - [Electronic Nicotine Delivery Systems: Key Facts CDC Office on Smoking and Health \(Oct. 2016\)](#)
- No amount of nicotine is safe, in fact there are poisonings.
 - [Nicotine: More harmful than you think](#)
 - [Health Advisory](#)
 - [New CDC study finds dramatic increase in e-cigarette-related calls to poison centers, Press Release.](#)

Military & T21: In addition to items brought out during the retailer meeting, I want to touch on the military & T21 question. Earlier, I provided you with these documents outlining the public health benefit and effectiveness of this policy:

- [2017 MN Medicine Report:](#) In MN, raising the legal sale age to 21 would have a one-time effect of preventing over 3,300 young Minnesotans from starting to smoke. Following this model, T21 would prevent an estimated 30,000 MN youth from starting to smoke over a 15-year period.
- [2015 Institute of Medicine Report:](#) Estimated there would be a 25% reduction in smoking initiation among 15-to-17-year-olds if the age to purchase tobacco were raised to 21.

The best practice is to implement the T21 policy without exemptions, to reach the predicted impact of this policy. Here are some items to consider:

Military Facts: Did you know?

Tobacco marketing and use in the military: Historically, the tobacco industry has actively marketed to those in the military, resulting in higher smoking rates than the general public. In 2011, "24% of active duty personnel were smokers compared with 19% of civilians. And 38% of the servicemen and women who smoke picked up the habit after enlisting."ⁱ

Cost of tobacco use in the military:

- "Tobacco use in the military also comes with a hefty price. The Department of Defense (DoD) spends more than \$1.6 billion each year on tobacco-related medical care, increased hospitalization, and lost days of work. It has also been estimated that \$2.7 billion in Veterans Health Administration health care expenditures are due to the health effects of smoking."ⁱⁱ

Tobacco, fitness, and readiness (or the factors that affect one's ability to do one's job):

- Tobacco use and its associated health impacts, is associated with compromised performance in the military.ⁱⁱⁱ

- Reduced respiratory and cardiac fitness, slower healing (not just wounds) result in reduced readiness and performance to complete their mission.^{iv v}

Actions being taken to reduce tobacco use in the military:

- The DoD and individual arms of the military support tobacco prevention and cessation. They are taking a number of steps to reduce tobacco use in the military, including tobacco free policies, increasing the price of tobacco sold on base, healthy living campaigns that encourage a tobacco-free lifestyle, and providing cessation services to tobacco users. Tobacco 21 policies would provide an additive effect to their prevention measures.^{vi}

Impact/concerns regarding military exemption to T21 laws:

- There is no public health rationale to justify a military exemption.
- It complicates enforcement. Clerks will need to be knowledgeable on different identifications, and military identifications typically do not specify whether or not a soldier is “active duty”.
- Exemptions can make a law more susceptible to equal protection legal challenges because it treats similar people differently.

ⁱ How stuff works: Why Smoking Rates in the Military Are So High. <http://science.howstuffworks.com/why-smoking-rates-in-military-are-so-high.htm>. Accessed on 9/19/17.

ⁱⁱ Truth Initiative – Inspiring Tobacco-Free Lives: tobacco is a social justice issue: the military. <https://truthinitiative.org/news/tobacco-social-justice-issue-military>. Accessed on 9/19/17.

ⁱⁱⁱ Institute of Medicine – Public health implications of raising the minimum age of legal access to tobacco products. http://www.nationalacademies.org/hmd/~/media/Files/Report%20Files/2015/TobaccoMinAge/tobacco_minimum_age_report_brief.pdf. Accessed 9/19/17.

^{iv} Project Uniform – Tobacco and Fitness. https://static1.squarespace.com/static/5730ca23f699bbaf2d5ffa34/t/5828a58859cc687470187aed/1479058824694/fitness_v2.pdf. Accessed 9/19/17.

^v Project Uniform – Tobacco and Endurance. https://static1.squarespace.com/static/5730ca23f699bbaf2d5ffa34/t/5828a630d1758e699d906a88/1479058992541/endurance_v2.pdf. Accessed 9/19/17.

^{vi} Health.mil – The official website of the Military Health System and the Defense Health Agency. <https://health.mil/Military-Health-Topics/Operation-Live-Well/Focus-Areas/Tobacco-Free-Living>. Accessed 9/19/17.

Community reductions in youth smoking after raising the minimum tobacco sales age to 21

Shari Kessel Schneider,¹ Stephen L Buka,² Kim Dash,¹ Jonathan P Winickoff,³ Lydia O'Donnell¹

¹Education Development Center, Inc, Waltham, Massachusetts, USA
²Department of Epidemiology, Brown University, Providence, Rhode Island, USA
³Harvard Medical School, Boston, Massachusetts, USA

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Received 18 December 2014
Accepted 12 May 2015

ABSTRACT

Objective Raising the tobacco sales age to 21 has gained support as a promising strategy to reduce youth cigarette access, but there is little direct evidence of its impact on adolescent smoking. Using regional youth survey data, we compared youth smoking trends in Needham, Massachusetts—which raised the minimum purchase age in 2005—with those of 16 surrounding communities.

Methods The MetroWest Adolescent Health Survey is a biennial census survey of high school youth in communities west of Boston; over 16 000 students participated at each of four time points from 2006 to 2012. Using these pooled cross-section data, we used generalised estimating equation models to compare trends in current cigarette smoking and cigarette purchases in Needham relative to 16 comparison communities without similar ordinances. To determine whether trends were specific to tobacco, we also examined trends in youth alcohol use over the same time period.

Results From 2006 to 2010, the decrease in 30-day smoking in Needham (from 13% to 7%) was significantly greater than in the comparison communities (from 15% to 12%; $p<.001$). This larger decline was consistent for both genders, Caucasian and non-Caucasian youth, and grades 10, 11 and 12. Cigarette purchases among current smokers also declined significantly more in Needham than in the comparison communities during this time. In contrast, there were no comparable differences for current alcohol use.

Conclusions Our results suggest that raising the minimum sales age to 21 for tobacco contributes to a greater decline in youth smoking relative to communities that did not pass this ordinance. These findings support local community-level action to raise the tobacco sales age to 21.

INTRODUCTION

Raising the legal age of tobacco sales to 21 to reduce youth smoking has gained increasing support among prevention advocates¹ who are working to reduce youth smoking initiation as a primary means of preventing addiction later in life. Nearly 1 in 10 high school youth experiment with cigarettes before age 13, and 4% have smoked regularly.² These youth who initiate smoking in adolescence are at greater risk of becoming addicted to tobacco as adults.^{3–4} Conversely, research shows that the majority of adults who are addicted to cigarettes began smoking daily before age 18.⁴

In addition, many people who purchase cigarettes for minors are under 21 themselves.⁵ This suggests that prohibiting young adults under 21 from purchasing cigarettes would reduce the number of legal buyers in adolescents' social

circles, thereby disrupting the supply of cigarettes to adolescents. Given that youth attitudes towards smoking, such as perceived risk and disapproval of smoking, have levelled off or lessened since 2007,⁶ reducing access to cigarettes is an important prevention strategy.

A recent report by the Institute of Medicine suggests that raising the minimum age of legal access to tobacco to 21 would result in a 12% decrease in the prevalence of tobacco use among today's teenagers once they become adults.⁷ Another simulation of the impact of raising the legal smoking age to 21 in the USA suggests that adolescent smoking would be reduced by more than half in 7 years.⁸ There is broad public support for this effort, with 70% of adults in support of raising the minimum sales age to 21, including a majority of adults in all demographic and smoking status categories.⁹ Despite these promising projections, there is little direct evidence that raising the minimum purchase age for tobacco would lead to a decline in youth smoking.

In April of 2005, Needham, Massachusetts became the first town in the USA to raise the minimum tobacco sales age to 21; it was not adopted elsewhere in the USA until 2012 (DJ Wilson, Director, Massachusetts Municipal Association Tobacco Control Technical Assistance Program, personal communication, 7 November 2014.). In this paper, we use data from the MetroWest Adolescent Health Survey (MWAHS) to compare youth smoking trends from 2006 to 2012 in Needham with 16 surrounding communities that did not pass this ordinance. To the best of our knowledge, this is the first study to examine trends in the actual prevalence of smoking associated with raising the minimum sales age. We examined: (1) whether smoking declined more in Needham than in the nearby communities; and (2) whether the effect was specific to tobacco or if similar patterns were also found for alcohol.

METHODS

The MWAHS is a school-based census of youth in 25 communities in the Boston metropolitan area served by the MetroWest Health Foundation, having the primary goal of informing local prevention efforts. It has been administered biennially since fall, 2006 to students in grades 9–12. Of the 26 public high schools in the region served by the foundation, 18 began the survey in 2006. Of these, 17 high schools participated in all four surveys (2006, 2008, 2010 and 2012) and are included in this analysis. Student participation rates ranged from 88.8% to 89.6% over the four surveys, and the number of participants ranged from 16 385 to

To cite: Kessel Schneider S, Buka SL, Dash K, et al. *Tob Control* Published Online First: [please include Day Month Year] doi:10.1136/tobaccocontrol-2014-052207

Brief report

17 089 each year. Student gender and grade distributions were similar across all years.

Measures

The MWAHS instrument is a classroom-administered anonymous survey that incorporates items from the Center for Disease Control and Prevention's Youth Risk Behavior Survey.¹⁰ We examined two tobacco outcome measures: (1) current (30-day) cigarette smoking (any vs none) using the question "During the past 30 days, on how many days did you smoke cigarettes", and (2) current (30-day) purchase of cigarettes in a store (any vs none), using the question "During the past 30 days, how did you usually get your own cigarettes?" with seven response categories: did not try to get cigarettes/bought them in a store/gave someone else money to buy them for me/borrowed or bummed them/a person 18 or older gave them to me/took them from a store or family member/got them some other way. This latter measure of store purchases was restricted to current smokers under age 18 who gave a response other than that they did not try to get cigarettes in the past 30 days. We also examined current (30-day) alcohol use (any vs none) to determine if trends for smoking and drinking differed.

Analyses

To compare smoking outcomes in Needham with the 16 comparison communities, we conducted pooled cross-sectional analyses. First, we fit a series of Poisson regression models for each of the two smoking outcomes (current smoking and current purchase of cigarettes in a store) using generalised estimating equations (SAS Proc GENMOD).¹¹ The models estimated three parameters: (1) differences in the proportion of youth reporting each outcome at baseline (2006), comparing Needham to the 16 surrounding communities (β_1); (2) change in these proportions across consecutive survey years (eg, 2006–2008, 2008–2010, and 2010–2012) across all study communities (β_2); and (3) whether the change over time differed between Needham and the comparison communities, the main parameter of interest (β_3). All models adjusted for two measures of school composition: per cent of students receiving free/reduced cost school lunch (an index of socioeconomic status) and per cent of Caucasian students (an index of racial/ethnic composition), both mean centred. For example, to compare the prevalence of current smoking between 2006 and 2008, we used data for these 2 years only and fit the following model:

$$\text{Smoking} = \beta_0 + \beta_1 \text{Needham} + \beta_2 2008 + \beta_3 2008 \times \text{Needham} + \beta_4 (\% \text{ free lunch}) + \beta_5 (\% \text{ non-white})$$

Similar models were fit comparing 2008 with 2010 and 2010 with 2012, with separate models estimated for the prevalence of current cigarette use, current purchase of cigarettes in a store and current alcohol use.

Second, we modelled the prevalence of current smoking, current store purchases of cigarettes and current alcohol use for years 2006–2010 only, with a linear term for study year because, as shown below, models including these years produced a consistent pattern of results. This final model was:

$$\text{Smoking} = \beta_0 + \beta_1 \text{Needham} + \beta_2 \text{Study year} + \beta_3 \text{Study year} \times \text{Needham} + \beta_4 (\% \text{ free lunch}) + \beta_5 (\% \text{ non-white})$$

where again β_3 is the coefficient of interest reflecting differences in change over time for Needham compared with the 16

comparison communities from 2006 to 2010. This model was fit for current smoking and current alcohol use for various subgroups (gender, race/ethnicity, grade) to examine whether the overall pattern of results was consistent across different student populations.

RESULTS

Smoking behavior

Thirty-day smoking prevalence is shown in figure 1A, along with the results of the Poisson regression models that summarise the findings for consecutive survey years. In 2006, current smoking did not differ significantly between Needham and the 16 comparison communities. From 2006 to 2008, current smoking decreased at a greater rate in Needham than in the comparison communities ($\beta_3 = -0.174$, $p < 0.001$), and again from 2008 to 2010 ($\beta_3 = -0.278$, $p < 0.001$). However, from 2010 to 2012, decreases in current smoking were significantly greater in the comparison communities than in Needham ($\beta_3 = 0.143$, $p < 0.01$).

Results of additional analyses on current smoking restricting data to the time period 2006–2010 are presented in table 1. These analyses were restricted to the first three surveys because that was the period of time during which the decline in youth smoking was significantly greater in Needham relative to the comparison communities. In 2006, shortly after the minimum purchase age was raised in Needham, the estimated prevalence of 30-day smoking between Needham and the comparison communities did not differ ($\beta_1 = 0.062$; ns (non-significant)); the prevalence for all communities decreased significantly with time ($\beta_2 = -0.050$; $p < 0.001$). Most notably, the overall decline in Needham's 30-day smoking prevalence exceeded that of the comparison communities combined ($\beta_3 = -0.108$; $p < 0.001$). This statistically greater decline in Needham was observed for all subgroups (females, males, Caucasian, non-Caucasian, and by student grade), with the exception of ninth grade youth, who reported low levels of smoking.

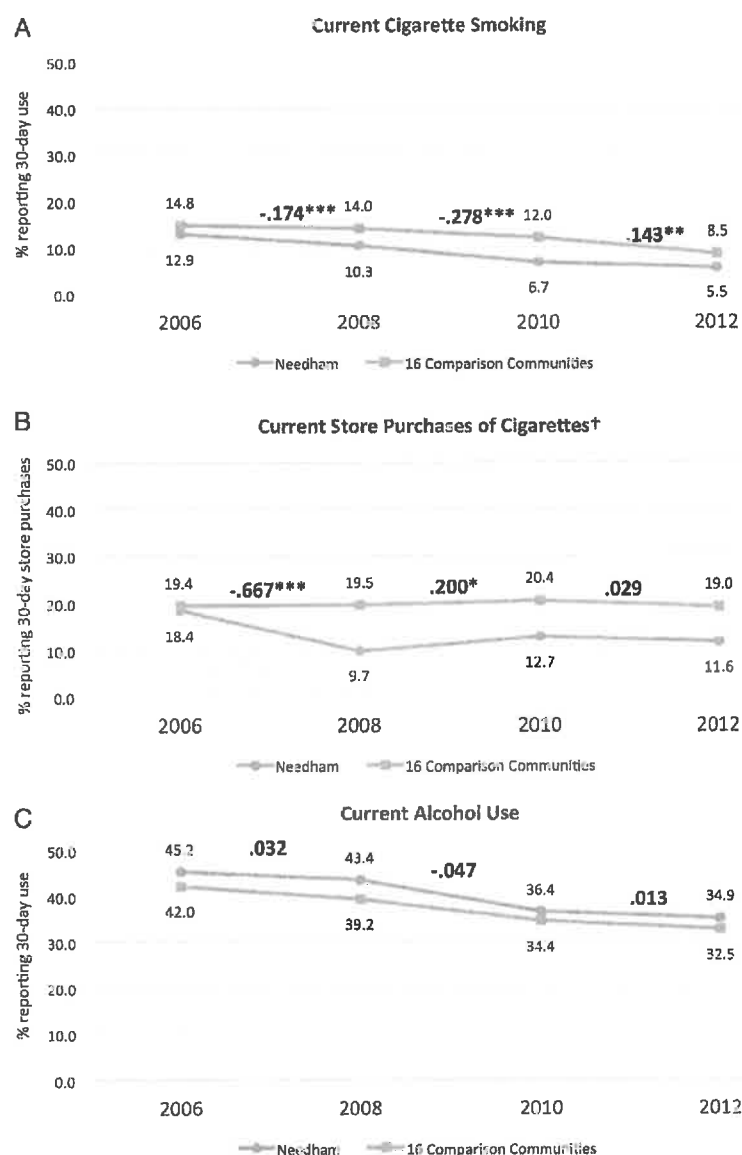
Cigarette purchases in stores

From 2006 to 2012, the percentage of youth under age 18 who purchased cigarettes in stores decreased significantly more in Needham (from 18.4% to 11.6%) than in the comparison communities (from 19.4% to 19.0%; $p < 0.001$) (see figure 1B). The findings follow the same general pattern as current smoking: the rate of decline in purchasing cigarettes in Needham relative to the comparison communities was greatest for the period from 2006 to 2008 ($\beta_3 = -0.667$; $p < 0.001$), lessened for the period from 2008 to 2010 ($\beta_3 = 0.200$; $p < 0.05$), and did not show a significant change from 2010 to 2012 ($\beta_3 = 0.029$; ns). Since the pattern of findings was similar to that of current smoking, we also examined the overall change from 2006 to 2010; the decline in store purchases in Needham over this period was greater than in the comparison communities ($\beta_3 = -0.465$, $p < 0.001$).

Comparison to alcohol use

Notably, the findings for current alcohol use were distinct from those for current cigarette smoking: from 2006 to 2012, there was a general decline in the 30-day prevalence of drinking, with no significant differences between Needham and the comparison communities over any of the consecutive survey waves (see figure 1C). Models for the combined years spanning 2006–2010 also show that there was no significant difference in the 30-day prevalence of drinking in Needham compared with the 16 comparison communities ($\beta_3 = -0.003$; ns) (data not shown).

Figure 1 Trends in current (A) cigarette smoking, (B) store purchases of cigarettes and (C) alcohol use in Needham vs 16 comparison communities, 2006–2012. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. †Among current smokers who tried to obtain cigarettes in the past 30 days. Note: The minimum purchase age was raised to 21 in 2005. The numbers between time points represent the β coefficients from a series of Poisson regression models that estimated the change in use/purchase in Needham relative to the 16 comparison communities over consecutive time periods (2006–2008, 2008–2010, and 2010–2012) controlling for race/ethnicity and socioeconomic status at the school level.



DISCUSSION

As more communities are debating whether or not to raise the minimum sales age of tobacco, it is important to examine the effects this policy may have on youth smoking and access to

cigarettes. Comparing data from Needham and 16 surrounding communities, we showed a significantly greater decline in current smoking in Needham soon after the minimum purchase age was raised, overall and for males, females, Caucasian and

Table 1 Stratified models predicting 30-day cigarette smoking, Needham versus 16 comparison communities, 2006–2010

	Gender		Race/ethnicity		Grade				
	Total	Females	Males	Caucasian	Non-Caucasian	9th	10th	11th	12th
Cigarette smoking									
Intercept	-1.922**	-2.032***	-1.831*	-1.947***	-1.794***	-2.551***	-2.001***	-1.809***	-1.546***
β_1 —target community (Needham)	0.062	0.258***	-0.101	0.089*	0.068	0.046	-0.162*	0.022	0.270***
β_2 —time	-0.050***	-0.084***	-0.025	-0.058***	-0.034*	-0.082*	-0.086***	-0.044**	-0.023
β_3 —time $\times$ target community	-0.108***	-0.214***	-0.038*	-0.129***	-0.074**	-0.028	-0.059**	-0.134***	-0.192***
Percentage of free/reduced lunch	0.026***	0.032***	0.021***	0.030***	0.019***	0.044***	0.029***	0.024***	0.019***
Percentage of Caucasian	0.020***	0.026***	0.016***	0.021***	0.022***	0.032***	0.019***	0.019***	0.019***

The coefficient of time×target community represents the change in prevalence of 30-day use in Needham relative to the 16 comparison communities from 2006 to 2010.

* $p<0.05$, ** $p<0.01$, *** $p<0.001$.

β_1 , difference in log-odds of a 30-day prevalence of smoking between Needham and non-Needham communities at 2006; β_2 , change in log-odds of a 30-day prevalence of smoking per 2-year interval, from 2006 to 2010, in non-Needham communities; β_3 , difference in change of log-odds of a 30-day prevalence of smoking per 2-year interval, from 2006 to 2010, between Needham and non-Needham communities.

Brief report

non-Caucasian youth, and for students in grades 10, 11 and 12. These trends were significant from 2006 to 2010, but not from 2010 to 2012, suggesting that raising the minimum purchase age may contribute to a greater decline in smoking in the years immediately following its adoption. As the smoking rate decreased in Needham, floor effects might have slowed the rate of decline in the period from 2010 to 2012; however, the smoking rate still declined by 18% in that final period.

In addition to lower levels of smoking, Needham youth also reported a significantly greater decline in purchasing cigarettes from stores in the years immediately following the legislation. This was true despite the fact that the youth population in Needham is very mobile, and closely neighbouring suburban communities maintained a minimum sales age of 18 throughout the study period. The decline in smoking in Needham may have been even more pronounced if surrounding communities had also increased the tobacco sales age to 21, as this would have further limited access. Youth who purchase cigarettes are more likely to supply cigarettes to other youth,^{12 13} and these social sources of tobacco have become more common as commercial restrictions have increased.⁵ Our findings suggest that by successfully reducing commercial availability of cigarettes to Needham youth, there was a decrease in underage purchases, as well as a potential disruption of the social availability of cigarettes to other youth, resulting in less smoking.

Also notable was the fact that alcohol use did not decline significantly more in Needham relative to the comparison communities during any portion of the study period. This indicates that the observed pattern of change appears to be specific to cigarette smoking and not due to a broader decline in substance use or reporting patterns.

Enforcement may partially explain the apparent success of raising the minimum tobacco sales age in Needham. Effective enforcement is important in the success of laws designed to prevent tobacco sales to minors.¹⁴ In 2008, more than 18 000 compliance checks for cigarette sales to adolescents under the age of 18 were conducted in Massachusetts towns with state-funded tobacco control programmes, with an illegal sales rate of 8.3%. In Needham, 57 compliance checks were conducted, with zero illegal sales to those under the age of 18 occurring.¹⁵ Increasing the tobacco sales age to 21 may have made it less likely that adolescents under the age of 18 would have been sold tobacco.

Several limitations are worth noting. First, this study was not initially designed to evaluate the minimum sales age legislation; the 2006 survey was administered more than 1 year after the legislation was adopted in April of 2005; therefore, there is no baseline measure of youth smoking. It also does not take into account the fact that the minimum sales age in Needham was increased in phases: it was first raised from 18 to 19 in April of 2003, then to 20 in April of 2004, and finally to 21 in April of 2005. Data reported from the Youth Risk Behavior Survey conducted in Needham (Needham Youth Risk Behavior Survey, unpublished raw data, 2001–2005) and the state of Massachusetts¹⁶ in 2001, 2003 and 2005 provide some information on trends prior to the current study. In Needham, current smoking was similar in 2001 (21%) and 2003 (20%), and then dropped to 15% in 2005, corresponding with the first two increases in the minimum sales age. During the same time period, smoking decreased in Massachusetts from 26% to 21% during 2001–2003, and then was stable at 21% in 2005. This suggests that the greater decline in smoking in Needham in this study may be a continuation of a trend that began earlier, possibly around the time when the minimum sales age was initially

raised. Second, Needham also passed a law in 2009 prohibiting tobacco sales in pharmacies, which may have contributed to the smoking decline after the 2008 survey. With the exception of one other study community that banned pharmacy sales in 2011, neither Needham nor any of the comparison communities adopted any of the Massachusetts Tobacco Control Program's five priority prevention policies during the study period (banning pharmacy sales, capping tobacco licenses, regulating single cigar purchases, banning flavoured tobacco sales and regulating electronic cigarette purchases) (M Paskowky, Director of Surveillance and Evaluation, Massachusetts Tobacco Cessation and Prevention Program, Massachusetts Department of Public Health, personal communication, 6 November 2014). This study did not account for non-policy-related programmes in Needham or the other communities. Finally, this study analysed the use of cigarettes only and did not examine the use of other tobacco products.

Despite these limitations, this study shows promising results on the potential impact of raising the minimum sales age of tobacco. Further, raising the minimum age is relatively simple to implement given the existing mechanisms to restrict tobacco purchases and conduct compliance checks.¹⁷ As this approach is considered in more and more localities, our findings provide strong evidence of its potential to save lives by preventing youth access, initiation and ultimately addiction.

What this paper adds

- An increasing number of communities are implementing policies to raise the minimum sales age of tobacco to 21, but there is little direct evidence regarding whether this strategy is effective in reducing youth smoking.
- We have demonstrated that, after raising the minimum sales age in Needham, Massachusetts, smoking and cigarette purchases declined significantly more in Needham relative to 16 comparison communities.
- These findings are valuable to localities that are considering raising the minimum age, in showing that this approach has the potential to reduce youth access and initiation, with potentially life-saving benefits.

Acknowledgements The authors express their gratitude to the MetroWest Health Foundation, specifically Martin Cohen, CEO/president, and Rebecca Donham, senior program officer, for funding the MetroWest Adolescent Health Survey (MWAHS) initiative and encouraging Education Development Center's (EDC) efforts to conduct this analysis. They thank the Needham Public Schools and Needham Health Department for permitting public use of the Needham data and assisting with documentation of local substance use prevention activities. They also acknowledge Dr Robert Crane for encouraging them to engage in this analysis, and Professor George Papandanos and Dr Michelle Rogers for biostatistical and programming guidance. Finally, they thank the MWAHS team at EDC, including Erin Smith, Robert Coulter and Olivia Alford, and the many school administrators and staff who worked to ensure the successful administration of the MWAHS since 2006.

Contributors All authors participated in the study conceptualisation. SKS originated the study, oversaw data collection and drafted portions of the manuscript. SLB and KD oversaw the analysis and contributed substantially to the manuscript writing. JPW contributed to the conceptualisation and manuscript editing. LO contributed substantially to the study design and manuscript writing.

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Competing interests None declared.

Ethics approval The study was approved in all years by the Institutional Review Board at Education Development Center, Inc, Waltham, Massachusetts, USA.

Provenance and peer review Not commissioned; externally peer reviewed.

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TC

Community reductions in youth smoking after raising the minimum tobacco sales age to 21

Shari Kessel Schneider, Stephen L Buka, Kim Dash, Jonathan P Winickoff and Lydia O'Donnell

Tob Control published online June 12, 2015

Updated information and services can be found at:
<http://tobaccocontrol.bmj.com/content/early/2015/06/12/tobaccocontrol-2014-052207.1>

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John Tingley

From: Regan Murphy
Sent: Wednesday, September 20, 2017 9:34 AM
To: John Tingley
Subject: Fwd: Tobacco Ordinance Follow Up
Attachments: Coalition Letter to Robbinsdale City Council.pdf; ATT00001.htm; Robbinsdale FDA Compliance Check Data.xls; ATT00002.htm; Minnesota Compliance Inspections (99% Passage Rate).pdf; ATT00003.htm; FDA PATH Study Data on Social Sources.pdf; ATT00004.htm; Minnesota Statutes Section 340A.503.pdf; ATT00005.htm; ClearWay Press Release on New Grants (March, 2017).doc; ATT00006.htm

Regan

Begin forwarded message:

From: Thomas Briant
Date: September 11, 2017 at 4:15:05 PM CDT
To: Regan Murphy <rmurphy@CI.ROBBINSDALE.MN.US>, "William A. Blonigan" <wablonigan@CI.ROBBINSDALE.MN.US>, "dprogan@ci.robbiinsdale.mn.us" <dprogan@ci.robbiinsdale.mn.us>, "bgbseleman@ci.robbinsdale.mn.us" <bgbseleman@ci.robbinsdale.mn.us>, Pat Backen <pbacken@CI.ROBBINSDALE.MN.US>
Subject: Tobacco Ordinance Follow Up

Coalition of Neighborhood Retailers

TO:
Mayor Murphy and Members of the Robbinsdale City Council

FROM:
Coalition of Neighborhood Retailers

DATE:
September 11, 2017

Please recall that I spoke at the special workshop session that you held last week on the proposed tobacco ordinance. As a follow up to that workshop meeting, we are sending the attached letter and accompanying documents for your further consideration.

Thank you for considering our concerns.

Coalition of Neighborhood Retailers

September 11, 2017

Mayor Regan Murphy
Council Member Bill Blonigan
Council Member Dan Rogan
Council Member George Selman
Council Member Pat Backen
4100 Lakeview Avenue North
Robbinsdale, MN 55422

Re: Tobacco Ordinance

Dear Mayor Murphy and Robbinsdale City Council Members:

The retail trade associations that comprise the Coalition of Neighborhood Retailers and our respective retail store members located in Robbinsdale sincerely appreciate the city council conducting a special workshop to receive input from local retailers about the proposed changes to the Tobacco and Related Products ordinance.

To follow up on Council Member Blonigan's suggestion to provide additional feedback on the proposed ordinance, please consider the information below as you deliberate on these ordinance changes. With the ordinance making many changes to how and what tobacco products can be sold by Robbinsdale retailers, the information we are providing is lengthy, but is very important to the on-going viability of your local retail stores.

The Convenience Store Business Model

According to the National Association of Convenience Stores (NACS), the sale of tobacco products makes up 36% of in-store sales for the average convenience store (see Page 12 of the NACS article at this link: <http://www.nacsonline.com/YourBusiness/Refresh/Documents/How-Stores-Work.pdf>). At its most basic level, the business model for a convenience store involves primarily gasoline sales at the pump and in-store tobacco sales to remain profitable and a going concern. Without one or the other, the business model no longer works.

Retailers Prevent Youth Access to Tobacco

Your local Robbinsdale retailers and our retail trade organizations take the job of preventing underage access to tobacco very seriously. That is why retailers train their store clerks regularly to request photo identification from customers and deny tobacco sales to underage youth. Please recall that you were provided with a print out of the U.S. Food and Drug Administration retail tobacco compliance check results conducted by the Minnesota Department of Human Services on Robbinsdale retailers from January, 2014 through March, 2017. During this three plus years,

59 out of 60 Robbinsdale retailers passed the compliance check for a 98.3% success rate. Only the BP store located on 42nd Avenue North sold to a minor decoy in January, 2017, but then passed a follow up compliance check in March of this year as indicated on the spreadsheet. Moreover, the Minnesota Department of Human Services issued the accompanying press release stating that Minnesota retailers statewide achieved a 99% tobacco compliance check passing score, the highest in the nation. In other words, retailers are not the access point for youth to obtain tobacco and adopting many of the restrictions in the proposed ordinance will only serve to penalize these law-abiding business people and their employees.

Social Sources Are the Real Problem that Additional Retail Restrictions Will Not Solve

As explained to you during the city council workshop session, in 2016 the U.S. Food and Drug Administration (FDA) published the findings of the agency's Population Assessment of Tobacco and Health Study, which demonstrates that the vast majority of underage youth obtain access to tobacco from non-retail sources, also referred to as "social sources." These social sources include older friends, adult age siblings, parents and even strangers. As shown on the accompanying chart provided by the FDA and summarized in the table below, minors rely on social sources and use various methods to obtain access to cigarettes 86.1% of the time, to obtain access to electronic cigarettes 89.5% of the time, and to obtain access to cigars 75.6% of the time.

Product	Gave Someone Money to Buy	Bought From Someone Else, Stole From a Person or Store	Asked Someone for a Tobacco Product or Someone Offered a Tobacco Product	Other or Don't Know or Refused to Answer	Social Sources Percentage	Bought at a Retail Store
Cigarettes	32%	6.6%	42.5%	5%	86.1%	13.8%
E-Cigarettes	17.3%	5.8%	56.7%	9.7%	89.5%	10.5%
Cigars	34.2%	4.1%	37.3%	NA	75.6%	21%

The restrictions being proposed do not address the problem of youth obtaining tobacco through social sources. This includes the provision that would raise the legal age to purchase tobacco from 18 to 21 as explained below. Until all levels of government focus on solving the social sources problem, then there will not be a significant reduction in youth access to tobacco products. A societal attitude change needs to occur so that adults understand that it is not permissible to provide tobacco to underage youth.

Raising the Legal Age to Purchase Tobacco to 21 is a Catch 22

A "Catch 22" is a problematic situation caused by mutually conflicting or seemingly contradictory conditions. Considering raising the legal age to purchase tobacco products is a Catch 22 and also allows the social sources problem to perpetuate itself.

Under the Robbinsdale proposed ordinance, the *use and possession* of tobacco products by 18, 19 and 20 year olds remains legal. Those advocates who support raising the legal purchase to 21

claim that there will be a public health benefit because 18, 19 and 20 year olds will not use tobacco products nor serve as a social source for underage youth. However, these young adults will simply drive to a neighboring suburb, purchase their preferred tobacco products, and then legally possess and use them in Robbinsdale. This also means that these young adults can continue to be a social source of tobacco for minors. In other words, the health benefit claimed will be marginal to non-existent, but the retailers will suffer the financial loss of tobacco sales to legal age adults along with reduced gasoline, snack and beverage sales when these young adults drive to neighboring suburbs.

If the Robbinsdale ordinance were to also ban the possession and use of tobacco products, then local police departments generally oppose an ordinance because the police would be tasked with enforcing the ordinance by citing and/or arresting 18, 19 and 20 year old adults for possessing and/or using legal tobacco products. At a Bloomington City Council workshop session held on August 14, 2017, an advocacy group made a presentation on raising the legal age to 21. Then, a representative of ClearWay Minnesota, the organization formed as a result of the 1998 tobacco lawsuit settlement and funded with \$225 million from the litigation settlement agreed, informed the Bloomington City Council that if an age 21 ordinance included a prohibition on the possession and use of tobacco, then the organizations that make up the Tobacco 21 movement would likely withdraw their support for the ordinance.

This opposition to prohibiting the possession and use of tobacco, while at the same time as raising the legal age to 21 to purchase tobacco, creates a double standard. Minnesota Statutes Section 340A.503 makes it illegal for anyone under the age of 21 to buy, possess or use alcohol (a copy of this statute accompanies this letter). However, these advocacy groups apparently oppose uniformity with the state liquor laws and, instead, want to allow 18, 19, and 20-year old adults to be able to possess and use tobacco.

Here is the Catch 22: On the one hand, the supporters of an age 21 ordinance claim a health benefit if the age to purchase tobacco is raised, but fail to acknowledge that there will little if any health benefit because 18, 19 and 20 year olds can still possess and use tobacco and that social sources will remain the leading access point to tobacco for underage youth. On the other hand, when the possibility of also prohibiting possession and use of tobacco is raised to be in line with the state liquor possession and use law, the advocates publicly state that support for raising the legal age will likely be withdrawn. These positions are contradictory and demonstrate the level of difficulty presented by considering a policy that changes the legal of adulthood.

If the goal is to benefit the public health, then an age 21 ordinance that does not ban possession and use of tobacco products will not reach that goal. If possession and use of tobacco by 18, 19 and 20 year olds are prohibited, then the very advocacy groups that proposed this idea of raising the legal age to 21 will no longer support the ordinance and your local police department may also withhold its support.

ClearWay Grants Lead to Proposals to Raise the Legal Age and Ban Flavored Tobacco

During the city council workshop held this past Tuesday, representatives of the Association for Nonsmokers Minnesota were present. This year, ClearWay Minnesota awarded \$1.26 million in grants to advocacy groups using state tobacco settlement funds to, in part, lobby local governments to enact ordinances banning the sale of flavored tobacco products and raising the

legal age to purchase tobacco, all to the detriment of local law-abiding retailers. The Association for Nonsmokers Minnesota was a recipient of one of these ClearWay grants. A link to the ClearWay press release about these grants is below:

<http://clearwaymn.org/new-clearway-minnesota-grants-to-fund-research-projects-local-tobacco-prevention-advocacy/>

Significant Reduction in Youth Tobacco Use Without an Age 21 Ordinance

The annual Minnesota Student Survey also reports that smoking among 9th graders decreased from 19.6% in 2001 to 4.3% in 2016, an 80% decline. In addition, the smoking rate among 11th graders decreased 75% over this same time period. These declines were achieved by retailers preventing sales to minors, better health education in our schools, and all in the absence of raising the age to 21.

The advocate groups lobbying for the passage of an age 21 ordinance may reference the Town of Needham, Massachusetts which experienced a 50% reduction in smoking rates among high school students after an age 21 ordinance was adopted. However, it is important to understand that Minnesota has seen even more significant declines in youth smoking rates than in Needham without the adoption of an age 21 law.

Overwhelming Negative Public Reaction to Edina Age 21 Ordinance

The adoption of an age 21 ordinance is not necessarily an accurate reflection of the public's opinion about raising the legal age. Accompanying this letter are actual comments posted on-line in response to a Minneapolis Star Tribune newspaper story about Edina's adoption of its age 21 ordinance. The overwhelming majority of posted comments did not support the action of the Edina City Council. We urge you to read the sample comments as they are a barometer of this strong negative public opinion toward an age 21 ordinance.

Personal Rights Still Matter

The personal rights of 18, 19 and 20 year old adults to decide for themselves whether to purchase tobacco products will be curtailed even though these same young adults can vote, serve in the military, get married, take out loans for college, and make their own health care decisions. The protection of personal rights is still important in our society and we ask that you weigh the rights of all adults before considering whether to restrict the freedom of 18, 19 and 20 year olds to decide what legal products they are allowed to purchase.

Banning the Sale of Flavored Tobacco Products Will Not Solve Youth Access Issue

Prohibiting the retail sale of flavored tobacco products to adults will not solve the problem of youth access to tobacco products, since most minors rely on social sources. Moreover, the use of flavors in a wide range of products is a phenomenon that is not exclusive to tobacco products. As explained during the city council's workshop meeting, other product categories that now come in a variety of flavors include water, soft drinks, tea, coffee, yogurt, potato chips, alcohol and many other product lines.

Mayor Murphy mentioned that cigars now come in pineapple flavor. That is true. At the same time, Smirnoff produces a pineapple-flavored vodka and there are numerous brands of pineapple-flavored beer. The point is that adults like flavors and manufacturers and bottlers of products from water to alcohol have responded with an array of fruit and dessert flavored products. Also, 99% of pipe tobacco is flavored and always has been. This means that a flavored tobacco product ban would remove all pipe tobacco from store shelves, even though the average age of a pipe smoker is 54.

Just like raising the legal age to 21, if flavored tobacco products are banned, then adult customers will drive to the next suburb to buy their preferred flavored products along with their gasoline, beverages, snacks and other grocery items. The result is that Robbinsdale retailers who follow the law will lose all of those sales, which cannot be made up by selling other products.

Cigar Package Size and Minimum Prices Constitutes Prohibition of Legal Cigar Products

Section 1132.15(d) would ban the sale of cigars in packages of less than five, set a \$13.00 minimum price for a package of five cigars, or set a retail price before sales tax of \$4.00 for a single cigar. If enacted, this section would force retailers to stop selling numerous cigar brands, whether flavored or not, if the cigars normally come in packages of a single, two, three or four. Also, the \$13.00 mandated minimum price for a package of five cigars would also force more cigar brands off of store shelves because a five pack of domestic cigars would be unsellable at this price.

Does the Robbinsdale City Council mandate minimum prices on any other legal product? Such a high minimum price would be another reason for adult customers to simply drive a short distance and patronize competing retailers adjacent cities further impacting Robbinsdale's retailers. This minimum price provision is in reality a prohibition provision. The Sherburne County, Minnesota Board of Supervisors considered a similar minimum price for cigars provision for the county's retail tobacco ordinance last week and removed the price mandate provision from the ordinance.

Exempting Tobacco Stores is Choosing Winners and Losers

The proposed ordinance allows stores that prevent anyone under the age of 21 from entering and derive at least 90% of their revenues from the sale of tobacco products to sell flavored tobacco products. This exception is choosing winners and losers even though Robbinsdale convenience store retailers have proven that they follow the law and prevent the sale of tobacco to underage youth. This is neither fair nor reasonable given the stellar track record of your local retail businesses in preventing the sale of tobacco to minors.

Age 21 Requirement Could Prevent Legal Retail License Transfers

Section 1132.06 of the proposed ordinance allows the city to deny the issuance of a retail tobacco license if the applicant is under 21 years of age. This could result in a situation where an 18, 19 or 20 year old son or daughter is unable to take over ownership of a store if a parent passes away or a parent wants to retire and sell the store to the adult child. The same situation could arise in an arms length sale of a retail store between a seller and an 18, 19 or 20 year old adult. What basis is the city council relying on to prevent an otherwise lawful transaction

between a parent and a child or a lawful sale of a business? If this provision was included simply because the ordinance proposes raising the legal age to buy tobacco to 21,

We appreciate you considering our concerns and not adopting the provisions of the ordinance that would raise the legal age to 21, ban the sale of flavored tobacco products, set minimum cigar package size and price, exempt tobacco stores from these provisions, and not prevent the issuance of a retail tobacco license to an 18, 19 or 20 year old adult.

Sincerely,

Lance Klatt, Executive Director
Minnesota Service Station Association

Jamie Pfuhl, President
Minnesota Grocers Association

Kevin Thoma, Executive Director
Minnesota Petroleum Marketers Association

Thomas Briant, Executive Director
National Association of Tobacco Outlets

Bruce Nustad, President
Minnesota Retailers Association

Sample of Comments in Response to Edina Age 21 Ordinance Passage

Source: Minneapolis Star Tribune (www.startribune.com), May 2-3, 2017

"All Edina has done is make cigarettes more of a 'forbidden fruit' to their teenagers and won't do much, if anything to do with reducing smoking rates. It's already proven that education, not prohibition, is the best way to reduce smoking (and drinking)."

"Since Edina doesn't seem to believe 18 year olds can make a good decision when it comes to tobacco use, I assume they'll want to raise the age of legal majority to 21 along with the voting age and the age for military service?"

"When are the citizens going to say enough is enough? A City Council enacting a law prohibiting the sale of a legal product seems like overreach. Hopefully these 18-20 year olds will vote against these folks for infringing on their rights."

"I would not have voted for the 2 new members of the city council had I known they would bring to life and vote for this. It's a waste of my city tax dollars and a loss of more tax dollars."

"This is a no brainer...just go elsewhere...how dumb are the council people of Edina?"

"What principle does this establish? That they don't trust 18 year olds to make decisions about their own personal consumption choices?"

"Do you trust them enough to allow them to march into battle overseas with a machine-gun in their hands?"

"I'm a non-smoker and well over 21 so I have no dog in [t]his fight. But I don't think it's a good idea to make cigarettes illegal to purchase for young adults. They're legal adults. They can make their own decisions."

"What an amazingly superficial and useless action. Military personnel aside, is there any true reason to be a legal adult when others are making your personal decisions for you?"

"Self-righteous do-nothingness. And no, I do not smoke-I just don't believe in arbitrarily taking away the rights of legal adults."

"Brilliant! Leave it up to Edina to lead the way to show the rest of us how another symbolic, do nothing law will only hurt local businesses and effectively lower tax revenues for their city."

"Nanny state."

"I loathe smoking, but the only thing more insufferable than smokers is people on their high horse telling adults what they can't do."

"Each day we are getting closer to living in a totalitarian society. This is supposed to be a free country. We are losing more and more of our freedoms with each legislative session, with each city council meeting and each new law that is put on the books. Tragic and sad."



Sept. 2, 2014

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Minnesota retailers lead nation in preventing tobacco sales to youth

Stopping illegal sales is key to healthier kids, communities

Minnesota achieved a 99 percent compliance rate with state and federal laws prohibiting the sale of tobacco products to people under 18 years old during the 2013 federal fiscal year. Minnesota tied with Nevada for the lowest retailer sale violation rate of one percent, as reported in an [annual report](#) recently released by the federal Substance Abuse and Mental Health Services Administration.

States are required to conduct annual undercover inspections of licensed tobacco retailers to check for illegal sales of tobacco to minors under the federal Synar law, named for the congressman who sponsored it.

“Curtailing illegal sales of tobacco is a vital step to promoting healthier kids and healthier communities because the smoking habit often starts at an early age,” said Human Services Commissioner Lucinda Jesson. “Minnesota’s high compliance rate shows that retailers are recognizing their responsibility to help keep tobacco out of the hands of people who are under age.”

A compliance rate of 80 percent or higher is required for states to receive their entire federal substance abuse prevention and treatment funds. The Minnesota Department of Human Services is the recipient of those funds, which amounted to more than \$23 million in 2013. The department is also responsible for administering the Synar tobacco sale inspections.

This is the seventh consecutive year Minnesota’s compliance rate has been at least 90 percent, significantly up from 69.8 percent in 1996, when Synar reports first started.

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YOUTH ACCESS TO TOBACCO PRODUCTS AMONG PAST 30-DAY USERS: WHERE DO YOUTH GET TOBACCO?

Source of access to tobacco product among 15-17 year old current users



340A.503 PERSONS UNDER 21; ILLEGAL ACTS.

Subdivision 1. Consumption. (a) It is unlawful for any:

(1) retail intoxicating liquor or 3.2 percent malt liquor licensee, municipal liquor store, or bottle club permit holder under section 340A.414, to permit any person under the age of 21 years to drink alcoholic beverages on the licensed premises or within the municipal liquor store; or

(2) person under the age of 21 years to consume any alcoholic beverages. If proven by a preponderance of the evidence, it is an affirmative defense to a violation of this clause that the defendant consumed the alcoholic beverage in the household of the defendant's parent or guardian and with the consent of the parent or guardian.

(b) An offense under paragraph (a), clause (2), may be prosecuted either in the jurisdiction where consumption occurs or the jurisdiction where evidence of consumption is observed.

(c) As used in this subdivision, "consume" includes the ingestion of an alcoholic beverage and the physical condition of having ingested an alcoholic beverage.

Subdivision 2. Purchasing. It is unlawful for any person:

(1) to sell, barter, furnish, or give alcoholic beverages to a person under 21 years of age;

(2) under the age of 21 years to purchase or attempt to purchase any alcoholic beverage unless under the supervision of a responsible person over the age of 21 for training, education, or research purposes. Prior notification of the licensing authority is required unless the supervised alcohol purchase attempt is for professional research conducted by postsecondary educational institutions or state, county, or local health departments; or

(3) to induce a person under the age of 21 years to purchase or procure any alcoholic beverage, or to lend or knowingly permit the use of the person's driver's license, permit, Minnesota identification card, or other form of identification by a person under the age of 21 years for the purpose of purchasing or attempting to purchase an alcoholic beverage.

If proven by a preponderance of the evidence, it shall be an affirmative defense to a violation of clause (1) that the defendant is the parent or guardian of the person under 21 years of age and that the defendant gave or furnished the alcoholic beverage to that person solely for consumption in the defendant's household.

Subdivision 3. Possession. It is unlawful for a person under the age of 21 years to possess any alcoholic beverage with the intent to consume it at a place other than the household of the person's parent or guardian. Possession at a place other than the household of the parent or guardian creates a rebuttable presumption of intent to consume it at a place other than the household of the parent or guardian. This presumption may be rebutted by a preponderance of the evidence.

New ClearWay Minnesota grants to fund research projects, local tobacco prevention advocacy

Last week, the ClearWay Minnesota Board of Directors approved 14 grants to fund research and local policy advocacy around tobacco issues. The new research grants, totaling \$625,000, will be awarded to the following organizations:

- **Public Health Law Center** for 24-month project titled “Tobacco Control Policies in Homeless Shelters: Targeting Front-Line Staff” (\$125,000);
- **The American Indian Cancer Foundation** for a 24-month project titled “Impacts of Traditional Tobacco Messages on Prevention and Cessation” (\$250,000);
- **The University of Minnesota** for a 24-month project titled “Developing Proactive Outreach Strategies for Asian Language-Speaking Smokers” (\$125,000); and
- **The University of Minnesota** for a 24-month project titled “A Faith-Based Pilot Intervention to Reduce Tobacco Use Among Somali Male Smokers” (\$125,000).

“ClearWay Minnesota’s aim is to fund research that will impact policy and practice within Minnesota and nationally,” said David Willoughby, our Chief Executive Officer. “This research will help address smoking in populations with some of the highest tobacco disparities in the state.”

Additionally, local policy grants will be awarded to eight Minnesota organizations working to raise the tobacco age and tobacco prices, to restrict flavored tobacco products and to increase funding for tobacco control and prevention. The organizations are:

- **African American Leadership Forum**
- **American Lung Association in Minnesota – Northeast**
- **American Lung Association in Minnesota – Greater Mankato**
- **Association for Nonsmokers – Minnesota**
- **City of Bloomington**
- **City of Minneapolis**
- **Clay County Public Health**
- **Horizon Public Health**

In addition to the local policy grants, the American Lung Association in Minnesota – Greater Mankato and the Association for Nonsmokers – Minnesota will receive grants to provide technical assistance to other organizations conducting tobacco advocacy work. All told, the grants total \$1.26 million.

“Local organizations have the best knowledge and judgment about their communities’ readiness for tobacco prevention policies,” said Willoughby. “These organizations have track records of meaningful policy change to reduce youth tobacco initiation, and we believe they will accomplish even greater things with our help.”

John Tingley

From: Gretchen J Garman
Sent: Wednesday, August 30, 2017 1:06 PM
To: Marcia Glick; John Tingley
Cc: Ruth S Tripp; Meaney, Mark
Subject: Robbinsdale Tobacco Education Packet - Policy litigations, T21, Military, Menthol & State law
Attachments: IOM tobacco_minimum_age_report_brief.pdf; Clinical-BOYLE_T21 MN 2017.pdf; MDH-T21.Health Impacts of Raising the Minimum Tobacco Sale Age.pdf; CFTFK_Raising the Tobacco Sales Age to 21 & the Military.pdf; PHLC Tobacco 21 Tips.Tools-2016.pdf; Menthol-Fact-Sheet_Truth Initiative.pdf; MDH Menthol Fact Sheet_2016.pdf; Tobacco Prevention Policy Approaches matrix_MLSA_Flavor_MinPrice_Robbinsdale_Aug2017.docx
Importance: High

Hello Marcia, at the work session the other week, we heard a few different comments and questions during the conversation so we wanted to share some additional educational items, detailed below, and attached. Is this email packet something you would be able to share with the Council? If hard copy packets are easier, I would be happy to create those for you and drop them off at your office.

1. **Policy options that have been litigated, nationally:** see attached Tobacco Prevention Policy Approaches matrix.
 - a. This is a document Hennepin County created and PHLC reviewed. The various policy options are in the left column. As you move right, the columns discuss the impact, scope, what other jurisdictions have done, and limitations and challenges of each policy.
2. **Tobacco 21:**
 - a. Institute of Medicine (IOM) - Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products
 - b. MDH Fact Sheet - Tobacco 21: Health Impacts of Raising the Minimum Tobacco Sale Age
 - c. MN Medical Society Article - Raising the Minimum Legal Sale Age for Tobacco to 21 The Estimated Effect for Minnesota
3. **Tobacco 21 & Military:**
 - a. Campaign for Tobacco-free Kids – Raising the Tobacco Sale Age to 21 & the Military: drawing attention to pg. 1, 4th paragraph down, “The military recognizes the negative impact of tobacco on troop readiness and soldiers’ health and has initiated a series of actions to curb.”
 - b. PHLC – Tobacco 21: Tips & Tools: drawing attention to:
 - i. Pg. 3, section on Raising the MLSA would simplify ID checks for retailers, and
 - ii. Pg. 5 section on Allowing Exemptions.
4. **Menthol & Discrimination:**
 - a. Truth Initiative – The Truth about Menthol
 - b. MDH Menthol Fact Sheet
5. **State law to be aware of:** There is a new state law that says ANY ordinance change needs to be posted online (full language) at least 10 days before the final vote. That state statute is here:
<http://wdoc.house.leg.state.mn.us/leg/LS90/HF1242.3.pdf>

Thank you Marcia, please let me know if you have any questions or if we can support you and the Council with anything additional.

Best,
Gretchen Garman, MPH
Community Health Specialist
Hennepin County Public Health Department
525 Portland Ave., MC 963
Minneapolis, MN 55415

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Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products



Over the past 50 years, tobacco control in the United States has led to an estimated 8 million fewer premature deaths. However, tobacco use continues to significantly affect public health, and more than 40 million Americans still smoke.

In 2009, the Family Smoking Prevention and Tobacco Control Act granted the U.S. Food and Drug Administration (FDA) broad authorities over tobacco products, though it prohibited FDA from establishing a nationwide minimum age of legal access—an MLA for tobacco products—above 18 years of age. It also directed FDA to convene a panel of experts to conduct a study on the public health implications of raising the minimum age to purchase tobacco products. At FDA's request, the Institute of Medicine (IOM) convened a committee in 2013 for this purpose.

In the resulting report, *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products*, the committee of experts reviews existing literature on tobacco use initiation, developmental biology and psychology, and tobacco policy and predicts the likely public health outcomes of raising the MLA for tobacco products to 19 years, 21 years, and 25 years. The committee also uses mathematical modeling to quantify these predictions. Of note, the report contains only conclusions regarding raising the MLA; as requested by FDA, the committee does not offer recommendations as to whether the MLA should be raised.

...tobacco use continues to significantly affect public health, and more than 40 million Americans still smoke.

Lowering Initiation Rates

The initiation age of tobacco use is critical. Among adults who become daily smokers, approximately 90 percent report first use of cigarettes before reaching 19 years of age, and almost 100 percent report first use before age 26. As mentioned above, FDA cannot raise the MLA nationwide. However, states and localities can set a higher minimum age for their communities. Most states currently set the MLA at 18 years. Four states set it at 19 years, and several localities around the country have raised the minimum age to 21 years.

Based on its review of the literature, the committee concludes that overall, increasing the MLA for tobacco products will likely prevent or delay initiation of tobacco use by adolescents and young adults. The age group most impacted will be those age 15 to 17 years. The committee also concludes that the impact of raising the MLA to 21 will likely be substantially higher than raising it to 19. However, the added effect of raising the MLA from 21 to 25 will likely be considerably less.

The parts of the brain most responsible for

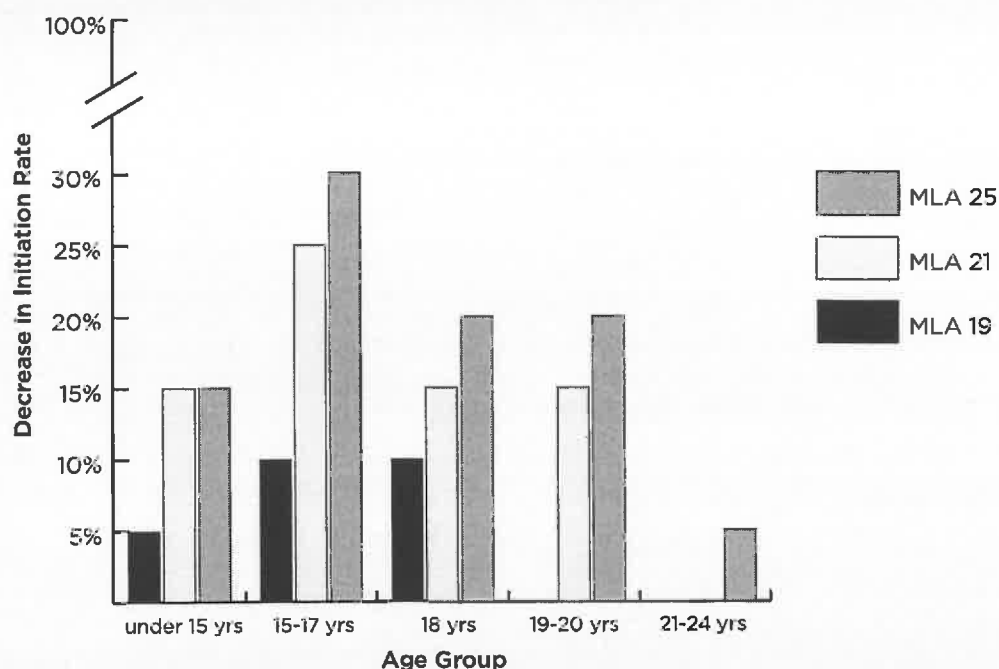
decision making, impulse control, sensation seeking, and susceptibility to peer pressure continue to develop and change through young adulthood, and adolescent brains are uniquely vulnerable to the effects of nicotine. In addition, the majority of underage users rely on social sources—like family and friends—to get tobacco.

Raising the MLA to 19 will therefore not have much of an effect on reducing the social sources of those in high school. Raising the MLA to 21 will mean that those who can legally obtain tobacco are less likely to be in the same social networks as high school students. In the same vein, increasing the MLA from 21 to 25 is not likely to achieve additional notable reductions in social sources for those under age 15.

Reducing Prevalence, Decreasing Disease

Delaying initiation rates will likely decrease the prevalence of tobacco users in the U.S. population. To quantify this decrease in both prevalence of tobacco users and in related health concerns

FIGURE: Committee Estimates Regarding Effects on Initiation Rates



NOTE: This figure was created using data from Table 7-2 in the report.

The parts of the brain most responsible for decision making, impulse control, sensation seeking, and susceptibility to peer pressure continue to develop and change through young adulthood, and adolescent brains are uniquely vulnerable to the effects of nicotine and nicotine addiction.

that could be a result of raising the MLA, the committee commissioned the use of two established and complementary tobacco simulation models, SimSmoke and the Cancer Intervention and Surveillance Modeling Network smoking population model (CISNET).

In using the models, the committee employed all available evidence and expert judgment to project outcomes. The committee also had to make assumptions with important implications. The models only address cigarette smoking, but the committee expects the MLA and relative effects on initiation to apply to all tobacco products. In addition, the models project the effects of raising the MLA on the United States as a whole and do not take into account existing variations in tobacco use—such as by race or socioeconomic status—initiation rates, and tobacco control activities. In addition, the rapidly changing landscape of tobacco products—for example, e-cigarettes—provides unknowns and could affect the future of tobacco product use in ways that the committee was unable to anticipate due to lack of evidence.

Based on the modeling and backed up by the literature review, the committee concludes that raising the minimum age of legal access to tobacco products in the United States, particularly to ages 21 and 25, will likely lead to a substantial reduction in smoking prevalence. If the MLA were raised now, the models projected that by the time today's teenagers were adults, there would be a 3 percent decrease in prevalence of tobacco use among those adults if the MLA were raised to 19, a 12 percent decrease if raised to 21, and a 16 per-

cent decrease if raised to 25.

Given a decline in the initiation rates of tobacco use by adolescents and lower prevalence in the population, it follows that tobacco-related disease would also decrease in proportion to the reduction in tobacco use. It is generally known that smoking-related diseases like cancer and heart disease develop over decades, and therefore, it could take many years to lower rates of these diseases; however, there could be immediate decreases in other tobacco-related health effects.

The committee concludes that raising the MLA will likely immediately improve the health of adolescents and young adults by reducing the number of those with adverse physiological effects such as increased inflammation and impaired immune functioning caused by smoking, as these could potentially lead to negative health consequences, including increased hospitalizations and lessened capacity to heal wounds. Adverse maternal, fetal, and infant outcomes—including preterm births, low birth weight, and sudden infant death—will also probably decrease due to reduced tobacco exposure in mothers and infants. Raising the MLA will also lessen the population's exposure to secondhand smoke and its associated health effects, both now and in the future.

Over time, the committee concludes that raising the MLA will likely lead to substantial reductions in smoking-related mortality, though results from the models suggest that these results will not be observed for at least 30 years, assuming that the MLA increase occurs now. The CISNET model

Committee on the Public Health Implications of Raising the Minimum Age for Purchasing Tobacco Products

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projected that if the MLA were raised now to 21 nationwide, there would be approximately 223,000 fewer premature deaths, 50,000 fewer deaths from lung cancer, and 4.2 million fewer years of life lost for those born between 2000 and 2019.

Conclusion

The public health impact of raising the MLA for tobacco products depends on the degree to which local and state governments change their policies. These decisions will depend on each state's or locality's balance between personal interests and the privacy of young adults to make their own choices versus society's legitimate concerns about protecting public health.

The IOM committee makes conclusions about likely public health outcomes of raising the MLA for tobacco products. Overall, in the absence of transformative changes in the tobacco market, social norms and attitudes, or in the knowledge of patterns and causes of tobacco use, the committee is reasonably confident that raising the MLA will reduce tobacco use initiation, particularly among adolescents 15 to 17 years of age; improve the health of Americans across the lifespan; and save lives. ➤



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Raising the Minimum Legal Sale Age for Tobacco to 21

The Estimated Effect for Minnesota

BY RAYMOND G. BOYLE, PHD, JOHN H. KINGSBURY, PHD, AND MICHAEL J. PARKS, PHD

A campaign to raise the minimum legal sale age for tobacco products from 18 to 21 years known as Tobacco 21 is having a nationwide impact, with at least 200 localities in 14 states having already implemented a Tobacco 21 policy. A 2015 report from the Institute of Medicine (IOM) estimated the effects of such policy on cigarette use at the national level; however, little is known about the expected effects for individual states. The purpose of this study was to consider the effect on smoking initiation in Minnesota if the minimum sale age were 21 in 2015. Estimates from the Minnesota Adolescent Community Cohort and Minnesota Adult Tobacco Survey were used to calculate the uptake of smoking in a hypothetical cohort of Minnesota adolescents 15 to 20 years of age. Expected reductions in initiation in the IOM report were used to calculate the effects of Tobacco 21 policy on smoking uptake in this cohort. Results revealed that raising the sale age to 21 in 2015 would prevent 3,355 young Minnesotans from starting to smoke.

Minnesota addresses tobacco use through a comprehensive approach that includes coordinating smoke-free policies, promoting normative changes in the social acceptability of tobacco use, establishing and expanding the reach of cessation programs, keeping the price of tobacco high and preventing young people from initiating tobacco use. The overall effect of these actions has been a 35% reduction in cigarette smoking in Minnesota since 1999;¹ however, tobacco use remains popular among young adults in Minnesota and nationally.^{1,2}

The persistence of tobacco use among young adults, coupled with an evolving marketplace that includes new flavored products (eg, flavored cigars and cigarillos) and new delivery methods (eg, electronic cigarettes), has led to a desire for increased regulation of tobacco. In 2009

the U.S. Congress granted authority to the Food and Drug Administration (FDA) through the Family Smoking Prevention and Tobacco Control Act to regulate the manufacture, distribution and marketing of tobacco products.³

Although this law prohibited the FDA from increasing beyond age 18 the national minimum sale age for tobacco products, state and local governments are able to raise the minimum sale age for tobacco. In addition, the law required a study of the health implications of a higher minimum age of legal access. The Institute of Medicine (IOM), now the National Academy of Medicine, conducted the study using national data to consider the effects of different minimum purchase ages (19, 21 or 25 years) and examine multiple outcomes, including preventing young people from starting and encouraging current smokers to quit smoking, and the health benefits from reduced smoking because of an in-

creased purchase age. Nationally, increasing the purchase age to 21 would result in approximately 223,000 fewer premature deaths and 50,000 fewer deaths from lung cancer.⁴

Adolescents younger than age 18 frequently obtain tobacco from social sources who are older than 18 but younger than 21.⁵ If tobacco could not be sold to 18- to 20-year-olds, they would be far less likely to provide tobacco to younger teens. By age 21, young adults are likely to have friends older than high-school age and, therefore, less likely to provide tobacco to minors.

The IOM's 2015 report is particularly important because it provides scientific guidance for state and local governments as they seek to protect public health. Although the report provided novel information on the expected effects of Tobacco 21 policy on a national level, it provided little

information about the expected effects at a state level.

The purpose of this study was to consider the effects on smoking initiation in Minnesota if the legal minimum sale age for tobacco products were 21. The specific goal was to calculate how many young people ages 15 to 20 years would not start smoking if the assumptions from the IOM report were applied to Minnesota.

Methods and Assumptions

Age groups: The 2015 IOM report examined effects among specific age groups: under 15 years, 15- to 17-year-olds and 18- to 20-year-olds. In this analysis, we limited the consideration to ages 15 and older.

Initiation rate: Cohort studies that follow participants over time provide the best estimates of smoking initiation. The Minnesota Adolescent Community Cohort (MACC) study was a population-based study of Minnesota youth ages 12 to 16 in 2000 who were followed until 2008. In 2003, approximately 19% of the cohort reported smoking in the previous month.⁶ Smoking among Minnesota high school students has fallen to about 10% since 2003. Therefore, in this analysis we used 10% as the estimate of smoking initiation among youth 15 to 17 years of age.

In a later analysis of the MACC data, 16% of the cohort who did not start smoking in high school took up smoking (smoked in the past month) between the ages of 18 and 21.⁷ This estimate of smoking uptake is consistent with the prevalence of smoking among young adults in the Minnesota Adult Tobacco Survey. For this analysis we used 16% as the estimate of 18- to 20-year-olds who would initiate smoking.

Estimated effects of Tobacco 21 policy: An increase in the minimum sale age is expected to apply to all commercial tobacco products; however, for the purpose of estimating effects similar to those in the IOM report, the scope of this study was restricted to cigarette smoking. In addition,

FIGURE

Estimated Reduction in Youth Smokers with Implementation of Tobacco 21 Policy



COHORT AGE (YEARS)	NUMBER WHO HAVE NOT SMOKED	PROPORTION WHO START SMOKING	NUMBER SMOKING	NUMBER NOT SMOKING IF POLICY WERE IN EFFECT
15	72,000			
16 to 17	64,800	10%	7,200	1,800
18 to 20	54,432	16%	10,368	1,555
TOTAL: 3,355				

Note: The cohort size is 1/5 of the census estimate of Minnesota 15- to 19-year-olds in 2015.

tion, the expected reduction in smoking initiation is thought to vary by age. The effect is expected to be larger among youth 15 to 17 years of age, with an expected reduction in the uptake of smoking of 25%. Among those 18 to 20 years of age, the expected reduction is 15%.⁴

Variation by demographic variables: Smoking rates vary substantially by population groups in Minnesota. For example, in 2014 the overall adult smoking rate was about 14%,¹ but within the urban American Indian population the smoking rate was 59%.⁸ There is a lack of literature on how smoking initiation would be affected in population groups with higher smoking rates if the sale age were increased. Thus, the estimate here is not adjusted by gender or other demographic variables (eg, race/ethnicity, income).

Enforcement: States are required to enact and enforce laws prohibiting the sale or distribution of tobacco products to individuals younger than 18 years of age. A major assumption of Tobacco 21 policy is that the same level of current enforcement and retailer compliance would remain in effect. Although Minnesota has a high rate of retailer compliance with current law,⁹ retailer cooperation has been lower

in other places. For example, in New York City, compliance has fallen over time after Tobacco 21 policy was implemented.¹⁰

Calculation: In this analysis, we began with a cohort of Minnesota 15-year-olds in 2015—approximately 72,000. We estimated the smoking initiation rate in two periods: during high school (ages 15 to 17 years) and after high school (ages 18 to 20 years). Next, the reduction in smoking was calculated for each period if the sale age for tobacco were raised to 21 in 2015. We assumed that the smoking uptake in high school and after high school would not change in future years. The difference is reported as the number of young people 15 to 20 years of age who would not have started smoking.

Results

In 2015, the Minnesota population of those 15-year-olds was approximately 72,000. Of these, an estimated 7,200 will start smoking during their high school years. If the minimum legal sale age in 2015 were 21, an estimated 1,800 would not start smoking in high school.

Of those who finished high school without initiating smoking, 10,368 will begin smoking between ages 18 and 21. Under a Tobacco 21 policy, 1,555 fewer young people would start smoking after high school. Overall, 3,355 fewer young people would start smoking in this cohort of youth if a Tobacco 21 policy were in effect (see Figure). In other words, increasing the sale age to 21 would increase the proportion of nonsmokers in a cohort of 15-year-olds from 76% to 80%.

Discussion

Increasing the sale age to purchase tobacco products from 18 to 21 would have a positive effect on Minnesota, where tobacco use remains popular among young adults.¹ Given that almost 95% of smokers start smoking by age 21, raising the age of sale to 21 years would prevent the vast majority of young people from becoming addicted to the nicotine in tobacco.

At least 200 localities in 14 states have raised the minimum legal sale age for tobacco products to 21 years.¹¹ Notably, Hawaii was the first state (2015) followed by California (2016), and New York City (2013) is the largest city to adopt a Tobacco 21 policy. This policy has broad support and is viewed positively by both smokers and nonsmokers. In New York City, 60% of smokers and 69% of nonsmokers have supported the age increase.¹² In a national sample of adults, 70.5% supported the increase.¹³ And in an online survey, 77.5% of never smokers and 70% of current smokers either strongly favored or somewhat favored raising the legal purchasing age to 21.¹⁴

We acknowledge that some young people will begin using tobacco at a later age. The amount is unknown; but even if 5% eventually take up smoking, this would not diminish the overall effect of Tobacco 21 policy. In addition, while we have highlighted how Tobacco 21 would inhibit more than 3,300 youth from initiating smoking, it is important to note the policy could have additional and more indirect benefits. Youth tend to respond more

strongly to smoking bans than to other types of tobacco control¹⁵ in part because a ban is an unambiguous anti-tobacco message that indirectly influences social norms, creating a social environment that discourages health-risk behavior.¹⁶ Put differently, the effects of Tobacco 21 policy would extend into the future as new cohorts of young people do not start using tobacco.

Our analysis considered only cigarette smoking; but a Tobacco 21 policy would apply to all tobacco products. Whether the effects of raising the purchasing age to 21 would be similar across all demographic and racial/ethnic groups is not known. Similar to the IOM, we did not adjust the Minnesota estimate for any variation by demographics other than age. This question should be examined when there is sufficient data on communities that have implemented the policy.

Conclusion

Raising the minimum sale age for tobacco to 21 would prevent the uptake of smoking among youth and young adults, subsequently reducing smoking prevalence over time. Applying national estimates from the 2015 IOM report to Minnesota, we found that implementing a Tobacco 21 policy could have a marked impact on smoking initiation among Minnesota's young people. Tobacco 21 should be considered an effective strategy for reducing smoking initiation. Preventing smoking among youth remains a primary focus for reducing morbidity and mortality as well as promoting health across the lifespan. **MM**

Raymond Boyle is director of research programs for ClearWay Minnesota. John Kingsbury and Michael Parks are research scientists for the Minnesota Department of Health.

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Tobacco 21: Health Impacts of Raising the Minimum Tobacco Sale Age

Research shows that raising the legal sale age from 18 to 21, known as “Tobacco 21,” would greatly reduce youth tobacco use and prevent kids from starting to smoke, according to a 2015 Institute of Medicine report.¹ Notably, the report estimated there would be a 25 percent reduction in smoking initiation among 15-to-17-year-olds if the age to purchase tobacco were raised to 21.¹

Nearly all tobacco users start before age 21.^{1,2} According to a 2017 MDH Health Advisory on nicotine, teens are especially susceptible to nicotine addiction and the harmful effects of nicotine on the developing brain. Raising the minimum tobacco sale age to 21 would limit youth access to tobacco until age 21, when the portion of the brain responsible for rational decision-making is more fully developed.³

Research shows raising the tobacco sale age would keep Minnesota kids from starting.

In Minnesota, raising the legal sale age to 21 would have a one-time effect of preventing over 3,300 young Minnesotans from starting to smoke, according to a January 2017 Minnesota Medicine article.⁴ Following this model, Tobacco 21 would prevent an estimated 30,000 Minnesota youth from starting to smoke over a 15-year period.

Increasing the age gap between kids and those who can legally buy tobacco would help keep tobacco out of the high school environment. Results from the 2016 Minnesota Student Survey revealed that one in five students still use tobacco products of some kind, and according to the Centers for Disease Control and Prevention, 102,100 Minnesota youth are projected to die from smoking.⁵

Communities are taking action to protect youth.

Long term, Tobacco 21 has the potential to significantly reduce smoking,¹ and the *Minnesota Comprehensive Tobacco Control Framework: 2016-2021* identifies Tobacco 21 as a step for reducing youth tobacco use.

Nationally, more than 200 communities in 14 states have adopted a Tobacco 21 policy. The states of California and Hawaii have also raised their minimum tobacco sale age to 21. Edina is the first Minnesota local jurisdiction to raise its tobacco sale age to 21, effective July 1, 2017.

Learn more at www.health.mn.gov/tobacco21.

TOBACCO 21: HEALTH IMPACTS OF RAISING THE MINIMUM TOBACCO SALE AGE

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¹ Institute of Medicine, Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products, Washington, DC: The National Academies Press, 2015, <http://iom.nationalacademies.org/Reports/2015/TobaccoMinimumAgeReport.aspx>

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RAISING THE TOBACCO SALE AGE TO 21 AND THE MILITARY

Military leaders recognize the toll tobacco takes on troop readiness and on the military health care system and are actively taking steps to reduce tobacco use in the military. Tobacco use remains this nation's number one preventable cause of premature death and disease, killing more than 480,000 Americans annually.¹ The Department of Defense (DoD) estimates that 175,000 current Active Duty Service members will die from smoking unless they are able to quit.² Almost all smokers start smoking before the age of 21,³ and the ages of 18 to 21 are a critical period when many smokers move from experimental smoking to regular, daily use.

Tobacco use is not a rite of passage or a sign of adulthood. It is important to remember that age 18 is not the age of majority for everything – from buying alcohol to running for certain political offices, and so on. Tobacco companies target young people before they can fully appreciate the consequences of becoming addicted to the nicotine in tobacco. Nearly 70% of adult smokers want to quit⁴, but once a person is addicted to nicotine, it is difficult to stop, and the health consequences begin immediately and accumulate over a lifetime.

Tobacco companies have a long history of promoting tobacco to members of the military and have a vested interest in tobacco use by the military, an important market for recruitment of the next generation of smokers.⁵ Raising the tobacco sale age to 21 will help prevent our service members from starting to use this deadly and addictive product and support DoD efforts to reduce tobacco use among service members.

Military Leaders Support Tobacco Prevention and Cessation

Tobacco use is bad for military preparedness. The military recognizes the negative impact of tobacco on troop readiness and soldiers' health and has initiated a series of actions to curb tobacco use in the military.⁶ The Department of Defense and the Army, Navy, Marines, and Air Force have each set goals to become tobacco-free.⁷ In April 2016, Secretary of Defense Carter approved actions "to ensure a comprehensive tobacco policy that assists with preventing initiation of tobacco use, helping those who want to quit using tobacco succeed, and decreasing exposure to secondhand smoke for all our people."⁸

Our military leaders understand the toll tobacco takes on our troops. Below are specific examples of military leaders supporting tobacco prevention and a tobacco sale age of 21:

- As part of the military's tobacco prevention efforts, General Robert Magnus, Assistant Commandant of the Marine Corps, has stated, "*Tobacco impairs reaction time and judgment. It stands in the way of a Marine's number one priority: to be in top physical and mental shape - combat ready.*"⁹
- After Hawaii raised its tobacco sale age to 21, effective January 1, 2016, Hawaii's military bases opted to comply with the higher age in recognition of its benefits to readiness, health and finances:¹⁰
 - Bill Doughty, spokesman for the Navy Region Hawaii, stated, "*We see it as a fitness and readiness issue. When we can prevent sailors from smoking or using tobacco, if we can get them to quit, then that improves their fitness and readiness, and it saves them a ton of money too.*"¹¹

- Rear Admiral John Fuller, Navy Region Hawaii and Naval Surface Group Middle Pacific stated, *"I've heard this argument by some shipmates against cracking down on tobacco: 'If someone is young enough to die for their country, they should be free to be allowed to smoke.' But, turning that argument on its head: 'If someone is young enough to fight for their country, they should be free from addiction to a deadly drug.' Tobacco harms people's physical wellbeing, leads to illness and costs them money."*¹²
- 27-year senior officer of the Air Force and Chautauqua, New York, County Executive Vince Horrigan, stated, on signing a bill to raise the tobacco sale age to 21: *"As a retired 27-year senior officer of the Air Force, I join with many other military leaders in the perspective that tobacco products are a threat to our military readiness and too often compromise the health of our professional military who put their lives on the line to defend our freedoms."*¹³
- Major General Bret Daugherty, the Adjutant General for the state of Washington and Commander of the Washington National Guard stated in testimony supporting raising the tobacco sale age: *"...I want to address the age-old argument that if someone is old enough to serve their country in the military, then they are old enough to use tobacco products. This is clearly an outdated argument. There is a laundry list of things that we as a country have decided are contrary to the interest of young people and public health, whether they are in the military or not. Decades ago, this very body saw the wisdom in raising the drinking age to 21. That policy change significantly reduced drunk driving deaths and contributed to the overall health of our public here in the state."*¹⁴
- Retired military leaders supported an Illinois bill to raise the tobacco sale age to 21. Major General (Ret) William Enyart, U.S. Army, Former Adjutant General of Illinois, 2007-2013; Major General (Ret) Randal Thomas, U.S. Army Former Adjutant General of Illinois, 2003-2007; Brigadier General (Ret) John "Jay" Sheedy, U.S. Air Force, Brigadier General (Ret) Avrum Mark Rabin, Illinois Air National Guard stated: *"Americans owe much to the young people who choose to serve in our military. But early addiction to a deadly drug is no reward. Their physical fitness and health should be paramount in policymaking decisions."*¹⁵

Tobacco Use Hurts Military Readiness and is Costly

While tobacco use takes an enormous toll on all users, it has particularly detrimental consequences for active duty military personnel. Tobacco use reduces soldiers' physical fitness and endurance and is linked to higher rates of absenteeism and lost productivity. In addition, service members who use tobacco are more likely to drop out of basic training, sustain injuries and have poor vision, all of which compromise troop readiness.¹⁶ Tobacco use places a significant burden on the Department of Defense (DoD). The DoD spends more than \$1.6 billion each year on tobacco-related medical care, increased hospitalizations, and lost days of work.¹⁷

Tobacco Use Among Active Duty U.S. Military

Smoking rates are higher among active duty military than among civilians. Nearly one-quarter (24.0%) of active duty military personnel in 2011 reported currently smoking, compared to 19 percent of civilians at that time.¹⁸ Smoking rates vary significantly by service, ranging from 16.7 percent in the U.S. Air Force to 30.8 percent in the U.S. Marine Corps. Many of the military's

current cigarette smokers are dual users of smokeless tobacco.¹⁹ In addition, close to half of all military service members (49.2%) used a nicotine product* in the past twelve months.²⁰

Alarming, many current military smokers - 36 to 40 percent - report initiating tobacco use *after* joining the military.²¹ Given everything we know about what smoking does to the body and how it weakens our combat preparedness, it is unacceptable that soldiers smoke at higher rates than the general population and that more than 1 in 3 soldiers who are current smokers started smoking *after* joining the military.

Raising the Minimum Legal Sale Age Will Help Save Lives

Raising the tobacco sale age is an evidence-based policy that is an important part of a comprehensive approach to tobacco prevention. A 2015 report by the Institute of Medicine (IOM), one of the most prestigious scientific authorities in the world, concluded that raising the tobacco age to 21 will have a substantial positive impact on public health and save lives.²² Specifically, raising the age to 21 is predicted to reduce the smoking rate by about 12 percent and smoking-related deaths by 10 percent, which translates into 223,000 fewer premature deaths, 50,000 fewer deaths from lung cancer, and 4.2 million fewer years of life lost.²³

Tobacco use is a deadly and addictive behavior that compromises the readiness and health of our military and prematurely kills half its adult users.²⁴ Raising the tobacco sale age to 21 is an important step that will protect young people and service members from a deadly addiction and will complement other tobacco prevention and cessation efforts being undertaken by the military.

Campaign for Tobacco-Free Kids, February 23, 2017 /Becca Knox

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² Department of Defense, Memorandum re: Reducing Tobacco Use in the Armed Forces and Department of Defense, March 14, 2014.

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<http://nationalacademies.org/hmd/Reports/2009/MilitarySmokingCessation.aspx>; see also, <https://www.ucanquit2.org/AboutUs/Policy>

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⁹ U.S. Department of Defense, *UCanQuit2.org*,

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¹⁰ Seck, Hope Hodge, "Marines Will Comply With Hawaii Law Raising Smoking Age to 21," December 29, 2015, <http://www.military.com/daily-news/2015/12/29/marines-will-comply-with-hawaii-law-raising-smoking-age-to-21.html>; Uyeno, Kristine, "Tobacco, eCig laws take effect on New

* Nicotine product includes cigarettes, chewing tobacco, snuff, other smokeless tobacco including new forms of smokeless (e. g. dissolvables), cigars, pipes, and electronic nicotine delivery products.

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¹² Rear Admiral Fuller, John, "Young Enough To Not Die From Smoking," *Navy Medicine Live*, <http://navymedicine.navy.mil/archives/9815>

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¹⁴ Major General Bret Daugherty, *Testimony in Support of SB 5025 to the Washington State Senate Commerce, Labor, and Sports Committee*, February 9, 2017

¹⁵ Mission: Readiness, Military Leaders for Kids, *Letter in support of IL SB3011 to raise the tobacco sale age to 21*, April 19, 2016

¹⁶ Institute of Medicine, *Combating Tobacco in Military and Veteran Populations*, 2009.

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¹⁸ Department of Defense, *2011 Health Related Behaviors Survey of Active Duty Military Personnel*,

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¹⁹ Department of Defense, *2011 Health Related Behaviors Survey of Active Duty Military Personnel*,

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²³ Institute of Medicine, *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products*, Washington, DC: The National Academies Press, 2015, <http://www.nationalacademies.org/hmd/Reports/2015/TobaccoMinimumAgeReport.aspx>

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TOBACCO21: TIPS AND TOOLS



The Tobacco Control Legal Consortium has created this series of legal technical assistance guides to serve as a starting point for organizations interested in implementing certain tobacco control measures.

We encourage you to consult with local legal counsel before attempting to implement these measures.¹ For more details about these policy considerations, please contact the Consortium.



Background

All states in the U.S. have laws prohibiting retailers from selling tobacco products to minors. In most states, the minimum legal sales age (MLSA) for tobacco products is 18, and a few states have raised it to 19. In 2015, Hawaii became the first state to raise the MLSA to 21, with the law taking effect on January 1, 2016.² California followed suit soon after, with its MLSA 21 law taking effect on June 9, 2016.³ As of September 2016, at least 200 localities in fourteen states have raised the MLSA to 21,⁴ including New York City, which in November 2013 became the first major city in the U.S. to raise its tobacco sales age to 21.⁵



In 2015, the Institute of Medicine (now the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine) (IOM) released a report containing compelling evidence of the significant public health benefits of raising the legal sales age for tobacco products.⁶ The Institute studied existing literature on tobacco use patterns, developmental biology and psychology, health effects of tobacco use, and national youth access laws. It also conducted mathematical modeling to predict the likely public health outcomes of raising the minimum legal sales age for tobacco products to 19, 21 and 25 years. The report found that an increased tobacco sales age helps delay smoking initiation among youth, which leads to lower smoking prevalence rates. In turn, this would significantly increase not just the length, but also the quality, of life across populations. The IOM concluded that raising the minimum sales age today to 21 would result in a 12 percent decrease in tobacco use, approximately 223,000 fewer premature deaths, 50,000 fewer deaths from lung cancer, and 4.2 million fewer years of life lost for those born between 2000 and 2019.⁷

In 1992, Congress passed a law (known as the Synar Amendment⁸) which conditioned state eligibility for substance abuse prevention and treatment block grants on the state setting its MLSA for tobacco products no lower than 18 years old. Later that decade, the U.S. Food and Drug Administration (FDA) issued a regulation that established a federal MLSA of 18 years old and required state and local governments to request a waiver to increase the MLSA in their jurisdictions. However, the FDA regulation was invalidated by

the U.S. Supreme Court's decision in *FDA v. Brown & Williamson Tobacco Corp.*⁹ In that case, the Court held that the FDA did not have authority to regulate tobacco products. In 2009, Congress passed the Family Smoking Prevention and Tobacco Control Act,¹⁰ which expressly gave the FDA authority to regulate tobacco products while also delineating the areas where states retained their authority to regulate these products. This 2009 law actually *prohibits* the FDA from establishing a MLSA higher than 18 years old.¹¹ However, it also required the FDA to convene an expert panel to study the public health implications of raising the MLSA and report its findings to Congress by 2014.¹² Regardless of these current limitations on the FDA, all state and many local governments continue to have authority to increase the MLSA for tobacco products.

This guide provides information for state and local policymakers, advocates, and others who are considering raising the MLSA for tobacco and related products as a tobacco control strategy.

Policy Benefits

- **Raising the MLSA would likely lower overall tobacco use rates by reducing and delaying the onset of tobacco use.** Increasing the MLSA for tobacco and related products could promote tobacco control efforts by helping to reduce the number of young people who start using tobacco, as well as by delaying the potential onset of tobacco use by many youth and young adults. Delaying the onset of tobacco use is associated with several long-term health benefits. Not only does it reduce the number of life-years available



for tobacco use (and of course, the longer a person uses tobacco, the higher the risk of developing severe health consequences), but delays in onset are also associated with a higher probability of successful cessation efforts later.¹³ Raising the MLSA also has been linked to reduced smoking prevalence rates, especially among older youth. For example, studies of England's experience when it raised the MLSA for cigarettes from 16 to 18 years of age in late 2007 have shown that this increase was associated with rapid and significant drops in smoking prevalence among 16 and 17 year olds regardless of socioeconomic status, even though *smoking by* (as opposed to *sales to*) this age group was not made illegal.¹⁴

- **Raising the MLSA would likely reduce youth access and usage in particular.** Based on studies showing the effectiveness of youth access laws when they are enforced,¹⁵ increasing the MLSA is likely to be particularly effective in reducing tobacco usage among high school-aged youth by reducing their access to tobacco products. Studies have indicated that older underage youth (i.e. those who are closer to age 18) are more likely to succeed in buying tobacco in stores.¹⁶ Further, high school friends and peers of legal age are an important social source of tobacco for underage youth.¹⁷ Increasing the MLSA would not only make it more difficult for older youth to buy tobacco products, but would reduce the likelihood that a high school student will be of legal age and able to buy tobacco products for younger classmates or underage friends.¹⁸

- **Raising the MLSA would offer a complement to proven tobacco control measures.** While tobacco control strategies such as smoke-free laws have proven highly effective, increasing the MLSA could be a complementary strategy, and in some cases, may be more politically viable.
- **Raising the MLSA would simplify ID checks for retailers.** Finally, an administrative benefit of increasing the MLSA to 21 years old is that it could facilitate compliance efforts in some jurisdictions. State drivers' licenses typically indicate that a driver is under the age of 21 in some way (using format, colors, photo placement, etc.); some jurisdictions also require an indication that the driver may be under 18 years old. In these jurisdictions, making the MLSA for tobacco and alcohol the same could simplify ID checks for retailers.

Policy Considerations

- **Looking at the bigger public policy picture.** Proposals to increase the MLSA for tobacco have generated mixed reactions among public health advocates when such laws are linked with laws that penalize underage youth for purchase, use, or possession of tobacco products (PUP laws).¹⁹ PUP laws have been criticized as not being effective in reducing underage tobacco use.²⁰ Advocates also have argued that they divert focus and energy from addressing irresponsible retailers and tobacco industry behavior, are difficult to enforce, can hinder enforcement efforts of MLSA laws by prohibiting use of underage buyers in compliance check operations,



and open the door to selective enforcement against young persons of color.²¹ Some PUP laws also have been used to preempt local tobacco control authority.²² Thus, advocates have at times expressed doubts that efforts to increase age limits are a good use of limited resources when other measures — such as tax increases, smoke-free laws, and promoting better enforcement of existing tobacco control laws — have proven track records and focus on industry responsibility for marketing an addictive and disease-causing product.²³ While these are important considerations to bear in mind, a developing body of research indicates that raising the sale age could be a useful tobacco control policy option in certain circumstances. Thus, it continues to be one of several reasonable alternatives in the tobacco control tool box.

- **Understanding the larger legal framework.** A comprehensive understanding of the state or local network of tobacco control laws also is important—age restrictions could be implicated in a number of areas, including MLSA provisions, separate PUP laws, provisions restricting the age of sales clerks who can handle tobacco sales, or provisions applying to where vending machines can be located, to name a few. In addition, in some states, the age restriction may be tied to the state’s age-of-majority law. Thus, an understanding of all these laws and how they may relate to each other is necessary.
- **Increasing the legal age for sales as opposed to purchases.** For the states with a MLSA law where it is not politically feasible to repeal PUP laws, one way to address concerns raised by PUP laws would be to increase the age only for legal sales, and remove the PUP altogether, or leaving the legal possession or use age at 18. A potential benefit of this approach is that it could help in the transition for those tobacco users who would be made newly underage but nonetheless are addicted — while they could no longer legally buy tobacco products, at least they would not be subject to civil and/or criminal liability for doing so or for using or possessing tobacco products. On the other hand, in addition to enforcement challenges, it could raise concerns about fairness and equal protection if young teenagers (i.e., under 18 years old) are subject to sanctions for purchasing, using, or possessing tobacco products, but not young adults (i.e. ages 18–20 years old).²⁴ The equal protection arguments are further explained below.



- **Determining how much to increase the MLSA.** At least seven jurisdictions in the U.S. (four states²⁵ and two counties²⁶) set the minimum legal age limit for tobacco purchases or sales at 19 years old. Many cities such as Boston, Chicago, Cleveland, Kansas City, New York and the states of Hawaii and California, have set the MLSA at 21,²⁷ and other jurisdictions have considered similar laws.²⁸ Increasing the MLSA to age 21 would delay or reduce tobacco usage to a greater extent than to age 19, and could have a larger effect in reducing underage access to tobacco through the social source of legal-age peers.
- **Allowing exemptions.** California's MLSA 21 law exempts "active duty military personnel who are 18 years of age or older."²⁹ Also, two New York counties that have raised their MLSA to 19 years of age exempt sales to members of the U.S. military who are 18 years old.³⁰ Although these exemptions may have political appeal, no public health rationale justifies them. Moreover, they complicate enforcement. For example, military identifications typically do not specify whether or not a soldier is "active duty," which poses challenges for enforcing California's law. Finally, exemptions can make a law more susceptible to equal protection challenges because it treats similar people differently. (Incidentally, Hawaii's law has no exemptions.)
- **Restricting the age of sales clerks.** As explained above, friends or peers who work in stores that sell tobacco products are a key social source of tobacco for underage youth.³¹ Thus, to maximize the public health benefits of increasing the MLSA, the legal minimum age for sales clerks handling tobacco products could also be set or increased. However, this may raise concerns among convenience store owners because they often hire teenagers and young adults to staff their store. Also, such a policy might limit employment opportunities for youth in rural areas, where fewer jobs for young people are available.
- **Implementation considerations.** Increasing the MLSA might also increase the number of addicted users who would become underage as a result of the change in the MLSA. Of course, this concern would be resolved within three years or less, depending on whether the MLSA was increased to 19, 20, or 21 years of age. One way to address these concerns would be to require notices about the MLSA posted in the store to include information about how users can obtain help with cessation efforts. Another approach could be to exempt from the new law those who are 18 and over at the time the law goes into effect, but who would otherwise be underage under the new law — in other words, to "grandfather" in those who were of legal age to buy or use tobacco, but would be made underage by increasing the MLSA. Before Hawaii's statewide MLSA 21 law took effect, Hawaii County passed a law that included such a provision.³² While grandfather provisions might seem feasible, they pose enforcement challenges not present with a universal MLSA 21 law and minimize the law's immediate public health benefits. In addition, communities need to know what effective enforcement



mechanisms exist — or need to be established — for successful implementation, such as a retailer licensing program.

Possible Legal Challenges

While laws that increase the MLSA for tobacco products might encounter challenges brought on other grounds, the more likely challenges would be based on preemption or equal protection grounds.

- **Preemption.** Preemption occurs when a higher level of government (e.g. federal or state) eliminates or limits the authority of a lower level of government (e.g. state or local) to regulate a certain issue. Preemption has important implications for public health issues because of the vital role of state and local authorities in this area.³⁶ Many of the lessons learned about preemption come from the field of tobacco control. One tobacco industry strategy has been to push for the inclusion of language in state youth access laws that could preempt local government authority to pass smoke-free and other tobacco control laws.³⁴ The Centers for Disease Control and Prevention have identified 22 states with youth access laws that include preemptive language relating to local authority over sales of tobacco products.³⁵ Thus, particularly for local jurisdictions, it would be important to assess whether any state law might limit local authority to increase the MLSA, and if so, what the scope of those limitations might be (e.g. the state law only limits local authority to pass tobacco control laws with criminal sanctions, but local governments can pass laws that only impose
- civil sanctions).³⁶ Also, it is important to assess whether a state's age-of-majority law might impliedly preempt an effort to raise the MLSA for tobacco products. Such an argument seems unlikely to prevail in most cases, but each situation would depend on the state law's language and how the law has been interpreted by courts.³⁷
- **Equal Protection.** The concept of equal protection comes from the U.S. Constitution and is included in many state constitutions as well. It embodies the principle that similarly-situated people are entitled to equal treatment by the law — so that if the law treats one person differently from another, there must be a fair and logical basis for the differential treatment.³⁸ Typically, laws relating to age limits are treated with great deference by courts. As long as these laws are rationally related to a legitimate government interest, they are usually upheld.³⁹ Thus, equal protection challenges to state laws increasing the MLSA for alcohol purchases or consumption, for example, have not been successful.⁴⁰ Similarly, laws increasing the MLSA for tobacco products likely would be upheld, given the government's legitimate interest in protecting public health and preventing youth access to tobacco products, and the research indicating that delaying onset of tobacco use among young people has both immediate and long-term public health and safety benefits. Also, avoiding exemptions to the law is another way to minimize the likelihood of successful equal protection challenges.



Select legislation and policies

Below are examples from some jurisdictions that have set the minimum legal age for the sale and/or purchase of tobacco products at 21 years of age.⁶¹ A state or local government considering whether to adapt any language from the following policies should take care to ensure that the language is appropriate, practical, and legal for its jurisdiction. Please note that the Tobacco Control Legal Consortium does not endorse or recommend any of the following policies. We have included these examples simply to illustrate how various jurisdictions have regulated the minimum legal age for sale and/or purchase of tobacco and related products.

Jurisdiction	Ordinance/ Statute	Excerpts from text of law
Hawaii	S.B. 1030 SD1 HD2, 28th Leg. (Haw. 2015)	Section 3. § 709-903. Tobacco products and electronic smoking devices; persons under twenty-one years of age. (1) Effective January 1, 2016, it shall be unlawful to sell or furnish a tobacco product in any shape or form or an electronic smoking device to a person under twenty-one years of age. (2) Effective January 1, 2016, signs using the statement, "The sale of tobacco products or electronic smoking devices to persons under twenty-one is prohibited," shall be posted on or near any vending machine in letters at least one-half inch high and at or near the point of sale of any other location where tobacco products or electronic smoking devices are sold in letters at least one-half inch high. (3) It shall be unlawful for a person under twenty-one years of age to purchase any tobacco product or electronic smoking device, as those terms are defined in subsection (5).... (4) Any person who violates subsection (1) or (2), or both, shall be fined \$500 for the first offense. Any subsequent offenses shall subject the person to a fine not less than \$500 nor more than \$2,000. Any person under twenty-one years of age who violates subsection (3) shall be fined \$10 for the first offense. Any subsequent offense shall subject the violator to a fine of \$50, no part of which shall be suspended, or the person shall be required to perform not less than forty-eight hours nor more than seventy-two hours of community services during hours when the person is not employed and is not attending school.

continued



Jurisdiction	Ordinance/ Statute	Excerpts from text of law
California	S.B. 7 (Cal. 2015)	Section 4. § 22956. All persons engaging in the retail sale of tobacco products shall check the identification of tobacco purchasers, to establish the age of the purchaser, if the purchaser reasonably appears to be under 21 years of age. Section 5. § 22958(a). (1) An enforcing agency may assess civil penalties against any person, firm, or corporation that sells, gives, or in any way furnishes to another person who is under 21 years of age, any tobacco, cigarette, cigarette papers, any other instrument or paraphernalia that is designed for the smoking or ingestion of tobacco, products prepared from tobacco, or any controlled substance ... (2) This subdivision does not apply to the sale, giving, or furnishing of any of the products specified in paragraph (1) to active duty military personnel who are 18 years of age or older. An identification card issued by the United States Armed Forces shall be used as proof of age for this purpose. Section 6. § 22963(a). The sale, distribution, or nonsale distribution of tobacco products directly or indirectly to any person under 21 years of age through the United States Postal Service or through any other public or private postal or package delivery service at locations, including, but not limited to, public mailboxes and mailbox stores, is prohibited. Section 8. § 308(a)(1)(A)(i). Every person, firm, or corporation that knowingly or under circumstances in which it has knowledge, or should otherwise have grounds for knowledge, sells, gives, or in any way furnishes to another person who is under 21 years of age any tobacco, cigarette, or cigarette papers, or blunt wraps, or any other preparation of tobacco, or any other instrument or paraphernalia that is designed for the smoking or ingestion of tobacco, products prepared from tobacco, or any controlled substance, is subject to either a criminal action for a misdemeanor or to a civil action ...

continued



Jurisdiction	Ordinance/ Statute	Excerpts from text of law
Suffolk County, NY	Regulatory Local Laws ch. 792	§792-3 (A)(2) Prohibitions; posting of sign; proof-of-age Sale of tobacco products or herbal cigarettes in such places, other than by a vending machine, shall be made only to an individual who demonstrates, through a valid driver's license or nondriver's identification card issued by the Commissioner of Motor Vehicles, the federal government, any United States territory, commonwealth or possession, the District of Columbia, a state government within the United States or a provincial government of the dominion of Canada, or a valid passport issued by the United States government or any other country, or an identification card issued by the Armed Forces of the United States, that the individual is at least 21 years of age. Such identification need not be required of any individual who reasonably appears to be at least 27 years of age; provided, however, that such appearance shall not constitute a defense in any proceeding alleging the sale of a tobacco product or herbal cigarettes to an individual under 21 years of age. §792-9 Sales restrictions No person shall sell or offer for sale e-cigarettes or liquid nicotine within the County of Suffolk to persons under 21 years of age. http://legis.suffolkcountyny.gov/Resos2014/11039-14.pdf
Dover, MA	Smoking: Sale of Tobacco and Nicotine Delivery Products	§ 220-6 Retail sale of tobacco products. B. No person shall sell tobacco products or nicotine delivery products to any person under the age of 21 years or, not being his/her parent or guardian, give tobacco products or nicotine delivery products to any person under the age of 21. http://ecode360.com/10428043

continued



Jurisdiction	Ordinance/ Statute	Excerpts from text of law
New York City, NY	Local Laws No. 094 (Nov. 19, 2013)	§ 17-706 Sale of cigarettes, tobacco products, or electronic cigarettes to minors and young adults prohibited. a. Any person operating a place of business wherein cigarettes, tobacco products, or electronic cigarettes are sold or offered for sale is prohibited from selling such cigarettes, tobacco products, or electronic cigarettes to individuals under twenty-one years of age. Sale of cigarettes, tobacco products, or electronic cigarettes in such places, shall be made only to an individual who demonstrates, through a driver's license or other photographic identification card issued by a government entity or educational institution, that the individual is at least twenty-one years of age. Such identification need not be required of any individual who reasonably appears to be at least thirty years of age, provided, however, that such appearance shall not constitute a defense in any proceeding alleging the sale of cigarettes, tobacco products, or electronic cigarettes to an individual under twenty-one years of age.





Other helpful resources

The Tobacco Control Legal Consortium's website includes a [Sample Resolution](#) and a [Sample Ordinance for Creating a Minimum Legal Sales Age of 21 for Tobacco Products](#). The website also features several [publications](#) explaining the federal Family Smoking Prevention and Tobacco Control Act of 2009, and its [impact on state and local tobacco control authority](#). The Preventing Tobacco Addiction Foundation supports increasing the MLSA for tobacco and related products to 21 years old. Its website (<http://www.tobacco21.org>) has additional information, including model legislation. The Institute of Medicine's report, along with related materials on raising the legal tobacco sales age, is available on the Health and Medicine Division's [website](#). The CDC has a [fact sheet](#) on youth and tobacco use, with links to other resources and data about youth tobacco access and use. The Campaign for Tobacco-Free Kids has a [website](#) on the topic and also has created fact sheets with data about [increasing the minimum legal sale age for tobacco products](#), [enforcing Tobacco21 laws](#), and [policy issues relating to laws that penalize underage users](#).

Contact us

Please feel free to contact the Tobacco Control Legal Consortium at publichealthlawcenter@mitchellhamline.edu with any questions about the information included in this guide or to discuss local concerns you may have about implementing such a policy.

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The Public Health Law Center provides information and legal technical assistance on issues related to public health. The Center does not provide legal representation or advice. This document should not be considered legal advice.

Endnotes

- 1 The information contained in this document is not intended to constitute or replace legal advice.
- 2 HAW. REV. STAT. § 709-908 (2015); CAL. BUS. & PROF. CODE § 22958(a)(2) (2016). Other state legislatures that have considered raising the legal minimum age for purchasing tobacco products to 21 include New Jersey, New York, Texas, Utah, and Washington D.C. See, e.g., Lee Davidson, *Lawmakers Seek to Raise Smoking Age to 21*, SALT LAKE TRIB., Nov. 26, 2013, <http://www.sltrib.com/sltrib/politics/56930258-90/age-among-health-limit.html.csp>; *More States Consider Raising Minimum Age for Tobacco Sales*, CONVENIENCE STORE NEWS, May 17, 2013, <http://www.csnews.com/top-story-tobacco-more-states-consider-raising-minimum-age-for-tobacco-sales-63672.html>.
- 3 California Department of Public Health, *New Landmark California Tobacco 21 Law*, <https://www.cdph.ca.gov/programs/tobacco/Pages/Tobacco21.aspx>.
- 4 Campaign for Tobacco-Free Kids, *States and Localities That Have Raised The Minimum Legal Sale Age for Tobacco Products to 21* (last accessed Sept. 19, 2016), http://www.tobaccofreekids.org/content/what_we_do/state_local_issues/sales_21/states_localities_MLSA_21.pdf; see also Tobacco Twenty-One (website containing list of all tobacco communities with MLSA of 21) (last accessed September 20, 2016), <http://tobacco21.org>.
- 5 New York City, N.Y., Local Laws No. 94-2013 (Nov. 19, 2013), <http://legistar.council.nyc.gov/LegislationDetail.aspx?ID=664290&GUID=4223E26A-7F3F-4B7D-9E3A-0E3F78850155&Options=ID|Text|&Search=minimum+legal+smoking+age>.
- 6 Institute of Medicine, *Public Health Implications of Raising the Minimum Age of Legal Access to Tobacco Products* (2015), http://www.nationalacademies.org/hmd/-/media/Files/Report%20Files/2015/TobaccoMinAge/tobacco_minimum_age_report_brief.pdf.
- 7 *Id.*



- 8 42 U.S.C. § 300x-26 (2011), with implementing regulations found at 45 C.F.R. § 96.130 (2001).
- 9 FDA v. Brown & Williamson Tobacco Corp., 529 U.S. 120 (2000).
- 10 Family Smoking Prevention and Tobacco Control Act, Pub. L. No. 111-31, 123 Stat. 1776 (June 22, 2009) (codified as amended in scattered sections of 5 U.S.C., 15 U.S.C., and 21 U.S.C.), <http://www.publichealthlawcenter.org/sites/default/files/resources/fda-tobacco-regulation-final-bill.pdf>.
- 11 21 U.S.C. § 387f (d)(3)(A)(ii) (2011).
- 12 Pub. L. No. 111-31, Div. A § 104.
- 13 See Tammy Tengs et al., *The Public Health Impact of Changes in Smoking Behavior: Results From the Tobacco Policy Model*, 39 MED. CARE 1131 (Oct. 2001); Sadik Khuder et al., *Age at Smoking Onset and Its Effect on Smoking Cessation*, 24 ADDICT. BEHAV. 673 (Sept.-Oct. 1999); and Jiajian Chen & Wayne Millar, *Age of Smoking Initiation: Implications for Quitting*, 9 HEALTH REP. 39 (Spring 1998).
- 14 Christopher Millett et al., *Increasing the Age for the Legal Purchase of Tobacco in England: Impacts on Socio-Economic Disparities in Youth Smoking*, 66 THORAX 862 (Oct. 2011); and Jennifer Fidler & Robert West, *Changes in Smoking Prevalence in 16-17-Year-Old versus Older Adults Following a Rise in Legal Age of Sale: Findings From an English Population Study*, 105 ADDICTION 1984 (Nov. 2010).
- 15 See, e.g., Joseph DiFranza et al., *Enforcement of Underage Sales Laws as a Predictor of Daily Smoking Among Adolescents — A National Study*, 9 BMC PUB. HEALTH, <http://www.biomedcentral.com/content/pdf/1471-2458-9-107.pdf> (April 17, 2009).
- 16 See, e.g., Joseph DiFranza et al., *Youth Access to Tobacco: The Effects of Age, Gender, Vending Machine Locks, and "It's The Law" Programs*, 86 AM. J. PUB. HEALTH 221 (Feb. 1996).
- 17 Joseph DiFranza & Mardia Coleman, *Sources of Tobacco for Youths in Communities with Strong Enforcement of Youth Access Laws*, 10 TOBACCO CONTROL 323, 327 (Dec. 2001). One unpublished survey of minor-aged high school students found that 90% of the adults who purchased tobacco products for them were less than 21 years old. *Id.* See also Lorna Schmidt, *Campaign for Tobacco-Free Kids, Where Do Youth Get Their Cigarettes?* (Jan. 2013), <http://www.tobaccofreekids.org/research/factsheets/pdf/0073.pdf>.
- 18 DiFranza & Coleman, *supra* note 17.
- 19 According to the American Lung Association, 41 states and the District of Columbia have laws that prohibit the purchase or attempted purchase of tobacco products by minors. American Lung Association, *State Legislated Actions on Tobacco Issues Overview Data*, (last accessed September 20, 2016) <http://www.lungusa2.org/slati/slatiOverview.php>. In 1994, the Institute of Medicine issued a report that recommended that the MLSA for tobacco products be set at 18 years of age, and not higher. GROWING UP TOBACCO-FREE: PREVENTING NICOTINE ADDICTION IN CHILDREN AND YOUTHS 223-24 (Barbara S. Lynch & Richard J. Bonnie eds., Inst. of Medicine, 1994).
- 20 See, e.g., Gary Giovino & Melanie Wakefield, *Teen Penalties for Tobacco Possession, Use and Purchase: Evidence and Issues*, 12 TOBACCO CONTROL 6 (2003). But see Leonard A. Jason et al., *A Randomized Trial Evaluating Tobacco Possession-Use-Purchase Laws in the USA*, 67 SOC. SCIENCE & MED. 1700 (2008) (indicating that enforcement of underage PUP laws may be effective in reducing youth smoking rates).
- 21 See, e.g., Jessica Guilfoyle, *Campaign for Tobacco Free Kids, Youth Access Laws That Penalize Kids for Purchase, Use, or Possession Are Not Proven To Reduce Tobacco Use* (March 2016), <http://www.tobaccofreekids.org/research/factsheets/pdf/0074.pdf>.
- 22 Robin Hobart, Am. Med. Ass'n, *Preemption: Taking the Local Out of Tobacco Control* (2003).
- 23 See, e.g., Susan Haigh, *Lawmakers Consider Raising Smoking Age from 18 to 21*, BOSTON.COM, Mar. 5, 2007, http://www.boston.com/news/local/connecticut/articles/2007/03/05/lawmakers_consider_raising_smoking_age_from_18_to_21/; and John Ritter, *California Considers Raising Smoking Age*, USATODAY.COM, Mar. 3, 2002, <http://www.usatoday.com/news/nation/2002/03/04/smoking.htm>.
- 24 See *Johnson v. State Hearing Examiner's Office*, 838 P.2d 158 (Wyo. 1992) (invalidating state law which imposed driver's license suspension penalty on teen drivers 18 years old and younger who are convicted of unrelated alcohol or drug offenses, but which did not impose same penalty on underage 19 and 20 year-olds); but see *Allam v. State*, 830 P.2d 435 (Alaska Ct. App. 1992) (noting that law which criminally penalized 18 year olds, but not those 19 and over, for possessing small amounts of marijuana was not irrational because "many 18-year-olds attend high school and regularly associate with students under the age of 18 years ... [and thus] if 18-year-olds were allowed to possess and use marijuana, they would share the drug with other younger students or would at least frequently expose those younger students to drug use").



- 25 The states are: Alabama (Ala. Code § 28-11-13 (2011)); Alaska (Alaska Stat. §§ 11.76.100 & 11.76.105 (2011)); New Jersey (N.J. Stat. Ann. § 2A:170-51.4 (2011)), and Utah (Utah Code Ann. §§ 76-10-104 et seq. & 76-10-105 (2011)).
- 26 The counties are in New York: Nassau (Nassau County, N.Y., Local Law No. 5-2006 (Apr. 26, 2006)); Onondaga (Onondaga County, N.Y., Local Law No. 2-2009 (Jan. 12, 2009)).
- 27 See, e.g., Campaign for Tobacco-Free Kids, *supra* note 4.
- 28 See, e.g., Susan K. Livio, *Christie's Velo Leaves Smoking Age in N.J.* at 19, *NJ.com*, Jan. 19, 2016, http://www.nj.com/politics/index.ssf/2016/01/19-and_20-year-olds_may_still_buy_tobacco_e-cigs.html.
- 29 Cal. Bus. & Prof. Code § 22958(a)(2) (2016), https://leginfo.ca.gov/faces/codes_displaySection.xhtml?lawCode=BPC§ionNum=22958.
- 30 Onondaga County, N.Y., Local Law No. 2-2009 (Jan. 12, 2009); Nassau County, N.Y., Local Law No. 5-2006 (Apr. 26, 2006).
- 31 DiFranza & Coleman, *supra* note 17.
- 32 Leila Fujimori, *Big Island Raises Legal Age for Tobacco Sales*, HONOLULU STAR-ADVERTISER, July 1, 2014, <http://health.hawaii.gov/tobacco/files/2014/01/BigIs21.pdf>.
- 33 The Public Health Law Center's website (<http://publichealthlawcenter.org/topics/other-public-health-law/preemption-public-health>) has more information about preemption as well as resources for understanding how it works and how it can impact public health policy development.
- 34 In the early and mid-1990s, tobacco industry lobbyists actively fostered a false belief that the Synar Amendment and its regulations required broad preemptive clauses be included in state youth access laws. Hobart, *supra* note 22, at 7.
- 35 CDC, U.S. Dep't of Health and Human Services, *State Preemption of Local Tobacco Control Policies Restricting Smoking, Advertising, and Youth Access — United States, 2000–2010*, 60 Morbidity & Mortality Weekly Rep. 1124 (August 26, 2011), <http://www.cdc.gov/mmwr/pdf/wk/mm6033.pdf>.
- 36 See, e.g., *Prime Gas, Inc. v. City of Sacramento*, 184 Cal. App.4th 697 (Cal. Ct. App. 2010).
- 37 See, e.g., *Burnett v. San Francisco Police Dep't*, 36 Cal. App.4th 1177, 1182-1185 (Cal. Ct. App. 1995) (rejecting argument that California's age of majority law expressly or impliedly preempted city ordinance restricting access to cabarets to people 21 years old and up); and *Allam v. Alaska*, 830 P.2d 435, 438 (Alaska Ct. App. 1992) (noting that "[t] here is no legal requirement that the same age of majority apply to all activities and circumstances").
- 38 See, e.g., *City of Cleburne v. Cleburne Living Ctr.*, 473 U.S. 432 (U.S. 1985).
- 39 See, e.g., *Gregory v. Ashcroft*, 501 U.S. 452 (U.S. 1991) (holding that Missouri constitutional provision requiring most state judges to retire by age of 70 did not violate Equal Protection); *Massachusetts Bd. of Retirement v. Murgia*, 427 U.S. 307 (U.S. 1976) (upholding state law requiring uniformed police officers to retire at age 50); *Stiles v. Blunt*, 912 F.2d 260 (8th Cir. 1990) (upholding Missouri's minimum age requirement of 24 years old for state legislators); *Manuel v. State*, 692 So. 2d 320, 340 (La. 1996) (reversing original decision on rehearing) (upholding state law raising minimum drinking age to 21); and *Maine v. Dube*, 409 A.2d 1102 (Me. 1979) (upholding state regulation requiring drivers of common and interstate carriers to be at least 21).
- 40 *Gabree v. King*, 614 F.2d 1 (1st Cir. 1980) (upholding Massachusetts law that increased minimum drinking age to 20); *Felix v. Milliken*, 463 F. Supp. 1360 (E.D. Mich. 1978) (upholding Michigan constitutional amendment raising minimum drinking age to 21). Some state courts have interpreted their state constitution's equal protection provisions to require a less deferential standard of review for statutory age limits, but even then, such laws have been upheld. See, e.g., *Manuel v. State*, *supra* note 39.
- 41 For additional examples of jurisdictions that have raised the minimum legal sales age for tobacco products, see the Institute of Medicine report, *supra* note 5, Appendix A (State and Local Laws on the Minimum Age of Legal Access to Tobacco Products).

WHAT IS MENTHOL?

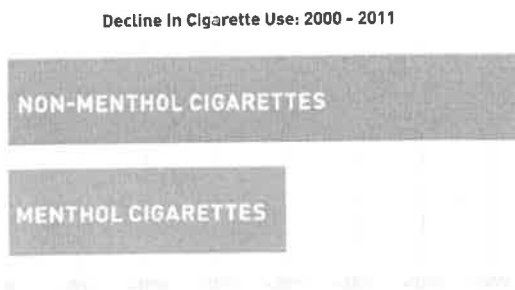
- Menthol is a chemical compound extracted from the peppermint or corn mint plant or created synthetically. It reduces the harshness of cigarette smoke due to its characteristic cooling effects on the mouth and throat.^{1,2}
- Menthol suppresses the coughing reflex³ which makes inhaling smoke from cigarettes more tolerable.
- Menthol was first added to cigarettes in the 1920s and 1930s, and became widespread in the 1950s and 1960s.^{1,4,5}
- Although most cigarettes contain some menthol, certain brands use menthol in greater quantities making it detectible as a characterizing flavor.⁶ Tobacco manufacturers market and advertise those brands as "menthol cigarettes."



*Photo credit: Keith Homan / Shutterstock.com

PATTERNS OF USE

- In 2010, 8.2% (20.7 million) of those ages 12 or older in the U.S. used menthol cigarettes.⁷



- Menthol cigarette smoking is more prevalent among youth,⁹ female smokers,⁹⁻¹³ racial/ethnic minorities,⁹⁻¹⁴ sexual minorities,¹⁵ and those with mental illness.^{12,16}
- **African American smokers predominantly use menthol cigarettes.**⁹ Nearly 9 in 10 African American smokers (88.5%) aged 12 years and older use menthol cigarettes.⁹

- **Menthol cigarettes are slowing the reductions in overall cigarette smoking prevalence.** From 2000 to 2011, the decline in cigarette consumption was greater among non-menthol cigarettes (37% decline) than for menthol cigarettes (20% decline). Eighty-nine percent of the total decline in cigarette consumption is attributed to non-menthol cigarettes.⁸

9 in 10 African American smokers use menthol cigarettes.



Youth

Menthol cigarettes are disproportionately used by young smokers and may facilitate addiction.

- Menthol reduces the harshness of cigarette smoke, which may appeal to young, inexperienced smokers.^{1,17,18}
- Longitudinal studies show that initiation with menthol cigarettes facilitates progression to established cigarette use in young smokers.^{19,20}
- Data from nationally representative samples show that from 2008-2010 the youngest age groups among cigarette smokers use menthol at the highest rates (Figure 1).^{9,10}
- In 2014, the prevalence of menthol cigarette use among past 30-day cigarette users was 54.5% among all high school students and 48.4% among all middle school students.²¹
- Most African American youth smokers smoke menthol cigarettes. From 2008-2010, 94.9% of African American past 30-day smokers used menthol cigarettes. This is compared to 51.3% of White and 60.7% of Asian American past 30-day smokers who smoke menthol cigarettes (Figure 2).⁹

Figure 1. Prevalence of Use of Menthol Cigarettes among Past 30-Day Smokers by Age in the United States, 2008-2010⁹

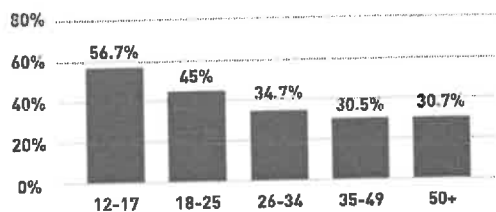
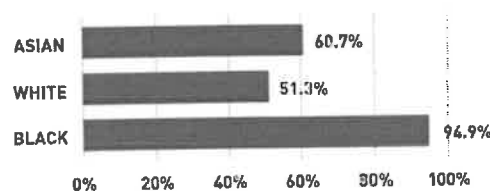
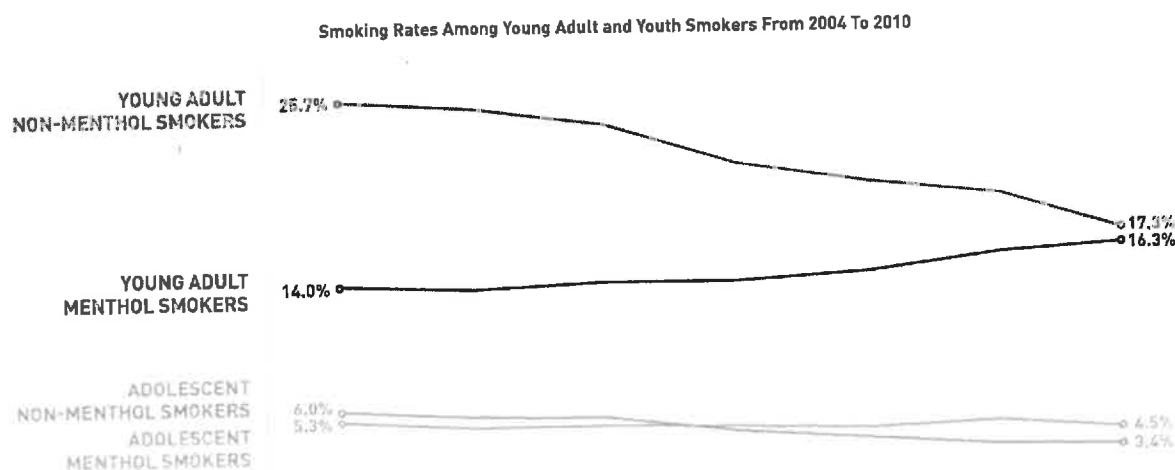


Figure 2. Prevalence of Youth (12-17) Use of Menthol Cigarettes among Past 30-Day Smokers by Race/Ethnicity in the United States, 2008-2010⁹



- A nationally representative study found that among youth and young adults, non-menthol cigarette prevalence declined from 2004 to 2010. By contrast, menthol cigarette prevalence remained constant among youth and increased among young adults over this period.⁹



Young Adults and Adults

- **Menthol cigarette use is higher in younger adults than older adults.** Among adults surveyed in 2008-2010, past 30-day smokers ages 18-25 had the highest prevalence of menthol cigarette use (45%), compared to adults aged 26-34 (34.7%), adults 35-49 (30.5%), and adults 50+ (30.7%) (Figure 1).⁹

Prevalence of Menthol Cigarette Use Among Adult Smokers

HETEROSEXUAL SMOKERS

LGBT SMOKERS

Prevalence of Menthol Cigarette Use Among Female Smokers

HETEROSEXUAL FEMALE SMOKERS

LGBT FEMALE SMOKERS

- From 2008-2010, the prevalence of menthol cigarette use among young adult past 30-day smokers (ages 18-25) was 93.9% among African Americans, compared to 36.3% among Whites and 49.7% among Asian Americans.⁹
- In 2010, the prevalence of menthol cigarette use among adult past 30-day smokers was 36.3% among LGBT smokers, compared to 29.3% among heterosexual smokers. This difference was even more pronounced among LGBT female smokers (42.9%) compared to heterosexual female smokers (32.4%).¹⁵

HEALTH AND SAFETY

Menthol cigarettes offer no health benefit to smokers, and in fact, are more likely to addict youth and are more difficult to quit than regular cigarettes. We agree with the Tobacco Products Scientific Advisory Committee (TPSAC) that menthol cigarettes pose a threat to public health above and beyond that posed by regular cigarettes.

- Menthol flavoring contributes to addiction in youth smokers.^{1,22-24}
- There are no health benefits associated with using menthol cigarettes compared to non-menthol cigarettes.²⁵
- Menthol cigarettes are at least as dangerous to an individual's health as non-menthol cigarettes,⁹ and menthol cigarette smokers are as likely to experience premature morbidity and mortality as smokers of non-menthol cigarettes.²⁶
- Adult menthol smokers report shorter time to first cigarette after waking than non-menthol smokers. Time to first cigarette is an important measure of nicotine addiction.²⁷⁻²⁹
- **The weight of the scientific evidence indicates that adult menthol smokers are less likely than non-menthol smokers to successfully quit smoking^{24,30-38} despite increased quit intentions³⁵ and quit attempts.^{32,35,36} Studies show significantly reduced cessation among African American^{24,30,31} and Hispanic menthol smokers compared to non-menthol smokers.³¹**

Successful Quitting Rates Among Adult Smokers in 2003

MENTHOL SMOKERS

NON-MENTHOL SMOKERS

Successful Quitting Rates Among Adult Smokers in 2007

MENTHOL SMOKERS

NON-MENTHOL SMOKERS

MARKETING IN THE U.S.

- **Menthol makes up a large portion of the cigarette market in the United States (31% in 2013).**³⁹
- **The tobacco industry has a well-documented history of developing and marketing mentholated brands to racial and ethnic minorities and youth.**⁴⁰⁻⁴⁴
- Evidence from tobacco industry documents shows that the industry studied smokers' menthol preferences and manipulated menthol levels to appeal to a variety of smokers, including adolescents and young adults.^{17,18,41,45}
- Evidence from tobacco industry documents also shows that tobacco companies specifically targeted African Americans with menthol cigarette advertising.^{44,46-48}
- A recent review found that menthol marketing is higher in publications and venues that appeal to African American audiences.⁴³
- Numerous studies show targeted marketing of menthol cigarettes at the point-of-sale in African American communities throughout the U.S.⁴⁹⁻⁵³
- In 2016, it was reported by the Wall Street Journal that Reynolds American Inc. was distributing packs of Newport cigarettes for \$1 per pack at concerts and festivals popular with youth as part of a push to target young adult smokers.



* actual promotion found online

POLICY IN THE U.S.

- The 2009 Family Smoking Prevention and Tobacco Control Act (Tobacco Control Act) gave the U.S. Food and Drug Administration (FDA) the authority to regulate tobacco products. The law prohibits the use of characterizing flavorings in cigarettes, except for menthol.⁵⁴ Instead, it gives FDA the regulatory authority to ban menthol. FDA has indicated that it will extend the cigarette flavor ban, excluding menthol, to small cigars, but to date, has not done so.
- Thus far, FDA's activities on menthol include:
 - FDA's Tobacco Products Scientific Advisory Committee (TPSAC) was required by the Tobacco Control Act to conduct a review of menthol cigarettes' effect on youth and other vulnerable populations. TPSAC published its report in March 2011, concluding that "the removal of menthol cigarettes from the marketplaces would benefit public health in the United States."
 - Lorillard (now Reynolds) challenged the integrity of TPSAC in a lawsuit against FDA, alleging that several experts the agency appointed to the committee were biased and therefore must be removed. The judge in the case sided with Lorillard and prohibited FDA from using the TPSAC menthol report.
 - FDA appealed and in January 2016, the D.C. Circuit reversed the district court's decision, and now the FDA may rely on the TPSAC menthol report to take action to regulate menthol tobacco products.
 - In July 2013, FDA published its own report which also concludes that the removal of menthol cigarettes from the market would improve the public health.
 - In July 2013, FDA issued an Advance Notice of Proposed Rulemaking seeking additional information to help the agency make informed decisions about menthol in cigarettes. Since that time, FDA has taken no further action on menthol.

The removal of menthol cigarettes from the market would improve the public health.

State and Local Policies

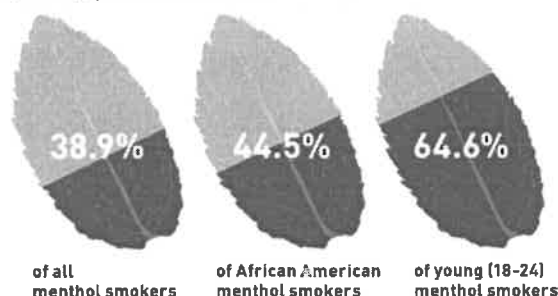
- While several localities have prohibited flavored tobacco products in some way, most of these exclude menthol, mint or wintergreen.
- However, thus far, two localities have included menthol in their flavor bans. Chicago, Illinois prohibits the sale of flavored tobacco products, including menthol, within 500 feet of schools.⁵⁵ Beginning January 2017, Berkeley, California prohibits the sale of flavored tobacco products, including menthol, within 600 feet of schools.⁵⁶



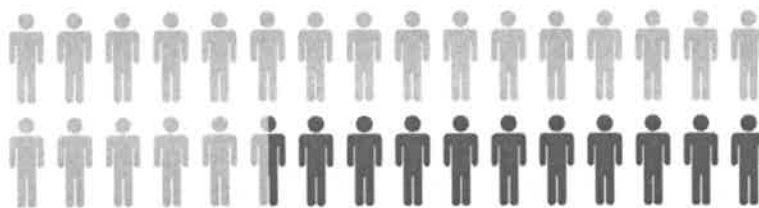
Effects of Possible Menthol Ban

- A 2012 nationally representative online survey found that one in five Americans agree menthol flavoring in cigarettes should be banned.⁵⁷
- If menthol cigarettes were banned, 38.9% of all menthol smokers and 44.5% of African American menthol smokers reported that they would try to quit.⁵⁸
- Among young adult menthol smokers (ages 18-24) 64.6% reported they would quit smoking and not use any other products if menthol cigarettes were banned.⁵⁹
- If a menthol ban had gone into effect in 2011, researchers estimate conservatively that over 320,000 smoking-attributable deaths would be averted by 2050, almost a third of them among African Americans.⁶⁰

Rates of Smokers Reporting They Would Quit If Menthol Cigarettes Were Banned



If menthol cigarettes had been banned in 2011...



African Americans make up almost one third of 320,000+ smoking-attributable deaths that could have been avoided by 2050.



Truth Initiative's Position on Menthol

Truth Initiative's mission is to achieve a culture where all youth and young adults reject tobacco. Consistent with Truth Initiative's vision of a future where tobacco is a thing of the past, we support the following policies with regard to menthol in tobacco products:

- FDA must issue product standards eliminating menthol as a characterizing flavor from all tobacco products – particularly cigarettes, cigars, little cigars and cigarillos and other combustible tobacco.
 - The only exception to this would be for proven harm-minimized products that can show that menthol flavor does help smokers completely switch from combustible tobacco to the harm-minimized product AND that it does not appeal to or attract youth.
- State and local entities should enact policies prohibiting flavors that include menthol, mint and wintergreen flavors.

TRUTH INITIATIVE'S AFFILIATED PUBLICATIONS

- Rath JM, Villanti AC, Williams VF, Richardson A, Pearson JL, Vallone DM. Correlates of current menthol cigarette and flavored other tobacco product use among U.S. young adults. *Addict Behav.* 2016;62:35-41. PMID: PMC4955768.
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MENTHOLS

MENTHOL CIGARETTES ARE POPULAR WITH TEEN SMOKERS.

54% of current smokers in high school and 48.4% of current smokers in middle school smoked menthols.

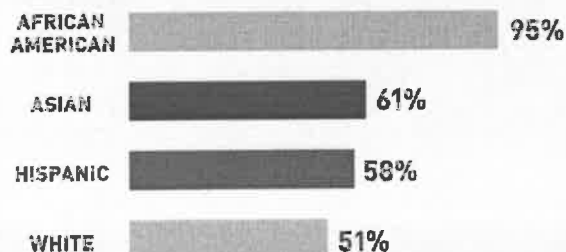


48.4% OF CURRENT SMOKERS IN MIDDLE SCHOOL SMOKE MENTHOL



54% OF CURRENT SMOKERS IN HIGH SCHOOL SMOKE MENTHOL

MENTHOL SMOKING RATES AMONG TEEN SMOKERS



NEARLY ALL AFRICAN AMERICAN TEEN SMOKERS SMOKE MENTHOLS.

95% of African American teens who are current smokers smoke menthols.



BANNING MENTHOL TOBACCO PRODUCTS COULD SAVE LIVES.

38.9% of all menthol smokers and 44.5% of African American menthol smokers say they would try to quit smoking if menthols were banned.

Menthol cigarettes are slowing reduction in overall cigarette smoking.

NON-MENTHOL SMOKERS

↓ 37%

MENTHOL SMOKERS

↓ 20%



IF A BAN ON MENTHOL HAD PASSED IN 2011, IT COULD HAVE SAVED AN ESTIMATED 320,000 LIVES.

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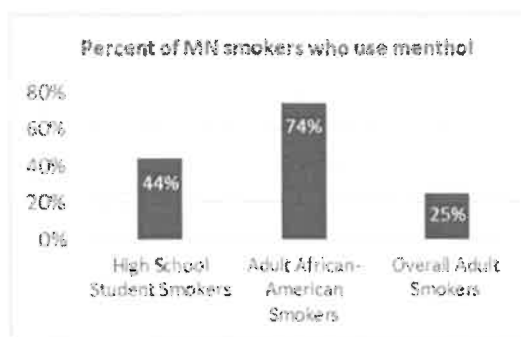
Menthol Flavored Tobacco Products

Menthol is a flavor additive commonly used in cigarettes and other tobacco products. Federal law currently prohibits the manufacture and sale of flavored cigarettes, with the exception of menthol.¹

Menthol cigarette use is high among youth and African-Americans.

Nearly half of Minnesota high school smokers use menthol;² overall 25 percent of adult smokers use menthol.³

From 2004 to 2014, as the use of non-menthol cigarettes by youth and young adults declined, the use of menthol cigarettes among these groups increased or remained constant.⁴ This disparate progress in reducing youth smoking rates is likely perpetuated by the sale and marketing of menthol cigarettes.⁵



Additionally, almost one in four Minnesota African-Americans are current smokers (compared to 14.4 percent of adults statewide), with the vast majority using menthol.⁶ While menthol use is high in many communities, use by African-Americans is particularly concerning as they are 30-36 percent more likely to die of lung cancer than non-Latino whites;⁷ they are also 53 percent more likely to die of heart disease.⁸

What are the health risks of menthol flavored tobacco?

Menthol makes smoking easier and more attractive for youth.



Menthol makes experimentation easier because it can mask irritation from smoking. It has a minty taste and smell and produces cooling and numbing sensations that reduce the harshness of cigarette smoke.^{9,10,11,12,13,14,15,16} This may encourage youth to keep smoking when they would otherwise stop.⁹

The use of characterizing flavors began in the 1970s to make it easier for new smokers to start, and to become regular smokers more easily.^{17,18,19}

Menthol intensifies addiction, especially for young smokers.

Youth who smoke menthol cigarettes are more dependent on cigarettes and show stronger addiction to nicotine than those who smoke non-menthol cigarettes.^{9,10,15,20,21,22} Additionally, youth who start smoking with menthol cigarettes are more likely to transition to regular smoking than those who start with non-menthol cigarettes.^{9,22}

Menthol makes it harder for smokers to quit for good.

A large number of studies show that menthol users have a higher nicotine dependence and smoking urge.¹⁴ Thus, menthol users have a harder time quitting than non-menthol users.^{23,24} This finding is stronger among African-American and other minority populations than among white smokers,^{25,26,27} despite African-American menthol users expressing greater confidence in their ability to quit than non-menthol users.²⁸



Women who smoke menthol cigarettes before a pregnancy are also more likely to start smoking again after the pregnancy than those who smoke non-menthol cigarettes.²⁹

Industry marketing practices target specific populations.

Menthol cigarette marketing practices are targeted more toward younger people and African-Americans than older adults and other racial or ethnic groups.^{9,10,30,31,32} Menthol cigarette marketing has consistently targeted minority and low-income communities.^{33,34,35,36} This strategy results in higher smoking rates among these groups.^{9,10,37}

Advertising is a strong driver of brand preference, especially among youth, and it is likely that price discounts, promotions, product placement, and geographic location have been used to drive menthol cigarette preference among youth and young adults as well as the African-American community.^{9,10}

How can communities reduce menthol tobacco use?

Proven tobacco control policies and evidenced-based strategies are necessary to prevent all forms of tobacco use, including flavored tobacco products.³⁸ Effective strategies include price increases as well as restricting youth access to tobacco products and exposure to tobacco product marketing.³⁹ The Tobacco Products Scientific Advisory Committee of the Food and Drug Administration states that “removal of menthol cigarettes from the marketplace would benefit public health in the United States.”⁹

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Tobacco Prevention and Control
PO Box 64882, St. Paul, MN 55164
651-201-3535
tobacco@state.mn.us
www.health.state.mn.us/menthol

1/20/16

To obtain this information
in a different format, call:
651-201-3535

Full citations are available at
www.health.state.mn.us/menthol.

¹ (Federal Trade Commission 2015)

² (Minnesota Department of Health 2014)

³ (ClearWay Minnesota and Minnesota Department of Health 2015)

⁴ (U.S. Department of Health and Human Services 2014)

⁵ (Giovino, Villanti, et al. 2013)

⁶ (ClearWay Minnesota and Minnesota Department of Health 2015, Unpublished Data)

⁷ (American Cancer Society, Inc. 2010)

⁸ (Center for Disease Control and Prevention 2010)

⁹ (TPSAC 2011)

¹⁰ (FDA 2013)

¹¹ (Kuhn, Khun and Luckhoff 2009)

¹² (Henningfield, et al. 2003)

¹³ (Giovino, Sidney, et al. 2004)

¹⁴ (Ahijevych and Garrett 2010)

¹⁵ (Hersey, Nonnemaker and Homs 2010)

¹⁶ (Klausner 2011)

¹⁷ (R.J. Reynolds Tobacco Company 1974)

¹⁸ (Kreslake, Wayne and Alpert, et al. 2008)

¹⁹ (Kreslake, Wayne and Connolly 2008)

²⁰ (Hersey, Ng, et al. 2006)

²¹ (Collins and Moolchan 2006)

²² (Nonnemaker, et al. 2013)

²³ (Delnevo, et al. 2011)

²⁴ (Rojewski, Toll and O'Malley 2014)

²⁵ (Levy, et al. 2011)

²⁶ (Gunderson, Delnevo and Wackowski 2009)

²⁷ (Okuyemi, et al. 2007)

²⁸ (Reitzel, Etzel, et al. 2013)

²⁹ (Reitzel, Nguyen, et al. 2011)

³⁰ (Anderson 2011)

³¹ (Yerger, Przewoznik and Malone 2007)

³² (Cruz, Wright and Crawford 2010)

³³ (Hyland, et al. 2003)

³⁴ (Yu, et al. 2010)

³⁵ (Schneider, et al. 2005)

³⁶ (Novak, et al. 2006)

³⁷ (Dauphinee, et al. 2013)

³⁸ (Neff, et al. 2015)

³⁹ (Centers for Disease Control and Prevention 2014)

Tobacco Prevention Policy Approaches – Minimum Legal Sales Age and Flavor Tobacco Sales Limitation – Robbinsdale

The following table describes policy approaches to reduce youth access and exposure to tobacco products and marketing in Robbinsdale. These are in addition to elements that would clarify or strengthen current regulations described in the *Retail Tobacco Policy Analysis City of Robbinsdale-Hennepin County*.

Policy Approach	Potential Impact on Tobacco Use	Scope and other things to consider	What other jurisdictions have done	Limitations and Challenges
Minimum Age Requirement Raise the minimum legal sales age (MLSA) from 18 to 21.	Delaying the age when people first use tobacco reduces risk of becoming a regular smoker. “National data show that about 95 percent of adult smokers begin smoking before they turn 21. The ages of 18 to 21 are also a critical period when many smokers move from experimental smoking to regular, daily use. While less than half of adult smokers (46 percent) become daily smokers before age 18, four out of five do so before they turn 21.”¹ - Data predicts substantial improvements in public health:² - Reduce smoking rates overall by 12% - Reduce smoking rates among 15-17 year olds by 25% - Reduce smoking related deaths by 10% - In Minnesota, increasing the MLSA to 21 is estimated to reduce the number of youth and young adult smokers by more than 30,000 in the next 15 years.³ - In the four years following Needham, MA, raising the minimum legal sale age to 21, smoking rates decreased more than twice as much as rates in surrounding towns.⁴ - The focus is on the seller, not purchaser. Laws that focus on the purchaser, i.e., penalizing underage youth for purchase, use, or possession of tobacco product, 1) have been ineffective in reducing underage tobacco use, 2) divert focus from industry behavior and irresponsible retailers, 3) are difficult to enforce and 4) can have inequitable impacts.	- Would impact 12 tobacco retailers in Robbinsdale and all individuals under age 21 in Robbinsdale. - Adults support raising the age – 2014 national survey shows 75% of adults favor increasing the minimum purchase age for tobacco to 21; 70% of U.S. adult cigarette smokers favor age 21.⁵ - This action would simplify ID checks for retailers with only one age to watch for. State driver’s licenses, including Minnesota’s, typically indicate that a driver is under 21 in some way.	States and municipalities that raised the MLSA to 21: States: California, Hawaii, Maine, New Jersey and Oregon. Municipalities: Locally: Edina and St. Louis Park. Over 260 individual communities across the country including New York City, Chicago, Boston, Cleveland, Kansas City, KS, and Kansas City, MO.⁶	Limitations: The extent of impact will depend upon enforcement. Youth could still get tobacco products through social networks (others buying for underage youth). Potential “Fall Out”: Retailers will resist the loss of customers. Likelihood of Legal Challenge: There has been one legal challenge to a Tobacco 21 law in Genesee County, MI. The challenge was based on Michigan’s age of majority law which is significantly different from age of majority laws in other states. The case is currently pending, but the court postponed the implementation of the regulation.
Flavored Tobacco Sales Limitation	A study of New York City’s restriction on flavored products (which exempted menthol) showed that sales of flavored tobacco products	Flavored cigarillos, chew, shisha, snus, e-cigarettes	Minnesota Minneapolis, St. Paul and	Limitations: Youth would still have

Prepared by Hennepin County Public Health, 8/30/2017

Tobacco Prevention Policy Approaches – Minimum Legal Sales Age and Flavor Tobacco Sales Limitation – Robbinsdale

Policy Approach	Potential Impact on Tobacco Use	Scope and other things to consider	What other jurisdictions have done	Limitations and Challenges
Limit the sale of flavored tobacco products to stores that derive more than 90% of revenue from tobacco sales and do not permit entrance by people under 18 years old (hereinafter “adult-only retailers”), similar to the existing exception for self-service sales. No other retail stores would be allowed to sell flavored tobacco products. Include menthol in definition of ‘flavored tobacco products.	dropped significantly.⁷ ▪ Cheap cigars are commonly sold in sweet flavors. Nationally, high-school students are nearly twice as likely as adults to report smoking cigars.⁸ ▪ In 2011 the Tobacco Products Scientific Advisory Committee (TPSAC) concluded in a report to the Secretary of Health and Human Services that “removal of menthol cigarettes from the marketplace would benefit public health in the United States.”⁹ ▪ A 2013 U.S. Food and Drug Administration (FDA) report showed that menthol cigarettes increase youth smoking initiation, lead to greater addiction and decrease successes in quitting smoking.¹⁰ ▪ The 2016 MN Student Survey reports that 35 percent of all tobacco users report using menthol products and 40 percent of all tobacco users reported using a flavor other than menthol.¹¹ ▪ Amongst all 11th grade students in suburban Hennepin County: ○ Six percent have used menthol cigarettes in the past 30 days; ○ Nine percent have used flavored tobacco in the past 30 days; and ○ 17 percent have used electronic cigarettes, which are often flavored.¹² Adolescents frequent convenience stores, with 70 percent of adolescents shopping in them at least once a week.¹³ Because youth are not allowed in adult-only stores, this approach would dramatically limit access to popular flavored tobacco products by taking them out of convenience stores, gas stations, corner stores and pharmacies where youth under age 18 like to shop.	and any emerging products would be covered, including menthol cigarettes. Because youth are not allowed in adult-only stores, this approach would eliminate primary retail access to flavored tobacco and related products for youth under age 18. This distribution restriction would impact 12 tobacco retailers in Robbinsdale.	Shoreview adopted laws restricting sale of flavored tobacco products (excluding menthol, mint and wintergreen) to tobacco product shops where 90% of gross revenues are from tobacco and related products, and those under age 18 are excluded. Nationally Localities have passed outright restrictions on the sale of flavored tobacco products, restrictions on sales of flavored products within a certain distance of schools, or restricted sales of flavored tobacco products to adult-only facilities. Those restricting all flavors: ▪ Chicago, IL ▪ Berkeley, CA ▪ El Cerrito, CA (eff. 1/1/2018) ▪ Contra Costa, CA ▪ Hayward, CA ▪ Manhattan Beach, CA ▪ Santa Clara County, CA ▪ Yolo County, CA ▪ San Francisco, CA (will not be implemented until and unless it is adopted via voter referendum) Those restricting flavors, exempting menthol products: ▪ Providence, RI ▪ Minneapolis, MN ▪ New York, NY	access to cigarettes and other non-flavored tobacco products. Youth could still get flavored products through social networks (others buying for underage youth). Potential “Fall Out”: Significant. Retailers will resist the loss of likely customers. Likelihood of Legal Challenge: Challenges to these laws have not been successful so far. The Chicago, New York and Providence ordinances were challenged in court and upheld. The CA, MN and MA ordinances have not been challenged.

Tobacco Prevention Policy Approaches – Minimum Legal Sales Age and Flavor Tobacco Sales Limitation – Robbinsdale

Policy Approach	Potential Impact on Tobacco Use	Scope and other things to consider	What other jurisdictions have done	Limitations and Challenges
			▪ Boston, MA ▪ 83 municipalities in Massachusetts ▪ Manhattan Beach, Sonoma, CA	
Minimum Pack Size (5) and Price Requirement Require cigarillos and other cigar products to be sold in pack sizes with at least five cigars, for a retail sales price of at least \$13.00, except for premium cigars as defined by state law (see Minn. Stat. § 297F.01 subd. 13a). Could allow smaller packs to be sold in adult-only stores so long as each cigar product costs the equivalent of \$2.60 per unit.	Establishing a minimum pack size and price effectively increases the price of buying the product. Raising the price of tobacco products improves public health outcomes by preventing initiation, reducing consumption, encouraging cessation, and preventing relapse.^{14, 15} Youth are up to three times more price-sensitive than adults, so the effective price increase will likely reduce youth use. Amongst all 11th grade students in suburban Hennepin County, six percent have used cigars, cigarillos, or little cigars in the past 30 days.¹⁶ This would likely reduce tobacco access for other disparate populations. After the MN tobacco tax increase, low-income populations have shifted away from expensive cigarettes to low-cost single and two pack cigar products. This strategy also counters industry targeting of specific populations.	Would impact 12 tobacco retailers in Robbinsdale. This will impact all retail tobacco customers, but especially youth who tend to buy them cheaply in single and two-pack sizes.	Minnesota ▪ Brooklyn Center requires cigars sold in packages of 1-4 to cost at least \$2.10 per cigar before retail sales tax. Packages 5 or more are at market rate. (2014) ▪ St. Paul requires cigars sold in packages of 1-4 to cost at least \$2.60 per cigar before retail sales tax. Packages 4 or more to cost at least \$10.40/pack. ▪ Bloomington requires packages of 1-4 to cost at least \$2.60 per cigar before retail sales tax. Packages 5 or more are at market rate. (2014) ▪ Maplewood, Minneapolis and Richfield require packages of 1-3 to cost at least \$2.60 per cigar before retail sales tax. Packages 4 or more to cost at least \$10.40/pack. ▪ 11 cities and 9 counties require single cigars to cost at least \$2.00. Nationally ▪ Boston and 68 municipalities in Massachusetts have minimum pricing laws for cigars. ▪ New York City has two minimum price laws: ○ Little cigar requirement: min. pack size of 20 with a min. price of \$13.00 per pack. This is the same as NYC min. price	Limitations: Higher prices through minimum pack sizes have the effect of reducing demand, but youth still have access to tobacco products and could buy or obtain a five pack and split it up. Potential “Fall Out”: So far, there has been little negative reaction once the measure is passed. Likelihood of Legal Challenge: None of these ordinances have been challenged.

Prepared by Hennepin County Public Health, 8/30/2017

Tobacco Prevention Policy Approaches – Minimum Legal Sales Age and Flavor Tobacco Sales Limitation – Robbinsdale

Policy Approach	Potential Impact on Tobacco Use	Scope and other things to consider	What other jurisdictions have done	Limitations and Challenges
			requirement for cigarettes. ○ Cigarillos requirement: Minimum price is \$6.25 plus \$1.75 for each cigar, which sets the minimum price for one cigar at \$8.00.	

¹ Campaign for Tobacco-Free Kids (2016). Increasing the minimum legal sale age for tobacco products to 21. Accessed on 1/17/17: <https://www.tobaccofreekids.org/research/factsheets/pdf/0376.pdf>

² Institute of Medicine of the National Academies (2015). Public health implications of raising the minimum age of legal access to tobacco products. www.iom.edu.

³ Boyle RG, Kingsbury, JH, & Parks, MJ. (2017). Raising the minimum legal sale age for tobacco to 21 – The estimated effect for Minnesota. *Minnesota Medicine* January/February 2017

⁴ Schneider, SK; Buka, SL; Dash, K; Winickoff, JP; & O'Donnell, L. (2015). Community reductions in youth smoking after raising the minimum tobacco sales age to 21. *Tob Control* June 12, 2015.

⁵ King, BA, Jama, AP, Marynak, KL, Promoff, GR. (2015). Attitudes toward raising the minimum age of sale for tobacco among U.S. adults. *Am J Prev Med*. 49(4): 583–588

⁶ Campaign for Tobacco-Free Kids. States and localities that have raised the minimum legal sale age for tobacco products to 21. Accessed on 1/17/17: https://www.tobaccofreekids.org/content/what_we_do/state_local_issues/sales_21/states_localities_MLSA_21.pdf.

⁷ Farley SM, Johns M. *Evaluating changes in flavored and menthol tobacco product sales before and after FDA and New York City bans*. New York City Epidemiology Forum: First Annual Conference (2014).

⁸ Campaign for Tobacco-Free Kids. (2013). Not Your Grandfather's Cigar. Available at: https://www.tobaccofreekids.org/what_we_do/industry_watch/cigar_report/.

⁹ Tobacco Products Scientific Advisory Committee. (2011). *Menthol cigarettes and public health: Review of the scientific evidence and recommendations*.

¹⁰ ClearWay MinnesotaSM, (2015). Minnesota Department of Health Minnesota Adult Tobacco Survey: Tobacco Use in Minnesota, 2014 Update.

¹¹ Minnesota Student Survey Interagency Team. *Minnesota Student Survey, 2016*. Roseville, MN: Minnesota Department of Education.

¹² Ibid.

¹³ U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.

¹⁴ U.S. Department of Health and Human Services. *Reducing Tobacco Use: A Report of the Surgeon General*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2000.

¹⁵ Jha P, Chaloupka FJ, Corrao M, Jacob B. (2006). Reducing the burden of smoking world-wide: effectiveness of interventions and their coverage. *Drug & Alcohol Review*. 2006;25(6):597-609.

¹⁶ Minnesota Student Survey Interagency Team. *Minnesota Student Survey, 2016*. Roseville, MN: Minnesota Department of Education.



Dear Mayor Murphy and City Council

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

Elizabeth Walton

Address 2031 Lakeside Ave N Robbinsdale, MN 55422

City Zip



Mayor Murphy and City Council
4100 Lakeview Ave N
Robbinsdale, MN 55422



Dear Mayor & City Council

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

Tim Lewis

Address 4110 Shoreline Ave

City Robbinsdale, MN 55422



Mayor Murphy and Councilmember
Rogan
4100 Lakeview Ave N.
Robbinsdale, MN 55422



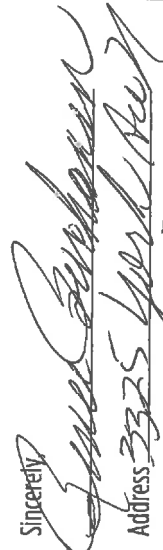


PAUL MN 550
JUL 17 PM 11

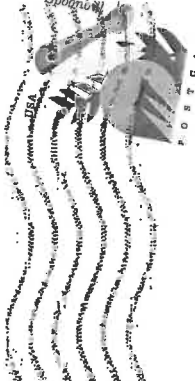
Dear Mayor Selman

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

 Address 3325 York Ave N
55422

City _____ Zip _____

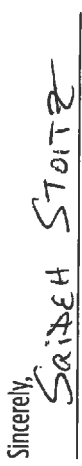


PAUL MN 550
JUL 17 PM 11

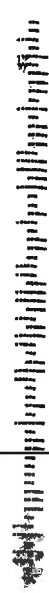
Dear Mayor + CM Selman

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

 Address 4004 Zane Ave N

City Robbinsdale Zip 55422



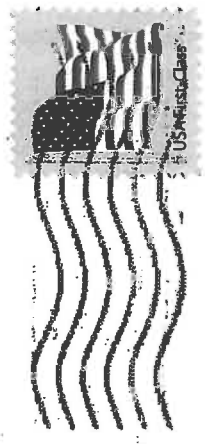


Dear Mayor & City Council
 Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

Mayor Murphy and Councilmember Selman
 4100 Lakeview Ave N.
 Robbinsdale, MN 55422

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,
Jennifer Byrd
 Address 3639 Frank Ave N
 City Robbinsdale Zip 55422



Dear Mayor Murphy
 MINNEAPOLIS MN 554
 Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,
Jenna Gust
 Address 16556 82nd Pl N
 City Maple Grove Zip 55311



Thank you Mayor Regan Murphy
 4100 Lakeview Ave. N.
 Robbinsdale, MN 55422



Dear Mayor & City Council PAUL MN 550
55017 PA 31

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

Carlos Garcia

Address 3234 Halifax Ave N

City Robbinsdale Zip 55422



Mayor Murphy and Councilmember
 Backen
 4100 Lakeview Ave N.
 Robbinsdale, MN 55422



Dear Mayor & City Council
 Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

Clarence Schaefer

Address 3535 France Ave N

City Robbinsdale Zip 55422



Mayor Murphy and Councilmember
 Backen
 4100 Lakeview Ave N.
 Robbinsdale, MN 55422



Dear MAYOR & CITY COUNCIL

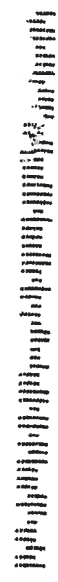
The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Mayor Murphy and Councilmember
Backen
4100 Lakeview Ave N.
Robbinsdale, MN 55422

Sincerely,
CARLOS GARCIA

Address:
3234 HOLIFAX AVE N

422-228000

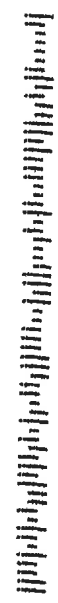


Dear Mayor and City Council

The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Mayor Murphy and Councilmember
Selman
4100 Lakeview Ave N.
Robbinsdale, MN 55422

Sincerely,
Jennifer Byrd
Address:
3639 France Ave N.
Robbinsdale, MN 55422



Dear Mayor & City Council
 The tobacco industry targets our communities and our youth with menthol tobacco. Menthol cools and numbs the throat, disguising the harshness of the smoke. Menthol tobacco is easy to start and even harder to quit. By regulating the sale of menthol tobacco, you can help prevent addiction and tobacco-related disease. Please act now to protect our community and our youth.



Sincerely, Bill Murphy
 Address 4321 Abbott Ave N
 City Robbinsdale zip 55422

Mayor Murphy and Councilmember Rogan
 4100 Lakeview Ave N.
 Robbinsdale, MN 55422

BEAUTIFUL LIE
UGLY TRUTH
 ABOUT MENTHOL TOBACCO

www.BeautifulLieUglyTruth.org

422-228000



Dear Mayor & City Council

The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.



Sincerely, Ghah McLennan

Address: 4321 43rd Ave N
Robbinsdale MN 55422

Mayor Murphy and Councilmember Blonigan
 4100 Lakeview Ave N.
 Robbinsdale, MN 55422





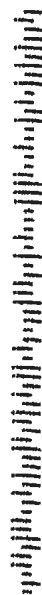
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Mayor Murphy and Councilmember
Rogan
4100 Lakeview Ave N.
Robbinsdale, MN 55422

Sincerely, Tim Lewis

Address: 4110 Shoreline Dr
Robbinsdale, MN
55422



SAINT PAUL MN 550

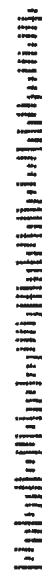
Dear Mayor & City Council

The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Mayor Murphy and Councilmember
Backen
4100 Lakeview Ave N.
Robbinsdale, MN 55422

Sincerely, Clayton Backen

Address: 2116 Armes Ave N
Robbinsdale MN



SAINT PAUL MN 550

Dear

Pat

14 SEP 2017 PM 1 L

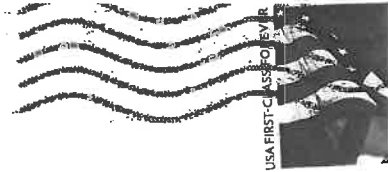
The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Sincerely,

Janine Wilson

Address:

*2618 Meridian Dr
Robbinsdale, MN 55422*



*Pat Backen
City Council member
4100 Lakeshore N.
Robbinsdale, MN
55422*

422-228000





BEAUTIFUL LIE
UGLY TRUTH
ABOUT MENTHOL TOBACCO

**"I don't believe
the lie the tobacco
companies try to
sell me."**

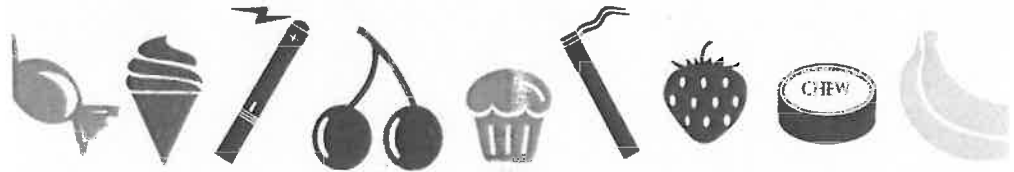
The truth is: 44 percent
of Minnesota high school
students who smoke use
menthol.

www.BeautifulLieUglyTruth.org



Approximately 95% of current adult smokers
started before they were 21. If youth don't smoke
by the time they are 21, they likely never will.

COUNTLESS FLAVORS



The tobacco industry targets youths with flavored tobacco products...
but there's nothing *Sweet* about Tobacco.

John Tingley

From: Regan Murphy
Sent: Friday, September 22, 2017 1:59 PM
To: John Tingley
Subject: Fwd: Tobacco 21 Supported by Family Physicians
Attachments: image007.jpg; image008.jpg; image009.png

Follow Up Flag: Follow up
Flag Status: Completed

Regan

Begin forwarded message:

From: Lynn Balfour <l.balfour@robbinsdalemn.gov>
Date: September 22, 2017 at 1:54:31 PM CDT
To: John Tingley
Subject: Tobacco 21 Supported by Family Physicians



September 22, 2017

Mayor Regan Murphy
City Hall
4100 Lakeview Avenue North
Robbinsdale, MN 55422

Dear Mayor Murphy,

As Minnesota's largest physician specialty association, the Minnesota Academy of Family Physicians (MAFP) and our 3100+ members support Tobacco 21 policies that raise the tobacco sale age from 18 to 21 years. Our association understands that Tobacco 21 will reduce and prevent youth in our communities from ever starting this addictive and lifelong habit that has far reaching health consequences.

The City of Robbinsdale shares in the responsibility of the public health of its citizenry and thus should not be afraid to move boldly ahead and support the Tobacco 21 initiative.

Raising the sale age to 21 years could cut teen smoking rates dramatically, largely because younger teens often get cigarettes from older teens and young adults. Teens under age 21 account for less than 2% of tobacco sales, but are 90% of the supply to their underage peers. Almost 95% of addicted adult smokers started before they were 18, and we know that

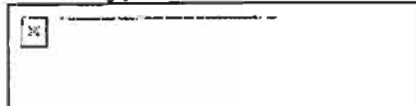
people who start smoking as children and youth are much less likely to quit later. If you make it to age 21 without smoking, your chances of ever becoming a smoker drop to about 2%.

We also know that while adverse health effects may primarily show up later in life, they are accrued over a lifetime of tobacco use. Smokers are at risk for lung, throat, pancreatic and bladder cancers, as well as chronic obstructive pulmonary disease (COPD) and cardiovascular disease that can lead to a heart attack or stroke.

Furthermore, according to the Minnesota Dept. of Health, it costs all of us over \$3.2 billion each year in excess health care costs in Minnesota.

If I can be of assistance to you on this issue please contact me via Lynn Balfour at the MAFP ~~600 S. Hwy. 169, Suite 1680~~. Let's help make smoking a thing of the past. Please support Tobacco 21 on September 26. Thank you.

Sincerely,



David Bucher, MD
President

.....
(This email was sent by Lynn Balfour at Dr. Bucher's request.)

Lynn Balfour
Deputy Executive Vice President
Minnesota Academy of Family Physicians
600 S. Hwy. 169, Suite 1680
St. Louis Park, MN 55426

www.mafp.org



Ora Hokes
1350 Russell Avenue North
Minneapolis, Minnesota

September 22, 2017

Dear Council Members,

I was able to attend the Retailer Listening session on September 5th and heard their side. As an anti-commercial tobacco activist and a Community Health Worker (CHW). I am writing to express my strong support for strengthening Robbinsdale's Tobacco Ordinance to protect youth by doing the following:

- 1) Raising the price of cheap cigars;
- 2) Restricting the sale of flavored tobacco to adult-only shops; and
- 3) Increasing the tobacco sales age from 18 to 21.

As has been demonstrated by many other communities in Minnesota (including a few that border Robbinsdale like Brooklyn Center raising the price of cheap cigars to Edina and St. Louis Park increasing the legal age to purchase to 21). These changes would have a positive impact on our youth and on the health of our entire community.

Can I count on your support for restricting the sale of tobacco, setting the minimum price for cigars and above all and more important raising the tobacco sale age to 21?

I appreciate your consideration of this request to keep our youth free from the harms of tobacco products.

For Our Children,

Ora Hokes

John Tingley

From: [REDACTED]
Sent: Sunday, September 24, 2017 2:31 PM
To: Regan Murphy; William A. Blonigan; Dan P. Rogan; George B. Selman; Pat Backen; Marcia Glick; John Tingley
Subject: Please Oppose Tobacco 21: Harm Outweighs Benefit
Attachments: THR4LIFETobacco21 (1) (1).pdf; Nicotine without smoke_0 (1).pdf; ecigMLSA.pdf; Liberating_Nicotine_from_Smoke_to_S_B5660D163B343 (1).pdf

Dear Mayor Murphy & City of Robbinsdale Council Members,

I am writing to you in regard to Tobacco 21. The language in this ordinance prevents adult access to tobacco harm reduction and carries with it some unintended negative consequences.

In a recently published National Bureau of Economic Research Working Paper titled "[The Effects of E-cigarette Minimum Legal Sale Age Laws on Youth Substance Use](#)", research supported by the National Institutes of Health concluded that laws banning sales of e-cigarettes to young adults actually pushes youth toward traditional cigarettes. The study concludes that strict enforcement of these laws is linked to an increase in youth smoking participation and that the unintended consequences of these laws are concerning and may have a negative impact on public health. **Preventing 18 - 20-year-olds from access to smoke-free vaping products will result in continued smoking among the restricted age group, and cause unnecessary harm to these individuals, whereas vaping would prevent tobacco-related harm.**

As evidence continues to mount, leading tobacco control experts both in the US and abroad are beginning to embrace supporting the many harm reduction benefits of vapor products. I encourage you to read the following reports, all released by recognized **anti-tobacco** organizations or government entities.

Liberating Nicotine From Smoke: This is a report released this year by leading tobacco control experts in the US. It stresses the need to embrace harm reduction technologies such as vapor, in an effort to reduce smoking rates.

Royal College of Physicians: The first organization to warn of the dangers of smoking in 1962 recently came out to embrace vaping as an alternative - and even reported that vapor is at least 95% safer than smoking, with very few if any demonstrable concerns for nonusers

Public Health England: England's National Health Department determined that vaping is a 95% - 98% safer than smoking, poses no risk of a "gateway to smoking", and vapor aerosols to pose no quantifiable risk to bystanders.

Last year the UK government AND all of the leading anti-smoking organizations issued a joint statement about vapor products, promoting them as a safe alternative to smoking.

***CITY REJECTS TOBACCO 21**

*This short video is very informative and I highly recommend you give it a watch! Though it is regarding Tobacco 21 in Texas, the information is still applicable to us.

*Here is a short educational video explaining tobacco harm reduction through vaping.

Please do not enact these proposed policies that will discourage more adults from vaping and ending their addiction to cigarettes!

Vaping is not smoking, and preventing adult access to tobacco harm reduction will carry negative consequences for public health. We urge you to take the time and due diligence to study and understand tobacco harm reduction (THR) before making a decision to move forward with Tobacco 21 ordinance language.

My team and I would really appreciate the opportunity to present another side to this before any final changes are enacted.

Thank you very much for your time and attention to this important matter, and please let me know if you have any questions or would like more information!

Respectfully,

--

Jenny Hoban

Minnesota Tobacco Harm Reduction Advocate

Board of Directors



Liberating Nicotine from Smoke to Save Lives Now:

Facing and Answering 7 Core Questions^{*} to Guide Regulation, Policy, and Communications.

The E-Cigarette Summit - Science, Regulation & Public Health
Washington, DC. May 8th 2017.

^{*} The 7 core questions were originally put forth by Mitch Zeller, Director, Center for Tobacco Products, U.S. Food and Drug Administration.

Background

E-cigarettes and vaping are a contentious and complicated issue, and they also raise critical questions about society's acceptance of the use of nicotine in any form. Seven core issues[†] are raised by the emergence of a class of innovative products (like e-cigarettes) as alternative modes of nicotine delivery without combustion of tobacco. Emerging products are fundamentally changing the way nicotine is delivered and may disrupt the 120+ year reign of the cigarette as the dominant mode of delivering a deadly inhaled mix of toxic smoke along with nicotine.

The 50th Anniversary Surgeon General's Report bluntly concluded: "*The burden of death and disease from tobacco use in the United States is overwhelmingly caused by cigarettes and other combusted tobacco products; rapid elimination of their use will dramatically reduce this burden*" p. 7 and "*The current rate of progress in tobacco control is not fast enough. More needs to be done.*" p. 875.¹

Going forward, to minimize preventable premature death and suffering as quickly as possible, we present these responses to the seven issues, integrating both current science and values-based policy analysis to the critical questions that underpin regulations and communications on nicotine. Our focus is on the core issues raised by nicotine; at times, we mention vaping as a topical and clearly popular example, but vaping is merely an example, not the central issue. The central focus is more generally about reframing nicotine use² to complement and enrich existing tobacco control strategies in the context of the very different modes of nicotine delivery when decoupled from the toxins in the inhaled smoke from combusted tobacco.

Can longer-term use of nicotine for those who need it be accepted?

As an alternative to the high probability of premature death from smoking, long-term use of nicotine delivered by relatively less harmful, non-combusted means is acceptable. The smoke inhaled from burning tobacco (combustibles like cigarettes) is deadly from the carbon monoxide and cancer-causing chemicals in the tar and *not* from the nicotine itself.^{1,3} For every two people who continue a lifetime of smoking, one life will be lost prematurely.⁴ People smoke for the nicotine but they die from the tar.⁵ Providing smokers with acceptable less harmful nicotine alternatives can yield massive health benefits. As an example, e-cigarette use (called vaping) is dramatically less harmful than combustibles. The United Kingdom Royal College of Physicians says: "Although it is not possible to precisely quantify the long-term health risks associated with e-cigarettes, the available data suggest that they are unlikely to exceed 5% of those associated with smoked tobacco products, and may well be substantially lower than this figure" (p. 87).⁶ Expert reviews of toxicological, clinical, and epidemiological evidence indicate that nicotine does not cause cancer and that the chemicals released during vaping are far fewer and well below the harm from inhaled smoke.^{3,6-10} New data should always be considered and added to the available evidence, but the public deserves our best judgment based on what we now know.

The dramatic difference in risk and in product characteristics between non-combusted modes of nicotine delivery and the toxic inhaled smoke from combustion should drive both personal decisions and the policy discourse about nicotine. The alternative classes of emerging products are vastly different from cigarettes. Thus, harms from nicotine also vary dramatically by different modes of delivery, including FDA-approved nicotine replacement medicinal products, non-combusted products like e-cigarettes and low-nitrosamine Swedish snus, all of which likely (or almost certainly) can be used long-term by most smokers with little evidence of harm from the long-term use of nicotine itself.^{3,6,11}

What about recreational nicotine use for adults who may want it?

Users of noncombustible nicotine should know there may be some risks, although dramatically smaller than the risk of cigarettes and other combustibles^{6-8,12} and should be able to choose based on accurate

[†] The 7 core questions were originally put forth by Mitch Zeller, Director, Center for Tobacco Products, U.S. Food and Drug Administration

relative risk information. In terms of impacts on health, recreational use of noncombustible nicotine by adults is vastly different from combustible smoking; the two should not be equated and such misperceptions should be corrected. Consumers must have full accurate and up-to-date information about relative harms of the different classes of nicotine products to make informed decisions.¹³

Can a short transitional period of dual use be ok? Or a longer period?

Using both noncombustible nicotine products and cigarettes (dual use) is common among those attempting to quit smoking;¹⁴⁻¹⁶ most smokers quitting with FDA-approved nicotine replacement therapy (NRT) still smoke and such use is permitted by labeling.¹⁷ Basically, dual use is a transition where a smoker tries out alternative products and methods until they find one that helps them stop smoking. This process can take time and should not be discouraged as a pathway towards eventual quitting or exclusive use of less harmful products. The goal must remain stopping use of combustibles completely and as soon as possible, but some smokers may need longer transition periods to achieve this goal. There is increasing scientific evidence that those who persist in finding an alternative nicotine product that is appealing and satisfying to them and then use it daily over an extended period (e.g. a month or more, rather than only a few times) are much more likely to quit smoking cigarettes or become exclusive e-cigarette users during the year following cessation of cigarettes.^{8,16,18-22}

How much youth initiation can we tolerate?

We should strive to prevent all youth initiation of nicotine. We should prohibit the sale of all nicotine-containing products to those under legal purchase age, something we are now doing in all 50 states. But this goal must be tempered by the realities of adolescent behavior despite our best prevention efforts.

Even with sales prohibitions, some youth will at least experiment with novel products, via “leakage” of products sold to adults into the underage market as youth do with many products, especially those predisposed to risk taking. On the one hand, if the leakage is to teenagers who otherwise would never have used nicotine in any form it is a potential concern from a health perspective if use persists beyond experimentation. A more substantial concern would accrue if some of those who would otherwise have been non-users of nicotine subsequently transition to becoming lifetime cigarette smokers. But the extent, or even the existence, of that behavior pattern remains unknown. On the other hand, use of e-cigarettes by those who otherwise would have started smoking anyway – or those who are already smoking and trying to quit – likely might represent a net health gain if e-cigarette use indeed displaced or prevented further progression to cigarette use.

Kozlowski and Warner (2017) carefully reviewed the evidence to date concerning the actual patterns of e-cigarette and tobacco use as well as the concerns of excessive harms to youth of having alternative less harmful forms of nicotine delivery on the marketplace.²³ After a steep rise from 2011-2014, e-cigarette use among youth dropped significantly in 2016 and use remains largely experimental and among those already using tobacco.²⁴⁻²⁷ Kozlowski and Warner (2017) concluded that while society must be vigilant in tracking trends, the fears of harms seem to be exaggerated and are unlikely to undermine the larger potential benefits of alternative nicotine delivery systems being on the market (see also: Levy et al, 2016; Villanti et al 2016; Warner, 2015; 2016; Glasser et al, 2017).^{8,25-28} Such modes of delivery ideally should eventually make the use of smoked tobacco obsolete, protecting youth and adults alike from the most deadly form of nicotine delivery via combustion.²⁹ Moreover, for adults and society in general, misleading youth or keeping from them truthful information to get them to do what we want is always a failed strategy.¹³

How much weight should diminished interest in quitting play?

There is no evidence to suggest that meaningful numbers of people who have tried e-cigarettes or initiated dual use will stop there and lose all interest in achieving full cessation of combustibles. In fact, in the

years when e-cigarette use has increased most sharply, we have seen a faster drop in cigarette use among both adolescents and adults, leading to record low rates - and we also have seen a greater number of quit attempts in adults over that same time period.^{16,23,26,27,30,31} Until and unless evidence emerges that vaping substitutes for quitting, the possibility that it might deserves little weight in decision-making. What's more, increasing evidence from recent and more scientifically robust studies indicates that alternative nicotine delivery systems, such as e-cigarettes, have surpassed nicotine replacement therapies as the leading method smokers are using to quit smoking.¹⁶ E-cigarette use is also associated with greater numbers of quit attempts and cessation success when used on a regular basis and with the availability of newer devices that deliver nicotine more effectively.⁸

Can we revise labeling and indications for medical nicotine to increase quitting?

Quitting smoking is hard. Information that improves quit rates is therefore valuable. Many smokers wrongly believe any use of nicotine is as harmful as the use of combustibles,³²⁻³⁴ to some extent, that belief stems from misguided public health efforts. Smokers should know that nicotine without smoke is much less damaging to their health than nicotine in combustibles. Non-combustible nicotine products can be useful for smoking cessation.^{8,16,19,22,35,36} Alternative nicotine delivery can help smokers cut down and eventually quit by reducing the urge to smoke or preventing relapse.¹⁷ Sound public education must fully communicate the relative safety of different modes of nicotine delivery and especially when nicotine is decoupled from combusted tobacco smoke.¹³

Where does the principle of harm reduction come in?

Harm reduction, like in many other areas of public health, should be embraced in tobacco control. It is a pragmatic approach that complements and enriches our proven current tobacco control efforts. Harm reduction is often misunderstood in the tobacco control community. Contrary to some skeptics' characterizations, harm reduction acknowledges that no use of nicotine is preferred to any use of nicotine; thus, both prevention of any use of nicotine by underage youth and cessation of smoking by adults is desirable. However, for those who continue to smoke, it is pragmatic to recommend using lower-harm alternatives to combustibles to save many more lives that would otherwise be lost prematurely. This harm reduction strategy is consistent with the 50th anniversary Surgeon General's admonition that more must be done now to eliminate the preventable deaths overwhelmingly caused by cigarettes and other smoked tobacco use.¹

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Tobacco 21 laws are *bad* for public health

Separating Fact from Speculation

A presentation by:



Leading the way toward a Smoke-free America
Minnesota Smoke-free

THR4LIFE is a non-profit 501(c)(3)

Background: Tobacco 21 is an initiative to raise the minimum legal sales age (MLSA) for tobacco and vapor products. Proponents of this measure are admittedly crusading the state of Minnesota in an effort to convince municipalities to participate in the agenda, in hopes they can eventually convince lawmakers to pass the policy at a state level.

While on the surface 'raising the smoking age' may seem like a noble idea, upon further investigation, we find any potential benefit of the policy to be outweighed by the potential harm.

Objective: In this presentation, we aim to separate fact from speculation and misinformation by outlining popular claims made by Tobacco 21 proponents, followed by the results of our research and analysis.

Our Mission: Tobacco Harm Reduction 4 Life (THR4Life) was established to help smokers regain control over their lives by providing balanced and accurate information about tobacco harm reduction. We believe that honesty and transparency in public health is imperative to the long term well being of our communities. We assert that the best way to protect future generations from the harms of tobacco, is to begin with the adults in their lives. We advocate for the technological innovation of tobacco harm reduction as paving the way toward a smoke-free future, a healthier population, and a cleaner environment.

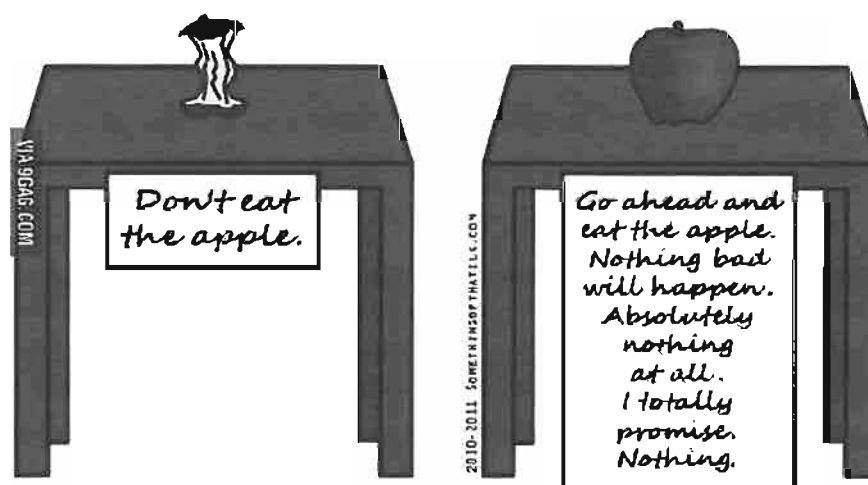
CLAIM: *Raising the minimum legal age to purchase tobacco products will reduce the amount of tobacco use by high school students.*

ANALYSIS: There is currently no conclusive evidence to indicate that Tobacco 21 laws are effective in preventing youth from tobacco use and access. There are 'tobacco control' commissioned, methodologically lacking surveys that speculate hopeful statistics, however, hopeful speculation does not qualify as conclusive evidence.

Psychological reactance may cause the target objective to backfire, increasing smoking

We need to stop and think about the sociological and psychological repercussions of violating the Age of Majority rights, and arguably the Constitutional rights, of young adults. We need to consider the *impact* of removing freedoms from the same demographic of people that we are concurrently encouraging to risk their lives in service to our country, in the name of protecting *our* freedom. When rules are perceived as arbitrary, it adds to an overall diffidence toward the law. As young adults realize their freedom to chose has been removed, they may enter into reactance motivational state and act to regain control by not complying. The term for this is *psychological reactance* - an aversive affective reaction in response to regulations or impositions that impinge on freedom and autonomy. This is a very 'human' and common reaction to loss of free will, and has the potential to **increase smoking**.

Young people are particularly susceptible to unintended *reverse psychology* effects as they develop an appetite for independence. When making their own choices is at such a high level of importance to them, creating a new forbidden fruit to tempt them with is imprudent. By 'raising the smoking age', we are drawing unnecessary attention to smoking during a time when smoking among youth is **already declining at an unprecedented rate**.



Instead of creating an environment of 'control' for youth to rebel against, we need to foster a more *positive environment* that encourages youth to make good decisions because they *want* to. The appropriate response to our unprecedented decline in youth smoking and vaping, is to applaud our youth for **making good choices** and focus on *positive reinforcement* for a continued positive outcome. Tobacco 21 is essentially a punishment for doing well. Removing the simple freedom of choice from legal adults, is an inappropriate response to our declining youth [and adult] smoking rates.

Tobacco 21 sets the stage for black market, increasing tobacco access among youth

Under Tobacco 21 laws, cities lose revenue to neighboring cities and states while simultaneously **setting the stage for a bolstered black market for cigarettes in our schools**. Nothing is stopping a motivated 18-year-old from simply driving to neighboring cities or states, picking up cigarettes, and driving back to capitalize on the new business opportunity. This idea is nothing new. Many Minnesota smokers make the trek to North Dakota and Wisconsin for tax-free smokes since Minnesota raised the sin tax on cigarettes. Furthermore, cigarettes can easily be purchased online, duty-free. Keep in mind, these young "entrepreneurs" will *not be requiring age verification for sales*.

Prohibition is a failed strategy

History repeats itself; this is indisputable. Looking at our history can provide us with clarity and wisdom in making future decisions. When considering whether or not to enact a new prohibition, it is critical that we take a look at the results of similar prohibitive measures.

Alcohol prohibition was a failed strategy

The United States has a complex history regarding the legalization of dangerous drugs. In 1920, the 18th Amendment banned the sale of alcohol. The amendment aimed to stem what was seen as a growing moral decay of society and eventually led to the passage of the 19th Amendment, which gave women the right to vote.

But the 18th Amendment had some other major consequences as well. It helped create an epidemic of organized crime, giving rise to the era of Al Capone and others. It also cut down on tax revenues that could have helped the United States during the start of the Great Depression. In 1933, the 21st Amendment was approved, repealing the disastrous attempt at prohibition authorized by the 18th Amendment.

Raising the drinking age increased college binge drinking, does not prevent youth access

Since raising the drinking age to 21, there's been an **increase in college binge drinking** (ages 18-24). According to the CDC, "people aged 12 to 20 years drink 11 percent of all alcohol consumed in the United States. More than 90 percent of this alcohol is consumed in the form of binge drinks. On average, underage drinkers consume more drinks per drinking occasion than adult drinkers."

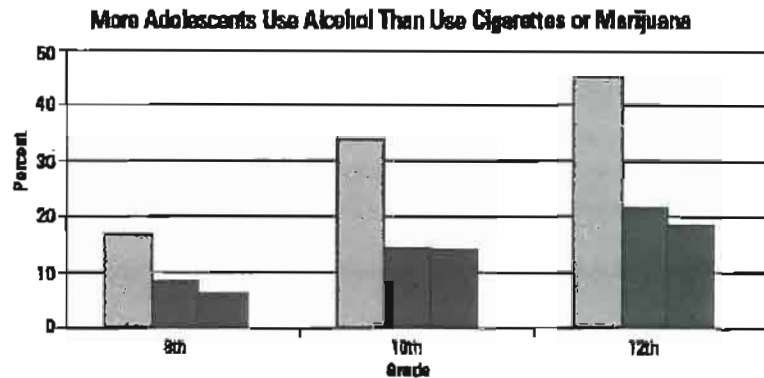


Alcohol is responsible for the deaths over 1,000 people in the U.S. between the age of 18-24 every year. The National Institute on Alcohol Abuse and Alcoholism says that even though the **"21 year-old**

drinking age has been in place for over 25 years, we are still facing an environment where drinking by people under 21 is the norm."

Statistically, more teens use alcohol, than cigarettes and marijuana combined - despite the legal drinking age being 21.

Prohibition on drugs remains ineffective



Similarly, the war on drugs has done nothing to decrease drug use. All it's done is create a violent black market, the highest incarceration rate on the planet, and has cost the U.S. over \$1 trillion since Nixon initiated it in the 1980's.



"Torches of Freedom", when discriminatory tobacco prohibitions backfire

Before the twentieth century, smoking was seen as a habit that was corrupt and inappropriate for women, and some states tried to prevent women from smoking by enforcing laws. In 1908 the New York City Board of Aldermen unanimously passed an ordinance that prohibited smoking by women in public. Following in 1921, a bill was proposed to prohibit women from smoking in the District of Columbia. Cigarettes became a way for women to challenge social norms and fight for equal rights as men. Eventually for women the cigarette came to symbolize 'rebellious independence'. Women who otherwise wouldn't have smoked, began smoking as a statement of social and political activism. This is a prime example of **psychological reactance** in regard to a tobacco prohibition, specifically one that unequally discriminated against a particular demographic of U.S. adults. This prohibitive attempt was rendered

ineffective at accomplishing the desired outcome, and **resulted in an increase in smoking among the targeted demographic.**

All of this proves that prohibition and restriction do not work. Every time the United States has opted to ban some kind of drug in some shape or form, a thriving drug trade has been born. Is that the kind of future we want to create for our children and our society? This kind of solution is not the kind that the state of Minnesota should pursue. Raising the age for tobacco consumption and purchase will not stem usage.

Tobacco 21 laws push youth toward traditional cigarettes

Tobacco 21 does **nothing to prevent youth from obtaining cigarettes through other common means** such as stealing them from a store or a parent, obtaining them consensually from a friend or family member over the age of 21, or even scavenging ash trays outside of grocery stores and gas stations.

Tobacco 21 **prevents adults age 18-20 from access to smoke-free vapor products**, which the Royal College of Physicians has concluded to be at least 95 percent less harmful than smoking. This measure is poised to keep the 90 percent of people who start smoking before the age of 18, bound to cigarettes for three additional years, **hardening an addiction to smoking**.

In a recently published National Bureau of Economic Research Working Paper titled "The Effects of E-cigarette Minimum Legal Sale Age Laws on Youth Substance Use", research supported by the National Institutes of Health concluded that **laws banning sales of e-cigarettes to young adults actually pushes youth toward traditional cigarettes**. Strict enforcement of these laws is linked to an increase in youth smoking participation of 0.7 to 1.4 percentage points. The study concludes that the unintended consequences of these laws is concerning and may have a **negative impact on public health**.

Tobacco 21 laws do not prevent 18 - 20 year olds from smoking. Under this policy, adults (age 18 - 20) are still legally allowed to possess and use tobacco products. Tobacco 21 simply creates an easily surmountable hurdle for those that smoke to obtain cigarettes, while discouraging access to and education in tobacco harm reduction products.

CLAIM: *Needham Mass. saw a 48% decrease in youth smoking rates after implementing Tobacco 21.*

ANALYSIS: Tobacco 21 proponents often cite Needham, Mass. as their golden example of the policy's success. Unfortunately, their claims are misleading, as they fall short of telling the whole story. The Boston suburb did see an impressive 48% reduction in teen smoking rates from 2006 to 2012 after implementing the policy, however, as Needham's director of public health points out, the city had enacted multiple other tobacco control efforts at the same time. "**I wouldn't say it's all because of this [Tobacco 21],**" she told WNYC. Additionally, 'the study analyzed data starting in 2006, a year after the

purchasing age hike. Kessel Schneider, study co-author, acknowledged this as a possible limitation to the research as **it's unclear exactly how teen smoking was trending in Needham during the years leading up to the policy change**'.

The entire nation's smoking rates have been steadily declining for decades, reaching historic lows; Needham is hardly an exception. For example, from 2011 to 2016, **Minnesota's youth smoking rates declined by 56% despite having no Tobacco 21 laws in place**.

Out of the 2 states and 200 plus communities that have passed this policy, this out of context and inconclusive example of Needham, Mass. remains the only statistical claim of Tobacco 21 success.

CLAIM: *Nicotine is highly addictive and dangerous.*

ANALYSIS: The popular perception has long been that it is the nicotine that 'addicts' people to smoking, but according to a number of recent studies, including one by the Royal College of Physicians (RCP), this is not the case. The RCP is one of the most respected medical research groups in the world, and was the first to tell us smoking is dangerous. In their 2016 report "Nicotine without smoke: Tobacco harm reduction", RCP reports that **nicotine, when isolated from the other chemicals in tobacco cigarettes, is relatively benign in its harm, benefit, and addictiveness** (compare to caffeine), and that the most harmful and addictive property of tobacco cigarettes is not the nicotine, rather it is the chemical laced smoke of combustible tobacco that is to blame for tobacco related cancers, diseases, and addiction. This is why tobacco companies add thousands of additional chemicals to tobacco - to create an addiction above and beyond simple nicotine.

This is echoed by the FDA which claims, "although any nicotine-containing product is potentially addictive, decades of research and use have shown that NRT (Nicotine Replacement Therapy) products sold OTC **do not appear to have significant potential for abuse or dependence**." To date, there are no documented cases of nicotine patches, gums, or lozenges creating addiction in users. Nicotine may be the most well known chemical in cigarettes, but is not the culprit when it comes to cancer and other tobacco related disease. Smoking causes cancer, nicotine does not.

The notion that nicotine is addictive dates back to the introduction of Nicorette in the 1980s, when for the first time in history smokers were labelled as "addicts" - as people with no willpower - unable to give up cigarettes without pharmaceutical nicotine products. Claims that 'nicotine is more addictive than heroin' were touted from the official "Surgeon General" report, "Nicotine Addiction", published in 1988. These findings were that of prominent anti-tobacco 'experts', who were later found in a 2014 Washington DC court case to have significant financial ties to the pharmaceutical industry, particularly in the nicotine replacement therapy market, during the time they were designated by the US government as scientific editors of the official "Surgeon General" reports on tobacco. A judgment ordered the FDA to remove these experts from Tobacco Products Scientific Advisory Committee (TPSAC) because of their extensive conflicts of interest with pharmaceutical companies. According to the presiding judge over the case, their recommendations must be considered "suspect" and "at worst unreliable" because of their long-standing

financial ties to the pharmaceutical companies. However, this has not stopped groups with special interests from cherry-picking "facts" from these reports.

The alarmist claims that 'nicotine is the addictive and harmful aspect of smoking' are rooted in corrupt financial interests of pharmaceutical corporations trying to gain a monopoly on the nicotine market through NRT cessation products.

The e-cigarette has been a threat to the pharmaceutical nicotine profits, since it succeeded in taking half of the Nicorette market in 2012. Survey results in the American Journal of Preventative Medicine revealed respondents using e-cigarettes more than 20 times per day had a **quit rate of 70.0%**. Of those who had stayed off the smokes for 6 months; 34.3% were not using e-cigarettes or any nicotine-containing products by that point.

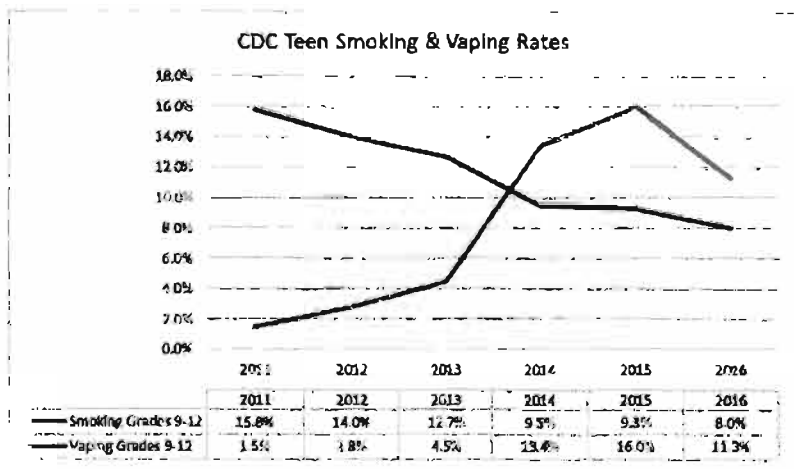
These results are astounding compared to endorsed nicotine replacement therapies that are far more expensive. For example, a study on the effectiveness of nicotine patches found just **8.2%** had abstained from smoking after 24 weeks. In a study of those using nicotine chewing gum, only **7.7%** of the prescribed gum group and **8.4%** in the over the counter gum group were not smoking at six months.

Smokers who switch to vaping are using a harm reduction method to abstain from cigarettes, and are able to detox the chemicals that are [intentionally] added to tobacco cigarettes to create an addiction above and beyond nicotine, while still satisfying cravings and oral fixation through a *clean delivery system for nicotine* suspended in vegetable glycerin and propylene glycol (both of which have been FDA approved for medical use for years.)

CLAIM: *Vaping is a gateway to smoking, re-normalizes smoking.*

ANALYSIS: Though repeated by many anti-tobacco groups, this speculation has no factual or statistical supporting basis. After a decade on the market, there is still **no evidence that vaping is a gateway to smoking**. Rather, there is evidence of the contrary. The CDC's most recent data should put to rest the contention that electronic cigarettes are a gateway to smoking among youth. This new data shows that the prevalence of smoking among high school students was cut in half in just five years - from 2011 to 2016 - at the same time as the use of e-cigarettes among these very same students increased dramatically from 1.5% to a peak of 16.0% in 2015.

Not only has youth smoking declined at an unprecedented pace in the last five years, but for the first time, the prevalence of youth use of e-cigarettes has also declined, **dropping from 16.0% in 2015 to 11.3% in 2016** (among high school students). Use of cigarettes among



high school students continued to fall between 2015 and 2016, dropping from 9.3% to **8.0%**.

This is great news because it reveals that smoking is truly becoming unpopular among youth. The rate of decline in youth smoking is unprecedented. This despite the rapid rise in e-cigarette experimentation. These data are simply **not consistent with the hypothesis that vaping is going to re-normalize smoking and that e-cigarettes are a gateway to youth smoking.**

The drop in e-cigarette use is also reassuring because it suggests that vaping is largely a social phenomenon that involves experimentation and that the addictive potential of these products is quite low. It also suggests that the popularity of youth vaping has peaked and that **concerns about vaping taking over and leading to nicotine addiction among a huge proportion of youth are not warranted.**

Landmark studies from The Royal College of Physicians, Public Health England, among others have determined **vaping does not act as a route into smoking for children or non-smokers.**

CLAIM: *Smoking causes 480,000 death per year in the U.S., and is responsible for approx \$3 billion in annual excess medical expenditures in Minnesota.*

ANALYSIS: According to the Royal College of Physicians' report 'Nicotine without smoke: tobacco harm reduction', **vaping has the potential to eliminate virtually all tobacco related harm.** Researchers have concluded that e-cigarettes are beneficial to public health; that **'smokers can therefore be reassured and encouraged to use them, and the public can be reassured that e-cigarettes are much safer than smoking.'** 11 million smokers have already successfully quit smoking by switching to vaping. Vaping has the potential to eradicate smoking in the U.S., alleviating the death toll and cost burden associated with smoking. Public Health England has already taken steps to promote vaping as a safer alternative to smoking. Bristol city council and public health officials have even offered carbon monoxide testing outside of local vape shops as an effort to persuade smokers to switch to vaping.

CLAIM: *Adolescents who smoke are 3x more likely to use alcohol, 8x more likely to use Marijuana, and 22x more likely to use cocaine.*

ANALYSIS: This claim illustrates that the legal status of a substance is not a barrier to youth who want to use it, and that 'raising the smoking age' is an ineffective way to combat youth smoking.

The age to purchase alcohol is 21 and has been for around 30 years. Marijuana and cocaine are illegal to purchase regardless of age. Though youth who experiment these substances may also smoke cigarettes, they do not use these substances *because* of cigarettes. Youth who have a proclivity toward using illicit and restricted substances, clearly do so regardless of age limit and legal status. There is no clear evidence that nicotine drives adolescents to use illicit substances. Rather, compromised psychological and emotional well being, and lack of awareness of the dangers and consequences, are to

blame for poor choices. Chaotic or abusive home life, depression, anxiety, anger, lack of self worth and confidence, rebellion and psychological reactance are all examples of root causes that lead an adolescent to make the choice to use a restricted substance.

More teens use alcohol than marijuana and tobacco combined. Clearly, the restrictive age of 21 hasn't impeded them from acquiring it. Additionally, meth and heroin have both become a problem in many U.S. schools despite being illegal. If teens are acquiring illegal substances like this, what makes us think they will not find a way to acquire cigarettes? Diffidence toward the law will not decrease by creating more perceivably arbitrary laws; if anything, it will only increase through psychological reactance by insulting the autonomy of those entering Age of Majority.

CLAIM: *During the years from ages 18-21, youthful experimentation often accelerates into daily use. It's a time when the adolescent brain is highly vulnerable, not developed enough to make potentially life altering choices. Humans do not reach a fully developed state until about 25 years of age, and until then lack the maturity, judgment and the ability to access risk in an appropriate form.*

ANALYSIS: At age 18, Minnesota adults can make their own medical decisions, get married, buy guns, own credit cards, vote, and join the military. If an 18-year-old commits a crime in Minnesota, they'll be charged as an adult and could even face the death penalty. Restricting an 18-year-old adult from buying tobacco products conflicts with the Age of Majority rule as defined in Minnesota Statute 645.451. If these young adults are considered too young to chose whether or not to use tobacco or vapor products, then they are also certainly too young to make decisions such as to risk their life serving in the military, to get gender reassignment surgery, or to accrue debt that will follow them the rest of their lives.

Our focus should be on cultivating whole and healthy adults through positive reinforcement and encouragement. According to a new report from the Minnesota Department of Human Services, 'rather than focusing on what youth are doing wrong, we should be emphasizing what the teens are doing right'. The CDC claims to have also found the approach to be effective in creating meaningful change on a range of issues.

Jill Ambuehl, a grant coordinator for Positive Community Norms in Hawley, MN describes the approach saying, "We are choosing to believe in our youth, so they can believe in themselves."

Meanwhile, tobacco control groups are taking the exact opposite approach. Not only are they overwhelming youth with negative statistics about the smoking rates of their peers, they are going as far as to negatively single out specific demographical groups, such as the LGBTQ the community.

For example: "If you identify as LGBTQ and are 18-24, you're nearly 2x as likely to smoke as your straight peers." - Truth Initiative

This message directly segregates a group of young adults based on their sexual identity, and targets them by using what is known as the 'nocebo effect' to instill negative programming and subsequently, negative outcome.

On a broader scale, tobacco control groups use this same *nocebo effect* through Tobacco 21, by negatively portraying the competency of young adults to make their own choices regarding tobacco use, as well as the ability of underage teens to, "just say no", by suggesting the government go as far as to step in and **take rights away from legal adults to 'protect the youth'**. The underlying message here is that *"we don't believe in the youth to make good choices"*. **This sends the message to teens and young adults that they are so incapable of making good choices that they require government intervention.**

This also reinforces the notion that smoking is of such prevalence, that drastic measures are being taken by municipalities to stop it. To an adolescent brain that is so "vulnerable" to suggestion, this is a dangerous misconception.

Tobacco control groups should take the advice from the MDOH, and focus more attention on celebrating our unprecedented and continued decline in youth and adult smoking. A quick look at the latest CDC data on youth smoking shows that our youth have already proven themselves responsible and worthy of our respect when it comes to making choices regarding tobacco use.

Contrary to popular belief, young adults are very informed about the dangers of smoking and using tobacco. **If we are expecting young men and women to live and die for this country, we should give them all possible and reasonable freedoms.** The decision of an adult to use tobacco or vapor products **should not be decided by the government.** That decision should come from each individual.

CLAIM: *70% of Minnesota adults are in favor of enacting Tobacco 21 laws.*

ANALYSIS: An average taken of 2017 Minnesota public polls show **71% of respondents oppose 'raising the smoking age' to 21.**

CLAIM: *65% of young people are in favor of raising the smoking age.*

ANALYSIS: Anti-smoking groups often coach high school students into speaking in support of Tobacco 21, while concurrently claiming that youth under the age of 21 are not developed enough to comprehend the ramifications of decisions such as whether or not to use nicotine. This is contradicting- if youth are not capable of making sound decisions until after they are 21, how then are they capable of comprehending

2017 Minnesota Public Polls Tobacco 21

Should Minnesota 'raise the smoking age' to 21?

Glencoe, MN - The McLeod County Chronicle: **No 61% Yes 34%**
 Hutchinson, MN - Hutchinson Leader: **No 50% Yes 49%**
 Mower County, MN - Kaus AM 1480: **No 84% Yes 16%**
 Wilmar, MN - West Central Tribune: **No 65% Yes 33%**
 St. Cloud, MN - WJON AM 1240: **No 66% Yes 33%**
 Minneapolis, MN - Star Tribune: **No 80% Yes 20%**
 Rochester, MN - Post Bulletin: **No 67% Yes 33%**
 St. Cloud, MN - 88.1 Country: **No 75% Yes 25%**
 Rochester, MN - Rock 107.7: **No 94% Yes 6%**

**71% of respondents said, "NO!"
The People Oppose Tobacco 21**

6/23/17 Tobacco Harm Reduction 4 Life THR4Life.org 

the consequences of enacting laws that remove the rights of legal adults to make decisions for themselves, and add to the erosion of autonomy of U.S. citizens?

Moreover, if this number is accurate, then this is great news because it indicates that this percentage of people *is not interested in smoking*. This is not the demographic that we need to worry about, as they are already inclined to be non-smokers. Rather, it is the alleged 35% of those who are not in favor of such a policy, that need our focus, as they are more likely to become smokers, and even more likely to do so out of psychological reactance after their right to choose as adults, is stripped.

THR4Life Recommendation

When considering the harm reduction benefits of vaping and the dangers of smoking, it may seem logical to raise the legal age to purchase tobacco products to 21, while keeping the age to purchase vapor products at 18. While this could encourage adults over the age of 18 to choose vaping over smoking, we still need to consider the potential psychological backlash of removing freedom from legal adults. **The last thing we want is to do is risk hardening a young person's preference toward smoking, by turning smoking into a form of political activism or rebellion.**

Given the fact that our youth smoking and vaping rates are already steadily declining, we find tampering with this continued progress by adopting Tobacco 21 policies, to be hazardous to public health. We strongly advise legislators to consider the 'big picture' and the potential harm this legislation carries with it. Smoking and vaping are both losing popularity among youth, and community leaders should strive to **protect this progress by opposing Tobacco 21.**

Tobacco 21 is a poor method of addressing tobacco use and the ordinance should not be adopted into law.

"I support the goal of reducing smoking by young Minnesotans," he said. "However, people who are 18, 19 and 20 years old are legally adults and should generally be allowed to make the same personal decisions as older adults."

~ Mark Dayton, Governor of Minnesota ~

Nicotine without smoke: Tobacco harm reduction

<https://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction-0>

Promote e-cigarettes widely as substitute for smoking says new RCP report:

<https://www.rcplondon.ac.uk/news/promote-e-cigarettes-widely-substitute-smoking-says-new-rcp-report>

E-cigarettes around 95% less harmful than tobacco estimates landmark

review: <https://www.gov.uk/government/news/e-cigarettes-around-95-less-harmful-than-tobacco-estimates-landmark-review>

Tobacco Use Among Middle and High School Students — United States, 2011–2016:

https://www.cdc.gov/mmwr/volumes/66/wr/mm6623a1.htm?s_cid=mm6623a1_w

E-Cigarettes Do Not Promote Cancer Growth in Lab Tests:

<http://newsroom.wiley.com/press-release/environmental-and-molecular-mutagenesis/e-cigarettes-do-not-promote-cancer-growth-lab->

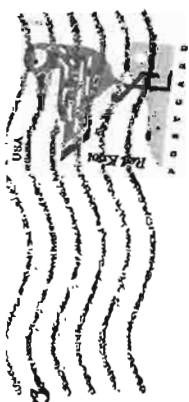
British city council to advocate vaping on No Smoking Day:

<http://ecigintelligence.com/british-city-council-advocates-for-e-cigs-on-no-smoking-day/>

The Effects of E-Cigarette Minimum Legal Sale Age Laws on Youth Substance Use:

<http://www.nber.org/papers/w23313>

Comparison of select analytes in aerosol from e-cigarettes with smoke from conventional cigarettes and with ambient air: <http://www.sciencedirect.com/science/article/pii/S0273230014002505>



Dear Mayor Murphy & Councilmember Bogan

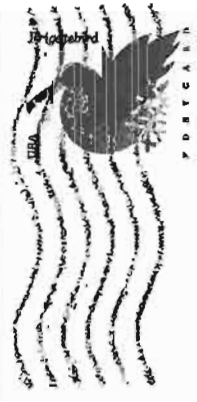
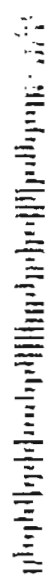
The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Sincerely, Re Tim

Address: 3810 43rd Ave
Robbinsdale MN 55422

Mayor Murphy & Councilmember Bogan

4100 Lakeview Ave N.
Robbinsdale, MN 55422



Dear Councilmember Bogan

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely, Angela Maguire

Address poppenfield #310
4200 W 4th Ave N
City Robbinsdale Zip 55422

Councilmember B. Bogan
4100 Lakeview Ave N,
Robbinsdale, MN 55422



Approximately 95% of current adult smokers started before they were 21. If youth don't smoke by the time they are 21, they likely never will.



TOUNTES LAYS



The tobacco industry targets youths with flavored tobacco products...
but there's nothing *Sweet* about **Tobacco.**



Royal College
of Physicians



Nicotine without smoke

Tobacco harm reduction

A report by the Tobacco Advisory Group
of the Royal College of Physicians

April 2016

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The Royal College of Physicians

The Royal College of Physicians (RCP) plays a leading role in the delivery of high-quality patient care by setting standards of medical practice and promoting clinical excellence. The RCP provides physicians in over 30 medical specialties with education, training and support throughout their careers. As an independent charity representing 32,000 fellows and members worldwide, the RCP advises and works with government, patients, allied healthcare professionals and the public to improve health and healthcare.

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Paul Aveyard is the chief investigator of a trial of nicotine preloading in which NRT is donated by GlaxoSmithKline to the NHS.

Peter Hajek has received research funding from and provided consultancy to Pfizer, Johnson & Johnson, Novartis and GlaxoSmithKline.

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Foreword

The Royal College of Physicians (RCP) exists to improve the care of individual patients, and the health of the population. As tobacco smoking generates more illness and premature death than any other avoidable cause, preventing smoking has been a high priority for the RCP since the health harm of smoking was first recognised over 60 years ago. In the more than 50 years since our first report, *Smoking and health*, in 1962, we have argued consistently for more and better policies and services to prevent people from taking up smoking, and help existing smokers to quit.

Smoking is far less prevalent today than it was in 1962, but remains common, particularly among more disadvantaged individuals in our society. There are still almost nine million smokers in the UK, half of whom will die prematurely unless they quit. The evidence in this report demonstrates sustained progress over recent decades in preventing young people from becoming smokers, but also shows that much more must be done to increase the number of existing smokers who succeed in stopping smoking.

In 2007 the RCP published a report, *Harm reduction in nicotine addiction*, which argued for the application of harm-reduction strategies to tobacco dependence. We suggested that making effective, affordable, socially acceptable, low-hazard nicotine products available to smokers as a market alternative to tobacco could generate significant health gains, by allowing smokers to stop smoking tobacco, without having to stop using the nicotine to which they are addicted. Our report was published just as the prototypes of a new consumer alternative to tobacco, the electronic cigarette (e-cigarette), were first appearing on the UK market.

The rapid growth in use of e-cigarettes by smokers since 2007 demonstrates that many smokers want reduced-harm products, and it is also clear that many smokers have succeeded in quitting simply by substituting electronic for tobacco cigarettes. However, e-cigarettes have also proved to be highly controversial, attracting much criticism as well as support within medicine and public health, and indeed in wider society.

This report therefore aims to provide a fresh update on the use of harm reduction in tobacco smoking, in relation to all non-tobacco nicotine products but particularly e-cigarettes. It concludes that, for all the potential risks involved, harm reduction has huge potential to prevent death and disability from tobacco use, and to hasten our progress to a tobacco-free society. With careful management and proportionate regulation, harm reduction provides an opportunity to improve the lives of millions of people. It is an opportunity that, with care, we should take.

Professor Jane Dacre
President, Royal College of Physicians

Abbreviations

ASA	Advertising Standards Authority
ASH	Action on Smoking and Health
BAT	British American Tobacco
BSI	British Standards Institute
CO	carbon monoxide
COP	FCTC Conference of the Parties
COPD	chronic obstructive pulmonary disease
CTADS	Canadian Tobacco, Alcohol and Drugs Survey
CYP2A6	cytochrome P450 2A6 enzyme
e-cigarette	electronic cigarette
ECITA	Electronic Cigarette Industry Trade Association
EFTA	European Free Trade Association
ENDS	electronic nicotine delivery system
EU	European Union
FCA	Framework Convention Alliance
FCTC	Framework Convention on Tobacco Control
FDA	US Food and Drug Administration
FMO3	flavin-containing monooxygenase 3
GABA	γ -aminobutyric acid
GRPs	gross rating points
HAZ	Health Action Zones
HMRC	HM Revenue and Customs
IGTC	Institute for Global Tobacco Control
ITC	International Tobacco Control policy evaluation project
MAO	monoamine oxidase
MCA	Medicines Control Agency
MHRA	UK Medicines and Healthcare products Regulatory Agency
MMC	mass media campaign
MPOWER	Monitor, Protect, Offer, Warn, Enforce, Raise
nAChR	nicotinic acetylcholine receptor
NICE	National Institute for Health and Care Excellence
NMR	nicotine metabolite ratio
NNN	<i>N'</i> -nitrosonornicotine

NNS	nicotine nasal spray
NO	nitric oxide
NRT	nicotine replacement therapy
ONS	Office for National Statistics
PET	positron emission tomography
PHE	Public Health England
PMI	Philip Morris International
RCP	Royal College of Physicians
SALSUS	Schools Adolescent and Lifestyle and Substance Use Survey
SES	socio-economic status
SHARE	Smoking Harm Reduction Education Programme
SHS	second-hand smoke
SPECT	single-photon emission computed tomography
SSS	Stop Smoking Service
STS	Smoking Toolkit Study
TAPA	UK Tobacco Advertising and Promotion Act 2002
TPD	EU Tobacco Products Directive
TSNAs	tobacco-specific nitrosamines
UGT	uridine diphosphate (UDP) glucuronosyltransferase
WHO	World Health Organization

1 Introduction

Harm reduction is a strategy used in medicine and social policy to minimise harm to individuals and/or wider society from hazardous behaviours or practices that cannot be completely avoided or prevented. Examples include providing clean needles and syringes to intravenous drug users to reduce the risk of infection, promoting condom use by sex workers, drink-driving laws, protective clothing in sport, and motor vehicle safety measures and emission controls. Sometimes by appearing to condone or perpetuate hazardous behaviours that could in theory be prevented, harm-reduction approaches can be controversial, particularly in medicine. To their proponents, however, they represent pragmatic solutions to a range of otherwise intractable causes of avoidable death and disability.

Tobacco smoking is addictive and lethal. Half of all lifelong smokers in the UK die as a direct consequence of their smoking,¹ and smokers lose an average of about 3 months of life expectancy for every year smoked after the age of 35; in sustained smokers this amounts to a total loss of around 10 years of life.^{1,2} Tobacco smoking harms others, through passive exposure of both adults and children to exhaled and sidestream smoke,^{3,4} while smoking in pregnancy impairs fetal growth and development, in some cases to the point of fetal death.⁵ Smoking causes fires and litter, reduces economic productivity and social engagement, and exacerbates poverty.⁶ Together these effects make smoking responsible for more loss of quality and quantity of life in the UK than any other avoidable cause.⁷ As smoking is strongly related to social disadvantage, the burden of ill health caused by smoking falls particularly on the most disadvantaged individuals, making smoking the largest cause of social inequalities in health in the UK.⁸

Smoking is completely preventable, yet, more than half a century after the health harm of smoking first became widely known, almost 1 billion people worldwide still smoke.⁹ They do so primarily because they are addicted to the nicotine in tobacco smoke¹⁰ and, as this addiction can be extremely difficult to overcome, many will continue to smoke until they die.¹⁰ Conventional tobacco control policies, embodied in the World Health Organization's (WHO's) Framework Convention on Tobacco Control (FCTC)¹¹ and MPOWER policy framework

(Monitor tobacco use and prevention policies, Protect people from tobacco smoke, Offer help to quit tobacco use, Warn about the dangers of tobacco, Enforce bans on tobacco advertising, promotion and sponsorship, and Raise taxes on tobacco)¹² aim to prevent the uptake of smoking and to help as many existing smokers to quit as possible. These approaches have contributed to a 50% reduction in UK smoking prevalence in the past 35 years,¹³ as well as increasing global success in smoking prevention.^{9,14} However, although smoking prevalence in the UK is now down to 18%,¹⁵ this figure translates into around 8.7 million current smokers^{16,17} sustaining significant harm from smoking. Harm reduction provides an additional strategy to protect this group, and their counterparts in other countries, from the burden of disability and early death that will continue to accumulate until and unless they stop smoking.

In 2007 the RCP published a report promoting the principle of harm reduction in nicotine addiction,¹⁸ arguing that, as most of the harm caused by smoking arises not from nicotine but from other components of tobacco smoke, the health and life expectancy of today's smokers could be radically improved by encouraging as many as possible to switch to a smoke-free source of nicotine. While recognising the primacy of complete cessation of all tobacco and nicotine use as the ultimate goal to prevent harm from smoking, the report argued that promoting widespread substitution of cigarettes and other tobacco combustion products would, for smokers who made the change, achieve much the same thing.¹⁸ Harm reduction, as a complement to conventional tobacco control policies, could therefore offer a means to prevent millions of deaths among tobacco smokers in the UK alone.¹⁸ This argument was accepted and integrated into national tobacco control strategies published by the then Labour and subsequent coalition governments in 2010 and 2011,^{19,20} through the extension of the licence for nicotine replacement therapy (NRT) to include harm reduction by the Medicines and Healthcare products Regulatory Agency in 2010,²¹ and in guidance issued by the National Institute for Health and Care Excellence in 2013.²²

At the time of the 2007 report, the product categories available as potential smoking substitutes comprised smokeless tobacco, the least hazardous forms of which were then and still are illegal in the UK,¹⁸ and conventional NRT, which, although effective as a smoking cessation therapy, has proved to have limited appeal to many smokers.¹⁸ E-cigarettes, which appeared in the UK at around the time the 2007 report was published, have transformed this market, becoming the most popular choice of product for smokers hoping to quit or cut down on their smoking^{23,24} (see Chapter 5). In the UK and many other countries, however, e-cigarettes have proved highly controversial, attracting both widespread concern and disapproval, and strong support, from individuals and organisations both within and outside medicine. Policies on e-cigarettes vary widely between countries with some, such as the UK, currently allowing their sale as consumer products whereas others, eg Australia, prohibit the product²⁵ (see Chapter 10).

Harm reduction, and in particular the role of e-cigarettes, has probably split global and, to some extent, national opinion on tobacco control more than any other issue. This report therefore aims to provide an update on harm reduction in the UK, particularly but not exclusively in relation to the role of e-cigarettes.

1.1 The harm of smoking

The harm that smoking causes to individuals and society is extensive and has been reviewed comprehensively in reports published by the RCP over the past 15 years,^{3,4,10,26} by the US surgeon general^{27–30} and by many other authorities. The main effects of smoking on health and wellbeing, particularly in the context of the UK population, are as follows.

1.1.1 Mortality

The most recent detailed analysis of mortality caused by smoking in the UK uses data from 2010, when tobacco smoking caused an estimated 122,000 deaths in adults, equivalent to more than one in six of all deaths, in the UK.³¹ Although due to a wide range of diseases, 70% of these deaths were from three causes: lung cancer, chronic obstructive pulmonary disease (COPD) and vascular disease (Fig 1.1).

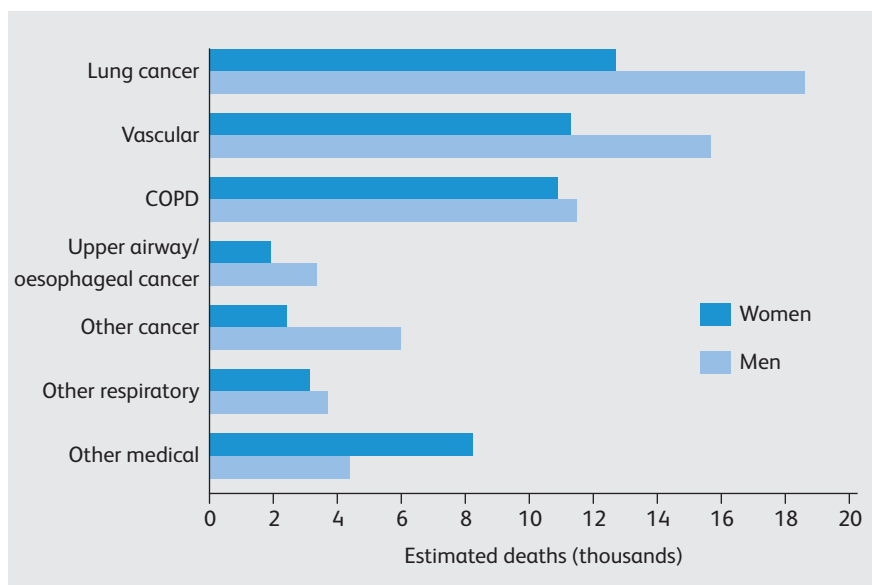


Fig 1.1 Deaths attributable to smoking by disease in men and women, UK, 2009.³¹ (Data for figure from Peto *et al.*³¹)

Deaths caused by passive smoking are more difficult to estimate with precision, but in 2003 over 10,000 adults in the UK were estimated to have died from lung cancer, cardiovascular disease or COPD caused by passive smoking.³² The figure today is likely to be lower, as a result of declining smoking prevalence and legislation making UK public places and workplaces smoke free. Among children, around 40 cases of sudden infant death syndrome are caused by smoking in the UK each year,³ whereas passive exposure of the fetus arising from maternal smoking during pregnancy causes over 5,000 fetal or perinatal deaths each year.³

1.1.2 Morbidity

Smoking during pregnancy accounts for around 2,000 premature births and 19,000 cases of low birth weight each year, and increases the risk of fetal anomalies.³ Among children, passive smoking has been estimated to cause around 165,000 new cases of disease, predominantly middle-ear disease and respiratory infections in 2008,³ generating over 300,000 primary care consultations and 9,500 hospital admissions in the UK each year.³ In adults, combined morbidity and mortality from smoking accounted for the loss of around 2 million disability-adjusted life years in the UK in 2010.⁷ In 2014 smoking caused over 450,000, or about 4% of all, admissions to hospitals in England.¹⁶ Most of these admissions were for cancer, or respiratory or vascular disease.¹⁶

1.1.3 NHS and wider societal costs

Smoking costs the NHS more than £2 billion in direct costs, or more than 2% of the total NHS budget, every year.^{6,13} Costs of inpatient and primary care caused by passive smoking in children in 2007 exceeded £20 million. The total cost of smoking to society, including healthcare, social care, lost productivity, litter and fires, was conservatively estimated in 2015 to be around £14 billion per year.¹³

1.1.4 Smoking and deprivation

Smoking prevalence is strongly and directly related to all measures of deprivation. Smoking prevalence among those in higher managerial and professional occupations in the UK is now close to 12%,¹⁶ whereas among those in routine and manual occupations the figure is over 28%.¹⁶ Among unemployed people, almost 40% smoke,³³ as do around 40% of people with longstanding mental health problems²⁶ and more than 70% of people who are homeless or imprisoned.²⁶

1.1.5 Normalisation effects

Smoking harms the health of others through behavioural effects, independent of tobacco exposure. It was estimated that, in the UK in 2011, over 200,000 11- to 15-year-olds started smoking³⁴ and, although smoking rates have since fallen, it is still the case that, every day, hundreds of children become smokers. These new smokers are more likely to come from households that include a smoker³⁵ or to have been exposed to smoking behaviour in the media³⁶ or in their wider social environment.³⁶ These effects tend to perpetuate addiction to smoking among successive generations of families and social groups, and hence also the consequent inequality in quantity and quality of life in disadvantaged groups.

1.2 Principles of tobacco harm reduction

Tobacco smoke contains thousands of constituents that determine the flavour and other characteristics of the smoke; but, crucially, they also combine to deliver nicotine to the lung in an aerosol, with physical properties that allow rapid absorption into the pulmonary circulation. Although other components of tobacco smoke may enhance the addictiveness of tobacco smoke, the main driver of tobacco smoking is addiction to nicotine.^{10,18} The mechanisms of nicotine addiction are complex, but it is evident that smokers experience an initial sensation of reward from exposure to nicotine; after sustained use and consequent desensitisation to nicotine's effects, smokers seek nicotine primarily to relieve the symptoms of nicotine withdrawal.^{10,18} Regular nicotine use also confers rewards in some of the stimuli and behaviours associated with nicotine delivery, such as the sense of smoke in the throat, and the physical acts that are integral to smoking, such as unwrapping, sharing or handling cigarettes.

Nicotine is not, however, in itself, a highly hazardous drug (see Chapters 4 and 5). It increases heart rate and blood pressure, and has a range of local irritant effects, but is not a carcinogen.³⁷ Of the three main causes of mortality from smoking, lung cancer arises primarily from direct exposure of the lungs to carcinogens in tobacco smoke, COPD from the irritant and proinflammatory effects of smoke, and cardiovascular disease from the effects of smoke on vascular coagulation and blood vessel walls. None is caused primarily by nicotine. For practical purposes, as argued by Mike Russell in the 1970s, 'smokers smoke for nicotine but are killed by tar'.³⁸ Although the nature and extent of any long-term health hazard from inhaling nicotine remain uncertain, because there is no experience of such use other than from cigarettes, it is inherently unlikely that nicotine inhalation itself contributes significantly to the mortality or morbidity caused by smoking. The main culprit is smoke and, if nicotine could be delivered effectively and acceptably to smokers without smoke, most if not all of the harm of smoking could probably be avoided.

It is also clear that many smokers would prefer not to have to smoke to get nicotine, provided that they can access the drug in doses and formulations that they find satisfying and acceptable. The availability and use of an oral tobacco product known as *snus* in Sweden, documented in more detail in our 2007 report (and revisited in Chapter 7), demonstrates proof of the concept that a substantial proportion of smokers will, given the availability of a socially acceptable and affordable consumer alternative offering a lower hazard to health, switch from smoked tobacco to the alternative product.¹⁸ Particularly among men, the availability of *snus* as a substitute for smoking has helped to reduce the prevalence of smoking in Sweden,³⁹ which is now by far the lowest in Europe.⁴⁰ The magnitude of the contribution made by the availability of *snus* over and above conventional tobacco control measures is difficult to quantify, but a recent study of the effect of withdrawal of *snus* from the market in Finland in 1995, when both Finland and Sweden joined the EU, but only Sweden was allowed to continue its use, estimates that over the following 10 years the availability of *snus* reduced smoking prevalence in Sweden by an additional 3.7 percentage points.⁴¹ Trends in *snus* use in Norway are similar to, and perhaps stronger than, those in Sweden, and there the use of *snus* is strongly associated with quitting smoking.⁴²

1.3 Role of harm reduction in tobacco control policy

In 1962, the RCP's *Smoking and health* report promoted a range of smoking prevention measures, including a list of policies that, under the heading 'Possible action by the government', probably represented the first published comprehensive tobacco control strategy.⁴³ The core components – preventing tobacco advertising, increasing prices, making public places smoke free, providing treatment for smokers, educating the public and restricting young people's access to cigarettes – remain at the centre of modern tobacco control strategy as promoted by the WHO⁴⁴ and the FCTC.¹¹

These policies are effective and, when countries and states adopt them comprehensively, the prevalence of smoking falls,⁴⁵ slowly. Australia, Canada and the UK have implemented increasingly extensive ranges of tobacco control policies over recent decades and, in these countries, over the past 10 years or so, prevalence has fallen respectively by around 0.6, 0.75 and 0.7 percentage points per year.^{23,46,47} Adult smoking prevalence is now below 20% in all of these countries, but, even if these rates of decline can be sustained, it will take more than two decades before rates start to approach zero. Meanwhile, substantial numbers of people in these countries continue to smoke: nearly 9 million in the UK, 4.6 million in Canada and 3 million in Australia remain exposed to the harm of smoking. Tobacco control policies may have a greater effect when introduced together for the first time in a high-prevalence setting: in Uruguay,

for example, a comprehensive package of tobacco control measures was introduced in 2005, when adult smoking prevalence was around 34%, and led to a reduction in smoking prevalence of around 1.1 percentage points per year for the next 6 years.⁴⁸ However, even if this rate of decline can be sustained, it will take three decades to eradicate smoking, during which most current smokers will continue to be harmed or killed by their addiction. It is therefore important to complement this approach with strategies to reduce or prevent harm in those who will otherwise continue to smoke.

To date, harm-reduction strategies have tended to focus on reducing emissions and absorption of toxins from conventional cigarettes, eg through the use of filters and attempts to limit tar yields, although the latter proved to be more of a marketing device for the tobacco industry than a genuine reduction in harm potential. More radical strategies, such as promoting alternative sources of nicotine as a sustained substitute for smoking, have until recently been pursued only in the context of therapies for individual smokers attempting to quit. The potential for more widespread nicotine product substitution at a population level, with the primary objective of changing the source of nicotine used by smokers rather than ending all nicotine use, has not to date been widely adopted as a public health policy. The evidence from Sweden suggests that the harm reduction could add a further 0.4 percentage points per year to the rate of decline in smoking prevalence,⁴¹ and hence make a substantial contribution to public health.

1.4 Developments since the publication of the 2007 RCP report and the need for this update

When the RCP published its last report on harm reduction in 2007, options for alternative nicotine products for use in a population-level harm-reduction strategy were limited to smokeless tobacco, the supply of which in the UK is subject to severe constraints under the terms of legislation passed in 1992,⁴⁹ and medicinal NRT products, which many smokers find unsatisfactory as a long-term substitute for smoking.¹⁸ However, the nicotine harm-reduction landscape has since been transformed by the emergence of e-cigarettes which, as documented later in this report, have demonstrated a popularity among smokers akin to that of *snus* in Sweden. The emergence of e-cigarettes has also provoked substantial controversy among those involved in tobacco control, wider public health policy and practice, and the general population, and a spectrum of regulatory responses in different countries that range from free market access to outright prohibition. This report has been produced to review developments relevant to tobacco harm reduction since the publication of the 2007 RCP report *Harm reduction in nicotine addiction*,¹⁸ to look in particular at the effect that this new product category has had on smoking and nicotine use in the UK, and to make further

recommendations as to how the potential for this approach to prevent death and disability from tobacco use might be realised, within an appropriate and proportionate regulatory framework.

1.5 Summary

- Tobacco smoking is addictive, and causes an extensive range of harm to health and wellbeing in individuals and wider society.
- Tobacco smoking contributes more to social inequalities in health, and to overall death and disability, than any other avoidable cause.
- Smoking is preventable, and smoking prevalence falls progressively when countries implement a comprehensive range of tobacco control policies.
- The rate of decline is slow, however, with millions of smokers in the UK alone continuing to be exposed to the immediate and long-term hazards of smoking.
- Harm reduction aims to reduce or prevent harm in those smokers who do not respond to conventional tobacco control approaches by quitting smoking.
- Harm reduction works by providing smokers with the nicotine to which they are addicted without the tobacco smoke that is responsible for almost all of the harm caused by smoking.
- E-cigarettes are a new product class that has proved popular with smokers and offers a viable harm-reduction option.
- E-cigarettes have proved highly controversial and have provoked widely different regulatory responses in different countries.
- It is therefore important to look carefully at the role that these and other novel nicotine products might play in helping to prevent death and disability caused by smoking, and to consider how regulation should be applied proportionately to maximise this benefit.

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2 Smoking in Britain

2.1 Recent trends and current prevalence of smoking in the UK

Reliable national data on the prevalence of smoking among adults in Britain were collected from 1972 to 2011 in the General Household Survey,¹ and since that date in the Opinions and Lifestyle Survey¹ and the Integrated Household Survey.² Data from these sources demonstrate that, over the more than four decades for which survey data are available, smoking prevalence fell from 51% of men and 41% of women in 1972,¹ to 21% of men and 16% of women in 2014² (Fig 2.1). Applying age- and gender-specific smoking rates to the 2013 population estimates of the Office for National Statistics (ONS),³ there are approximately 8.7 million adult smokers in the UK, of whom 4.8 million are men and 3.9 million women.

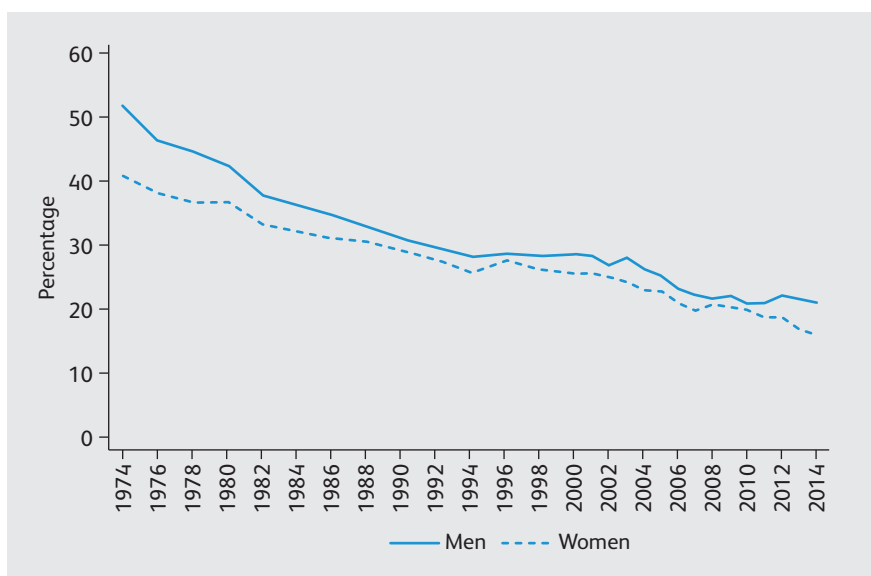


Fig 2.1 Smoking prevalence in men and women in Britain, 1972–2013¹ and 2014.² (Adapted with permission from the Office for National Statistics^{1,2} under Open Government Licence.)

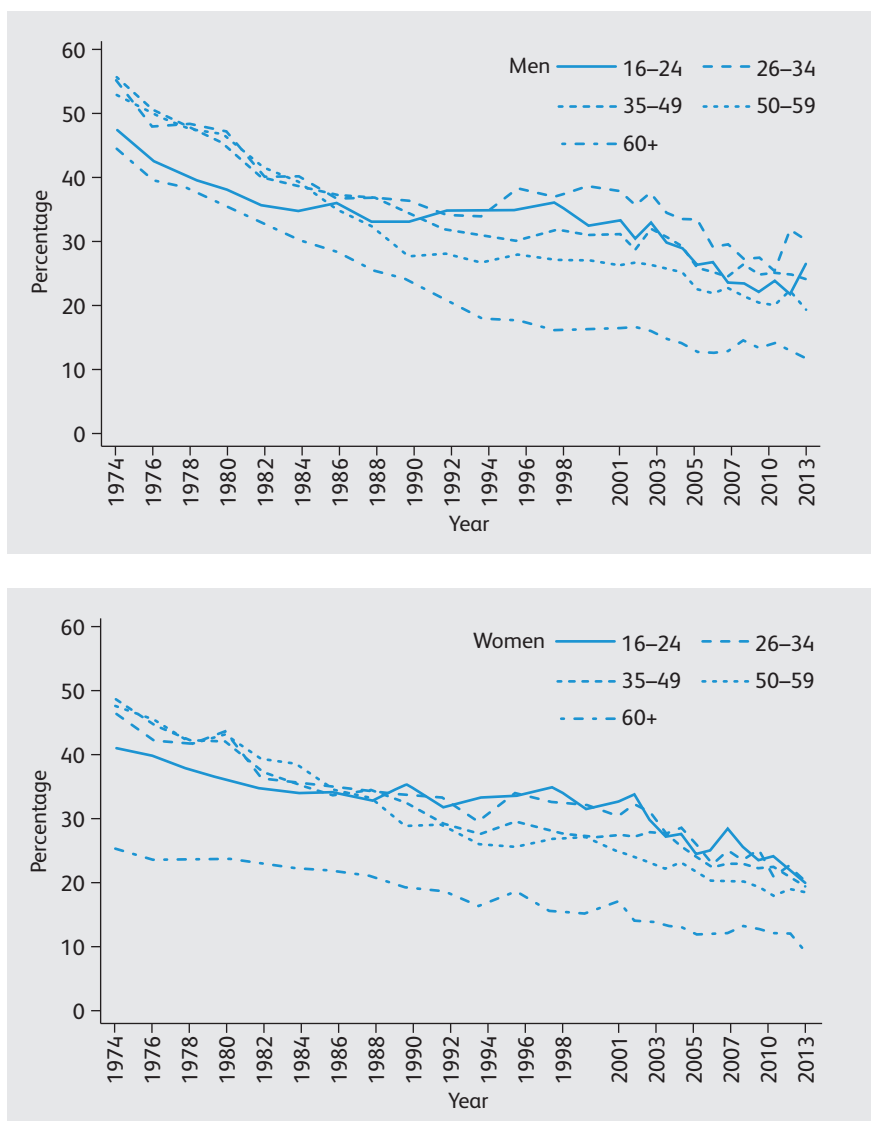


Fig 2.2 Smoking among men and women in Britain, by age 1974–2013.¹
 (Adapted with permission from the Office for National Statistics¹ under Open Government Licence.)

Smoking has always been more common among men than women, and is also related to age and socio-economic status. Especially over the past two decades, smoking tends to be most common among young adults, and least so among older people, but is following a predominantly downward trend in all age groups (Fig 2.2).

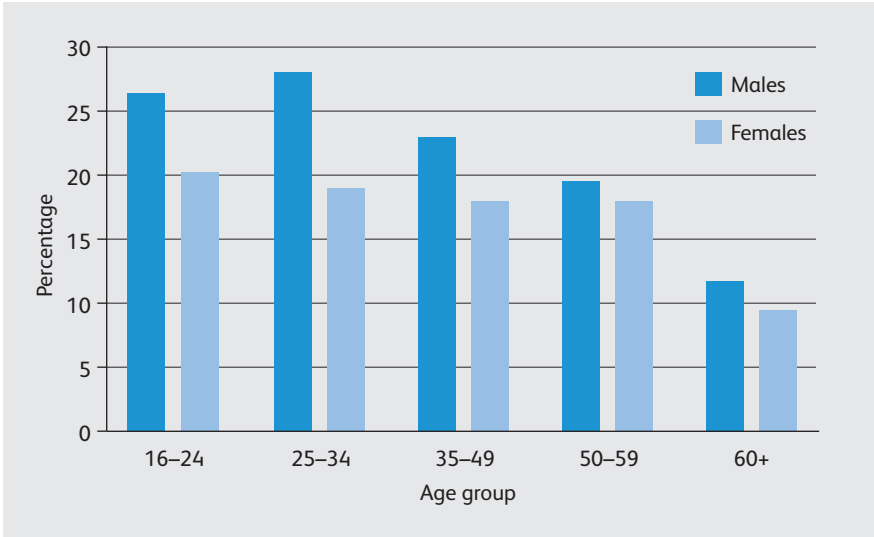


Fig 2.3 Prevalence of smoking by age group and gender in Britain, 2014.² (Adapted with permission from the Office for National Statistics² under Open Government Licence.)

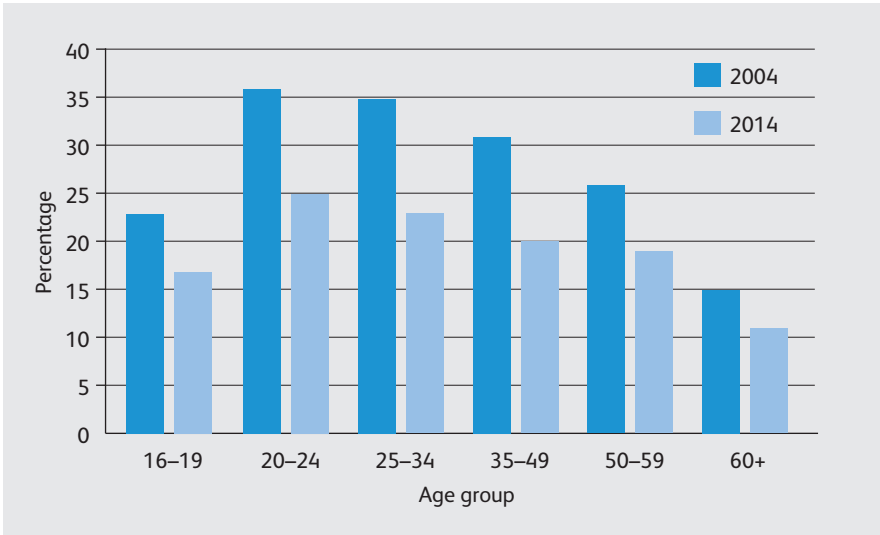


Fig 2.4 Smoking in Britain by age group, 2004¹ and 2014.² (Adapted with permission from the Office for National Statistics^{1,2} under Open Government Licence.)

Cross-sectional prevalence data by age demonstrate that smoking is currently most common among young adults, and particularly among men aged 25–34 (Fig 2.3). Age-group data also demonstrate marked falls in smoking prevalence

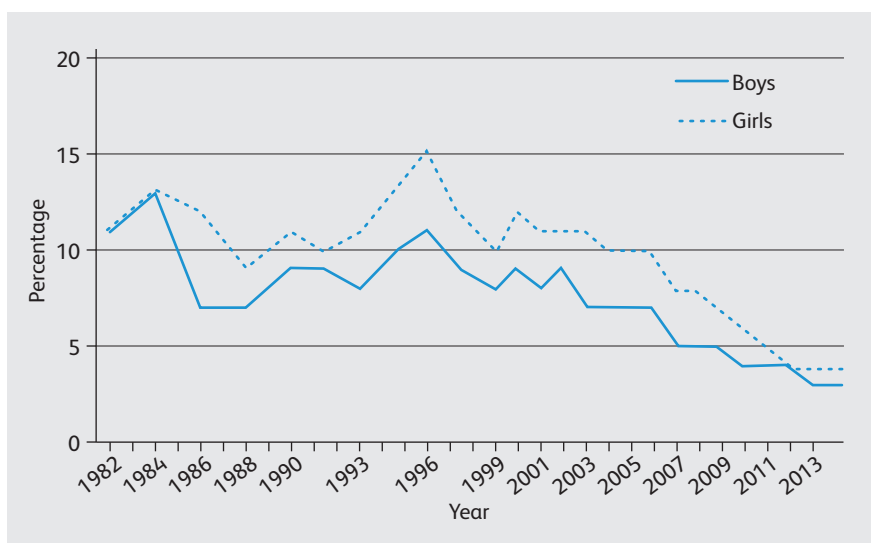


Fig 2.5 Prevalence of regular smoking among children aged 11–15 in England 1982–2014.⁴ (Adapted with permission from the Health and Social Care Information Centre⁴ under Open Government Licence.)

over the decade from 2004 to 2014 in all age groups, but particularly in younger adults (Fig 2.4).

Smoking among children is also falling, even more markedly than among young adults. Figure 2.5 shows that the proportion of children aged 11–15 in England who report that they currently smoke at least one cigarette a week has fallen by around two-thirds since the 1990s, to figures of 4% and 3%, respectively, in girls and boys.⁴ Over the past 10 years the prevalence of smoking in all people aged 11–15 has fallen from 9% to 3%, with smoking among the youngest participants (those aged 11 and 12) falling to almost zero⁴ (Fig 2.6). Similarly substantial declines in smoking prevalence among young people have also occurred in Scotland.⁵

2.2 Smoking and disadvantage

Smoking is strongly associated with socio-economic disadvantage, however defined or measured. Figure 2.7 shows prevalence trends over time in Britain according to occupational socio-economic status, and demonstrates a falling prevalence in all groups since 2001, but also prevalence that is twice as high, and falling more slowly, among those in routine and manual occupations relative to the managerial and professional group.

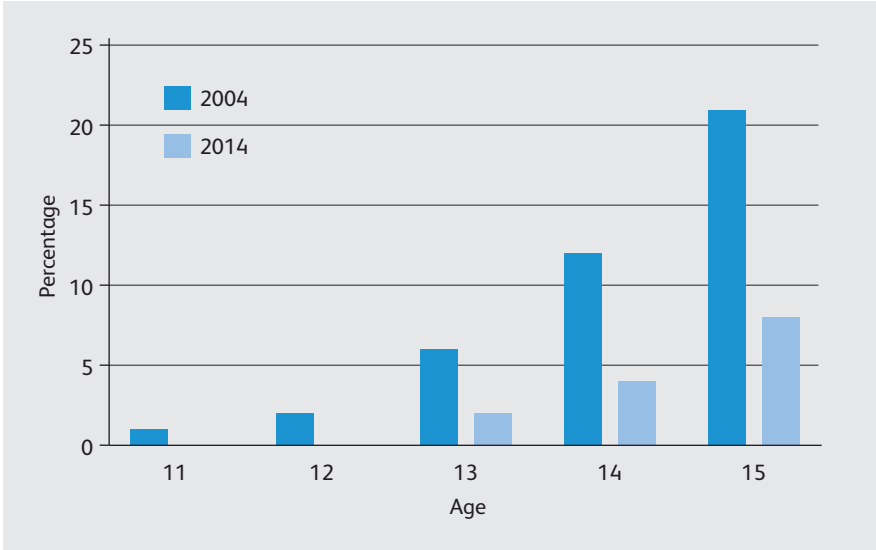


Fig 2.6 Smoking by age: children aged 11–15 in England, 2004 and 2014.⁴ (Adapted with permission from the Health and Social Care Information Centre⁴ under Open Government Licence.)

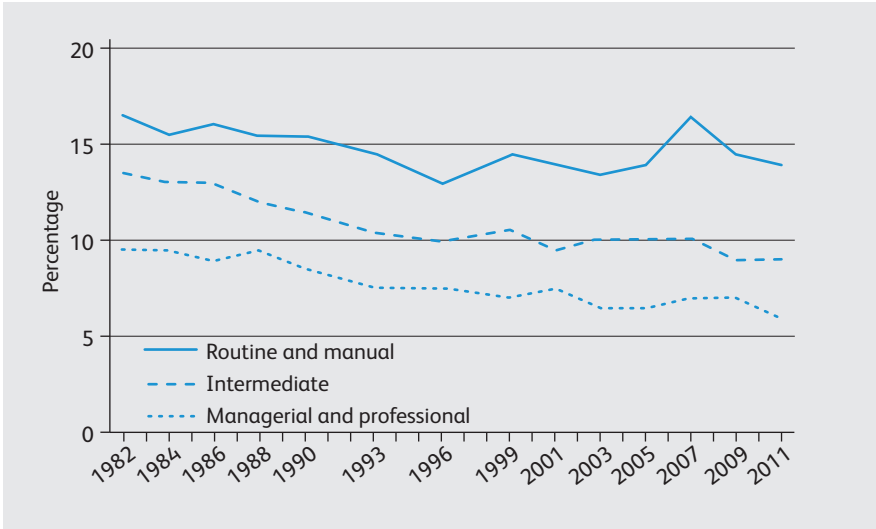


Fig 2.7 Prevalence of smoking by occupational socio-economic status, Britain 2001–13¹ and 2014.² (Adapted with permission from the Office for National Statistics^{1,2} under Open Government Licence.)

A more detailed breakdown of smoking by occupation, from the Integrated Household Survey, demonstrates a clear and direct relationship between smoking

prevalence and occupational social group, being highest in the least skilled occupations (Fig 2.8).

In 2013, smoking in Britain was almost twice as prevalent among unemployed people (35%) as among those in employment (19%), and in those with incomes below £20,000 per year (23%) than those with incomes greater than £40,000 (11%).¹ Smoking is about twice as prevalent among those with a long-standing mental health condition than in those without (Fig 2.9), and similar among those with schizophrenia or other psychosis in 2010⁶ to those in the general population in the 1970s.¹ Among other severely deprived groups, such as those who are homeless, imprisoned, or dependent on other drugs or other substances, most smoke.⁶ The strong relationship between smoking and deprivation means that passive exposure to tobacco smoke, particularly in children, tends to be much higher among children living in relatively deprived households.⁷

Socio-economically disadvantaged people not only are more likely to be smokers, but also tend to be more heavily dependent on smoking. Levels of cotinine, a metabolite of nicotine (see Chapter 4) and a marker of nicotine dependence, are consistently higher among relatively disadvantaged smokers across all age groups⁸ (Fig 2.10).

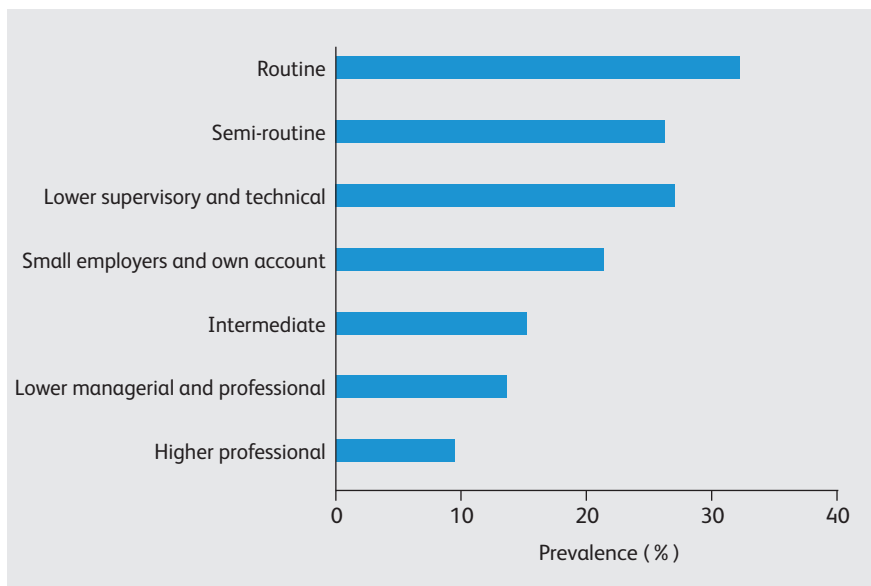


Fig 2.8 Smoking by occupation in Britain 2014.² (Adapted with permission from the Office for National Statistics² under Open Government Licence.)

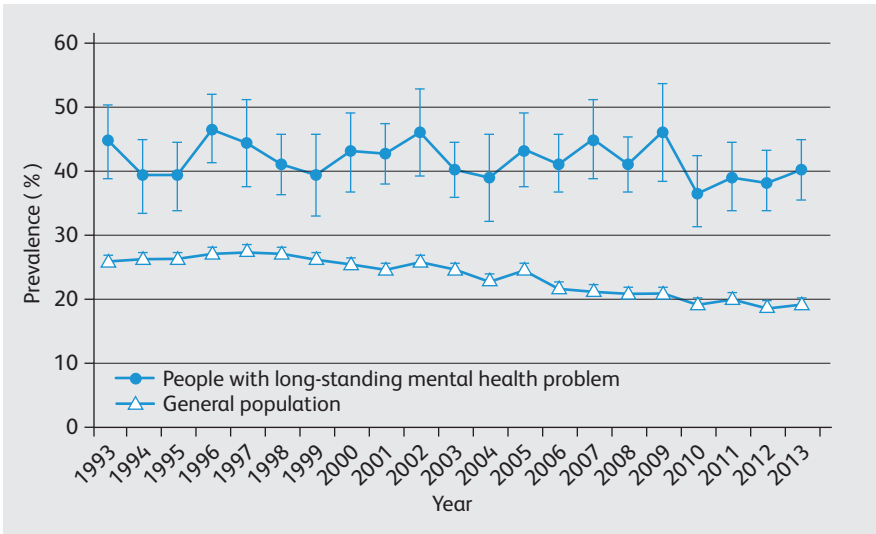


Fig 2.9 Smoking prevalence among people with a long-standing mental health problem, and in the general population, UK 1993–2013. (Updated for this report from the RCP.⁶)

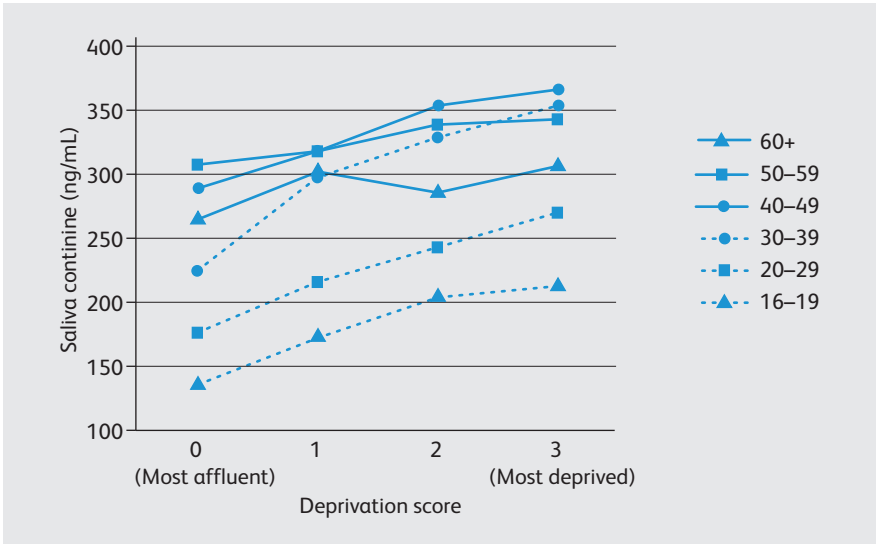


Fig 2.10 Saliva cotinine levels in smokers in relation to age and deprivation (data from 1998 to 2003).⁸ (Adapted with permission from Action on Smoking and Health.⁸)

2.3 Trends in the uptake and progression of smoking in the UK

2.3.1 Smoking uptake

Most smokers in the UK start smoking during their teenage or early adult years. In Britain in 2011, the most recent year for which data are accessible, 68% of male and 65% of female current smokers, respectively, reported that they started smoking before age 18, and 95% and 93%, respectively, before age 25.⁹ Children in lower socio-economic status households tend to start smoking at an earlier age: 43% of smokers in 2011 who grew up in households in which the main wage earner was employed in a manual or routine occupation took up smoking before age 16, compared with 31% of those from professional and managerial households.⁹ Uptake after age 25 is rare in men and women, and in all socio-economic groups.⁹

Smoking status in young people tends to be less dichotomous than in adults, because much early use is occasional and experimental, with a relatively low likelihood of leading to sustained smoking. Comparison of smoking behaviour between children and adults is also complicated by the different survey questions used to define smoking in national surveys in these groups. Thus, by the age of 15 in 2014, 35% of children in England had tried smoking at least once, 5% had smoked occasionally but less than once per week and 8% were smoking regularly, which in this survey is defined as smoking at least once a week.⁴ From age 16, the question used to define regular smoking changes to 'Do you smoke cigarettes at all nowadays?',¹⁰ and by this definition 17% of those aged 16–19 in 2014 were regular smokers.² Among those aged 20–24, smoking prevalence was 25% (see Fig 2.4).

However, these are cross-sectional data, so the prevalence of smoking in those aged 20–24 in 2014 will not necessarily apply to younger cohorts when they reach that age. As Figs 2.6 and 2.7 demonstrate, uptake of smoking among children and young people is falling rapidly, indicating that children born since the early 1990s may be substantially less likely than their predecessors to take up smoking, at least in their teens; and, unless these cohorts take up smoking in their 20s to a much greater degree than has typically been the case in the past, it appears that today's children and young people in the UK are much less likely than their predecessors to become smokers. The marked decline in smoking prevalence among 11- to 15-year-olds began in 2006 (see Fig 2.6) and is likely to be attributable primarily to the major tobacco control interventions of the decade: the phased removal of tobacco advertising in the UK from 2002 and smoke-free legislation, which was in place across the UK by the end of 2007.

2.3.2 Quitting

The proportion of people who have smoked regularly in the past but do not smoke now increases progressively with age. Taking data for 2011,⁹ around 2% of

men and 4% of women aged 16–19 describe themselves as ex-smokers, whereas, of those aged 60 and over, the respective proportions are 45% and 30%. Although the latter figures are likely to be biased upwards by the higher mortality in continuing smokers, this bias will be less marked among those aged 50–59. In this age group in 2011, 27% of men and 24% of women were ex-smokers, whereas 20% and 18%, respectively, were still smoking.⁹ These data therefore indicate that over half of those who had ever been regular smokers quit before they reached the age of 60, but that over 40% continue to smoke beyond that age.

2.3.3 Uptake and quitting within birth cohorts

Cross-sectional data on current smoking prevalence and past quitting are not representative of trends within cohorts of UK individuals born at different times. Figure 2.11 shows General Household/General Lifestyle Survey data from 1972 to 2011, provided by the UK Data Service, analysed to estimate smoking prevalence within 5-year birth cohorts over the duration for which data are available. Figure 2.11 demonstrates that, in more recent birth cohorts, smoking prevalence tends to be highest at around 25 years of age, but also that the peak within-cohort

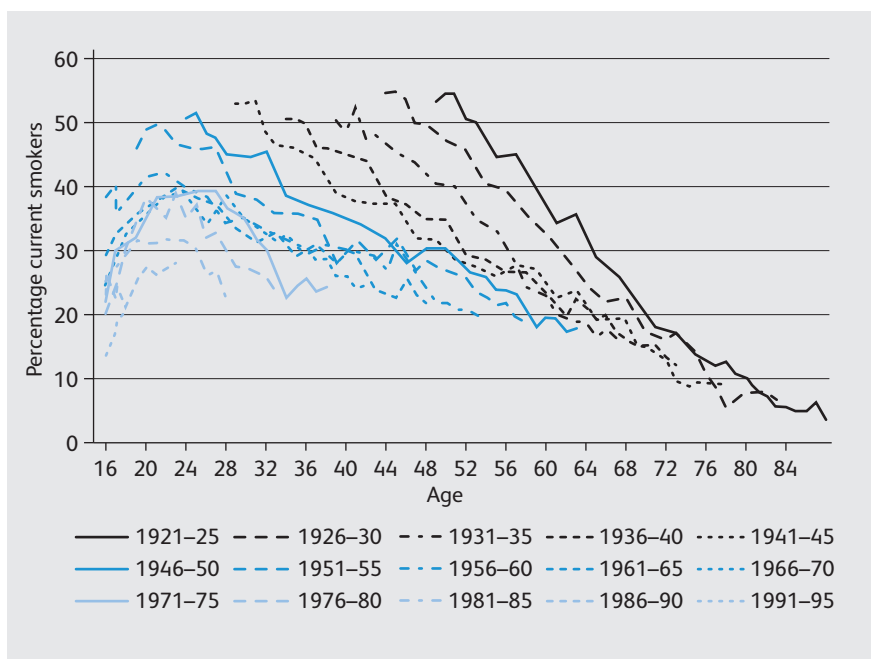


Fig 2.11 Smoking prevalence in Britain from 1972 to 2011, by 5-year birth cohort in people born since 1920.

prevalence has fallen progressively in successive cohorts from almost 50% in those born between 1951 and 1955, to under 30% in those born since 1986. Peak prevalence levels in earlier cohorts are not known, but the steady downward trend in prevalence in all of them indicates that they were probably substantially higher. After age 24 the prevalence of smoking declines in all cohorts, and this decline is likely to be attributable primarily to quitting smoking during mid-adult life, and also to earlier mortality among smokers in older age groups. The rate of this decline in smoking prevalence within recent cohorts is of the order of 1 percentage point per year, which, if sustained, indicates that, by the time today's 20- to 24-year-olds reach the age of 50, their smoking prevalence is likely to have fallen from around 30% (see Fig 2.4) to about 5%.

2.4 Current and expected future mortality and morbidity from smoking

Mortality from smoking tends to lag behind smoking prevalence by several decades, and reached a peak of around 151,000 deaths per year in the UK in the mid-1980s (Fig 2.12).¹¹ This total has since declined progressively to 103,000 in 2009.¹¹ Data for England since 2009 suggest that this trend has continued, with an estimated 78,200 people,¹² equivalent to about 93,000 in the UK, killed by smoking in 2014.¹² The decline has to date been due predominantly to a relatively marked fall in cardiovascular mortality (Fig 2.13), although modest

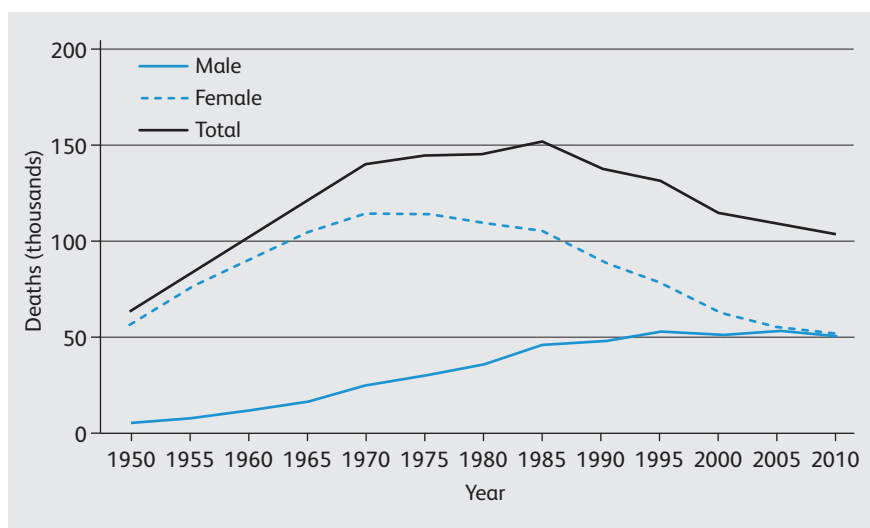


Fig 2.12 Deaths from smoking, total and by gender, UK 1950–2009.¹¹ (Data for figure from Peto *et al.*¹¹)

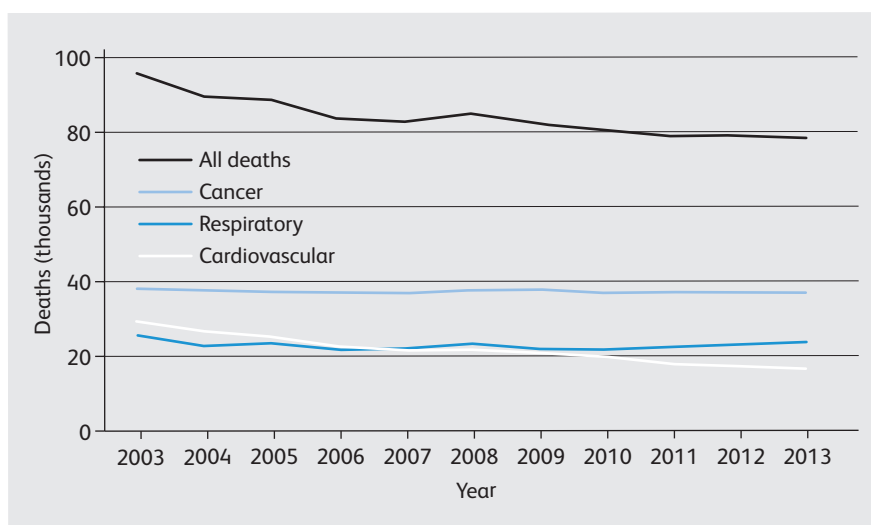


Fig 2.13 Deaths from smoking in England, by cause, 2003–13.¹² (Adapted with permission from the Health and Social Care Information Centre¹² under Open Government Licence.)

declines in all causes of premature mortality among smokers are expected over the coming decades.

Generating estimates of morbidity from smoking is a more complex process and direct data are not available. However, figures on hospital admissions attributable to smoking provide a proxy for morbidity, and demonstrate a sustained rise over the past decade, from 1.38 million in 2003–4 to 1.63 million in 2013–14.¹²

2.5 Summary

- Smoking prevalence has been falling for several decades in the UK, in all age groups, in both men and women.
- Smoking prevalence has fallen particularly markedly since 2007 among children and young people.
- Smoking remains much more prevalent among socio-economically disadvantaged individuals and those with mental health problems.
- Uptake of smoking appears to be falling progressively, whereas quit rates appear to be remaining relatively constant across successive cohorts.
- Smoking remains most prevalent among disadvantaged individuals, and addiction to nicotine tends to be higher in more disadvantaged smokers.

- This means that the approximately 8.7 million smokers in the UK today include a high proportion of the most disadvantaged individuals in society, who as a result of higher levels of addiction are likely to find it particularly difficult to quit smoking.
- Smoking is likely to be rare among today's young people as they approach older age, but continuing efforts to reduce child uptake of smoking are vital.
- However, smoking continues to cause significant mortality and morbidity, in part as a consequence of higher smoking rates in past decades.
- Helping disadvantaged smokers to quit or else reduce the harm caused by smoking is therefore a key priority to prevent current and future death and disability.

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3 Effectiveness of current and future tobacco control policy

3.1 Background

In 1962, when most men and almost half of all women in the UK were regular smokers, the RCP's report, *Smoking and health*, identified tobacco smoking as the primary cause of the twentieth-century global epidemic of lung cancer and proposed a range of policies to reduce smoking prevalence.¹ Progress with implementation of these policies remained slow, however, until the first comprehensive UK tobacco control policy document, *Smoking kills*, was published in 1998.² *Smoking kills* recognised the devastating effect of tobacco smoking on UK public health, and committed to reduce smoking in children and young people, help adults to stop smoking, prioritise reducing the prevalence of smoking in manual occupational groups as a means of decreasing health inequalities, and offer particular help to pregnant smokers. Drawing heavily on the policy recommendations of *Smoking and health*, *Smoking kills* defined a package of tobacco control policies including the following:

- a ban on tobacco advertising and sponsorship
- tobacco tax rises
- enforcement of underage sales laws
- reducing point-of-sale tobacco advertising
- introducing smoking cessation services
- facilitating access to smoking cessation medication
- voluntary measures to reduce passive smoke exposure in public places and workplaces.

Shortly after *Smoking kills* was published, powers for key policy areas, including health, were devolved to the newly established Scottish Parliament, Welsh Assembly and Northern Ireland Assembly, although some powers relevant to tobacco, such as fiscal policy (via the Treasury), remained within the remit of the Westminster government. However, *Smoking kills* had set the scene for tobacco policy changes throughout the UK and, in the years that followed, the main policies it recommended were implemented throughout England and the devolved nations. These new measures included comprehensive smoke-free

legislation, which was implemented in Scotland in 2006 and throughout the rest of the UK by the end of 2007. Each of the UK nations has since produced their own tobacco control strategies, with some variation in emphasis and the timing of how policies were introduced. The core strategies are, however, broadly similar and articulated in the most recent tobacco control plan for England, which was published in March 2011.³ This plan committed to:

- implementing legislation to end tobacco displays in shops
- considering and consulting on plain packaging of tobacco products
- continuing to defend tobacco legislation against legal challenges by the tobacco industry
- continuing to follow a policy of using tax to maintain the high price of tobacco products
- promoting effective local enforcement of tobacco legislation
- encourage more smokers to quit by using the most effective forms of support, through local stop smoking services
- publish a 3-year marketing strategy for tobacco control.

Progress has been made on all these objectives, particularly in ending point-of-sale tobacco displays and passing legislation mandating standardised packaging for tobacco products. The plan also proposed adopting a harm-reduction strategy based on helping tobacco users who cannot or are unwilling to quit smoking to substitute alternative safer sources of nicotine for tobacco,³ to be supported by guidance from the National Institute for Health and Care Excellence (NICE), which was in development at the time but published in due course in 2013,⁴ and undertook to encourage the development of new, affordable and acceptable nicotine products.³ The UK government elected in 2015 has committed to a new tobacco strategy, although a publication date has not been set.

In addition to national and devolved government actions, tobacco control policy in the UK is significantly influenced by international treaties and initiatives. UK tobacco policy is shaped by the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), a global health treaty⁵ ratified by most of the world's countries, including the UK, that defines a comprehensive range of tobacco control policies and practices that all political parties undertake to implement. At the European level, European Union (EU) single market rules have also been a driver of significant policy initiatives across all EU member states in recent years, including legislation banning tobacco advertising (2003/33/EC)⁶ and mandating health warnings on tobacco packs (2001/37/EC, known as the Tobacco Products Directive, or TPD).^{7,8} A revision of the TPD (2014/40/EU), which comes into force in 2016, will impose a minimum pack size of 20 cigarettes (and 50 g hand-rolling tobacco), require combined pictorial and text health warnings to cover 65% of the front and back of the pack, and end

cigarette flavouring.⁸ The new TPD will also set out product standards and regulations on the sale of e-cigarettes (see Chapter 9). UK tobacco control policy thus continues to be shaped by both national initiatives and international agreements and legislation. The combination of these processes has led to the UK becoming the European leader in tobacco control policy implementation.⁹

3.2 Tobacco control policy effectiveness and implementation in the UK

3.2.1 Increasing the price of tobacco products

Fiscal measures, including tobacco taxation, are a key element of tobacco control. In the UK, tobacco tax increased in the mid- to late 1990s, through an escalator of 3% above inflation from 1993 to 1997 and 5% above inflation from 1997 to 2000. From 2001 to 2008 taxes rose in line with inflation, until, in 2009, a tax escalator was reintroduced, which is currently set at 2% above inflation, a commitment that runs until the end of the current parliament in 2020. Overall, between 1980 and 2012 the affordability of tobacco declined by 28%,¹⁰ although, relative to the 1960s' prices, tobacco was approximately 50% more affordable in 2006 than when *Smoking and health* was published in 1962, and remains more affordable today.¹¹ The price of the most popular price category cigarettes, a metric that initially reflected the price of the most popular brand or brands on the market, but now typically represents the prices of the more expensive (premium-brand) cigarettes, has increased consistently over the last three decades (Fig 3.1), with the result that the UK now has some of the highest premium-brand prices in Europe. However, the price of cigarettes in the ultra-low price category favoured by younger and more disadvantaged smokers has remained virtually static in recent years, thus undermining the effects of tobacco tax rises.^{12,13}

The World Bank suggests that price increases through higher taxation are the single most effective and cost-effective tobacco control measure. Its estimates from the late 1990s suggested that a price increase of 10% typically decreases adult consumption by around 4% in developed countries.^{14,15} A 1996 study in the UK produced an estimate consistent with the World Bank figure, with a price increase of 10% reducing consumption by 5% and with evidence that lower socio-economic groups were more responsive than those in higher socio-economic groups to changes in the price of cigarettes.¹⁶ These figures were disputed in a recent paper by HM Revenue and Customs (HMRC), which estimated that the price elasticity of demand for cigarettes increased in the period from 1982 to 2009,¹⁷ suggesting that a 10% increase in price now reduces consumption by 10%. However, this study included duty-paid manufactured cigarettes only, and did not take into account other types of tobacco, such as

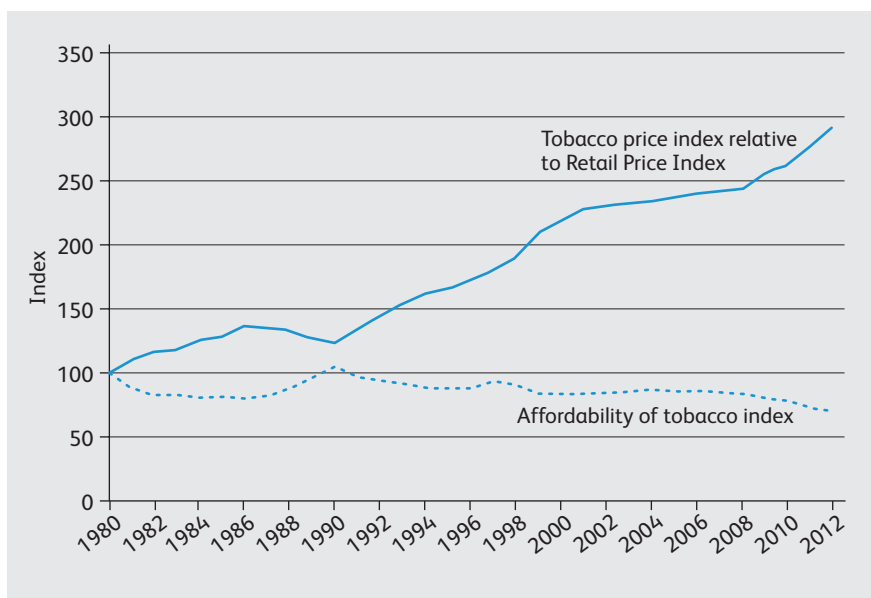


Fig 3.1 Price and affordability of tobacco, 1980–2012.¹⁰ (Adapted from the Health and Social Care Information Centre¹⁰ under Open Government Licence.)

hand-rolling tobacco, to which many smokers downtrade when prices for manufactured cigarettes rise.¹⁸

Evidence from a wide range of settings consistently demonstrates the effectiveness of price increases as a tobacco control measure. From 1990 to 2005, France tripled inflation-adjusted cigarette prices by raising taxes 5% or more every year in excess of inflation and, during the same period, cigarette consumption halved and smoking prevalence fell by a quarter.¹⁹ Comparable price increases in South Africa achieved similar reductions in consumption.¹⁹ However, the available evidence relates predominantly to the effects of relatively small, incremental price rises over time; the effects of sudden large price rises are less well defined.²⁰ Data from France indicate that a single large increase in tobacco taxation in 2003, which caused the price of a packet of premium-brand cigarettes to rise in real terms by almost 20%, resulted in a 13.5% decline in sales.²¹ This implies that sudden large price increases may be more effective than repeated smaller rises.

There is also consistent international evidence that raising taxes to increase the price of tobacco reduces smoking among young people, who as a group are more responsive than adults to price increases.^{22–24} The US surgeon general's report on preventing youth smoking concluded that increases in cigarette prices reduce

initiation, prevalence and intensity of smoking among both children and young adults.²³ Evidence from developed countries indicates that a 10% increase in price reduces youth consumption by between 5 and 12%.²⁴ There is also evidence from high-income countries that low socio-economic status (SES) groups are more responsive to price increases, indicating that tobacco price increases have a key role to play in reducing inequalities in health caused by tobacco use.²⁵ Two systematic reviews have recently assessed the equity impact of tobacco control in high-income countries, in terms of differential impact on SES groups, in both young people and adults.^{26,27} The reviews found that the clearest and most consistent evidence of a positive equity impact (ie reduced inequalities in smoking) for all types of tobacco control in adults, and to a lesser extent in young people (as there are fewer studies on this), related to price increases.

Although UK tobacco prices increased throughout the 1990s, the effects of increasing taxation during this period were undermined by, among other things, a rapid increase in the market share for illicit cigarettes, which rose from 3% in 1996–7 to 21% by 2000–1.^{28,29} This meant that smokers were switching to cheap, illicit cigarettes rather than quitting in response to price rises. This and a relative absence of other tobacco control measures during this period resulted in little change in UK smoking prevalence, despite year-on-year price rises. From 2000, however, a comprehensive anti-smuggling strategy reduced the supply of illicit cigarettes from 21% in 2000–1 to 9% in 2012–13. This included, from 2006, legislation imposing substantial fines on manufacturers who failed to prevent their products from being smuggled into the UK.²⁸ Since then, however, tax increases have been undermined by new developments in tobacco industry pricing strategy, with the creation of a range of ultra-low-price cigarettes and the practice of ‘overshifting’ tax on to more profitable premium brands, leaving ultra-low brand prices relatively unchanged.¹² The consequence of this strategy is that many smokers who might otherwise quit smoking or else reduce their consumption in response to price rises now ‘downtrade’ to lower-price brands, or indeed switch to hand-rolling tobacco.

3.2.2 Restrictions on smoking in public places, workplaces and cars

The health effects of passive smoke exposure are well documented³⁰ and, to protect workers and the public from these effects, bans or restrictions on smoking in public places and workplaces are a key component of tobacco control policy. In the UK, smoke-free legislation was introduced first in Scotland in March 2006, in Wales and Northern Ireland in April 2007, and in England in July 2007.

There is now extensive international and UK evidence that smoke-free laws are effective in reducing passive exposure to smoke. Before the 2007 smoke-free legislation, the highest levels of occupational passive exposure to smoke in the

UK occurred in serving staff in bars and pubs.³¹ A study of bar workers in England, Scotland and Wales showed that their exposure was reduced on average by between 84% and 93% after introduction of the legislation.³² Children are particularly vulnerable to the effects of tobacco smoke, and research in Scotland, Wales and Northern Ireland found that passive exposure of children to smoke declined after the introduction of the legislation in these countries.³³ Between 1998 and 2012 in England, passive smoke exposure among children declined by 79%, and the most rapid decline occurred in the period immediately before smoke-free legislation came into force, thus coinciding with national mass media campaigns highlighting the dangers of passive smoke exposure.³⁴ Smoke-free legislation in the UK has also had positive effects on child and adult health, with substantial reductions in preterm deaths, childhood admissions to hospital with asthma and adult admissions for myocardial infarction.^{35–38}

Smoke-free legislation also acts as an incentive to smokers to quit smoking. The Smoking Toolkit Study found that, at the time of the legislation in England, the number of smokers trying to quit smoking increased significantly, with approximately 300,000 additional quit attempts made.³⁹ Scottish data suggest that quit attempts increased in the 3 months leading up to Scotland's smoke-free legislation,⁴⁰ after which there was a temporary fall in prevalence in addition to the secular reducing trend.⁴⁰ A further study has suggested that, although smoke-free legislation was not associated with additional reductions in smoking prevalence, existing decreasing trends continued in the 18 months following implementation of the ban.⁴¹

Two systematic reviews have recently assessed the equity impact of smoke-free policy in high-income countries on young people and adults.^{26,27} A youth review found that, of the six studies that had looked at the equity impact of comprehensive smoke-free legislation, two had a neutral effect and four were negative in terms of second-hand smoke (SHS) exposure.²⁶ Declines in SHS exposure occurred predominantly among children who had low SHS exposure before smoke-free legislation, and who were from more affluent families. Thus, the substantial SES gradients in children's SHS exposure levels remained unchanged. Welsh data showed that, although there was a significant decline among high-SES children perceiving adult smoking as the norm, there was no change among children from low-SES households.⁴² Thus, SES disparities in children's perceptions of adult smoking as normative increased, which is of concern because social norms are important influences on smoking uptake. An adult equity systematic review found that comprehensive national smoke-free legislation was much more likely to have a neutral or positive equity impact than voluntary partial policies.²⁷

Following the success of smoke-free legislation in the UK, there are continuing efforts to extend smoke-free policies to other settings. Some cities are considering

extending smoke-free laws to outdoor public places including parks or other open spaces. Since October 2015 it has been illegal for drivers in England and Wales to smoke in private cars in the presence of children, and Scotland and Northern Ireland are in the process of introducing similar legislation. Recent UK research suggests that around one-fifth to one-third of 11- to 15-year-olds are exposed to SHS in cars sometimes or often, and that this is concentrated among those from more deprived backgrounds.^{43,44} Around three-quarters of adolescents reported disliking being exposed to SHS in cars. Around one-third of 8- to 15-year-olds who reported ever being exposed to SHS in cars felt too embarrassed or frightened to ask someone smoking in a car when they were present to stop. Most children, adults and adult smokers in the UK support a ban on smoking in cars where children are present.⁴⁵

3.2.3 Mass media campaigns

Tobacco control mass media campaigns (MMCs) use television, radio, newspapers and other media channels to reach large numbers of smokers and encourage them to quit smoking, reduce harm to self or others from tobacco use, and prevent young people from taking up smoking. Large-scale MMCs have been a key component of UK tobacco control strategy since the early 2000s, and there is strong evidence that tobacco control MMCs can increase adult smoking cessation and reduce youth uptake.^{46–53} Campaigns in England have varied in informational content; approximately half of the adverts between 2004 and 2010 warned of the negative consequences of smoking, whereas half contained information on how to quit smoking.⁵⁴ In April 2010, the government ceased spending on national public health MMCs in England. A tobacco control MMC was reintroduced in England in September 2011, but at a much lower rate of funding.⁵⁵ Mass media are also used to promote the ‘Stoptober’ campaign, which has run every year since 2012 and encourages smokers to quit for the month of October. Examples are shown in Fig 3.2.

The magnitude of the independent effect of MMCs on smoking behaviour is difficult to establish when, as is usually the case, they are used together with other tobacco control policies.^{51–53} However, several recent studies have assessed the impact of MMCs on a range of measures of quitting behaviour in England (and, to a lesser extent, Wales), including quit-line calls, hits on the national Smokefree website, and measures of cigarette consumption and smoking prevalence.^{56–60} Over the period from 2002 to 2009, when adult smoking prevalence in Britain fell from 26% to 21%,⁶¹ an estimated 13.5% of this decline was attributable to the effect of MMCs.⁵⁸ A further study showed that positive emotive campaigns – predominantly those promoting the use of NHS Stop Smoking Services – and negative emotive campaigns – generally those containing negative health effects messages – played a statistically indistinguishable role in



Fig 3.2 Examples of imagery from recent UK smoking mass media campaigns (MMCs). (a) Toxic cycle MMC: launched in December 2013, and aimed at reminding smokers of the physical damage caused by tobacco use, while also offering support to help them quit by urging them to go online to get information about stopping smoking, and order a free support pack (Quit Kit), Smokefree app, text and emails, and information on how to contact local NHS Stop Smoking Services.⁶² (b) Stoptober: launched in 2012; runs annually. Uses traditional and new media to set people the challenge of staying smoke free for 28 days starting on 1 October. The call to action is reinforced by the positive message that smokers achieving this goal are at least five times more likely to become permanent ex-smokers.^{63,64} (Reprinted with permission from Public Health England: <https://campaignresources.phe.gov.uk/resources/campaigns/6-stoptober/resources>.)

triggering this effect.⁶⁰ More recently, the annual English Stoptober campaign, which aims to create a positive quitting trigger around a specific call to action – stopping for 28 days – and which uses a combination of traditional and new

media, was estimated to have generated an additional 350,000 quit attempts and 9,000 permanent quitters in October 2012.⁶³

Research from Australia has suggested that the level of exposure to MMCs required to obtain a detectable reduction in smoking prevalence is the equivalent of four exposures per person per month (390 gross rating points, known as GRPs).⁴⁷ Between 2004 and the spring of 2010, campaign exposure in England exceeded this threshold in around 40% of months; in other months, exposure was lower, with no campaign at all during 1 in every 5 months.⁵⁴ A recent study found that, below 400 GRPs per month, there was little impact of campaigns on quit-line calls in England, and that the effect increased significantly above the 400 GRP threshold,⁵⁹ suggesting that efforts should be made to maintain exposure above this level.

The US surgeon general's report on prevention of smoking in youth concluded that MMCs can be one of the most effective strategies in changing social norms and preventing youth smoking.²³ The surgeon general concluded that the characteristics of effective campaigns included evoking strong negative emotions (eg health effects, deceptiveness of the tobacco industry), an appealing format, clear messages, intensity and adequate repetition (at least four advertising exposures per month over a 4-month period). There was strong evidence that MMCs aimed at adults also decreased smoking among young people.

Two recent systematic reviews have looked at the equity impact of MMCs on youth and adults. The youth equity review found only one study that had assessed the equity impact of MMCs on young people by SES.²⁶ This was an evaluation of the US Truth campaign, which had mixed equity effects depending on the outcome measure used.⁶⁵ The adult review found 30 studies that had looked at the equity impact of MMCs.²⁷ These studies included a diverse range of approaches and messages, including some aimed at increasing quit motivations and/or attempts, and some aimed at increasing calls to quit-lines or uptake of free nicotine replacement therapy (NRT). The equity impact of these campaigns was inconsistent. This is perhaps not surprising given the diversity of messages, media formats and levels of exposure. There was some evidence that certain types of message, such as those with a higher emotional narrative, are more effective with low-SES smokers. A previous review also found that the impact of campaigns can vary by SES depending on the type of message, media format and mechanisms of engagement.^{66,67}

3.2.4 Health warnings

Health warnings on tobacco packages are a means of communicating the risks of tobacco use to smokers. Text warnings became a legal requirement in the UK in



Fig 3.3 Examples of UK text and graphic health warnings.⁶⁸ (Adapted from Department of Health⁶⁸ under Open Government Licence; Crown copyright.)

1971, and since 2008 graphic pictorial warnings covering 40% of the back of the pack, and text warnings covering 30% of the front of the pack, have been required (Fig 3.3). The new EU TPD will see a further increase in the prominence of health warnings, with picture and text warnings covering at least 65% of the front and back of tobacco packaging by May 2016.

Studies from a wide range of countries indicate high levels of awareness of pack health warnings among both smokers and non-smokers.^{69,70} Large text warnings have been shown to be linked to increased knowledge about the health risks of smoking⁷¹ and increased motivation to quit.^{72–77} In the UK, a study of text-only warnings found that they were noticed by over half of smokers,^{78,79} and that those noticing warning labels were more likely to know about the health risks of smoking.⁷⁸ Pictorial warnings are likely to be most effective because they are more likely to be noticed, improve memory for the health message, and are associated with stronger beliefs about the risks of smoking and increased motivation to quit.⁶⁹

Determining whether exposure to health warnings is causally related to changes in smoking behaviour has been difficult, owing to the challenges of disentangling their effect from those of other interventions.^{69–80} Research has suggested that pictorial health warnings increase the likelihood of a quit attempt.⁸¹ Further studies, in which UK data were analysed together with data from Australia, the USA and Canada, concluded that forgoing cigarettes as a result of noticing warnings and cognitive reactions to warnings is a predictor of quit attempts,⁸² and that health warnings can help to prevent relapse.⁸³ Some studies have investigated the effect of health warnings on smoking prevalence,^{81–84} with some suggesting positive effects,⁸¹ although other factors may also have contributed.⁶⁹ The US surgeon general's report on prevention of smoking in youth concluded that small text-only health warning labels have limited impact on youth and

young adults, but that larger text or pictorial warnings that elicit strong emotional reactions are significantly more effective at discouraging tobacco use.²³

Systematic reviews of the equity impact of tobacco control policies found no studies that had assessed the equity impact of health warnings in young people,²⁶ and five studies of the effect of health warning labels in adults.²⁷ EU text-only health warnings and the addition of a quit-line number to new pictorial health warnings were found to have had a greater impact on low-SES groups, and the rest were equity neutral.

3.2.5 Comprehensive bans on the advertising and promotion of all tobacco products, logos and brand names

Prohibiting advertising and promotion of tobacco products is a key element of tobacco control. Television advertising for tobacco products was banned in the UK in 1965 under the Television Act 1964, almost 25 years earlier than an EU directive that prohibited television advertising across the EU in 1989 (Television without Frontiers Directive (89/552/EEC)).⁸⁵ This directive was replaced by the Audiovisual Media Services Directive (2007/65/EC) adopted in December 2007.⁸⁶ Subsequently, the UK Tobacco Advertising and Promotion Act 2002 (TAPA) banned print media and billboard advertising from February 2003, tobacco direct marketing from May 2003 and sponsorship within the UK in July 2003.

Advertising bans have been shown to reduce smoking uptake in children by lessening its social desirability, and also to reduce tobacco consumption in adults. The introduction of comprehensive advertising bans in Norway, Finland and France resulted in significant reductions in tobacco sales in the period following the introduction of the legislation.⁸⁷ The US surgeon general's report on prevention of smoking among youth concluded that there is a causal relationship between tobacco advertising and promotion, and the initiation and progression of smoking in young people.²³ It also concluded that comprehensive cigarette advertising bans reduce youth smoking. The World Bank has estimated that comprehensive advertising bans can reduce consumption by around 7%.⁸⁸

A recent systematic review found four studies that had assessed the equity impact of restrictions and bans on advertising and promotion, all of which had a neutral equity effect.²⁷ A similar review on the equity impact on young people found four US studies indicating that, when there is no enforced control of advertising, promotion or marketing of tobacco, there is the potential for increased inequality in youth smoking.²⁶

The main exclusions from TAPA, and hence the key remaining forms of promotion, were displays of tobacco packs at the point of sale in shops, and the



Fig 3.4 Examples of tobacco point-of-sale displays in small retailers in England, before and after prohibition.

pack itself. Legislation ending both of these exclusions has now been passed in the UK. Point-of-sale displays were removed from large retailers such as supermarkets in England, Northern Ireland and Wales from April, October and December 2012, respectively, and April 2013 in Scotland. Point-of-sale displays in smaller shops were prohibited across the UK from April 2015 (Fig 3.4). Studies of the removal of point-of-sale displays in Iceland and Ireland suggest that the policy is supported by the public and that there are signs that prohibition helps to denormalise smoking.⁸⁹ A recent systematic review of the impact of point-of-sale promotion on youth smoking found that there was a positive association between exposure and smoking-related outcomes, including smoking and smoking susceptibility.⁹⁰ The review also found that point-of-sale bans may contribute to a shift in youth perceptions about peer smoking prevalence, but found no evidence of short-term population-level impacts on smoking.



Fig 3.5 Examples of current and proposed standardised cigarette packs. (Reprinted with permission from Cancer Research UK and Action on Smoking and Health.)

Legislation to introduce standardised tobacco packaging in the UK was approved in March 2015, and from May 2016 imposes a standard plain dark-green/brown design and a large graphic health warning on all tobacco packaging, and limits branding to a name and descriptor in a specified and standard plain font (Fig 3.5). A systematic review published in 2012 found that plain packs were rated as less attractive than branded equivalent packs, or unattractive, by young people.⁹¹ An independent review into standardised packaging published in 2014 concluded that the measure is likely to lead to a modest but important reduction in smoking, including among children.⁹² Public support for the measure is also reported to be high: in January 2015, a YouGov survey conducted for Cancer Research UK found that 72% of those polled supported standardised packaging.⁹³

In 2012, Australia became the first country to introduce standardised packaging, and early evaluations suggest that the removal of branding from packaging has reduced the ability of the tobacco industry to use the pack to communicate to

young people and adults, and made products less appealing.^{94–96} There is also evidence that standardised packaging has increased both thoughts about quitting and quit attempts in adult smokers, and reduced smoking prevalence.^{97,98} Concerns that standardised packaging would lead to reductions in the price of cigarettes and increases in illicit tobacco consumption appear not to have been borne out.^{99,100}

With point-of-sale and standardised packaging legislation complementing TAPA, there are few remaining means by which smoking can be promoted in the UK. However, tobacco and related imagery remains prevalent in the media, including films, television programmes, magazines and social media. Although paid-for product placement is illegal under the terms of TAPA, smoking imagery remains common in popular films, computer games and on prime-time UK television.^{101,102} Evidence suggests that there is a clear association between exposure to such imagery in the media and young people starting smoking.¹⁰³ Smoking in the media thus remains a major driver of smoking uptake among children and young people, and needs to be addressed.

3.2.6 Restricting young people's access to tobacco products

Measures to reduce young people's access to tobacco have been recommended as a means of reducing uptake of smoking. Evidence arising mostly from the USA indicates that reducing youth access to tobacco by implementation of the minimum age-of-sale laws reduces smoking prevalence among young people, although this is highly dependent on levels of enforcement and access to alternative non-retail sources of cigarettes.^{104,105} European evidence indicates that access to cigarette-vending machines was significantly associated with regular smoking by young people.¹⁰⁶

Across the UK, the minimum age at which young people are permitted to purchase tobacco was raised from 16 to 18 in 2007, and legislation prohibiting vending machines was implemented between 2011 and 2013.¹⁰⁷ The increase in minimum purchase age in England was associated with a significant reduction in regular smoking among 11- to 15-year-olds¹⁰⁷ and a decline in smoking prevalence among 16- to 17-year-olds.¹⁰⁸ The percentage difference in current smoking pre- and post-legislation was significantly greater among those under 18 than in older age groups. However, the effect of the legislation is undermined by substitution of other means of access, particularly proxy purchasing by adults.^{109,110} Scotland banned such sales in 2010 and England from 2015, although the Scottish legislation appears not to have been successful in reducing proxy sales.¹¹¹

A recent systematic review of the equity impact of tobacco control policies found only five studies that have assessed the equity impact of such measures on

youth.²⁶ Two were equity positive (greater impact on low-SES youth), two neutral (no difference by SES) and one negative (greater impact on high-SES youth). Thus, no overall conclusion can be drawn about their equity impact. However, stronger (ie comprehensive and enforced) US state-level, age-of-sale laws were associated with lower smoking initiation and a reduction in low-SES adolescent girls moving on to regular smoking. In England, raising the age of sale from 16 to 18 was associated with a significant reduction in regular smoking among those aged 11–15 years, with no difference by SES (measured by eligibility for free school meals).¹¹² However, although the percentage of high-SES pupils who found it difficult to buy cigarettes from a shop increased, this was not the case for low-SES pupils.

3.2.7 Treatments to help dependent smokers stop, including increasing access to medications

Evidence-based smoking cessation treatments typically comprise behavioural interventions, delivered as brief advice from healthcare professionals, telephone quit-lines, more intensive one-to-one or group counselling, and pharmacotherapies, including NRT, bupropion and varenicline.¹¹³ The UK was one of the first countries to make these services easily available to all smokers as a tobacco control policy. In England and Wales, NHS Stop Smoking Services (NHS SSSs), free at the point of use, were launched in areas of high deprivation defined as Health Action Zones (HAZs) in 1998–9, and extended to the rest of England and Wales in 2000–1. The number of people using NHS SSSs grew year on year, rising to over 800,000 in 2011–12, although they have fallen each year since then to a total of 450,582 in 2014–15.¹¹⁴

These services, which use evidence-based guidelines¹¹⁵ and strongly recommend the use of pharmacotherapy, have been shown to be effective over a number of years. A national evaluation conducted in the early years after their establishment found that 53% of attendees confirmed abstinence at 4 weeks, with 15% still abstinent at 1 year.¹¹⁶ This study has recently been updated, and 1-year abstinence rates are now lower, at 8%;¹¹⁷ however, some of this change may be attributable to the growth of less intensive and hence less effective forms of support, such as one-to-one interventions in pharmacies rather than individual or group behavioural support delivered by smoking cessation specialists.¹¹⁷ In the UK, cessation support is also available to smokers through stop smoking helplines and websites where smokers can speak to or converse online with a trained expert adviser. In a recent trial using the NHS Stop Smoking helpline, approximately 20% of smokers who agreed to set a quit date were abstinent at 6 months.¹¹⁸ The number of calls to the NHS quit-line is small, however, averaging 20,000 per month between 2005 and 2010.⁶⁰

Pharmacological therapies such as NRT, bupropion and varenicline are highly effective when delivered with behavioural support (see Chapter 5), and initiatives to increase access to these treatments by smokers should improve the success of quit attempts. Making cessation therapies available on reimbursable prescriptions and NRT products available on general sale, which occurred in the UK between 1999 and 2002, resulted in a rapid increase in the proportion of quit attempts supported by medication from 28% to 61%.¹¹⁹ However, a great deal more could be done to extend delivery of stop smoking interventions, particularly by making intervention a component of all NHS care delivery, including secondary care.¹²⁰

Smoking cessation services tend to be more effective in adults than in young smokers. The US surgeon general's report on prevention of smoking in youth concluded that several cessation programmes for youth are efficacious in the short term but that, in contrast to adults, there is little evidence of the efficacy of pharmacotherapies in youth cessation.²³ Data from the NHS SSSs indicate that relatively few under-18-year-olds access these services, and that those who do have lower quit rates than other age groups.¹²¹ A recent systematic review found only two studies that had assessed the equity impact on youth of cessation services.²⁶ Participants in both studies were mobile phone owners in their late teens / early 20s, who were motivated to quit and received text messaging support. Only one study demonstrated a long-term effect on quitting and this was significant only in low-SES intervention participants.

The contribution of NHS SSSs to the reduction in smoking prevalence over recent years has been estimated at between 0.1 and 0.3% above the background quit rate per year.^{122,123} Although the impact on prevalence of policies and initiatives to improve access to treatment is modest, these interventions have been successful in reaching smokers in the most disadvantaged areas,¹²³ who tend to be more addicted and have the most difficulty stopping.¹²⁴ A recent systematic review of cessation studies concluded that untargeted smoking cessation interventions across Europe are, on balance, likely to have increased inequalities in smoking. However, the same review found that the comprehensive UK stop smoking services, which are targeted at low-SES smokers, have reduced inequalities in the harm caused by smoking, because higher reach among low-SES smokers compensates for lower quit rates.²⁷

3.3 Cumulative impact of conventional tobacco control policies and future challenges

Although evidence of the impact of individual interventions on smoking prevalence is limited by the difficulty of separating out the independent effects on smoking prevalence of individual components from a wider package of measures, the multi-component approach adopted in the UK appears to be

effective, for both adults and young people. The effectiveness of comprehensive packages of tobacco control policies has been further demonstrated in a recent study of the association between MPOWER policies – a list of measures developed by the WHO that are intended to assist in the implementation of interventions required by the FCTC (*Monitor tobacco use and prevention policies, Protect people from tobacco smoke, Offer help to quit tobacco use, Warn about the dangers of tobacco, Enforce bans on tobacco advertising, promotion and sponsorship, and Raise taxes on tobacco*) – and changes in prevalence, by scoring countries according to their implementation of MPOWER measures. The study showed that countries with higher MPOWER composite scores experienced greater decreases in current tobacco smoking between the years 2006 and 2009, and therefore underlines the need to implement the widest possible range of policies.¹²⁵ The study also assessed the effect of changes in each MPOWER measure on changes in current tobacco smoking, and confirmed existing evidence that price increases are the most effective tobacco control measure.

Figure 3.6 demonstrates the declines that have occurred in smoking prevalence among adults and young people in Britain since *Smoking kills* was published in 1998, in relation to the timeline of policies introduced. The reduction of adult

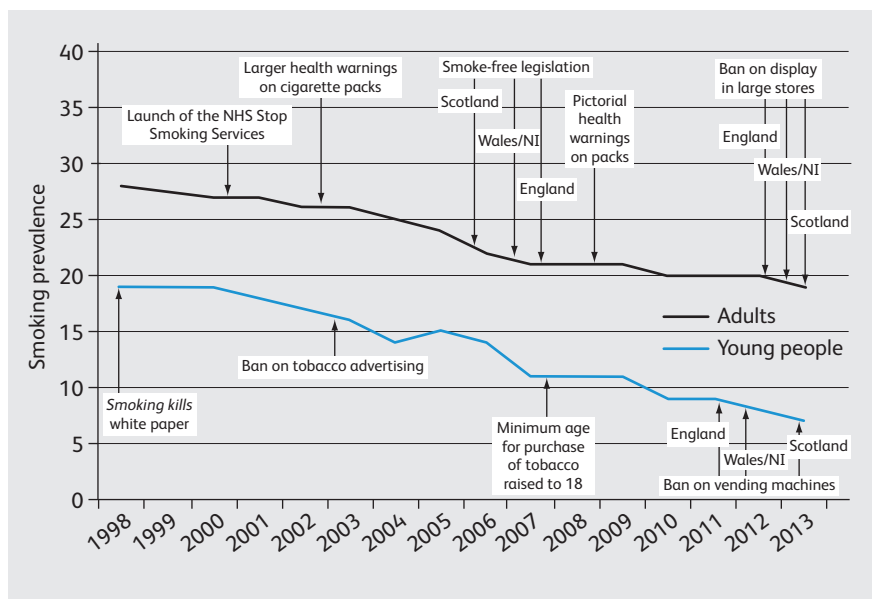


Fig 3.6 Smoking prevalence in adults in Great Britain and young people (current and occasional smokers) in England,^{61,126} and key dates for implementation of tobacco control policy. (Adapted from ONS⁶¹ and HSCIC¹²⁶ under Open Government Licence.)

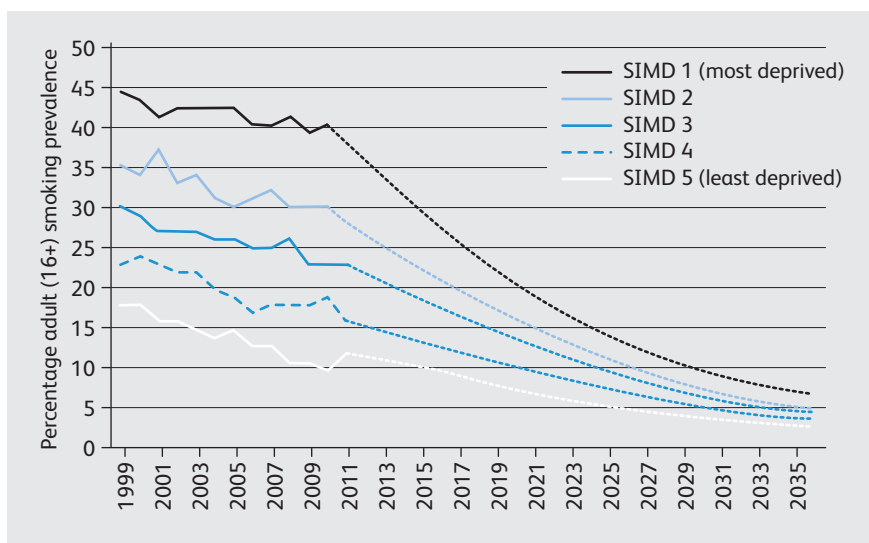


Fig 3.7 Adult smoking prevalence in Scotland by Index of Multiple Deprivation: 1999 to 2011 (actual), 2012–2036 (target projections).¹²⁷ (Adapted from ASH Scotland¹²⁷ under Open Government Licence.)

smoking by around one-third, and by almost twice that proportion among young people, represents a substantial success for tobacco control policy. However, these figures also demonstrate that, despite this progress, smoking remains a significant public health problem in the UK, with around one in five adults still smoking regularly.^{61,128} These smokers, who are increasingly predominantly from the more deprived SES groups in UK society,⁶¹ have by definition proved resistant to policies applied to date, and also by definition are in desperate need of measures to help them stop smoking.

The Scottish Government has recently set a target for Scotland to become ‘tobacco free’, defined as a smoking prevalence below 5%, by 2034. Figure 3.7 demonstrates how challenging it will be to meet this objective given current trends in smoking prevalence, particularly among low-SES groups, and it will be equally challenging in the rest of the UK. If such an ambition is to be realised, new tobacco control approaches that can bring about substantial declines in smoking among the most deprived individuals in society are urgently needed.

3.4 Developing a more effective tobacco control policy approach

There are many ways in which existing UK tobacco control policies could be improved and complemented to achieve faster declines in smoking

prevalence.^{129,130} In addition to policy measures already in place, greater investment in innovative MMCs, reversing declines in the uptake of SSSs and wider integration of smoking cessation interventions into NHS service delivery, extending smoke-free polices to a wider range of public places, preventing smoking promotion through media imagery and other loopholes in advertising and promotion legislation, and tighter measures to prevent youth access would all make contributions to this end.

However, the most effective policy measure is price. Repeated substantial increases in tobacco price, and removal of the price differentials for premium cigarettes, budget cigarettes and hand-rolling tobacco, would have a substantial impact, particularly among low-SES groups. The effect of taxes can be further enhanced if some of the revenue generated is used to support comprehensive tobacco control strategies. However, the negative effect of price rises on the incomes of those who continue to smoke, as well as the need to do more in general to provide smokers with alternative means to stop smoking, demands additional alternative approaches. Making non-tobacco nicotine products available to smokers, as envisaged in the Tobacco Control Plan for England³ and advocated in this report, could not only reduce the prevalence of smoking but also offset the negative effect of increased tax on continuing smokers by providing a more affordable and acceptable alternative product.

3.5 Summary

- Increasing the price of cigarettes reduces smoking prevalence, particularly among young and relatively disadvantaged smokers.
- Price increases may be more effective if introduced in single large rather than multiple small increments.
- The effect of price increases is undermined by the availability of illicit tobacco, and the option for smokers to downtrade to ultra-low-price cigarettes and hand-rolling tobacco.
- Smoke-free legislation has reduced passive exposure of children and adults to smoke, and may also have generated some further reduction in smoking prevalence.
- MMCs reduce smoking in all age groups and are an important factor in enhancing the effectiveness of other interventions, but are effective only if sufficiently well funded.
- Graphic health warnings on packs discourage smoking uptake, and encourage and sustain quit attempts.
- Removal of tobacco advertising is particularly effective in reducing smoking uptake, and both point-of-sale display prohibition and standardised packaging of tobacco products further reduce exposure to tobacco branding.

- Smoking imagery in the media, both branded and unbranded, remains a strong promotional driver of smoking, particularly among young people.
- Raising the minimum age of sale, and prohibiting vending machine sales, reduces smoking among young people.
- Providing cessation support to smokers helps them to quit smoking and, if widely available, increases the rate at which smoking prevalence declines.
- Smokers from low-SES groups are particularly likely to respond to price increases and graphic health warnings.
- Existing tobacco control policy could be enhanced by: further reducing the affordability of tobacco, particularly of budget cigarettes and hand-rolling tobacco; investing in MMCs; preventing smoking imagery in the media, including social media; and extending smoke-free policies to outdoor areas.
- NHS SSSs need to be expanded, and appropriately funded to be integrated and actively promoted in clinical care pathways.
- However, even with all such measures in place, millions of people in the UK will continue to smoke for the foreseeable future. Alternative approaches, particularly for young and disadvantaged smokers, are urgently needed.
- Promoting the use of alternative, acceptable and more affordable nicotine products as a harm-reduction strategy has the potential to complement existing tobacco control policy, and in particular to offset the potentially regressive nature of tobacco tax rises.

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4.1 Nicotine chemistry and absorption

Nicotine is a naturally occurring alkaloid present in the leaves of the tobacco plant, and is the major psychoactive compound and mediator of addiction to tobacco use.¹ Nicotine absorption across cell membranes is highly pH dependent, because only non-ionised nicotine can cross biological membranes and be absorbed into the bloodstream.² Nicotine is a weak base with a pK_a of approximately 8,² so, in the relatively acidic medium of cigarette smoke with a pH typically ranging from 6.0 to 7.8, more than half of the nicotine in tobacco smoke is protonated³ and cannot be absorbed. Manipulating the pH of tobacco smoke to make it more alkaline thus increases nicotine absorption.⁴

The average nicotine content of commercially available manufactured cigarettes is around 10 mg, but, as a result of loss in sidestream smoke, retention in the cigarette stub and delivery of nicotine in ionised form, only about 1 mg is absorbed from each cigarette smoked.⁵ When tobacco smoke is inhaled, nicotine passes through the alveolar membranes of the lung into the pulmonary venous circulation. It is then carried into the heart, and then directly into the arterial system, reaching the brain within 10–20 s. The rate of increase in arterial nicotine concentration achieved by inhaling nicotine is thus faster even than that achieved by intravenous administration, with peak arterial concentrations occurring at around 20 and 30 s, respectively.⁶ After smoking a single cigarette, arterial nicotine concentrations differ according to the type of cigarette and the way in which it is smoked. Thus, one study reported arterial levels of only about 20 ng/mL,⁶ but some smokers can achieve arterial nicotine concentrations of about 60 ng/mL with just a few puffs⁷ and arterial concentrations of 100 ng/mL have been reported after smoking a single cigarette.⁸ The arterial blood nicotine levels achieved by inhaling nicotine are much higher than in the venous circulation⁸ (Fig 4.1). As the rate at which an addictive drug reaches the brain influences its addictive potential,⁹ the fast absorption and delivery of nicotine after inhaling tobacco smoke underpin the rapid behavioural reinforcement of smoking.¹⁰

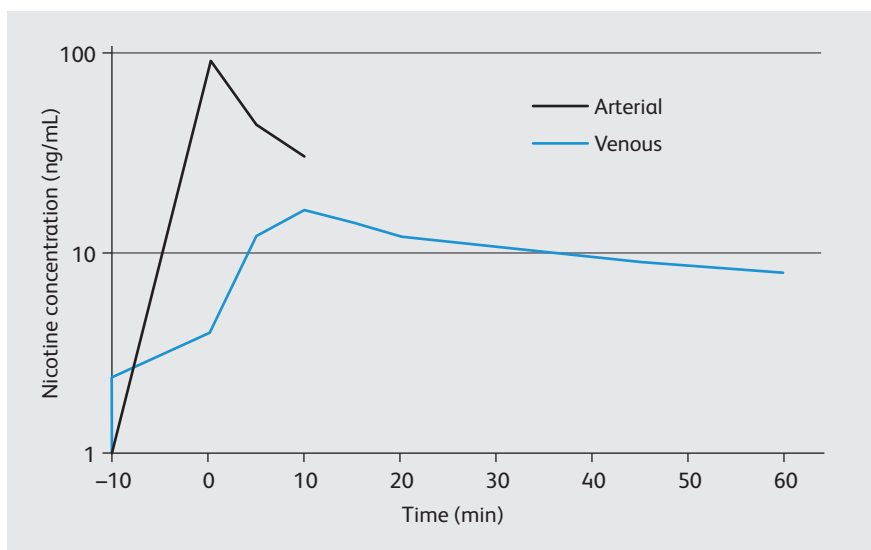


Fig 4.1 Arterial and venous plasma nicotine levels after smoking a cigarette. (Adapted and reprinted from Le Houezec⁸ with the permission of the International Union Against Tuberculosis and Lung Disease. Copyright © The Union.)

In contrast, when nicotine is swallowed, it is absorbed from the gastrointestinal tract into blood that flows into the portal veins and hence to the liver, where it undergoes substantial first-pass metabolism. Oral nicotine therefore generates very low and similar systemic venous and arterial blood levels. Conventional nicotine replacement therapy (NRT) products avoid this first-pass metabolism by delivering nicotine via the skin, mouth or nose, blood from which drains directly into the systemic venous system. NRT thus generates higher arterial nicotine levels than those achieved by gastrointestinal absorption, but levels in arterial blood are similar to those in venous blood and much lower than those achieved by inhalation. There are also marked differences in venous plasma concentrations of nicotine achieved, depending on the form and dose of NRT used¹¹ (Fig 4.2). The variation in time to reach maximal nicotine plasma concentration is due, in part, to differences in administration duration as well as absorption time that occur with each route of delivery.¹¹

The relatively slow delivery of nicotine to the brain achieved by NRT is much less reinforcing, and hence much less likely to generate dependence, than cigarette smoking.¹² However, forms of NRT that deliver nicotine relatively quickly, such as the nasal spray, are thought to be more likely to generate dependence than others. Overall, however, the addictive potential of cigarettes is much higher than that of NRT or other non-inhaled nicotine products.¹³ Clinically, very few users of NRT become dependent on it.

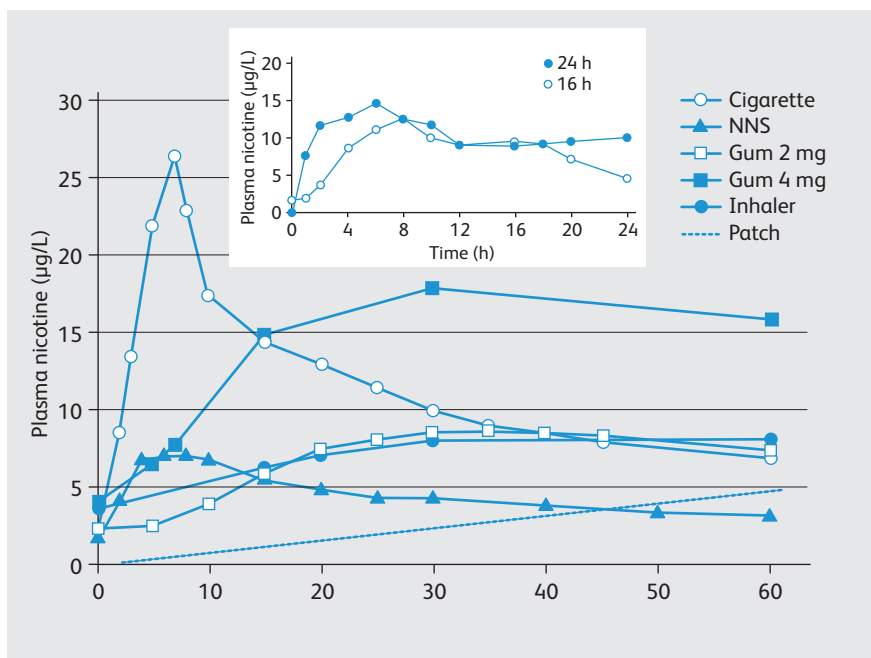


Fig 4.2 Venous plasma nicotine concentrations achieved over 1 h by a single cigarette and by single doses of various forms of nicotine replacement therapy (NRT – nicotine nasal spray (NNS), 2 and 4 mg gum, and nicotine patch). Inset: nicotine levels after a 16- and 24-h course of nicotine patch treatment over a 24-h period. (Reproduced from: Schneider NG, Olmstead RE, Franzon MA, Lunell E. The nicotine inhaler: clinical pharmacokinetics and comparison with other nicotine treatments. *Clinical Pharmacokinetics* 2001;40:661–84.⁸ With permission from Springer.)

4.2 Nicotine metabolism

Around 70–80% of absorbed nicotine is metabolised to cotinine,¹⁴ and around 90% of this metabolism is via the hepatic cytochrome P450 (CYP) 2A6 enzyme.¹⁵ The majority of cotinine is then further metabolised to 3'-hydroxycotinine in a reaction mediated exclusively by CYP2A6.¹⁶ Both nicotine and its metabolites are excreted in urine. As most nicotine clearance occurs via metabolic (ie non-renal) means, variability in nicotine metabolism is likely to cause substantial variation in the rate of nicotine clearance between individuals.^{17,18} The ratio 3'-hydroxycotinine:cotinine is known as the nicotine metabolite ratio (NMR), which serves as a phenotypic indicator of CYP2A6 enzymatic activity. As CYP2A6 represents the major route of nicotine clearance, the NMR is also strongly correlated with the rate of nicotine clearance.¹⁸

Variation in the *CYP2A6* gene, which has an impact on the functionality of the *CYP2A6* enzyme, is common and associated with alterations in the rate of nicotine clearance, together with a variety of smoking behaviours.¹⁹ Slower nicotine metabolism, as inferred from *CYP2A6* genotypes or as measured directly by the NMR, is associated with lower cigarette consumption,^{20,21} lower nicotine dependence,²² lower smoking-related reward²² and lower risk of being a current smoker.²⁰ Slower nicotine metabolism is also associated with an increased likelihood of unaided cessation (ie cessation without behavioural or pharmacological support)^{23,24} and cessation in clinical trials, in which slow metabolisers are typically more likely to achieve abstinence on both placebo^{25,26} and NRT.^{27,28} A separate study that used an alternative *CYP2A6* phenotype measure also found associations between slow nicotine metabolism and higher abstinence rates.²⁹ The prevalence of slower nicotine metabolism differs according to ethnicity, predominantly owing to interethnic variability in patterns of *CYP2A6* allele expression. The frequency of *CYP2A6* alleles conferring reduced or loss of *CYP2A6* activity is generally higher in African and East Asian populations than in European populations, as reflected by a higher prevalence of reduced nicotine metabolism in populations of African and East Asian descent (approximately 40–50%) versus European descent (approximately 10–25%).^{30–32}

In addition to *CYP2A6*-mediated nicotine inactivation, nicotine can be inactivated through *N*-glucuronidation and *N'*-oxidation, through metabolism by uridine diphosphate (UDP) glucuronosyltransferase (UGT) 2B10 and flavin-containing monooxygenase (FMO) 3, respectively. The resulting minor nicotine metabolites, nicotine *N*-glucuronide and nicotine *N'*-oxide, account for up to 5% and 7% of a nicotine dose that can be recovered from urine, respectively.² In individuals with no functional *CYP2A6* activity, FMO3- and UGT-mediated nicotine metabolism may be more important for nicotine clearance;³³ however, reduced FMO3 function did not substantially affect nicotine metabolism in individuals with reduced *CYP2A6* activity.³² UGT2B10 can also metabolise cotinine to cotinine *N*-glucuronide, comprising 12–17% of a nicotine dose recovered from urine.¹⁴ A second UGT enzyme, UGT2B17, metabolises 3'-hydroxycotinine to 3'-hydroxycotinine *O*-glucuronide, and accounts for about 9% of a nicotine dose recovered from urine.²

Several of these minor enzymes involved in the nicotine and cotinine metabolic pathway (FMO3, UGT2B10 and UGT2B17) are highly polymorphic, with some genetic variants leading to altered activity of these enzymes. Variation in *FMO3* is associated with minor alterations in nicotine metabolism, but appears to be of insufficient magnitude to alter cigarette consumption or total tobacco dose in light smokers of African-American ancestry.³² In heavy smokers of European ancestry, variation in *FMO3* has little effect on consumption, unless restricted to those with faster *CYP2A6* activity (a difference of about three cigarettes a day).³⁴ The influence of *UGT* genetic variation, tested to date on variation in nicotine

metabolism, is also relatively modest and does not appear to alter smoking behaviours substantially.^{35,36} Although *UGT2B17* genetic variation is associated with altered 3'-hydroxycotinine metabolism,³⁶ variation in genes for UGTs that alters cotinine and 3'-hydroxycotinine metabolism is unlikely to affect smoking behaviours because cotinine and 3'-hydroxycotinine are essentially inactive metabolites of nicotine.

4.3 Systemic and central nervous system effects

4.3.1 Nicotinic acetylcholine receptors

Nicotine exerts its pharmacological effects through binding to nicotinic acetylcholine receptors (nAChRs). These receptors are universally expressed in cells throughout the body,³⁷ including the central and peripheral nervous systems, where they play a key role in mediating nicotine dependence and addiction. The nAChRs are ligand-gated ion channels composed of five transmembrane subunit proteins arranged around a central pore. Neuronal nAChRs consist of α (α_2 – α_{10}) and β (β_2 – β_4) subunits,³⁸ each of which is encoded by a single gene (denoted with a 'CHRN' prefix), and may be homomeric or heteromeric in terms of subunit composition. Different combinations of subunits result in receptors differing in pharmacological and physiological profiles.^{39,40} Individual subtypes differ, eg in their affinity for nicotine, and sensitivity to upregulation and desensitisation after nicotine exposure.⁴⁰

Each nAChR subtype has a distinct distribution profile within the brain, which can be determined through assessment of subunit mRNA using techniques such as *in situ* hybridisation, and through imaging techniques such as positron emission tomography (PET) and single-photon emission computed tomography (SPECT), using subtype-selective radioligands.⁴⁰ The differential expression of specific subunits, with distinct biological functions in brain regions mediating specific behaviours, allows nicotine to exert a broad range of effects.⁴¹ The $\alpha_4\beta_2$ receptor is the most commonly expressed subtype in the human brain, and historically has been implicated through animal models as critical to the experience of nicotine's reinforcing effects (eg Picciotto *et al*⁴²). In recent years, however, the importance of the less studied α_3 - and α_5 -receptor subunits in mediating nicotine dependence has been recognised. The α_5 -receptor subunit appears to play a key role in determining aversive responses to high doses of nicotine.⁴³

4.3.2 Systemic and central nervous system effects

Nicotine, at relatively low doses, is a stimulant. It increases heart rate, and has been reported to have beneficial effects on cognition and performance,

improving attention, memory and fine motor skills.⁴⁴ Tolerance to nicotine can develop rapidly (within a few days of use), and cessation of use then results in the experience of withdrawal symptoms, both somatic and affective, such as anxiety, restlessness, inability to concentrate, irritability and change in appetite.⁴⁵ Chronic exposure to nicotine results in a number of neuroadaptions,⁴⁶ including desensitisation of nAChRs and upregulation in their expression,⁴⁷ both of which are linked to nicotine tolerance and withdrawal.

4.3.3 Mechanisms of effect

Nicotine exerts its complex effects (including arousal, mood modulation and pleasure) via several neurotransmitter pathways. Once bound to neuronal nAChRs, nicotine facilitates the release of dopamine, serotonin and a host of other neurotransmitters including γ -aminobutyric acid (GABA), glutamate, noradrenaline, acetylcholine and endorphins.⁴⁷ The mesolimbic dopamine pathway has, perhaps, been the most widely studied in relation to nicotine dependence.⁴⁶ Dopamine release in the nucleus accumbens, resulting from nicotinic stimulation of dopaminergic neurons in the ventral tegmental area, is crucial to the processing of rewarding and reinforcing the effects of nicotine. Indeed, dopamine release in the nucleus accumbens appears to be critical in the experience of the rewarding effects of many drugs of abuse. Continued pairing of the rewarding/reinforcing effects of nicotine with specific sensory and environmental stimuli (which could include, for example, the smell of tobacco smoke or the sight of a pack of cigarettes – smoking-related behaviours) results in these stimuli also acquiring reinforcing properties. These cues (conditioned reinforcers) have been linked to the maintenance of smoking, smoking-related cravings and relapse.⁴⁷

4.4 Toxicity and potential hazards

4.4.1 Toxicity of nicotine

Although nicotine is a toxic compound, overdosing on nicotine products used as directed is almost impossible, given the individual ability to titrate dose and the short half-life of nicotine (see Development of addiction below – Section 4.5). However, ingestion of high doses (purposeful or accidental) can be fatal. Historically, the lethal dose of nicotine for a human adult has consistently been stated to be about 60 mg,⁴⁸ corresponding to an oral median lethal dose (LD₅₀) of approximately 0.8 mg/kg. However, this figure has recently been disputed in the light of reports of non-fatal suicide attempts or accidents involving nicotine ingestion, leading to an estimate that the lower dose limit for fatal outcomes is likely to be 500–1,000 mg ingested nicotine, equivalent to an oral LD₅₀ of 6.5–13 mg/kg.⁴⁸

4.4.2 Potential hazards of short- and long-term nicotine use

At commonly used dose levels, short-term nicotine use does not result in clinically significant harm. The safety of NRT products, which have typically been used for days or weeks in the context of an attempt to quit smoking, is well established⁴⁹ (see Chapter 5 for further detail), with no evidence of any increase in the risk of heart attack, stroke or death.^{50,51}

Evidence about long-term nicotine or NRT use is relatively scarce, and concerns have been raised that long-term NRT use may increase cancer risk, in part owing to endogenous formation of carcinogens such as *N'*-nitrosonornicotine (NNN).⁵² However, studies carried out in experimental animals largely indicate that nicotine alone is not carcinogenic.⁵³ *In vitro* and *in vivo* studies in animals do, however, suggest that nicotine can have tumour-promoting effects through activation of intracellular signalling pathways. Such effects include cell proliferation, enhanced angiogenesis and decreased apoptosis.^{37,49} However, it is important to note that many studies in this area have used nicotine at higher doses than those achieved in heavy smokers.⁵⁴ *In vitro* research suggests that nicotine can have a negative impact on the function of some cells within the cardiovascular system,⁵⁵ and adverse effects on glucose metabolism.⁵⁶ However, robust evidence on the safety of long-term nicotine use in humans from the 5-year Lung Health Study, in which participants were actively encouraged to use NRT for several months and many continued to consume NRT for a much longer period, demonstrates no association between sustained NRT use and the occurrence of cancer (lung, gastrointestinal or any cancer) or cardiovascular disease.^{57,58} In addition, a recent clinical trial comparing 8, 24 and 52 weeks of NRT treatment found that treatment duration was not associated with any adverse effects, further supporting the safety of long-term NRT use.⁵⁹

Although there is little evidence on the safety of using nicotine for periods longer than 5 years, and no data on the safety of long-term use of nicotine by inhalation other than when delivered by tobacco smoke, it is widely accepted that any long-term hazards of nicotine are likely to be of minimal consequence in relation to those associated with continued tobacco use. Notably, and in recognition of this fact, the UK Medicines and Healthcare products Regulatory Agency (MHRA) recently approved an extension to the indication of NRT to include 'harm reduction',⁶⁰ defined as 'for use as a substitute or partial substitute for smoking tobacco, both for those making an attempt to quit and those not currently intending to make a quit attempt, *without any restriction on its duration of use*'.⁶¹ Guidelines on harm-reduction approaches to smoking from the National Institute for Health and Care Excellence (NICE) further state that 'it is safer to use licensed nicotine-containing products than to smoke' and 'there is reason to believe that lifetime use of licensed nicotine-containing products will be considerably less harmful than smoking'.⁶²

Research from animal studies suggests that fetal exposure to nicotine may lead to adverse postnatal health consequences⁶³ and that cognitive function and development are adversely affected by nicotine exposure during both the fetal and the adolescent periods.⁶⁴ The relevance of these findings to human brain development remains uncertain, however. There is evidence that smoking in adolescence is associated with cognitive and attentional impairments in later life, and possibly an increased risk of mental health problems,⁶⁵ but it is difficult to exclude the effects of confounders of this association in the observational studies available.⁶⁶

4.5 Development of addiction

Nicotine is the primary addictive component in cigarettes and other tobacco products. It establishes and maintains addiction, thereby sustaining use, through a range of complex actions on brain neurochemistry, which have been reviewed in detail elsewhere.^{67,68} However, the addictiveness of any nicotine-containing product depends on several factors beyond merely the presence of nicotine. These factors primarily include the rate at which nicotine is absorbed and delivered to the brain, and the dose of nicotine delivered. Other factors, such as the speed at which the drug is metabolised and how soon withdrawal symptoms occur, play a role. This is particularly relevant to nicotine, given its short half-life (about 2 h), but this is a feature of the drug more than the product delivering the drug. A nicotine-containing product will therefore be more or less addictive depending on the dose and rate at which the nicotine is delivered. Essentially, a product that delivers a high dose rapidly will have a greater liability for addiction than one that delivers a low dose slowly. In this section, we describe the importance of these factors.

4.5.1 Dose effects on addiction potential

Dose is an important factor in the development of nicotine dependence. Animal models clearly demonstrate an inverted-U relationship between nicotine dose and self-administration, although there is interindividual variability in the shape of this curve, some of which is under a genetic influence.⁴³ Therefore, increasing the dose is associated with increased self-administration up to a point, after which higher doses become increasingly aversive and ultimately toxic. One advantage of the short half-life of nicotine is, however, that it enables consumers to self-titrate their achieved dose. The dose (ie plasma concentration) of nicotine achieved via use of different nicotine-containing products varies considerably (see Fig 4.1 – the total dose achieved is reflected by the area under the curve for each product). Figure 4.1 also illustrates the considerable variability in speed of delivery across these products which, as discussed above, also contributes to addiction liability.

4.5.2 Rate of nicotine clearance

Nicotine is metabolised principally in the liver, with a half-life for elimination of approximately 2 h (although, as discussed above, this varies considerably between individuals). As a result of this short half-life, plasma nicotine concentrations drop rapidly after nicotine administration, leading to withdrawal symptoms, prompting further nicotine administration in regular users, eg in a typical heavy, dependent smoker, nicotine levels increase rapidly after smoking a cigarette (by about 5–30 ng/mL), then drop before increasing again after smoking the next cigarette. Over the course of a day, plasma nicotine concentrations rise gradually to a steady state of between about 10 and 50 ng/mL.⁸ The combination of a short half-life and regular administration via frequent smoking (eg hourly) results in a distinctive pattern of nicotine concentrations, as represented in Fig 4.3. Critically, overnight abstinence leads to the almost-complete elimination of nicotine from the body, leading to marked withdrawal on waking, and the need to consume nicotine in order to reverse these symptoms.

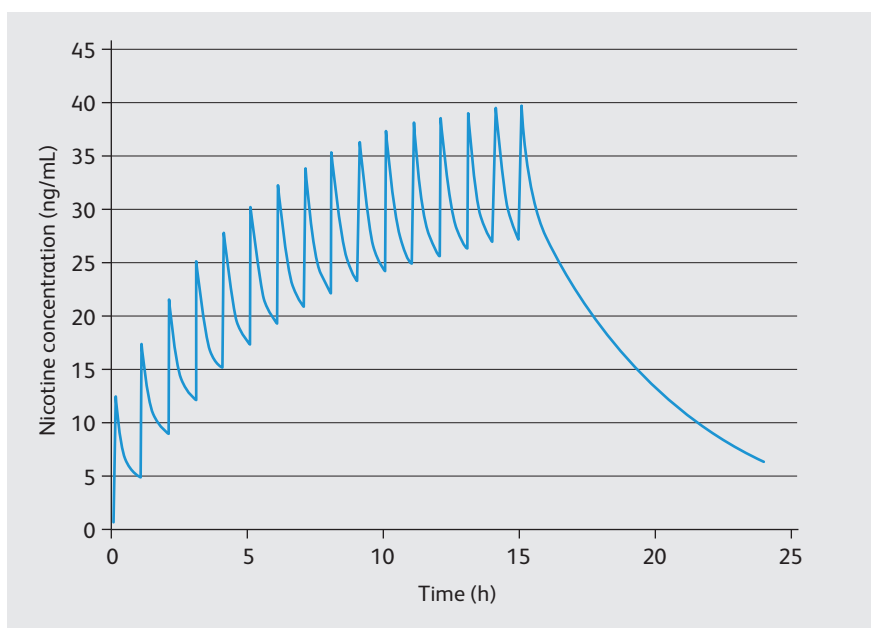


Fig 4.3 Simulated plasma nicotine concentrations obtained after smoking a cigarette every hour for 16 h. (Adapted and reprinted from Le Houezec⁸ with the permission of the International Union Against Tuberculosis and Lung Disease. Copyright © The Union.)

4.6 Smoke constituents influencing the addictive potential of cigarette smoke

The addictive potency of cigarettes (and indeed other tobacco products) is influenced by not only their nicotine content but also other aspects of product design, including substances added to the cigarette to enhance nicotine delivery and absorption. Monoamine oxidase (MAO) inhibitors in tobacco smoke increase the levels of amines in the brain, such as dopamine and serotonin, and may subsequently potentiate the reinforcing effects of nicotine.⁶⁹ Indeed, animal studies have demonstrated that MAO inhibitors facilitate nicotine self-administration and enhance its motivational properties.^{70,71} These findings may also contribute to the strong reinforcing properties of nicotine from cigarettes.

Sugars and polysaccharides are commonly added to tobacco products⁷² to increase the formation of aldehydes, including formaldehyde and acetaldehyde, in tobacco smoke. Acetaldehyde itself has addictive potential,⁷³ as demonstrated through self-administration experiments in animals,⁷⁴ but it also enhances the addictive potential of nicotine. The interaction between these compounds also generates a rewarding effect that exceeds the additive effects of either component in rodent studies.

Menthol and other flavourings (including cloves and liquorice) increase the palatability of cigarette smoke and, in the case of menthol and cloves, facilitate deeper inhalation and therefore a higher nicotine dose (owing to their cooling/local anaesthetic effects). These are widely added at levels below those used in what are conventionally considered to be 'flavoured' cigarettes. Flavours may also become conditioned reinforcers in themselves, as a consequence of their repeated pairing with nicotine.⁷⁵ In addition, menthol inhibits metabolism of nicotine to cotinine, purportedly through inhibition of CYP2A6 enzyme activity,⁷⁶ thus increasing the effect of nicotine. Cocoa and chocolate, which contain theobromine, are also common additives in tobacco. Theobromine is a bronchodilator, and thus has been proposed to enhance nicotine absorption in the lungs. However, the theobromine content of cigarettes was deemed too low to exert bronchodilatation in a recent review.⁷⁷ Levulinic acid is an additive with a sweet caramel taste, but it also alters the pH and so reduces the 'harshness' of inhaled smoke.⁷⁸ This, similarly to menthol, facilitates a higher nicotine dose.

Alkaline additives such as ammonia compounds are among the most common additives used in cigarette manufacture.⁷⁹ These substances are added to cigarettes (and other tobacco products) to manipulate the pH. As discussed above, increasing the pH increases the proportion of non-ionised, or freebase, nicotine, which is more physiologically active than the ionised form, crossing biological membranes more readily. Tobacco industry scientists have extensively investigated the potential of pH manipulation to optimise nicotine delivery (see

Hurt and Robinson⁷⁹). Curing methods used in the production of tobacco can also influence the pH of tobacco smoke. In particular, air-cured tobacco, as used in cigars, generates nicotine at a relatively high pH, facilitating absorption from oral and upper airway mucosa. Cigarette tobacco is largely flue cured, resulting in nicotine at a lower pH and lower upper airway absorption, hence requiring inhalation into the much larger surface area of the lung alveoli to achieve significant absorption.

4.7 Impact of cigarette design characteristics on nicotine delivery

A number of physical characteristics of cigarettes have been engineered to influence nicotine delivery, including cigarette dimensions, filtration, ventilation, paper porosity and tobacco shred size.⁷⁹ Ventilation, for example, serves to manipulate nicotine, tar and carbon monoxide levels through dilution of tobacco smoke, and is achieved through the introduction of holes in both the filter and the paper wrap.⁷⁷ Ventilation technology was used in the production of 'light' or 'low-tar' cigarettes, which were promoted by the tobacco industry as healthier alternatives to full-strength cigarettes. However, these descriptions have been shown to be misleading and for this reason have been banned in the UK. Although smoking machine assessments give readings indicating that these cigarettes yield lower doses of nicotine, studies in humans have shown that smokers compensate by altering their smoking topography (ie the way in which people smoke their cigarettes). Thus, smokers use deeper inhalation, increased number of puffs per cigarette, etc when smoking these cigarettes, in order to achieve the same dose of nicotine attained when smoking stronger brands.⁸⁰ This results in equivalent levels of exposure to the harmful constituents of tobacco smoke.⁸¹

Smoking topography also affects nicotine delivery. Smokers can make changes to their blood nicotine levels by altering depth and frequency of inhalation and volume of smoke inhaled. A 20-a-day smoker can halve the number of cigarettes that they smoke, but sustain the same plasma nicotine levels by taking larger and deeper puffs. It is this compensatory behaviour that leads to a lack of association between machine-determined nicotine levels in cigarettes and the nicotine dose and quantity of toxic smoke inhaled by a smoker (see below). This may be why reductions in the amount individuals smoke, although making it easier for them to go on to quit, have a relatively limited impact on health outcomes compared with quitting altogether. There are also sex differences in smoking topography (women typically take smaller puffs than men) and ethnicity (African-American individuals typically smoke more of their cigarette than people of European descent).² Mood may also affect the way in which people smoke, with positive effect being associated with a greater increase in blood nicotine levels.⁸²

4.8 Lessons from cigarette design for harm-reduction product development

Nicotine is the primary addictive component sustaining tobacco use, but is not the cause of the vast majority of harm associated with tobacco use. Therefore, a product that delivers nicotine in the absence of other constituents of tobacco will be associated with dramatically less harm. The safety of NRT demonstrates this and, although long-term use is relatively uncommon, there is sufficient evidence to conclude that any harm from long-term nicotine use will still be negligible compared with the harm of tobacco use. However, nicotine-containing products such as NRT, although very low in harm, are also substantially less satisfying to smokers than, for example, cigarettes, as evidenced by their modest efficacy as smoking cessation products. As discussed above, this is due to the favourable nicotine delivery characteristics and unique range of behavioural reinforcers associated with cigarette smoking. The ideal harm-reduction device should therefore deliver nicotine in a manner as similar as possible to cigarettes, while at the same time maximising palatability and nicotine delivery to approximate the experience of cigarette smoking more closely.

4.8.1 Targeting the determinants of addictiveness

The principal determinants of the addictiveness of a nicotine-containing product are the dose that it delivers, and the speed with which the dose is delivered. Given that most cigarette smokers are dependent (at least to some degree) on nicotine, targeting these determinants is a critical requirement of any harm-reduction product. The use of additives in tobacco products and the design of the cigarette are both engineered to enhance nicotine delivery from the cigarette, by modifying both the palatability of the cigarette smoke (and therefore the ease with which it can be inhaled, facilitating rapid delivery and self-titration) and the bioavailability of the nicotine contained within it. Other factors, such as the taste and smell of cigarette smoke, and the behavioural action of smoking, can themselves become conditioned reinforcers over time and, although secondary to the effects of nicotine, are important drivers of continued smoking.

4.8.2 E-cigarettes and harm reduction

E-cigarettes meet many of the criteria for an ideal tobacco harm-reduction product. Although nicotine delivery from e-cigarettes depends on a number of factors, including level of user experience and device characteristics,⁸³ they can in principle deliver a high dose of nicotine, in the absence of the vast majority of the harmful constituents of tobacco smoke (or at least at negligible levels), in a way that enables accurate self-titration (see Chapter 5). They also provide some of the

cues associated with cigarette smoking, such as taste and throat rasp, as well as behavioural actions such as hand-to-mouth movement. At present therefore, although little is known of the kinetics of nicotine uptake from e-cigarettes into arterial blood, e-cigarettes offer a substitute to smoking that is more likely, on theoretical grounds, to prove satisfying and acceptable to smokers than NRT.

4.9 Summary

- Nicotine is the primary addictive component of tobacco smoke.
- When inhaled into the lungs, nicotine from tobacco smoke is absorbed and delivered to the brain much more quickly, and in higher doses, than can be achieved by other routes of absorption.
- This rapid delivery of repeated high doses of nicotine to the brain is thought to underpin the addictive nature of cigarettes.
- Nicotine is metabolised quickly, causing blood levels to fall rapidly after dosing. People who metabolise nicotine more slowly, and therefore maintain more constant blood levels, tend to be less heavily addicted.
- Nicotine is a stimulant that improves concentration and fine motor skills. However, once tolerance is acquired, unpleasant withdrawal symptoms occur when nicotine blood levels fall.
- Sustained use of nicotine is reinforced by some of the co-stimuli of smoking, such as the taste and sensation of tobacco in the throat, and the smells and behaviours associated with smoking.
- The tobacco industry has manipulated other constituents and additives in tobacco to enhance the addictiveness of nicotine in smoke.
- NRT products may not be effective in some smokers because they replicate few of the delivery, sensory or behavioural characteristics of cigarettes.
- E-cigarettes have the capacity to replace more of the characteristics of tobacco cigarettes than conventional NRT, and therefore have potential as effective smoking substitutes.

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5 | Non-tobacco nicotine products

5.1 Introduction

For many years, the range of non-tobacco nicotine products available in the UK has been dominated by nicotine replacement therapy (NRT) products, developed and licensed as medicines to aid smoking cessation. The range of NRT products available has grown to include transdermal patches, chewing gum, lozenges, nasal spray, oral pouch, oral spray, oral strips and the ‘inhalator’, a device that provides a nicotine vapour for oral absorption. In recent years the licences for these products have been extended in several countries, including the UK, to include use to assist smoking reduction and temporary abstinence.

There is strong evidence from randomised controlled clinical trials that NRT can be an effective smoking cessation therapy. A Cochrane review carried out in late 2012 identified 150 such trials, and concluded that all commercially available forms of NRT increase the likelihood of successful cessation among smokers making a quit attempt.¹ NRT products also have a very good safety record.² The products differ in the speed of nicotine delivery and the degree of behavioural replacement for smoking that they provide, but are fairly similar in the amount of nicotine that their strongest formulation delivers. Some require specific techniques for correct use (eg chewing gum and nasal spray), whereas others (eg the transdermal patch) are very simple to use. None, however, reproduces the rapid delivery of high doses of nicotine achieved by inhaling tobacco smoke, and few smokers find them enjoyable or satisfying.

NRT products have traditionally been produced and marketed by the pharmaceutical industry, but in recent years tobacco companies have also begun to acquire or develop products manufactured to standards similar to those of NRT products. Examples of these ‘clean’, non-tobacco nicotine products include Zonnix nicotine gum, marketed by Nicovum, part of Reynolds American Inc, and Verve nicotine-containing discs marketed by NuMark, part of Philip Morris. In the past 5 years, however, the non-tobacco nicotine market has been transformed by the emergence of e-cigarettes, which are now the most widely used form of non-tobacco nicotine. Unlike NRT, they have been marketed as

consumer products rather than therapeutic goods, and also, unlike most forms of NRT, they retain several important features of smoking other than nicotine delivery, including similar hand-to-mouth movements, behavioural rituals, an inhaled sensory stimulus and a range of flavours. These characteristics make e-cigarettes attractive to a wide range of smokers, including many who do not or would not use NRT; hence, they provide a potentially viable, lower-hazard market competitor to tobacco cigarettes. As consumer products, they are subject to varying degrees of regulation in different countries, and are evolving quickly as the technology improves. Most e-cigarettes are marketed by independent companies importing products from China, but some production is now based in the UK. Several leading brands have now been bought by tobacco companies (see Chapter 8).

The non-tobacco nicotine market in the UK and many other countries is thus in a state of rapid change, with use of e-cigarettes already eclipsing that of pharmaceutical NRT (see Chapter 7), and an increasingly wide range of new products that deliver nicotine at or close to medicinal standards, some of them marketed by the tobacco industry, becoming available. Indeed the status quo of the nicotine market, whereby medicines have to date been made exclusively by pharmaceutical companies, has recently been challenged by the award of medicines licences to two new products: a nicotine-metered dose inhaler (Voke), and an e-cigarette (E-Voke), both of which are being brought to market by Nicoventures, a subsidiary of British American Tobacco.

This chapter provides a summary of currently available non-tobacco nicotine products, their pharmacokinetic profile, safety, addiction potential and trends in their use. Where blood or plasma nicotine levels are given, they relate to those in venous blood (see Chapter 4) unless stated otherwise.

5.2 NRT products

5.2.1 Transdermal nicotine

5.2.1.1 *Doses and pharmacokinetics*

Commercially available transdermal nicotine patches provide nicotine at a controlled rate for absorption through the skin into the systemic venous circulation. Products vary in dose from around 7 to 25 mg per patch, and deliver nicotine for either 16 or 24 h. High-dose examples include patches that deliver 25 mg over 16 h, or 21 mg over 24 h; lower doses, which are intended for weaning some weeks after smoking cessation, deliver (for example) 15 or 10 mg over 16 h, or 14 or 7 mg over 24 h. The rationale behind the 24-h patch is that it delivers nicotine during sleep and thus provides some protection against urges to smoke immediately after waking. The occasional drawback of 24-h delivery,

which is avoided by 16-h formulations, is that nicotine can cause vivid dreams or otherwise disturbed sleep.

The rate of absorption of nicotine from transdermal patches is slow, although there are some differences in pharmacokinetic profile between available products. In general, after application of the patch there is a delay of up to 2 h before plasma nicotine levels start to rise. High-dose products can generate maximum venous plasma concentrations of 16–18 ng/mL at around 6–12 h.^{3,4} Plasma nicotine levels at 24 h are about 11 ng/mL with the 24-h patch, and 3 ng/mL with the 16-h patch.³ During use a small reservoir of nicotine accumulates in the skin under the patch, which means that nicotine continues to be absorbed into the blood for an hour or so after the patch has been removed.

5.2.1.2 *Safety profile*

The nicotine patch has a good safety profile, even when more than one high-dose patch is applied simultaneously.⁵ In addition to the generic nicotine effects outlined briefly in Chapter 4, which apply to all the products described in this section, the most common side effects of the nicotine patch are insomnia, abnormal dreams, and skin irritation at the application site. There were early case reports of cardiovascular adverse effects, but more robust reviews suggest that these were not caused by NRT.⁶

5.2.1.3 *Addiction potential*

The addiction potential of nicotine products is generally related to the speed of nicotine delivery, with faster delivery systems more likely to be used long term.^{7,8} As transdermal patches deliver nicotine very slowly, long-term dependence is not expected to be a problem, and empirical evidence confirms that this is indeed the case.^{7,9}

5.2.2 Oral and nasal nicotine

5.2.2.1 *Doses and pharmacokinetics*

Oral and nasal NRT products deliver nicotine more rapidly than nicotine patches, typically achieving peak plasma nicotine concentrations within 30–60 min. However, this kinetic profile is due in part to the sustained-release formulations used in many oral products, and faster absorption is possible. Formulations that spray nicotine solutions directly on to the mouth or nasal linings are among the most quickly absorbed NRT products, achieving peak levels within about 10 min of dosing. Nicotine absorption is influenced by the pH of the oral lining, being faster in relatively alkaline conditions. As with all oral or nasal products, nicotine that is swallowed undergoes extensive first-pass

metabolism (see Chapter 4) and makes no appreciable contribution to levels of nicotine in the blood.

Nicotine gum

Nicotine gum is available in two strengths, 2 mg and 4 mg, with the higher dose recommended for more dependent smokers. The nicotine contained within the gum is released on chewing and absorbed through the tissues lining the mouth. After chewing a single 2-mg piece of gum, peak plasma concentrations of 3–5 ng/mL are observed within 30–60 min,^{10,11} and chewing a 2-mg piece of gum every hour results in plasma nicotine concentrations of between 12 and 16 ng/mL. The maximum concentration ($C_{\max}$) for a single dose of 4-mg gum is around 10 ng/mL, and regular dosing can generate plasma nicotine concentrations of between 27 and 32 ng/mL.¹¹

Nicotine oral disc

A recently developed nicotine oral disc has similar characteristics to the gum. It is a non-dissolving polymer disc containing 1.5 mg tobacco-derived nicotine, which is released when it is chewed. Chewing for 15 min results in an increase in plasma nicotine concentration of around 2 ng/mL.¹²

Nicotine oral pouch

The nicotine in this product is in a powder, contained in a small pouch designed to be held in the mouth. A single 4-mg pouch, if held against the inner lining of the cheek for 30 min, produces a peak plasma concentration of approximately 10 ng/mL.¹³

Nicotine lozenges and sublingual tablets

Products in this NRT category differ in how quickly they dissolve in the mouth, and in their dose and pharmacokinetic profile. A single 1-mg lozenge creates a peak plasma concentration of around 2 ng/mL,¹⁰ a 2-mg lozenge between 4 and 5 ng/mL and a 4-mg lozenge about 10 ng/mL, all within about 60 min. A study of a 2.5-mg nicotine lozenge showed that single use resulted in a maximum plasma concentration of 10.8 ng/mL in 30 min.¹⁴ Regular use of lozenges (eg one every 1–1.5 h) results in plasma nicotine concentrations of between 10 and 15 ng/mL for the 1- and 2-mg lozenges^{10,11} and 20 and 26 ng/mL for the 4-mg lozenge.¹¹ The pharmacokinetic profile of the 2-mg sublingual tablet is similar to that of the 2-mg lozenge.¹⁵

Nicotine oral film

This product contains 2.5 mg nicotine in a thin film, designed to be applied to the roof of the mouth, where it dissolves in less than 5 min. Use of a single strip

produces a peak plasma nicotine concentration, similar to the 2-mg lozenge and gum, of between 4 and 5 ng/mL.

Nicotine inhalator

The nicotine inhalator consists of a plastic tube holding a replaceable cartridge containing either 10 or 15 mg nicotine. When the user inhales through the device, nicotine vapour is generated, which deposits on and is absorbed through the lining of the mouth. Although used by inhalation, this product does not achieve appreciable pulmonary delivery or absorption, and the pharmacokinetic profile is similar to that of other oral NRT products. After 20 min intensive use, around 2 mg nicotine is released from the device, resulting in peak plasma concentrations of up to 8 ng/mL and, if this use is repeated hourly for 10 h, levels of around 20–25 ng/mL are achieved.¹⁶ Most users do not, however, use the device with this level of intensity, so lower plasma levels, similar to those achieved by 2-mg gum, are more typical. Nicotine release from this device decreases with ambient temperature¹⁷ so, in cold conditions (<15°C), users should be advised to keep the inhalator warm.

Nicotine nasal and mouth sprays

The nasal spray delivers nicotine solution to the nasal mucosa and, after a single 1-mg dose (two sprays containing 0.5 mg nicotine), a peak plasma nicotine concentration of about 5–6 ng/mL is observed within 10–15 min.¹⁸ Taking an hourly dose results in a steady-state plasma concentration of about 10 ng/mL. Although one of the fastest-acting NRT products, the nasal spray is also one of the most aversive to use initially.

The nicotine mouth spray also delivers nicotine quickly. Each spray delivers 1 mg nicotine and results in a peak plasma concentration of around 3–4 ng/mL within 10 min.¹⁹ A 2-mg dose gives a plasma concentration of around 5–6 ng/mL. Another mouth spray formulation has shown higher maximum plasma concentration (10 ng/mL) with a 2-mg dose, but with a slightly longer time (15 min) to reach this.¹⁴

5.2.2.2 Safety profile

Similar to the nicotine patch, oral and nasal nicotine products have a good safety profile. The most commonly reported adverse effects are related to mouth and throat irritation, and hiccups. The nasal spray is a local irritant to the nasal lining.²⁰

5.2.2.3 Addiction potential

Some 5% of smokers who use oral nicotine products to stop smoking will continue to use them for a year or longer.⁹ With the nicotine nasal spray, this figure is closer to 10%,⁹ which probably reflects the faster nicotine delivery of this product. Long-term users are usually people who were highly dependent on nicotine from their cigarettes and who would be relatively unlikely to maintain long-term abstinence from smoking without such help.²¹ There are no documented cases of non-smokers becoming dependent on NRT.

5.2.3 Dual use of NRT and smoked tobacco products

NRT appears to be safe and well tolerated when used together with smoking.^{22,23} Randomised placebo-controlled trials of dual use indicate that the occurrence of expected symptoms of nicotine overdose, such as nausea and palpitations, is uncommon.^{24,25} A meta-analysis of NRT use before quitting found no increase in adverse events in patch users compared with those on placebo.²⁶ No reported concerns over the use of NRT while smoking have arisen from post-marketing surveillance. Smokers who also use NRT (known as ‘dual users’) are approximately twice as likely in the following months to make a quit attempt, and to quit smoking, than those who do not.^{27,28}

5.3 E-cigarettes

E-cigarettes provide nicotine for inhalation in a vapour generated by heating a solution containing water, nicotine, propylene glycol, vegetable glycerine and typically also some flavouring. E-cigarettes were developed and first marketed in China in around 2003, and appeared on the market in the UK about 4 years later. The quality of early devices was variable, as was the consistency of the nicotine solutions (e-liquid) that they contained²⁹ and their ability to deliver nicotine, which, in some cases at least, was poor.³⁰ Newer studies have demonstrated some improvements in quality, at least in relation to declared nicotine content.^{31,32}

The many brands and models of e-cigarettes available can be grouped into three broad categories of different appearance (Fig 5.1). The original or first-generation e-cigarettes were designed to be of similar size and appearance to a conventional cigarette, and hence are sometimes known as ‘cigalikes’. These devices typically comprise two components: a battery and a ‘cartomiser’, a section of the device that contains nicotine solution and a vaporiser. Although some cartomisers are refillable, most are disposable, ie designed for single use and replacement when empty. Second-generation e-cigarettes are larger,

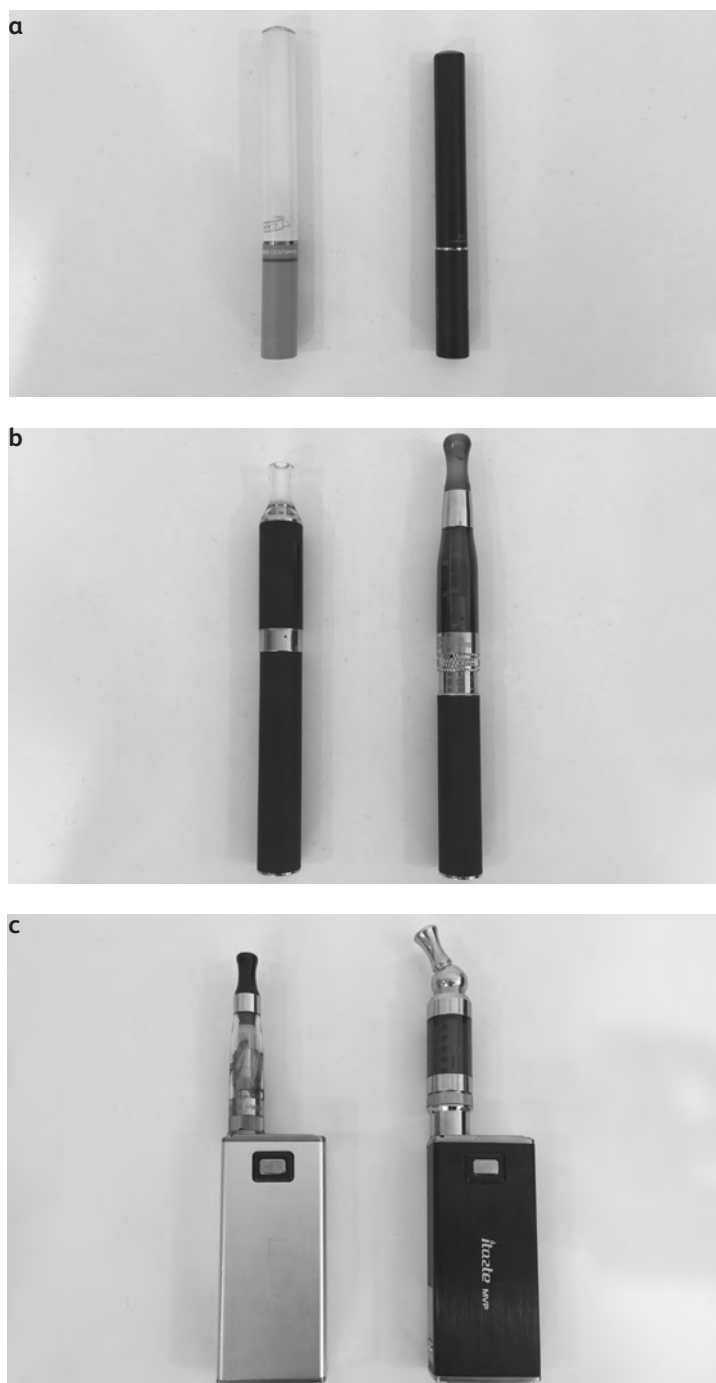


Fig 5.1 The three generations of e-cigarettes: (a) first generation; (b) second generation; and (c) third generation. (Images provided by Anna Phillips.)

typically the size of a large fountain pen, and incorporate a more powerful battery linked to a permanent vaporiser, and a tank system that users can refill with nicotine solution. Third-generation devices are typically larger still, with a still more powerful battery, usually with two heating elements (coils), and allow users to vary power and sometimes also the draw resistance of the device. Third-generation devices are also designed to allow modifications and substitution of individual components according to preference. Second- and third-generation devices generally deliver nicotine more effectively than first-generation devices (see below). The nicotine, propylene glycol, glycerine and flavouring contents of e-liquids also vary substantially, particularly in relation to nicotine content (with some being nicotine free), and in the ratio propylene glycol:glycerine.

5.3.1 Pharmacokinetics

Nicotine delivery from e-cigarettes is influenced by the concentration of nicotine and other constituents of the e-liquid, and the puffing ('vaping') technique used, and has generally increased with successive generations of the technology.³³ The earliest first-generation devices delivered little or no nicotine, eg two early products containing a 16 mg/mL nicotine solution; when tested in smokers who had not previously used e-cigarettes, it was found that the devices delivered either very little nicotine, achieving a maximum blood level of 1.3 ng/mL at 20 min,³⁴ or none at all.³⁵ However, with improved technology and more experienced users, nicotine delivery is improved, eg whereas one study found that, among naive users, 5 min free use of an e-cigarette containing 24 mg/mL nicotine produced a peak plasma concentration of 4.6 ng/mL within 5 min, after 4 weeks' practice the same users were achieving levels of 5.7 ng/mL.³⁶ A study of a more advanced first-generation e-cigarette containing 18 mg/mL nicotine, and using a longer puffing (vaping) regimen (10 puffs 30 s apart on six occasions every 30 min), resulted in a maximum plasma nicotine concentration of 7.4 ng/mL at 2.5 h after the first puffing bout.³⁷ In experienced users, using the same 10 puffs in a 5-min regimen, plasma nicotine levels can rise by around 8–16 ng/mL within 5 min of the first puff.^{38,39}

Use of higher nicotine concentrations in the e-liquid increases nicotine delivery, as does the inclusion of propylene glycol. In a study that examined nicotine delivery from a first-generation e-cigarette containing either 16 or 24 mg/mL nicotine, in either 75% glycerine or a 50% glycerine:20% propylene glycol e-liquid, peak plasma nicotine concentrations after 30 min of controlled puffing were highest (18 ng/mL) with the 24 mg/mL nicotine in the mixed glycerine:propylene glycol formulation, and lowest (10 ng/mL) with the 16 mg/mL nicotine in 75% glycerine solution⁴⁰ (Fig 5.2). The propylene glycol:glycerine mix formulation delivered more nicotine at either dose than the

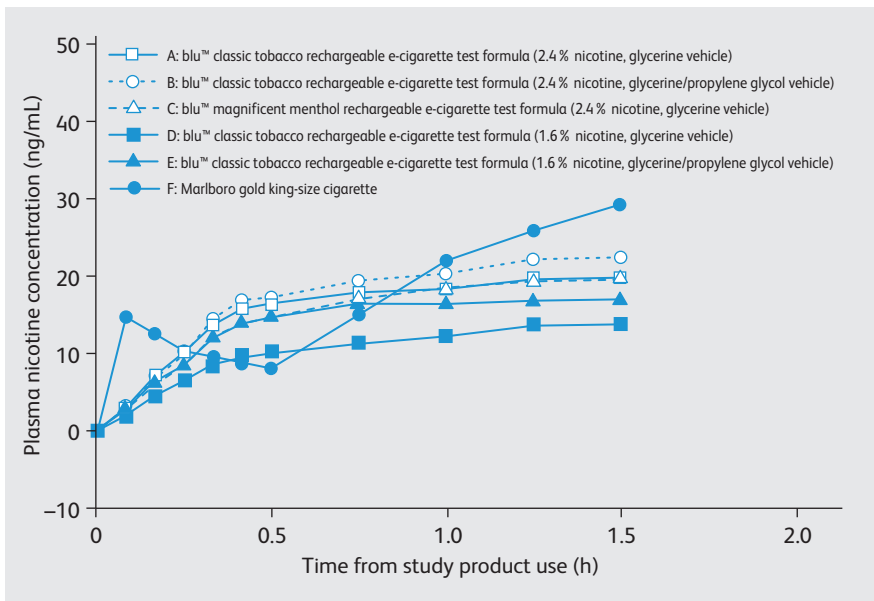


Fig 5.2 Venous blood nicotine levels from low and high nicotine concentrations, glycerine or propylene glycol:glycerine mix solutions, and from a conventional cigarette.⁴⁰ (Reproduced from: Sherwin Yan X, D’Ruiz C. Effects of using electronic cigarettes on nicotine delivery and cardiovascular function in comparison with regular cigarettes. *Regulatory Toxicology and Pharmacology* 2015;71:24–34.⁴⁰ With permission from Elsevier.)

75% glycerine solution. This higher delivery is thought to result from the lower boiling point of propylene glycol (187.6°C) than of glycerine (290°C).

Nicotine delivery is generally better from second- and third-generation devices, eg in a direct comparison with first-generation devices using a prescribed 5-min puffing regimen, second-generation e-cigarettes produced significantly higher rises in plasma nicotine concentration (by 4 ng/mL vs 2 ng/mL) at 5 min⁴¹ (Fig 5.3), and with repeated use these devices can sustain venous blood levels comparable with those expected in smokers.⁴² In a study examining the nicotine delivered by a third-generation device, experienced vapers were able to achieve a greater rise in blood nicotine levels than naive users under the same prescribed 5-min puffing regimen (5.8 ng/mL vs 2.7 ng/mL at 5 min),⁴³ although the speed of nicotine delivery remains much slower than from cigarettes.

Levels of the nicotine metabolite cotinine, which reflect nicotine intake over the past 3–4 days,⁴⁴ are similar in experienced e-cigarette users to those observed in smokers,^{45–47} indicating that e-cigarettes are capable of delivering

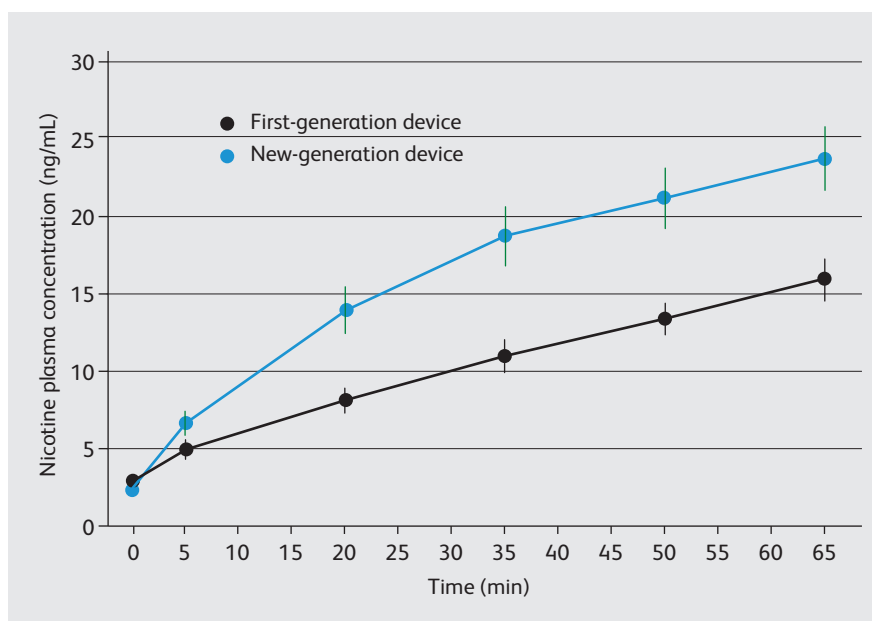


Fig 5.3 Nicotine absorption from first- and new-generation e- cigarettes.⁴¹ (Reproduced from: Farsalinos KE, Spyrou A, Tsimopoulou K *et al.* Nicotine absorption from electronic cigarette use: comparison between first and new-generation devices. *Scientific Reports* 2014;4:4133.⁴¹)

total doses of nicotine similar to those from cigarettes. However, because, at the time of writing, available data relate only to venous blood levels, the extent to which e-cigarettes deliver nicotine for absorption into the pulmonary circulation, and hence reproduce the high arterial levels achieved by cigarettes, remains uncertain.

5.3.2 Safety profile

E-cigarettes are generally well tolerated. Similar to oral NRT products, reported short-term adverse effects relate predominantly to mouth and throat irritation, and tend to be self-limiting.^{29,48,49} As with all new products, however, long-term or rare adverse effects will remain uncertain until e-cigarettes have been in widespread use for several decades. Discussion of the potential long-term adverse effects of e-cigarette use is therefore limited to consideration of the likely effects of sustained inhalation of the known constituents of e-cigarette vapour.

Analysis of vapour generated by e-cigarettes has identified a number of potentially harmful constituents delivered alongside the nicotine and other

e-liquid components. These include volatile organic compounds, carbonyls, aldehydes, tobacco-specific nitrosamines (TSNAs) and metal particles, but all at much lower levels than in cigarette smoke.^{50–64} Levels of formaldehyde and other aldehydes can be relatively high when vaporisation occurs at high temperatures,^{65,66} although in practice this overheating generates an aversive taste known as a ‘dry puff’, which vapers avoid.^{66,67} Recent reviews of the health effects of toxins inhaled during normal use of e-cigarettes have expressed concerns over potential adverse effects based on the presence of these contaminants,^{68–70} but not their levels, which are generally the more important determinant of toxicity. In normal conditions of use, toxin levels in inhaled e-cigarette vapour are probably well below prescribed threshold limit values for occupational exposure,⁷¹ in which case significant long-term harm is unlikely. Some harm from sustained exposure to low levels of toxins over many years may yet emerge, but the magnitude of these risks relative to those of sustained tobacco smoking is likely to be small. However, consideration of the potential harm of long-term e-cigarette use should serve as a guide to evidence-based product development, regulation and monitoring.

5.3.3 Areas of potential concern over hazards arising from vapour exposure

Areas of potential concern over the long-term effects of e-cigarette use include the effects of vapour constituents depositing in the mouth, upper airway and lungs, and systemic effects of vapour components absorbed as a result of swallowing or inhalation. The vapour constituents to be considered consist of those that should be present in e-liquids, and hence also the vapour, including: nicotine, propylene glycol, glycerine and flavours; those arising from impurities and contaminants in the e-liquid, which vary between batches and suppliers;⁷² and toxins, particles and other components created by the vaporisation process. The long-term adverse effects of nicotine are likely to be minimal⁷³ (see also Chapters 4 and 7), although it is acknowledged that the effects of sustained inhalation of nicotine, in isolation from tobacco smoke and as opposed to absorption by another route, have not been studied. There are, however, no grounds to suspect that inhaled nicotine will have an appreciably different risk profile from nicotine delivered via other routes of absorption. The following discussion therefore relates to the effects of other constituents of e-cigarette vapour.

Inhaled vapours deposit first, and often substantially, in the mouth and upper airway. Much of this deposition is then swallowed, absorbed from the gastrointestinal tract and excreted, mostly in urine, either unchanged or after metabolism. This process of deposition, absorption and excretion of TSNAs and other carcinogens in tobacco smoke probably accounts for the increased risks of

cancer of the oropharynx, stomach, bladder and other organs involved in the absorption and excretion process in smokers. The presence of carcinogens in e-cigarette vapour therefore increases the risk of similar outcomes but, in view of the very low levels of exposure generated by e-cigarette vapour, the magnitude of any increase in risk, in either relative or absolute terms, is likely to be low.

After passing through the mouth and upper airway into the lungs, larger particles and droplets in inhaled vapours deposit substantially throughout the intrapulmonary airways, to be either absorbed and excreted as above, or expectorated.⁷⁴ Vapour components <5 µm in diameter reach the alveoli, where they either deposit and are then absorbed or cleared through phagocytosis or other processes, or are exhaled.⁷⁴ In tobacco smoking, the deposition of carcinogens carried in tobacco smoke results in an increased risk of lung cancer, whereas oxidants and other toxins and irritants in smoke cause direct and inflammation-induced damage to lung tissues, which leads to chronic bronchitis and emphysema (chronic obstructive pulmonary disease (COPD))⁶⁴ and to pulmonary fibrosis.^{75,76} Smoke components absorbed from the lung, including particles and carbon monoxide, contribute to the increased risk of cardiovascular disease in smokers⁶⁴ and, together with local effects, to an increased risk of infection.⁷⁷ Although e-cigarette vapour contains a far less extensive range of toxins, and those present are typically at much lower levels, than in tobacco smoke, it is appropriate to consider potential hazards of e-cigarettes in relation to this spectrum of harm.

5.3.3.1 *Generic effects of vapour*

Data on the effects of e-cigarette vapour on the airways are limited to studies of short-term exposure. Use of an e-cigarette in healthy individuals for 5 min has been shown to reduce exhaled nitric oxide (NO) and increase airway resistance,⁷⁸ consistent with an irritant effect on the airways resulting in mucosal oedema, smooth muscle contraction or increased production of lung secretions in response to the vapour. Another study reported a reduction in exhaled NO after inhaling vapour from an e-cigarette, with or without nicotine, of an order of magnitude similar to that provoked by conventional cigarette smoke.⁷⁹ However, short-term e-cigarette use has been found to have no effect on spirometric markers of lung function,⁸⁰ and another study found no difference in reported adverse events over 12 weeks' use of an e-cigarette with or without nicotine, or conventional NRT.⁸¹ It is therefore far from clear whether these short-term airway effects will translate into long-term airway damage. Furthermore, as smoking cessation is associated with a reduction in respiratory symptoms in people with respiratory disease,^{82,83} many smokers who switch to an e-cigarette are likely to experience improvements in respiratory symptoms. This is illustrated in a study that followed a small cohort of patients with asthma, in whom improvements in symptoms and respiratory function were observed after

switching from smoking to vaping.⁸⁴ These observations therefore provide reassurance about short-term use of e-cigarettes in relation to adverse respiratory effects. One survey from Hong Kong has reported a higher prevalence of respiratory symptoms among Chinese adolescents who were ex- or never-smokers, and reported any use of an e-cigarette in the preceding month.⁸⁵ However, e-cigarettes were used by only 1.1% of the total sample and 0.1% of never-smokers and, as use of e-cigarettes was not quantified, there is no evidence that those reporting symptoms were using the product regularly.

E-cigarette vapour has been reported to influence resistance to infection, and to delay recovery from influenza infection, in an animal model,⁸⁶ although the validity of these findings and relevance to the effects in humans are far from clear. At the time of writing we are not aware of any published evidence on cardiovascular effects of e-cigarette use other than those attributable to nicotine.⁴⁰ It is known, however, that the vapour does not deliver appreciable amounts of carbon monoxide,^{87,88} which represents a significant advantage relative to tobacco smoke. A study of carcinogen excretion in participants' urine after use of e-cigarettes or tobacco cigarettes found significantly lower levels of TSNAs, benzene and polyaromatic hydrocarbons with e-cigarettes,⁸⁹ demonstrating systemic absorption of these carcinogens and hence some degree of potential cancer risk, although clearly much less than that associated with smoking.

5.3.3.2 *Propylene glycol and glycerine*

Propylene glycol is an active ingredient of the solutions used to generate the synthetic smoke widely used in the performing arts and nightclubs, and in this context is generally considered to be safe.⁹⁰ In animal studies, a month of exposure to propylene glycol vapour produced no apparent tissue toxicity of the lung, liver or kidney in beagles or rats,⁹¹ although 90 days' nasal inhalation in rats was associated with an increase in the number of goblet cells and mucin production in the nasal mucosa at levels of exposure >1.0 mg/L.⁹² An early study examined long-term exposure to propylene glycol vapour over 12–18 months in rats and monkeys, and identified no lung or other adverse effects.⁹³ However, acute exposure to propylene glycol has been shown to induce airway irritation and cough in humans, together with minor airflow obstruction.⁶¹ One study also found an association between levels of propylene glycol exposure in the home, and asthma and rhinitis in children.⁹⁴

Evidence on the adverse effects of inhaled glycerine is limited to a single case report of lipid pneumonia with onset of symptoms associated with commencing e-cigarette use. The pneumonia was attributed to glycerine-based oils in the e-liquid,⁹⁵ although commentators pointed out that glycerine is an alcohol and not a lipid.⁹⁶ There have been no further reported cases of this

outcome. Studies of repeated inhalation in rats found no evidence of damage to the lungs.^{97,98}

5.3.3.3 Flavours

Although the flavours used in the e-cigarette liquid are generally those considered safe when ingested orally, some are irritant to the airways and the safety of most flavours after heating and inhalation is unknown.⁹⁹ Diacetyl is an example of a flavour used in popcorn, and some other foods, that is safe for oral consumption but which, when heated and inhaled in large doses over long periods of time, can cause irreversible bronchiolitis.¹⁰⁰ Vapour produced from e-liquids containing flavours has been demonstrated to be more cytotoxic than unflavoured vapour¹⁰¹ and, although both are far less so than tobacco smoke, this exposure may increase airway inflammation.¹⁰² *In vitro* experimental studies have also reported increased susceptibility of airway cells to viral infection after direct contact with e-liquid¹⁰³ and evidence of cytotoxicity from cinnamon flavours, although the relevance of direct effects of contact with e-liquid, as opposed to vapour, is unclear.⁵⁰ Although no study so far shows any clear hazards of flavours in e-cigarette vapour, those derived from flavours seem the most likely to pose appreciable health risks from long-term use.

5.3.3.4 Components generated by vaporisation

Heating propylene glycol or glycerine can cause decomposition to low-molecular-mass carbonyl compounds including formaldehyde and acetaldehyde, which can be carcinogenic in large doses.¹⁰⁴ A study investigating the effect of varying the heating element voltage in e-cigarettes found that, at low voltage, levels of these compounds were up to 800-fold lower than in tobacco smoke, but that, at higher voltage (4.8 V), the levels were similar.⁵⁶ In a study involving a third-generation – or variable-voltage – e-cigarette, negligible levels of formaldehyde were generated at lower (normal) power settings, but, when used at maximum power with 3- or 4-s puffs, levels 5–15 times higher than those found in cigarette smoke were observed.⁶⁵ However, in a study simulating this ‘dry puff’ use, generating high levels of formaldehyde (up to 355 µg), acetaldehyde (up to 206 µg) and acrolein (up to 210 µg), experienced vapers were easily able to detect dry puffs and none could tolerate them.⁶⁶ Under normal conditions of use, the levels were negligible.⁶⁶

Two studies have examined urinary levels of aldehydes in vapers. One was a cross-sectional study that demonstrated considerably lower levels of urinary acrolein and crotonaldehyde in vapers than in smokers.⁸⁹ The other was a cohort study that examined the change in urinary acrolein level when smokers switched to vaping. Significant decreases in acrolein concentrations were observed in smokers who switched completely to e-cigarettes as well as in those who were

both smoking and vaping, showing that 'dual use' of tobacco cigarettes and e-cigarettes leads to a reduction in smoke intake.⁸⁸

In addition to the vaporised liquid, e-cigarette devices include metals, ceramics and rubber, all of which may become aerosolised in the process of vapour generation,^{62,105,106} eg copper particles of respirable size (0.450–2.02 µm) have been demonstrated in e-cigarette vapour at a level six times that seen in conventional cigarette smoke;⁵⁷ levels of nickel and silver that are also higher than those in tobacco smoke have been noted.⁶⁰ Whether these exposures comprise a significant health hazard remains uncertain. Potential toxicity of metal and other fine particles include carcinogenicity, cardiovascular disease and diseases such as COPD and interstitial lung disease, which are characterised by sensitisation, chronic inflammation or tissue remodelling.¹⁰⁷ Inhalation of small particles, over both the short and the long term, also increases the risk of cardiovascular events.¹⁰⁸ However, this is probably not a major concern because levels of exposure are well below recognised safety thresholds,¹⁰⁹ and could be reduced still further by improving manufacturing processes and standards.

5.3.3.5 Hypersensitivity reactions

Hypersensitivity pneumonitis has been described in response to a range of inhaled organic materials. Allergy to nickel, which can be present in very small amounts in e-cigarette vapour, is a relatively common problem in clinical practice,¹¹⁰ although there has been no reported case of this problem in e-cigarette users. A case of eosinophilic pneumonia has been reported in a smoker who tried an e-cigarette,¹¹¹ but again this has not been replicated and hence is of uncertain relevance.

5.3.3.6 Relevance to potential long-term harms

The above observations indicate that e-cigarettes deliver a much smaller range of toxins at much lower concentrations than cigarettes, and therefore indicate that harm from e-cigarette use is likely to be far less than that from smoking. They also demonstrate a possibility that some harm from long-term e-cigarette use cannot be dismissed. From first principles, we would expect repeated and sustained inhalation of the generally low concentrations of particulates, oxidants, carcinogens and other constituents to pose some risks to health, particularly in relation to COPD and lung cancer. However, the absolute magnitude of any risk attributable to e-cigarette use is likely to be very small in absolute terms, and hence substantially smaller than that arising from tobacco smoking. A recent evidence review concluded that e-cigarette vapour can contain some of the toxins present in tobacco smoke, but at much lower levels, and that the long-term health effects of e-cigarette use, although unknown, are likely to be much less, if

at all, harmful to users or bystanders than cigarette smoke.²⁹ An analysis based on expert opinion quantified the likely harm to health and society of e-cigarettes at about 5% of the burden caused by tobacco smoking,¹¹² and a recent report by Public Health England supported this conclusion.¹¹³

With appropriate product standards to minimise toxin and contaminant exposure in e-cigarette vapour, it should be possible to reduce risks of physical health still further. It is also possible, although unlikely, that other, unexpected harm from inhaling e-cigarette vapour over the longer term might yet emerge. Although it is not possible to quantify the long-term health risks associated with e-cigarettes precisely, the available data suggest that they are unlikely to exceed 5% of those associated with smoked tobacco products, and may well be substantially lower than this figure.

5.3.3.7 *Effects of passive exposure to e-cigarette vapour*

Users of e-cigarettes exhale the vapour, which may therefore be inhaled by others, leading to passive exposure to nicotine.¹¹⁴ There is, so far, no direct evidence that such passive exposure is likely to cause significant harm, although one study has reported levels of polycyclic aromatic hydrocarbons that were outside defined safe-exposure limits.¹⁰⁶ It is clear that passive exposure will vary according to fluid, device and the manner in which it is used.⁵² Nicotine from exhaled vapour can be deposited on surfaces,¹¹⁵ but at such low levels that there is no plausible mechanism by which such deposits could enter the body at doses that would cause physical harm.

5.3.4 *Addiction potential*

Speed of nicotine delivery seems to be important for smokers' satisfaction and addiction potential. As outlined in Chapter 4, as a consequence of pulmonary absorption, cigarettes deliver nicotine to the brain very quickly. Although there are no available data on arterial nicotine levels after e-cigarette use, its venous delivery kinetics appear similar to those of products delivering to the mouth or upper airway, suggesting that pulmonary absorption from currently available e-cigarettes is low. In addition to this, the addictiveness of cigarettes is probably also related to other chemicals in tobacco smoke that enhance nicotine's effects. These observations tally with other evidence, eg e-cigarette users report that they feel less dependent on them than on tobacco cigarettes,¹¹⁶ and empirical evidence from adolescent use suggests that, although adolescents experiment with e-cigarettes, few – if any – never-smokers who do so become regular e-cigarette users.^{117,118} The addiction potential of currently available e-cigarettes is therefore likely to be low. NRT and e-cigarettes may satisfy smokers who are already using nicotine, but they have little appeal for never-smokers. This may

change in the future, however, if e-cigarette and other nicotine inhalation technology improves sufficiently to achieve significant pulmonary absorption.

5.3.5 Dual use of e-cigarettes and tobacco cigarettes

Observational population-level evidence indicates that dual users of both tobacco and e-cigarettes are more likely to make an attempt to stop smoking than smokers who do not also use e-cigarettes, but it is not yet clear whether they are more likely to succeed^{119,120} (see Chapter 6). Some researchers have found a lower subsequent cessation rate among smokers who tried e-cigarettes but continued to smoke than among smokers who did not try e-cigarettes, but this could be explained by self-selection and exclusion of smokers who switched completely to e-cigarettes. One study found that daily users of the more advanced models had a higher cessation rate.¹²⁰ Experience with NRT suggests that e-cigarette use is likely to increase the proportion of smokers making a quit attempt, but appropriate evidence on this effect is not yet available. A recent study has shown that dual users maintain their intake of nicotine, but reduce their intake of smoke and related toxins significantly.⁸⁸ Obtaining nicotine from an alternative source leads to a reduction in smoking.²²

5.3.6 Use to inhale other drugs

Refillable e-cigarettes can be used to inhale other materials including cannabis oil or narcotics. Although such use is outside the scope of this report, use of e-cigarettes to deliver cannabis is likely, as is the case for nicotine, to be substantially less hazardous than conventional inhalation of cannabis smoke either alone or mixed with tobacco.

5.4 Products in development

At the time of writing there is a range of non-tobacco nicotine products in development, most of which are variations on the formulations outlined above, but some of which represent genuinely novel approaches, with the potential to deliver nicotine by inhalation with significant pulmonary absorption. As this is the route of absorption that generates the fastest increases in arterial blood levels, this range of products may prove to be the most effective, and also possibly the most addictive, smoking substitutes.

A metered-dose inhaler using propellants to deliver small droplets of nicotine to the respiratory tract has been developed.¹²¹ Ten puffs of a 50-µg nicotine/puff inhaler, inhaled via a spacer, resulted in peak plasma nicotine concentrations of

12.5 ng/mL within 6 min of finishing the 10 puffs. A 100- μ g dose was also tested and resulted in slightly lower peak nicotine concentrations (9.4 ng/mL), most probably owing to the greater adverse effect of coughing at the higher dose. Voke is an inhaler device that is similar in shape and size to a conventional cigarette; it is charged and recharged with an aerosol containing nicotine, propylene glycol and a propellant from a small pressurised canister (similar to those used in asthma inhalers), housed in a pack about the size of a pack of 20 cigarettes. Inhalation of the entire contents of the device provides 0.45 mg of nicotine to the user, with nicotine measurable in arterial blood (mean 2.06 ng/mL) within 2 min of the first inhalation, suggesting at least some pulmonary absorption. A $C_{\max}$ of 3.7 ng/mL in arterial blood was reached in 7 min. A $C_{\max}$ in venous blood of approximately 3 ng/mL was reached within 15–20 min. Hourly use results in steady-state plasma nicotine levels of between 8 and 10 ng/mL.¹²² The product has now been awarded a medicines licence, and hence is likely to be brought to market, although at the time of writing no date has been set.

Nicotine pyruvate is formed from the combination of nicotine and pyruvic acid. Its salts are small (similar in size to the particulate matter in cigarette smoke) and so can be carried deeper into the respiratory tract in the process of inhalation, and are less harsh than pure nicotine to inhale. An inhaler has been developed that contains pyruvic acid and nicotine, which are combined when the user draws air through the device. In participants taking 10 controlled inhalations over 5 min, plasma nicotine levels rose to 5 ng/mL within 5 min when using a dose of 20 μ g nicotine pyruvate per puff, and to 8.3 ng/mL with a 30- μ g dose.¹²³ This technology was purchased by Philip Morris International Inc in 2011,¹²⁴ but has not yet been brought to market.

The Aradigm AERx system, which was developed for inhalation of insulin, has also been tested for nicotine delivery.¹²⁵ There are limited published data about nicotine delivery, but those that are available on the company website¹²⁶ suggest that nicotine delivery is rapid. The product has not, however, yet been commercialised.

5.5 Summary

- The market in non-tobacco nicotine products in the UK has been dominated for several decades by NRT.
- NRT is licensed as a medicine to help smokers quit smoking, and there is strong clinical trial evidence of effectiveness in this role.
- NRT is also licensed for use to help smokers cut down on smoking, and for temporary abstinence.
- NRT products have an excellent safety profile and present negligible risks to users.
- However, NRT products do not reproduce the rapid, high-dose delivery of

tobacco smoke, and reproduce few if any of the behavioural components of tobacco smoking.

- The dominance of NRT has been challenged in recent years by a growing range of consumer nicotine products, some of which are made to high standards of purity but not necessarily licensed as medicines, and by e-cigarettes, which are now more widely used than NRT.
- Unlicensed nicotine products made to high standards of purity are also likely to have very little risk for users.
- Currently available e-cigarettes are manufactured to variable standards, and many are therefore likely to be more hazardous than NRT.
- Nicotine delivery from e-cigarettes is variable and, with some first-generation devices, very low.
- However, e-cigarette design is evolving quickly, with newer models delivering higher doses of nicotine than their predecessors, and hence being more satisfying for smokers.
- Some of the carcinogens, oxidants and other toxins present in tobacco smoke have also been detected in e-cigarette vapour, raising the possibility that long-term use of e-cigarettes may increase the risks of lung cancer, COPD, cardiovascular and other smoking-related diseases.
- However, the magnitude of such risks is likely to be substantially lower than those of smoking, and extremely low in absolute terms.
- These potential health risks arise primarily from contaminants and components generated by the vaporisation process, which should be amenable to reduction through technological and purity improvements.
- New nicotine products in development are likely to extend the range of choices available to smokers further, increasing purity and safety, and, in those achieving greater pulmonary absorption, addictiveness.
- Although it is not possible to precisely quantify the long-term health risks associated with e-cigarettes, the available data suggest that they are unlikely to exceed 5% of those associated with smoked tobacco products, and may well be substantially lower than this figure.

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Quitting smoking

6.1 Introduction

Quitting smoking is the most effective means by which smokers can avoid the premature death and disability caused by smoking. This chapter describes current patterns of smoking cessation in the UK, to provide context in which to consider the position and role of harm-reduction policies. As in Chapter 5, data are again drawn from the Smoking Toolkit Study (STS: www.smokinginengland.info),¹ the only national survey within the UK that provides detailed data on smoking cessation behaviour in a representative general population sample. Although limited to smokers in England, STS data are likely to be broadly representative of trends across the UK. This chapter uses STS and other data to explore recent trends in quitting behaviour, and the association between e-cigarette use and smoking prevalence, and to consider approaches to increasing the number of quit attempts made. It also describes patterns of use of e-cigarettes among young people

6.2 Quit attempts and quit success

STS data indicate that the proportion of smokers making at least one quit attempt each year has fallen over the past 8 years, from 43% in 2007 to 32% in the first 9 months of 2015 (Fig 6.1). This overall trend was reversed in 2012 and 2013, when 34% and 39% made quit attempts, but has since fallen again.

These attempts were slightly more likely to occur in women and younger adults and, in 2014 and 2015, among those in non-manual occupations (Fig 6.2).

The proportion of these attempts that are successful in the short term, which can be identified as survey responses from individuals reporting that they have made a quit attempt in the past year and are now not smoking, is around 16%, a slight increase since 2011 (Fig 6.3). There were no marked differences in the proportion of successful attempts in relation to age or gender, but success was more likely among those in higher occupational groups (Fig 6.4).

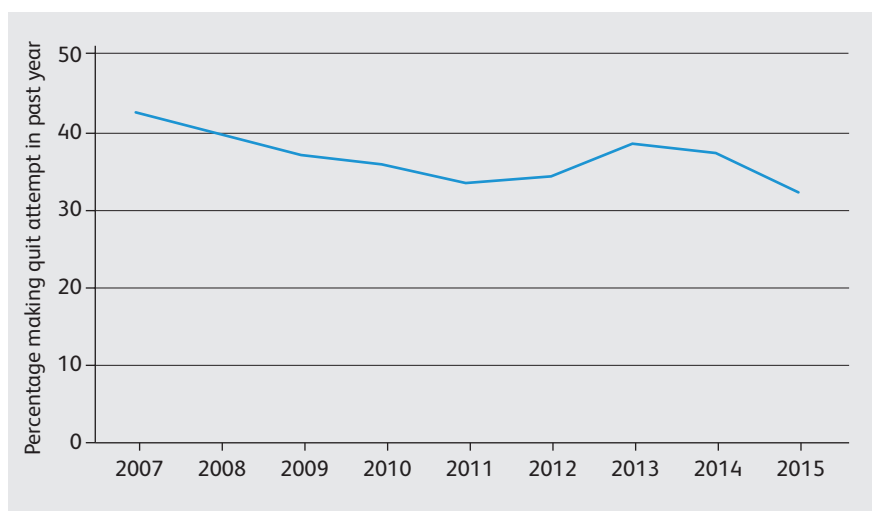


Fig 6.1 Proportion of people who have smoked in the past year who made at least one serious quit attempt in that year¹ (data from 42,386 people who smoked in the past 12 months; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study¹ with permission.)

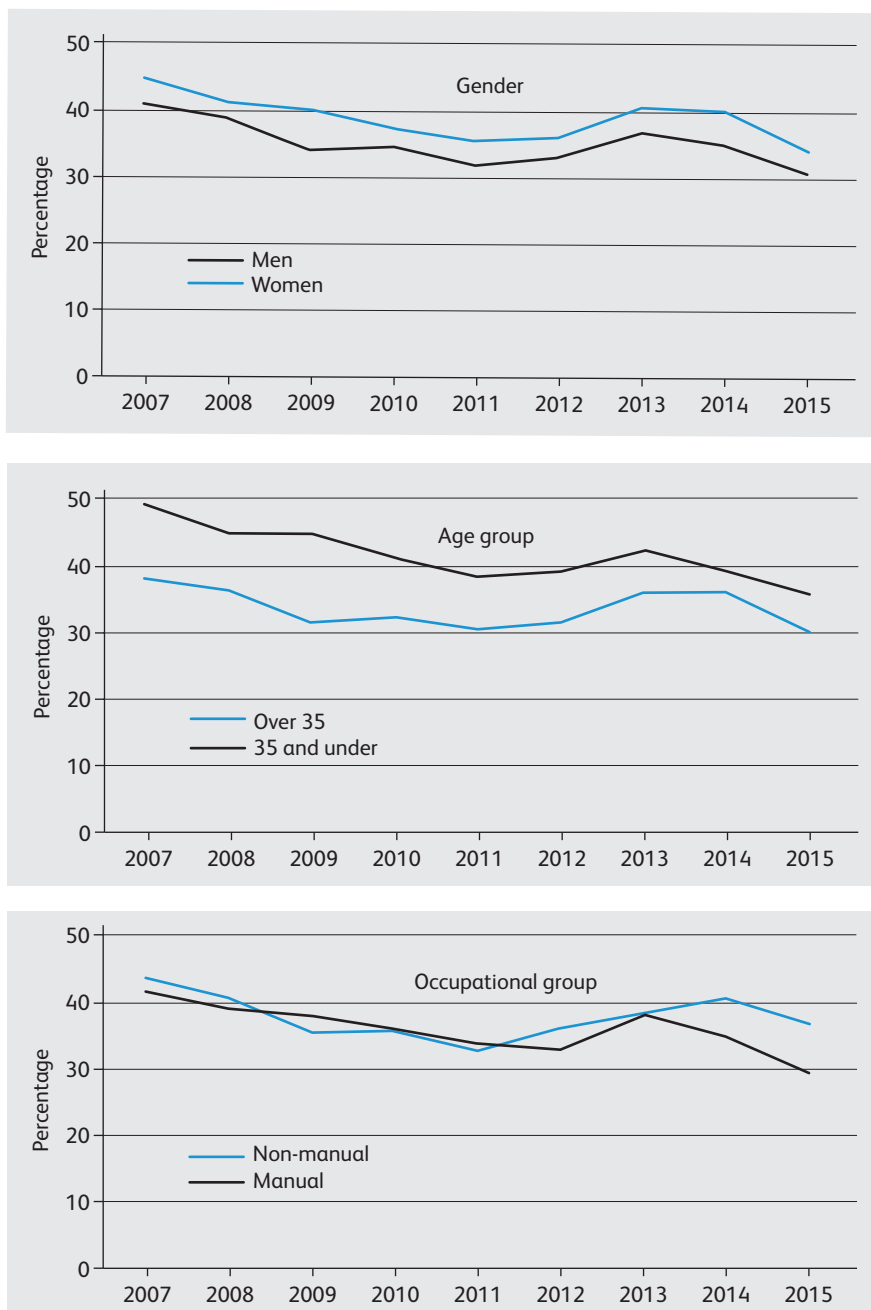


Fig 6.2 Proportions of people who have smoked in the past year making at least one serious quit attempt in that year, by gender, age and occupational group (data details as per Fig 6.1).¹ (Adapted from the Smoking Toolkit Study¹ with permission.)

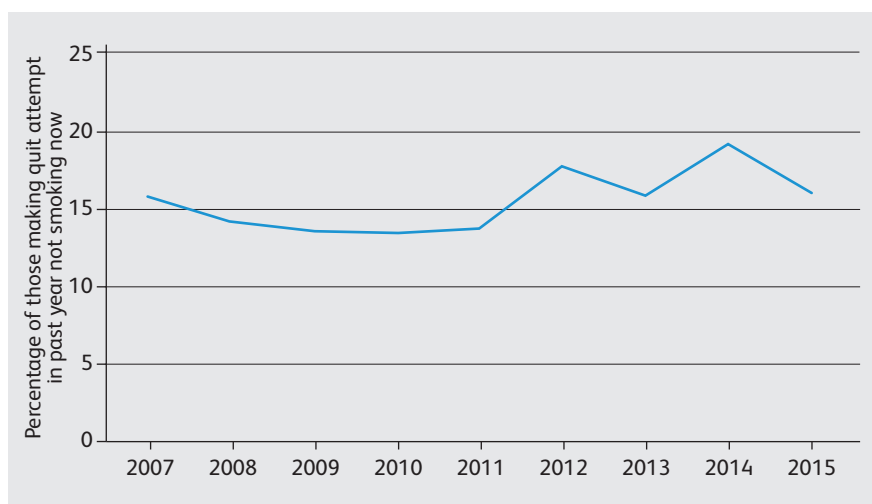


Fig 6.3 Proportion of people who have tried to stop in the past year and are currently not smoking¹ (data from 15,720 people who tried to stop smoking in the past 12 months; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study¹ with permission.)

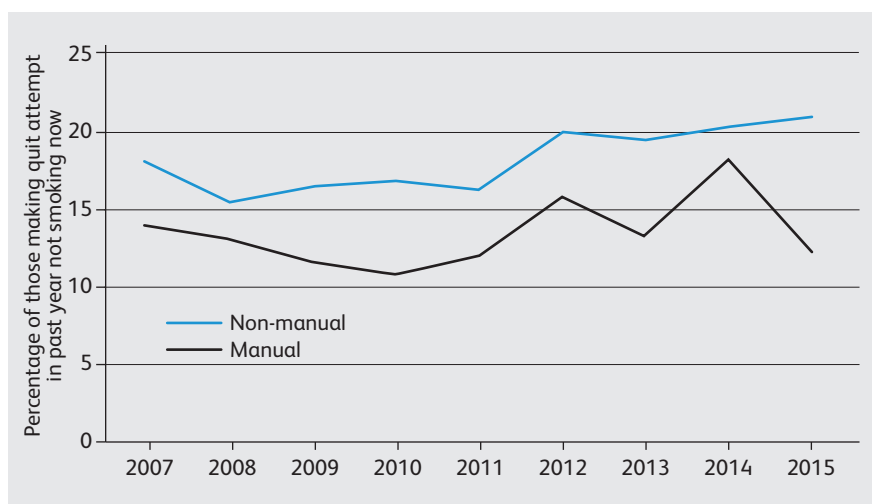


Fig 6.4 Proportion of people who have tried to stop in the past year and are currently not smoking by occupational social group (data details as per Fig 6.3).¹ (Adapted from the Smoking Toolkit Study¹ with permission.)

6.3 Methods used to quit

The methods chosen by smokers in England to help them to quit, reported in the STS study between 2007 and 2015, are represented in Fig 6.5. Until 2013, the most commonly used aid to cessation was nicotine replacement therapy (NRT) bought over the counter, but NRT has been displaced as the most popular choice by a rapid increase in the use of e-cigarettes in England since 2012 (see also Chapter 5). The proportion of smokers who use no aid to cessation has fallen progressively over recent years, but remains above 40%.

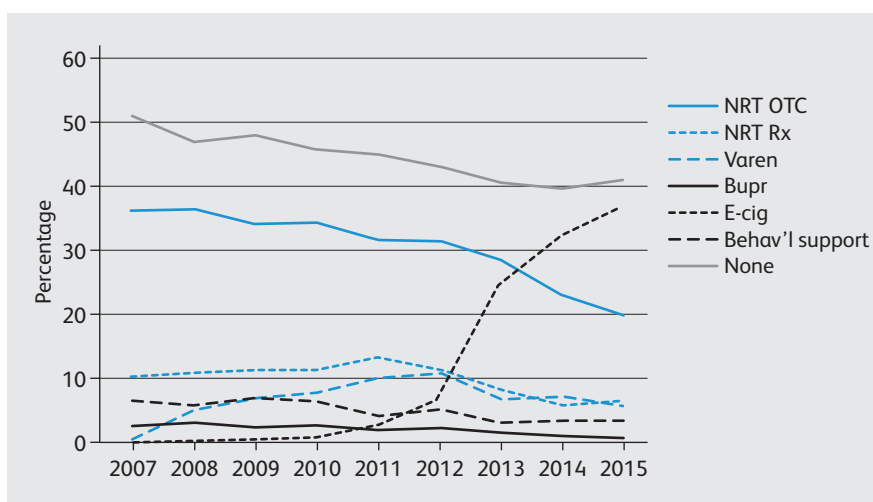


Fig 6.5 Percentage of smokers using different aids to cessation in at least one quit attempt in the past year¹ (data from 15,720 people who tried to stop smoking in the past year; 2015 figures based on January to September data; respondents may use more than one method per quit attempt). NRT OTC = nicotine replacement therapy bought from a shop; NRT Rx = nicotine replacement therapy obtained on prescription; Varen = varenicline (Champix) prescribed therapy; Bupr = bupropion (Zyban) prescribed therapy; E-cig = e-cigarette; Behav'l support = one-to-one sessions with an adviser or group support; None = none of the aforementioned. Use of other methods such as telephone quit-lines is very low. (Adapted from the Smoking Toolkit Study¹ with permission.)

Evidence from randomised trials² and English population data³⁻⁶ indicate that there are three main categories of quit attempt in terms of aids used; these are grouped below in relation to their relative likelihood of success.

6.3.1 Lowest likelihood of success

The approaches to quitting associated with the lowest likelihood of success are those that are unaided, including use of over-the-counter NRT and use of NRT without professional support. STS data suggest that there is little or no difference in the likelihood of quitting using either of these methods.^{5,6} This observation contrasts with randomised trial evidence that NRT can increase the likelihood of cessation,⁷ and suggests that trial procedures, and perhaps in particular an element of professional instruction and follow-up, may be crucial to NRT effectiveness. This, in turn, indicates that providing even minimal behavioural support to purchasers of NRT could improve the likelihood of successful quitting. As one in five smokers who tried to quit smoking in 2015 did so using NRT purchased from a shop or pharmacy, the low effectiveness of this approach represents a considerable lost opportunity to promote cessation.

6.3.2 Intermediate likelihood of success

Quit attempts among STS participants are around 50% more likely to succeed if they involve NRT, varenicline or bupropion obtained on prescription (and hence involving at least some contact with a health professional), or an e-cigarette bought from a shop.^{3–6} These methods are typically used by more heavily addicted smokers who would otherwise be expected to have a lower chance of success than those using the methods of lowest effectiveness.⁸ The fact that NRT obtained on prescription yields higher success rates than over-the-counter NRT suggests that, again, with this product, some form of clinical supervision or involvement is required for NRT to have an effect. This may be because without supervision smokers use NRT incorrectly, eg by using too little, or use the therapy for too short a time. However, this in turn raises the question of why use of e-cigarettes, which in the limited clinical trials available to date appear to be of similar efficacy to NRT,⁹ appears to be effective even without this supervision. There are, however, a number of possible explanations, as follows.

6.3.2.1 Nicotine delivery kinetics

Although early-generation e-cigarettes delivered relatively little nicotine, experienced e-cigarette users, particularly when using a later-generation product, can achieve venous blood levels similar to those obtained from smoking¹⁰ (see Chapter 5). Although this is also possible with NRT, it generally requires very frequent dosing with a short-acting product used in combination with a nicotine transdermal patch,¹¹ and few consumers of NRT are likely to be aware of the need to follow this kind of dosing regimen. It is therefore possible that users

adopting e-cigarettes without direction on optimal use are more likely to achieve satisfactory nicotine substitution than those choosing NRT.

6.3.2.2 Duration of use

There is a tendency for e-cigarettes to be used for longer than NRT. Although some smokers who use NRT to stop smoking continue to use NRT for months or even years after quitting, they are in a minority; most discontinue the product within a few weeks. In contrast, many users of e-cigarettes continue using the product both before and after quitting smoking, and for a longer period after quitting than most NRT users.^{12–15}

6.3.2.3 Sensory replacement

Unlike NRT, e-cigarettes replicate many of the sensory characteristics of smoking. As outlined in Chapter 4, nicotine addiction is sustained not only by the rewarding characteristics of nicotine itself, but also by reward given to the stimuli and behaviours associated with nicotine delivery.¹⁶ As sensory replacement can reduce tobacco withdrawal symptoms,¹⁷ the sensation of vapour in the back of the throat, the plume of exhaled vapour, the hand-to-mouth action, and various other sensory and behavioural similarities with cigarettes may help to make e-cigarettes a closer sensory substitute for tobacco smoking than NRT products.

6.3.2.4 Cultural acceptability

Particularly among smokers, e-cigarettes are a socially and culturally accepted direct substitute for smoking. E-cigarette users can still share smoking breaks with and be accepted by other smokers, thus sustaining a social identity as a smoker, but can also tap into the enthusiasm, knowledge sharing and social support for e-cigarette use generated via online user groups and vaping websites. Also, unlike NRT, e-cigarettes are not medicalised, and use does not imply rejection of smoking or a commitment to quitting.

6.3.2.5 Confounding

People who choose to purchase e-cigarettes may differ from those who choose NRT in relation to factors that also influence the likelihood of successful quitting. Although STS analysis suggests that differences in characteristics known to predict smoking cessation outcome, including nicotine dependence, age, social grade and recent history of quit attempts, do not account for the difference in quit rates between those using e-cigarettes and those using NRT,^{3–6} it is still possible that unmeasured confounding variables could account for the apparent advantage of e-cigarettes.

Clarifying whether and why over-the-counter e-cigarettes appear to be more effective than NRT purchased in the same way clearly requires further research, comparing e-cigarettes and other cessation pharmacotherapy in head-to-head pragmatic trials, and exploring the importance of sensory replacement and other characteristics of the products involved.

6.3.3 Highest likelihood of success

STS data indicate that the greatest improvement in quit rates comes from use of NRT, varenicline or bupropion together with multi-session, face-to-face specialist behavioural support from a qualified stop smoking adviser. This method tends to be used by the most heavily addicted smokers, who would therefore be expected to have the lowest success rates of the three categories⁸ but, after adjustment for characteristics associated with likelihood of cessation,^{5,6,18} this approach appears to increase success rates by between two- and threefold.⁶ As NHS Stop Smoking Services (SSSs) have only recently started to support quit attempts using e-cigarettes, the available data on success rates are limited, but early experience estimates quit rates to be at least as high as among those using other medication. In the year to March 2015 in England, only 2,221 SSS users made a quit attempt using an unlicensed nicotine product (ie an e-cigarette), from a total of 445,979 setting a quit date.¹⁹ The average quit rate in all smokers using SSSs was around 51%, and among e-cigarette users it was 66%;¹⁹ although factors other than the product itself are likely to be involved in this difference, the finding is certainly consistent with high efficacy as a cessation therapy.

6.3.4 Trends in uptake of different quitting methods over time

Figure 6.6 shows the proportions of quit attempts using these three groups of quitting methods among smokers in England from 2009 to 2015. It demonstrates that use of specialist services is rare among smokers and that, although most of those making a quit attempt still use the least effective methods to do so, the proportion using methods of intermediate effectiveness is increasing, largely as a consequence of increased use of e-cigarettes.

Through use of estimates of relative effectiveness based on Cochrane reviews of trials of medication and behavioural support,^{20–23} supplemented by the data from smokers in England described above, the growth in use of intermediate effectiveness methods between 2012 and 2015 from 18% to 40% is likely to have generated many thousands of additional successful quit attempts by 2015; the figure for 2014 is likely to be around 19,000.²⁴ However, these trends also demonstrate that much more needs to be done to increase the number of smokers attempting to quit, and to increase the proportions

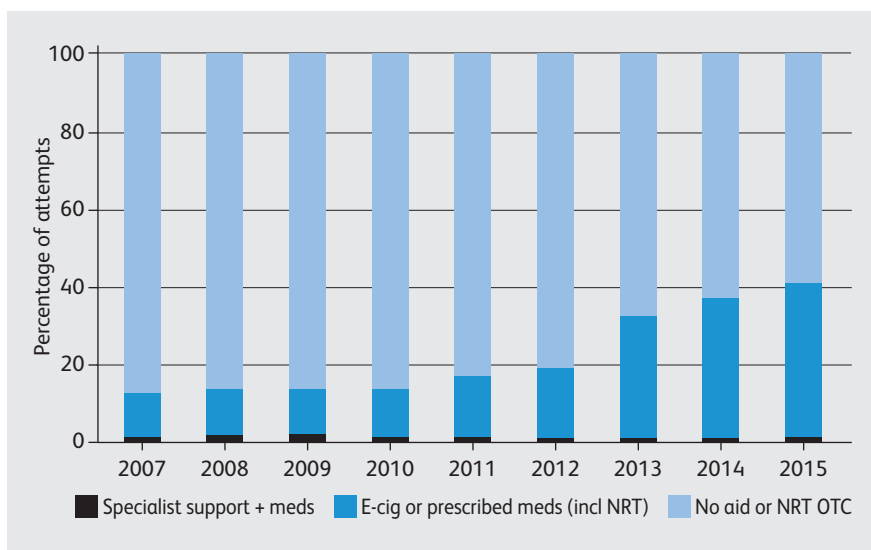


Fig 6.6 Percentages of those attempting to quit smoking in the past year by method used in most recent quit attempt¹ (data from 15,723 people who tried to stop smoking in the past year; 2015 figures based on January to September data). Specialist support = specialist SSS involving behavioural support plus medication/NRT. Meds = NRT or medication on prescription (Rx) or e-cigarette bought over the counter. No aid or NRT OTC = no aid or NRT bought from a shop. (Adapted from the Smoking Toolkit Study¹ with permission.)

using the more effective approaches. The data available from NHS SSSs indicate that there is no reason to believe that the integration of e-cigarettes into treatment support would reduce quit rates.

6.4 What motivates smokers to try to quit and what are the obstacles?

Smokers make a quit attempt when the desire to quit and confidence in success reach an action threshold. Environmental factors can trigger a quit attempt by either momentarily raising motivation above this threshold or reducing the level of the threshold.²⁵ In this context, the environment includes social norms about the desirability of smoking, as well as triggers such as health campaigns or advice on smoking from health professionals.

Survey data suggest that, in Britain, motivation to quit is driven primarily by health concerns and the financial cost of smoking, whereas factors such as

concern about the effect of smoking on one's family, not liking being addicted to smoking and feeling stigmatised are present but less frequently cited.^{26,27} The most important environmental trigger identified from smokers' reports is health professional advice.²⁶ Mass media campaigns can also play an important role,²⁸ although this does not appear to be explicitly recognised by smokers.²⁶ The introduction of a comprehensive ban on smoking in indoor public areas appears to have had a short-term, but not a sustained long-term, effect on quitting.²⁹

The main personal barriers to making an attempt to quit smoking appear to be enjoyment of smoking, having a positive smoker identity and low confidence in success.^{27,30} Motivation may also be reduced by smoking among other people who are important to the smoker, such as a partner or friends, colleagues and wider family, although evidence for this influence is less strong.²⁷

6.5 Why do more smokers not try to quit and how could the numbers be increased?

The figures outlined in this chapter thus far relate to the approximately one in three smokers who make a quit attempt each year. Although it is essential to ensure that as many of those as possible succeed in quitting, it is at least as important to increase quit attempts among the remaining majority of smokers who do not make a quit attempt in any given year. Measures are therefore required to increase the proportion of smokers making any attempt to quit smoking, as well as to increase the likelihood of success among those who try.

Chapter 3 outlined the population measures that can influence both quitting and uptake of smoking, and identified price rises and media campaigns as among the most effective. As studies of smokers also identify that the main drivers of motivation to quit are concerns about the health consequences of smoking and the cost of smoking,^{26,27} the evidence is consistent in indicating that the most effective approaches to increase quit attempt numbers in the UK are likely to comprise price rises and media campaigns using health messages. However, advice from a health professional is also identified by smokers as a key trigger for quit attempts,²⁶ and it would appear that a great deal more could be done to increase the delivery of such advice. Figure 6.7 shows the proportion of smokers in England who report having received advice to stop smoking from their GP in the past year during 2010–15, and reveals that fewer than 40% of smokers recall having received advice to quit; of these, only two-thirds recall having received an offer of help with quitting. Equivalent data from people accessing NHS secondary care services are not available, but anecdotal evidence suggests that delivery of smoking cessation advice and support is also low. As over 1 million

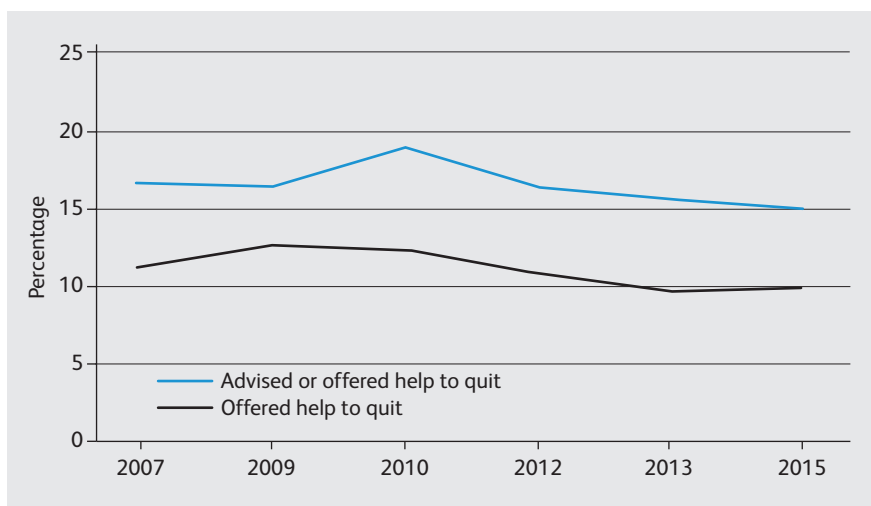


Fig 6.7 Proportion of people who smoked in the past year who reported receiving any advice on stopping or offer of help with stopping from their GP¹ (data from 27,000 smokers; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study¹ with permission.)

smokers are admitted to hospitals in the UK each year,³¹ this also represents a substantial missed opportunity to initiate and support quit attempts.

These findings indicate that guidance from the National Institute for Health and Care Excellence (NICE), which recommends that health professionals should offer help to quit at every opportunity,^{32,33} and support of harm-reduction initiatives among those unwilling to quit,³⁴ is not being implemented sufficiently widely. Clinical trial evidence also suggests that, although simple advice from a physician to quit is effective, offers of support are more effective, generating quit attempts in around 40% of those receiving the offer.³⁵ Therefore, there is substantial scope for healthcare professionals to increase the rate of quit attempts by integrating advice and support to quit smoking in all healthcare consultations.

Since 2004, GPs in the UK have received financial incentives to record smoking status and provide advice on smoking, which, although unspecified, is generally interpreted as advice to quit.³⁶ This scheme applied initially only to smokers with smoking-related conditions and people with serious mental health disorders, but in 2012 was extended to cover everyone who smokes. Moreover, in 2012, the contracted requirement was changed from an offer of advice to an offer of pharmacotherapy and referral for smoking cessation support. Early evidence on the scheme demonstrated that it led to marked increases in the recording of both

smoking status and delivery of advice, but no increase in the prescription of pharmacotherapy³⁶ over the background trend.³⁷ A later evaluation of the 2012 change showed a similar result for all smokers, with increased recording by GPs of smoking status, delivery of advice to quit and referral to smoking cessation services, but no actual increase in prescription of pharmacotherapy.³⁸ A similar scheme that rewarded hospitals for ensuring that opportunistic advice on smoking was given to patients was introduced in 2012, and there is also no evidence that this initiative has had any effect.³⁹ Reform of these schemes would therefore appear appropriate.

6.6 How could changes in the availability of nicotine products influence quitting behaviour?

Evidence from time-series analyses indicates that increasing the availability of NRT, and introducing new smoking cessation medications to the market, increases the use of these products by smokers trying to stop smoking, but does not increase the proportion of smokers attempting to quit.⁴⁰

Evidence from placebo-controlled trials indicates that use of an NRT product while continuing to smoke can increase the likelihood of a quit attempt (see Chapter 5), and that this effect is due to the nicotine in the products rather than being a placebo response.⁴¹ Population-level data confirm that smokers who use an NRT product while smoking are more likely to try to stop, and eventually to succeed in quitting.^{42–45} Although the mechanism for this effect does not appear to involve increased confidence in quitting,⁴³ it is possible that nicotine from the NRT product interferes with the maintenance of the association between smoking and nicotine reward, and hence reduces the motivation to smoke. It is also possible that encouraging smokers to experiment with nicotine products, including e-cigarettes, would generate more quit attempts and hence increase smoking cessation. The limited available evidence on this indicates that quit attempts are indeed more common among daily e-cigarette users who continue to smoke, but that successful quitting using the early-generation ‘cigalike’ devices is less common.^{46,47} Research into methods of increasing quit rates among people experimenting with alternative nicotine sources, perhaps by finding ways to deliver quitting advice and behavioural support, is therefore needed.

6.7 Summary

- Approximately one in three smokers in the UK currently attempts to quit each year, but only about one in six of those who try to quit remains abstinent for more than a few weeks or months.

- Most smokers who try to quit do so without accessing professional help, preferring either to use no help or support, or else to use NRT or e-cigarettes bought over the counter.
- Those who use over-the-counter NRT appear to be no more likely to quit than those getting no help.
- Smokers who use over-the-counter e-cigarettes or prescribed medications are more likely to succeed.
- The greatest increase in the chances of stopping successfully occurs with prescribed medications used together with specialist behavioural support.
- The effectiveness of e-cigarettes used with behavioural support is uncertain, but early data demonstrate a relatively high quit rate.
- Smokers are motivated to make a quit attempt in particular by cost and health concerns.
- Price rises, media campaigns and brief advice from health professionals are therefore likely to increase the numbers of smokers trying to quit.
- Health professional advice and support to quit smoking should be offered as a routine component of healthcare consultations.
- Smokers who use nicotine products as a means of cutting down on smoking are more likely to make quit attempts. Promoting wider use of consumer nicotine products, such as e-cigarettes, could therefore substantially increase the number of smokers who quit.
- New research is needed to improve the effectiveness of over-the-counter NRT, and to find ways of providing behavioural support to smokers who choose e-cigarettes.

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7

Trends in use of non-tobacco nicotine in Britain

7.1 Sources of data

Although detailed data on the prevalence of smoking in Britain have been collected for some decades (see Chapter 2), sources of survey data on the use of nicotine replacement therapy (NRT) or unlicensed nicotine products are relatively limited. The most detailed source is the Smoking Toolkit Study (STS: www.smokinginengland.info), a monthly, household, face-to-face survey of representative samples of the population of England aged 16 and over, in operation since 2007.¹ Data on all smoking and non-tobacco nicotine-containing products, including e-cigarettes, have been collected since 2007 for smokers, since 2011 for recent ex-smokers (<1 year), and since 2013 for never-smokers and long-term (>1 year) ex-smokers. Other large national surveys have added questions on e-cigarettes much more recently, eg in 2014 in the Opinions and Lifestyle Survey² and Scottish Health Survey.³ Data on use of e-cigarettes by children have also begun to be collected only relatively recently in national surveys in England, Scotland and Wales.^{4–6} Action on Smoking and Health (ASH) UK has commissioned annual surveys of e-cigarette use among adults since 2010 and children since 2013, and these extend beyond simple measures of prevalence to include reasons for use, and a range of other factors.^{7,8} The STS is the only source of data on NRT use. This chapter draws on all these sources to review trends in use of NRT and e-cigarettes in Britain over recent years. Most of the data presented are drawn from samples of smokers and recent ex-smokers participating in the STS.

7.2 Trends in the use of non-tobacco nicotine products among adults

Before the widespread uptake of e-cigarette use began in around 2011, NRT was being used by between 15% and 20% of smokers in England (Fig 7.1). However, use of non-tobacco nicotine products has risen sharply since 2011, primarily as a result of a marked increase in e-cigarette use, which has more than offset a more sustained decline in use of licensed NRT. In 2015 about 28% of smokers were

using at least one non-tobacco nicotine product, and more than 20% an e-cigarette (Fig 7.1).

Among recent (<1 year) ex-smokers, use of non-tobacco nicotine products also rose between 2012 and 2015, despite a fall in the use of NRT (Fig 7.2). In 2015 more than half of all recent ex-smokers were using a non-tobacco nicotine product, with more than 40% of these being e-cigarette users.

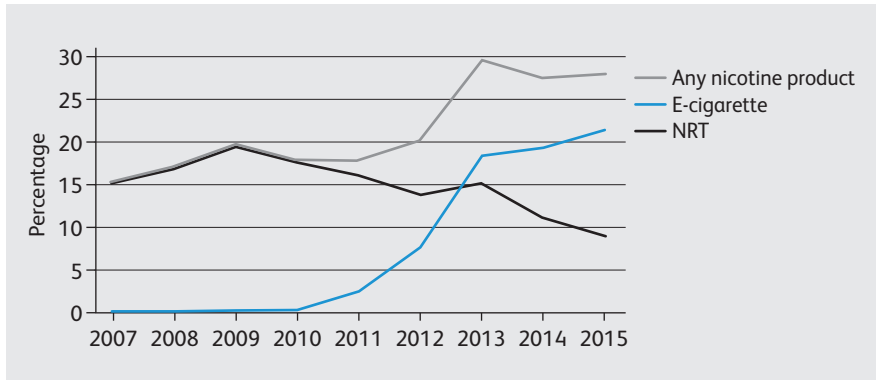


Fig 7.1 Prevalence of use of NRT, e-cigarettes or any non-tobacco nicotine products among current cigarette smokers in England 2007–15¹ (data from 36,896 cigarette smokers; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study⁹ with permission.)

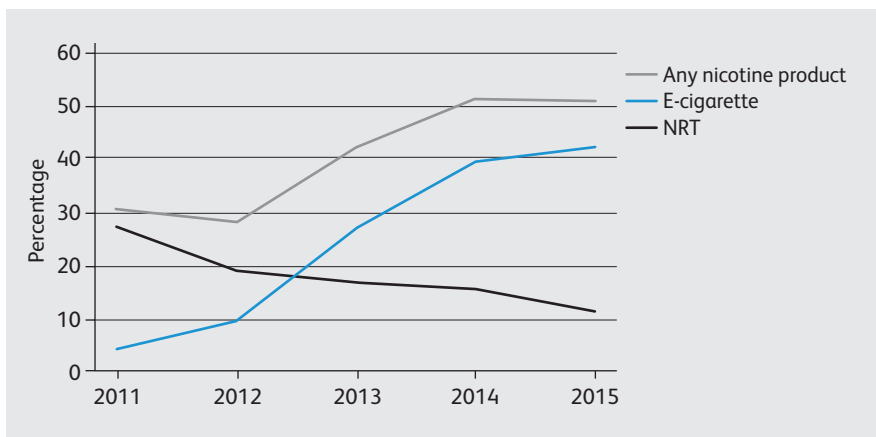


Fig 7.2 Prevalence of use of NRT, e-cigarettes or any non-tobacco nicotine products among recent ex-smokers in England 2011–14¹ (data from 2,318 people who stopped smoking in the past year; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study⁹ with permission.)

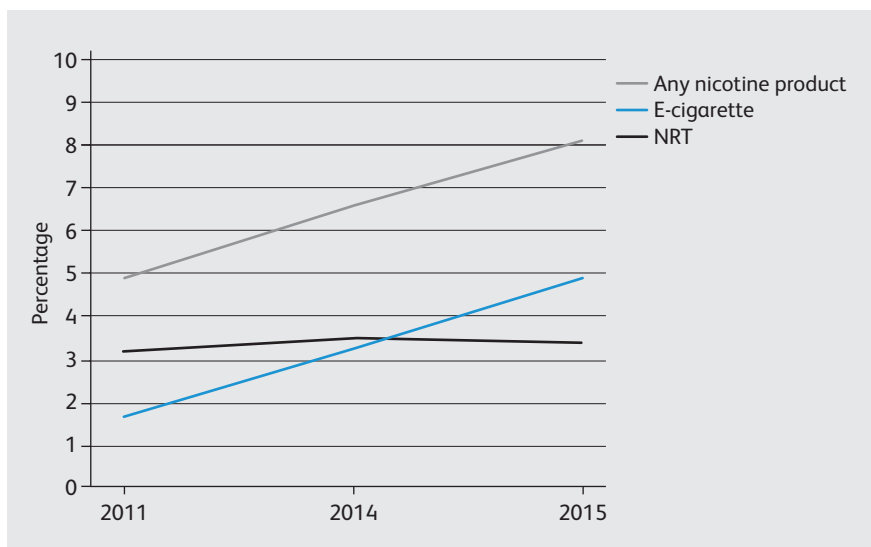


Fig 7.3 Prevalence of use of NRT, e-cigarettes or any non-tobacco nicotine products among long-term ex-cigarette smokers in England 2013–15¹ (data from 6,487 long-term ex-smokers; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study⁹ with permission.)

Data for longer-term (>1 year) ex-smokers, which are available since 2013, show a slightly different pattern, with generally lower levels of prevalence of use and stable NRT prevalence, whereas e-cigarette use has increased (Fig 7.3).

The explanation for these trends is not certain, but is likely to be mainly due to continued e-cigarette use among people who have used them to quit smoking, because the proportion of smokers in England who have stopped smoking but then take up an e-cigarette within a year of stopping is only about 10%.¹ The ASH survey in 2015 found that the principal reasons given by ex-smokers who are currently vaping are ‘to help me stop smoking entirely’ (61%) and ‘to help me keep off tobacco’ (53%). The principal reasons given by current vapers who still smoke are ‘to help me reduce the amount of tobacco I smoke, but not stop completely’ (43%) and ‘to help me stop smoking entirely’ (41%).⁷ Whether some of these individuals would otherwise have relapsed back to cigarette smoking, had e-cigarettes not been available, is not clear. Exploration of the explanations for these trends is an important area for future research.

Among never-smokers, non-tobacco nicotine use is extremely uncommon. In 2015, 0.1% of never-smokers were using NRT and 0.3% an e-cigarette, and these figures have remained virtually unchanged since 2013 (Fig 7.4).

Among current smokers and recent ex-smokers, e-cigarettes tend to be used by a slightly higher proportion of younger than older smokers (Fig 7.5), but this use does not differ by socio-economic status (Fig 7.6) or gender.

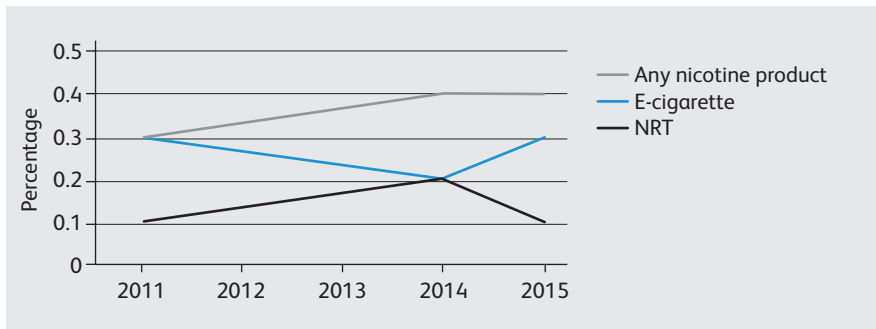


Fig 7.4 Prevalence of use of NRT, e-cigarettes or any non-tobacco nicotine products among never-smokers in England, 2013–15¹ (data from 24,041 never-smokers; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study⁹ with permission.)

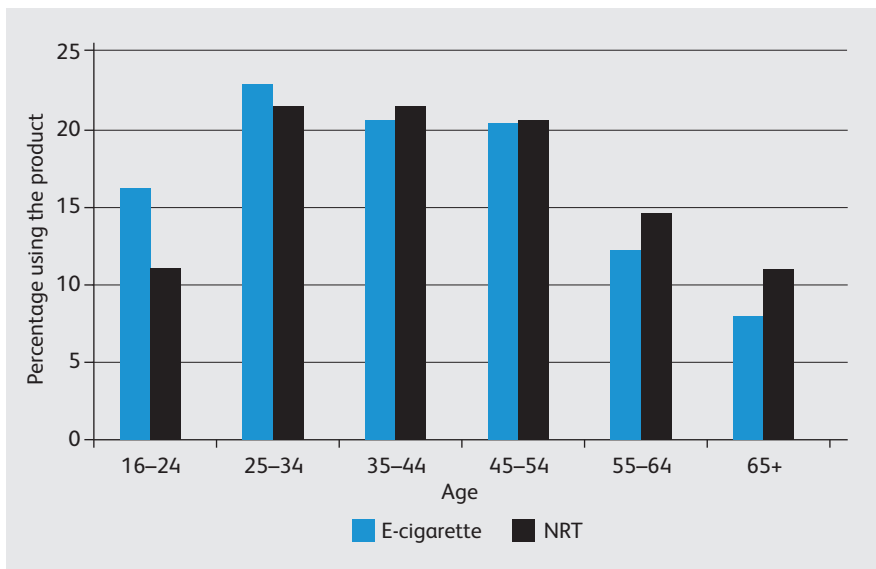


Fig 7.5 Age distribution of e-cigarette or NRT users in 2013–15¹ (data from 11,186 smokers and <1 year ex-smokers; 2015 figures based on January to September data). (Adapted from the Smoking Toolkit Study⁹ with permission.)

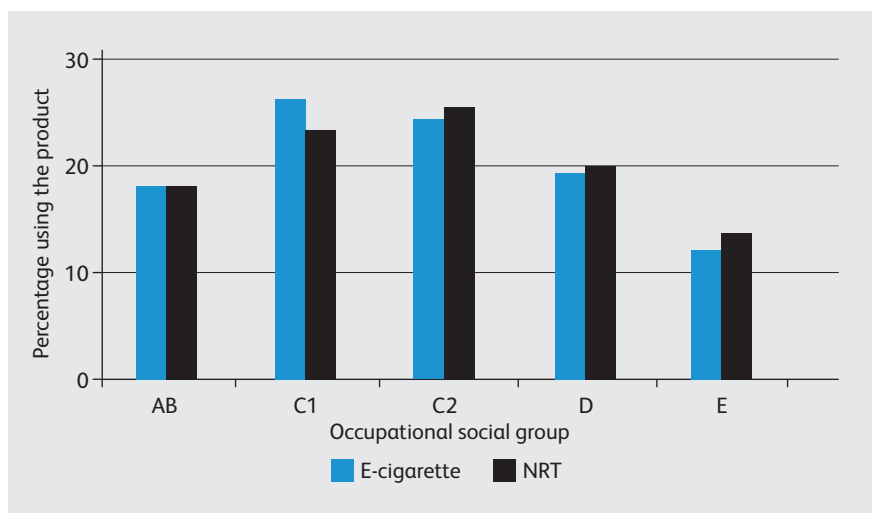


Fig 7.6 Social grade distribution of e-cigarette and NRT users in 2013–15¹ (from 11,186 smokers and <1 year ex-smokers; 2015 figures based on January to September data). AB, professional managerial; C1, clerical; C2, skilled manual; D, semi-skilled manual; E, unskilled manual/unemployed. (Adapted from the Smoking Toolkit Study⁹ with permission.)

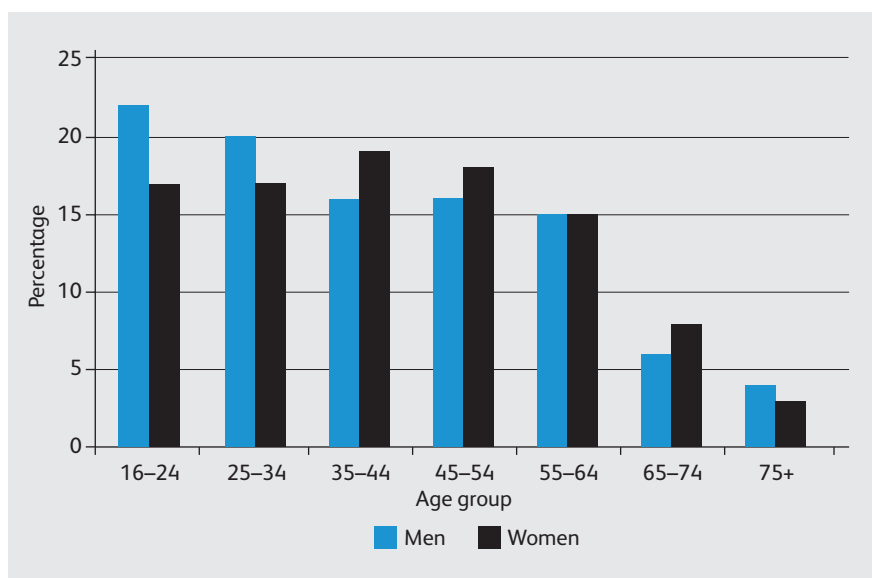


Fig 7.7 Proportion of adults in Scotland in 2014 who had ever used an e-cigarette, by age and sex.³ (Adapted from the Scottish Government³ with permission under Open Government Licence.)

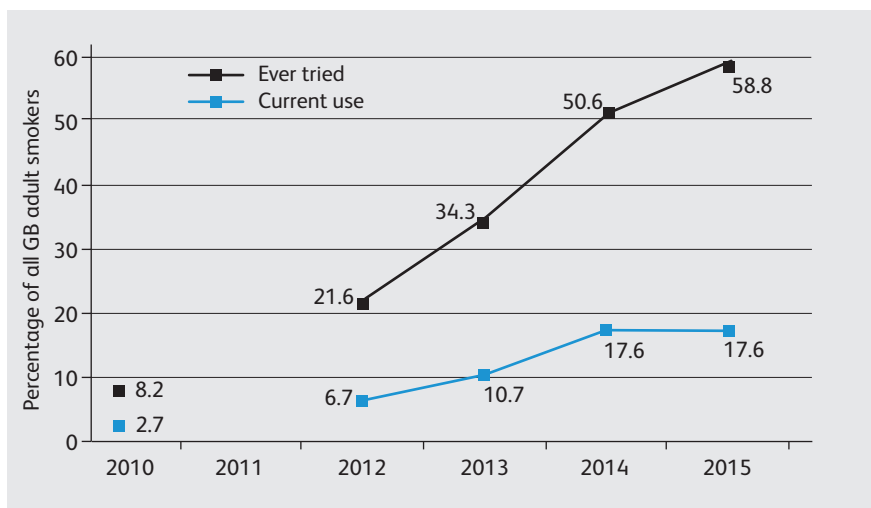


Fig 7.8 Prevalence of ever use and current use of e-cigarettes among adult smokers in Britain, 2010–15.⁷ (Adapted from ASH⁷ with permission under Open Government Licence.)

The Opinions and Lifestyle Survey estimated that, in the first quarter of 2014, e-cigarettes were being used by 11.8% of smokers, 4.8% of ex-smokers and 0.14% of never-smokers.² Data from Scotland indicate that, in 2014, around 15% of men and women reported ever having used an e-cigarette, and about 5% reported current use.³ This current use was entirely restricted to current smokers (of whom 15% were current e-cigarette users) and ex-smokers (7%). Of never-smokers, 1% reported ever using an e-cigarette, and none were current users. 'Ever use' was much more prevalent among younger people (Fig 7.7).

Annual surveys by ASH demonstrate data consistent with STS findings, with almost 60% of smokers in Britain ever having tried an e-cigarette, and just under 18% reporting current use in 2015.⁷ Similar to the STS findings, current use had remained unchanged between 2014 and 2015 after rapid growth since 2010 (Fig 7.8).

As in the Scottish data, however, this use of e-cigarettes has occurred almost entirely among current and ex-smokers; in 2015, the prevalence of current use of e-cigarettes among never-smokers was 0.2%.⁷ The most frequently reported reasons for using e-cigarettes were to quit smoking, to help maintain abstinence having already quit and, among dual users, to cut down on smoking.⁷ The ASH survey in 2015 also explored the type of e-cigarettes that respondents were using, and demonstrated that most had started use with first-generation disposable or 'cigalike' devices, but then migrated to second- and third-generation refillable or tank designs (Fig 7.9).⁷

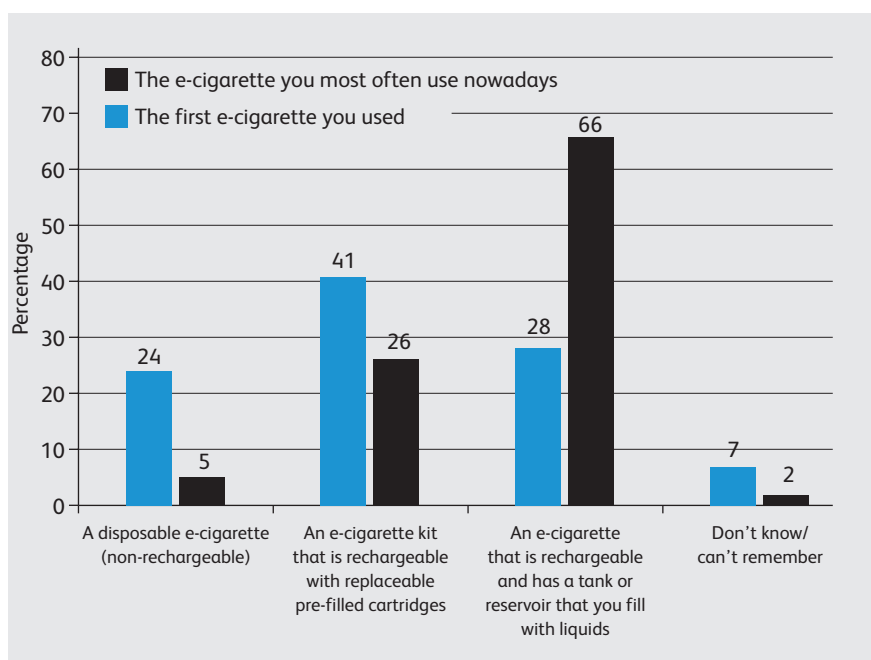


Fig 7.9 Types of e-cigarette tried in the past and now.⁷ (Adapted from ASH⁷ with permission under Open Government Licence.)

Over 80% of e-cigarette users surveyed by ASH in 2015 were using flavoured e-liquids. Tobacco was the most popular flavour (35% of users), but fruit (25%) and menthol (19%) were also popular.⁷

7.3 Trends in the use of non-tobacco nicotine products among children

Data on the use of non-tobacco nicotine among children are limited to e-cigarette use. Annual surveys by ASH of young people in the UK since 2013 demonstrate that awareness of e-cigarettes has grown substantially, such that, in 2015, only 7% of young people reported no knowledge of these products, and the proportion of young people who had tried e-cigarettes increased over these three surveys from 5% to 13% (Fig 7.10).⁸

However, of the 13% of young people who reported in 2015 ever having tried an e-cigarette, most (80%) had done so only once or twice.⁸ Only 2.4% of all participants in the survey had used e-cigarettes once or more a month, and 0.5% once or more a week. The Scottish SALSUS (Schools Adolescent and Lifestyle and Substance Use Survey) study⁵ reported similar findings among 13- and 15-

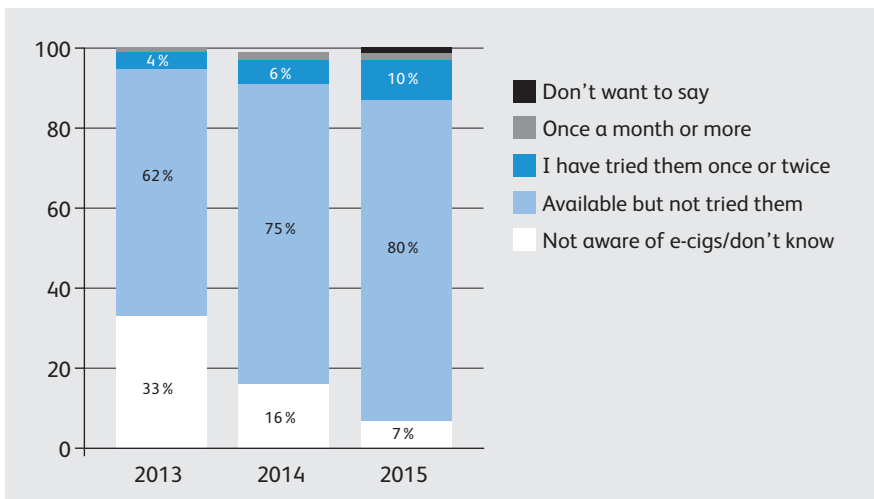


Fig 7.10 Prevalence of awareness and frequency of use of e-cigarettes among young people aged 11–18, UK, 2013–15.⁸ (Adapted from ASH⁸ with permission under Open Government Licence.)

year-olds in 2013, with 7% and 17%, respectively, reporting ever having tried to use or used an e-cigarette, and only 1% in each age group using the product more than 'once or a few times'. In 2014, the Welsh Health Behaviour in School-aged Children survey of 11- to 16-year-olds in Wales reported that 12.3% of participants had ever used an e-cigarette, and 1.5% were using e-cigarettes at least once a month.⁶ The 2014 Smoking, Drinking and Drug Use survey of children aged 11–15 in England found that 22% of participating children had ever used an e-cigarette, but only 1% reported regular use.⁴ Regular use of e-cigarettes among young people in the UK thus appears to be very rare. As in adults, it appears that it occurs predominantly among those who are using, or have used, tobacco cigarettes. In 2013 in the Scottish study, all of those who reported having used e-cigarettes more than a few times had been, or were still, smokers (Fig 7.11).⁵

The 2014 Welsh survey reports very similar findings, with young people aged 11–15 who had ever used an e-cigarette being over 20 times more likely than never-users to have ever smoked; those using e-cigarettes more than once a month were more than 100 times more likely to be smoking cigarettes at least once a week.⁶ The 2015 ASH survey also reports a strong association between use of e-cigarettes and tobacco cigarettes (Fig 7.12), with almost all e-cigarette users either being current smokers, or having tried or been regular smokers in the past.⁸ Regular e-cigarette use in the 2014 English Smoking, Drinking and Drug Use survey was exclusive to children who had at least tried smoking.⁴

Of those using e-cigarettes in the ASH survey, most used a tank or other refillable device, and most used e-liquids with fruit (42%), tobacco (23%) or menthol (13%) flavours.⁸

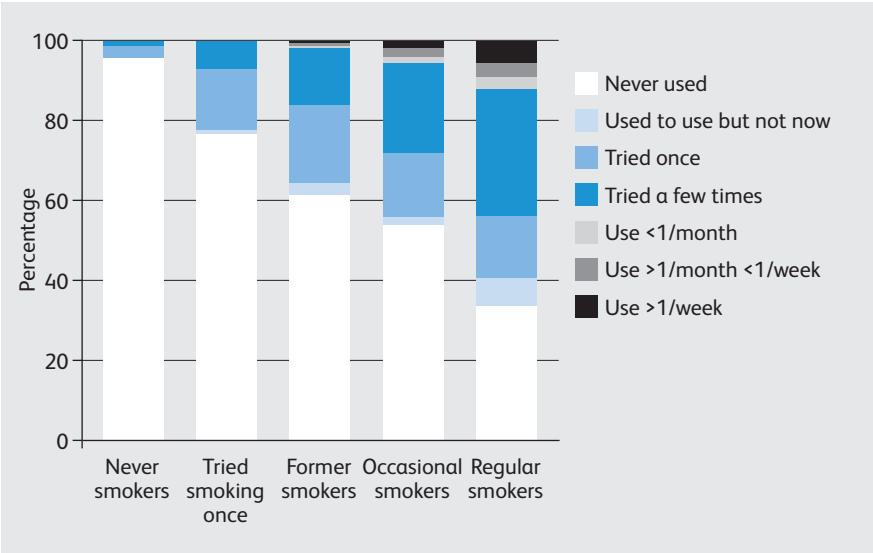


Fig 7.11 Use of e-cigarettes, by smoking status, among 13- and 15-year-olds in Scotland in 2013.⁵ (Adapted from NHS National Services Scotland⁵ with permission under Open Government Licence.)

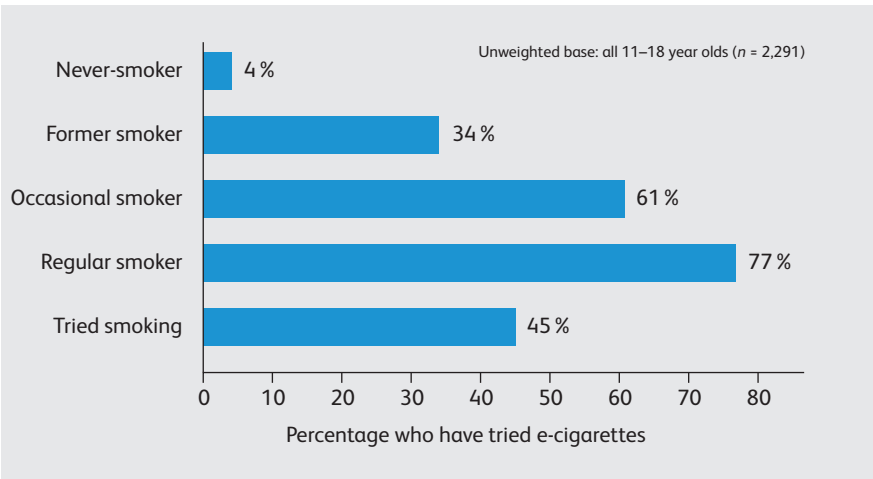


Fig 7.12 Young people aged 11-18 who have ever tried an e-cigarette, by smoking status, UK, 2015.⁸ (Adapted from ASH⁸ with permission under Open Government Licence.)

7.4 Summary

- Use of e-cigarettes among adults in the UK was rare before 2010, but has since increased to the point that up to one in five smokers now uses an e-cigarette, more than twice as many as use NRT.
- The proportion of smokers using NRT has fallen by about half over this period, but the proportion using any non-tobacco nicotine product has increased to just under 30%.
- These trends are similar but more marked among recent ex-smokers, 40% of whom use an e-cigarette.
- Use of e-cigarettes among adults who have never been regular smokers is very rare.
- There is a slightly greater likelihood that younger adult smokers will use e-cigarettes than NRT; in Scotland, younger men are more likely to use them.
- Adult regular e-cigarette users tend to use tank or other refillable devices, rather than first-generation 'cigalikes', and tobacco-, fruit- or menthol-flavoured nicotine.
- The proportion of young people in Britain aged <18 who have ever used an e-cigarette is increasing, but remains low.
- Most use among young people appears to be single or very occasional experimentation. Use more than once a month is relatively rare and more than once a week extremely rare.
- Regular use is almost exclusively limited to young people who are already either regular or occasional smokers, or have experimented with smoking in the past.
- Young regular users of e-cigarettes also favour later-generation devices, and fruit, tobacco or menthol flavours.
- In adults and young people in the UK, therefore, use of e-cigarettes is limited almost entirely to those who are already using, or have used, tobacco.

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8.1 The need for harm reduction

Prevention of smoking is vital to public health, and much progress has been made in reducing the prevalence of smoking in the UK over recent decades (see Chapter 2). However, the data presented in Chapter 2 also demonstrate that this success has been achieved primarily by reducing uptake of smoking among younger people, more than improvements in the rate at which established smokers quit smoking. It is, however, these established smokers in middle and older age who will generate most of the population burden of morbidity and premature mortality caused by smoking over the next two decades.^{1,2} As established smokers today are more likely to be socio-economically disadvantaged or to have mental health problems (see Chapter 2), this burden of disease will fall disproportionately on these groups who, as a result of higher levels of addiction to nicotine, also find it particularly difficult to quit smoking.

Increasingly powerful incentives for existing smokers to try to quit smoking, and strong support to help them succeed, are therefore urgently required. Further application and extension of the conventional policy options summarised in Chapter 3 might be expected, at best, to sustain the decline in smoking prevalence of close to 0.7 percentage point per year achieved over the past decade in the UK (see Fig 2.1, Chapter 2), the consequence of which will be that most of the current smokers in the UK, and particularly the most heavily addicted smokers, will continue to smoke for several decades. The public health imperative in relation to smoking is, however, to reduce prevalence as much and as quickly as possible, for example, to achieve the widely agreed objective of a 'tobacco-free' society (comprising smoking rates of 5% or less in all socio-economic groups) by 2035,³ and this requires the addition of new strategies. Harm reduction offers the potential to add significantly to the current rate of decline in smoking prevalence among all population groups. The availability of alternatives to tobacco, as a source of nicotine for the most heavily addicted smokers, also allows the application of much higher levels of taxation on tobacco without necessarily exacerbating poverty in those smokers who find themselves unable to quit in response to increases in tobacco prices. In Sweden,

the availability of *snus* has been estimated to have added around 0.4 percentage point per year to the rate of decline in smoking prevalence.⁴ E-cigarettes, and other non-tobacco nicotine products, surely have the potential to achieve at least the same in the UK.

Harm-reduction approaches, by promoting substitution of tobacco with less hazardous sources of nicotine, thus represent a potentially powerful complement to existing prevention policy, particularly among the relatively highly addicted and typically disadvantaged smokers who are likely to find it most difficult to quit.^{5,6} However, pursuing a harm-reduction strategy also carries risks of unwanted effects in society. This chapter explores some of the harms caused by tobacco smoking in different periods of life, and the probable balance of risks and benefits of harm-reduction approaches based on substitution with NRT or other non-tobacco nicotine products, particularly e-cigarettes.

8.2 Potential hazards of harm reduction

Although harm-reduction approaches have the potential to reduce the hazard of nicotine use among the current smoking population, they also bring potential hazards to wider public health. For example, a product that is half as damaging to health as tobacco smoking has the potential to halve the harm caused by smoking in society, if used exclusively and completely as a substitute for tobacco by current smokers, and young people who would otherwise have become smokers. That benefit would be reduced or even reversed, however, if the new product came to be sufficiently widely used among non-smokers that the benefits to smokers were eclipsed by harm sustained by non-smokers. The benefit of harm reduction to smokers would also be offset at population level if use of harm-reduction products increased the risk of smoking uptake (known as gateway progression, see below), undermined existing tobacco control measures by making the act of smoking socially acceptable again (renormalisation) or discouraged quitting by being used as a partial substitute for tobacco smoking ('dual use'), without progression to complete substitution among smokers who would otherwise have quit. These processes are discussed in more detail below.

8.2.1 Renormalisation

In relation to tobacco smoking, renormalisation refers to processes that undermine or reverse a progressively increasing perception in society that smoking is not a normal or desirable behaviour.⁵ For much of the 20th century smoking was part of the fabric of British life, and children grew up perceiving

smoking to be something that many, if not most, adults did. In recent years, however, the acceptability of smoking has changed, particularly as a consequence of prohibition of tobacco advertising, smoking in enclosed public places and point-of-sale displays, and other measures. Although smoking remains relatively common, and hence relatively normal, in some communities or social groups, this is no longer the case in general. Examples of renormalisation might include: the use of e-cigarettes in areas where smoking is prohibited, thus creating an impression that smoking is acceptable; advertising or other imagery that evokes tobacco smoking through e-cigarette use; behavioural modelling from use of e-cigarettes by parents, siblings, peers, friends, celebrities or others; or other processes that in some way make smoking more appealing.^{6,7}

8.2.2 Gateway progression

Gateway progression is a process by which, in relation to tobacco smoking, use of non-tobacco nicotine is proposed to cause uptake of smoking that would not otherwise have occurred. Gateway theory has its origins as a descriptive model for progression from use of soft drugs to use of hard drugs, and a recent review of evidence from animal models concluded that nicotine exposure may indeed increase susceptibility to other drug use, independent of other determinants of common liability.⁸ In nicotine use, however, the gateway theory has also been applied as a predictive model proposing that use of non-tobacco nicotine is likely to cause progression to use of nicotine through tobacco smoking,⁹ and therefore that use of e-cigarettes by non-smokers, and particularly by children, could cause smoking uptake independent of other determinants of smoking initiation. Similar concerns have in the past been expressed in relation to nicotine replacement therapy (NRT) and smokeless tobacco.⁹

8.2.3 Dual use

Dual use refers to the concomitant use of non-tobacco nicotine by smokers who continue to smoke tobacco. As outlined in Chapter 5, reasons for dual use include relief of nicotine withdrawal symptoms at times when smoking is not allowed, or a desire to cut down on smoking without necessarily a commitment to quit. However, concerns have been expressed that dual use may inadvertently sustain smoking by making it easier to abstain when smoking is prohibited and the smoker might otherwise have quit, and that smokers who could otherwise have quit elect for dual use instead, in the mistaken belief that this generates significant health gains. There are particular concerns that the tobacco industry will promote dual use of e-cigarettes as a means of sustaining, rather than cutting down or quitting, tobacco smoking in their customers¹⁰ (see Chapter 9).

8.3 Harm to health and wellbeing of self and others from smoking at different stages of life

Smoking directly damages the health of all who smoke (see Chapter 1), increasing the risk of a wide range of fatal and non-fatal illnesses¹¹ and causing over 120,000 deaths in the UK in 2010.¹² However, the adverse effects of smoking extend well beyond this direct harm to the individual smoker, and are not limited to the later period of life when the increased mortality in smokers becomes more acute. Through the life course of any individual from the point of conception, maternal smoking (and hence fetal exposure *in utero*) impairs fetal growth and development, and increases rates of fetal and neonatal death, low birth weight, preterm birth and developmental anomalies.¹³ Passive maternal smoking during pregnancy increases the risk of stillbirth and developmental anomalies^{14,15} and reduces birth weight.¹⁶ In childhood, passive exposure to tobacco smoke causes sudden infant death, respiratory infections, middle-ear disease and exacerbation of asthma.¹³ Passive exposure to others' smoke during adulthood causes transient symptoms such as eye and throat irritation at all ages, and in later life contributes to higher mortality from lung cancer, cardiovascular disease and chronic obstructive pulmonary disease (COPD).¹⁷

Harm from smoking is not limited to that arising from inhaling tobacco smoke. Probably through behavioural modelling and opportunities for experimentation, children whose parents or other household members smoke are more likely to take up smoking themselves,¹⁸ thus perpetuating smoking and its consequent harm in successive generations. Smoking rates in the wider communities and environments that children grow up in also influence smoking uptake, because children whose peers smoke, and those exposed to smoking imagery in the media, are more likely to become regular smokers.¹⁹ Smoking is a significant drain on family budgets, exacerbating poverty,²⁰ and a drain on wider society, which suffers the opportunity cost of funding over £3.3 billion in direct healthcare and social care costs in the UK, and over £10 billion in lost productivity and other societal costs.²¹ Thus, although smoking has little direct effect on the personal health of individual smokers during early adult life,^{22,23} the risks to others, especially children, are substantial.

As outlined above, all or almost all of these harms could be prevented or else much reduced by substitution of smoked tobacco with a less hazardous source of nicotine. The potential benefits and risks to individual and societal health of doing so are now considered in relation to the two main options currently available in the UK: conventional NRT products and unlicensed non-tobacco nicotine products, including e-cigarettes.

8.4 Harm reduction with conventional NRT products

8.4.1 Health harms

As use of nicotine alone in the doses used by smokers represents little if any hazard to the user,²⁴ complete substitution of smoking with conventional NRT products is, for practical purposes, the equivalent of complete cessation in almost all areas of harm to the user. NRT products do not emit vapour and so are not a source of passive exposure for adults or children. Packaging and dose restrictions render accidental poisoning in children highly unlikely. Questions remain about the safety of nicotine in pregnancy²⁵ and potential effects on fetal development and mortality,¹¹ although one recent study has reported a lower occurrence of developmental abnormality among children whose mothers used NRT in pregnancy than in those whose mothers did not.²⁶

8.4.2 Renormalisation of and gateway to smoking

Only the Nicorette inhalator bears any resemblance to a cigarette, so users of most NRT products provide no behavioural modelling that could encourage primary uptake of, or sustain, tobacco smoking by others. Use of NRT among never-smokers is rare at all ages and, despite early concerns to the contrary, there is no reported evidence that use of the inhalator or any other NRT product in young people has ever acted as a gateway to smoking.

8.4.3 Dual use and gateway from smoking

NRT was developed as a smoking cessation therapy for use after an abrupt and complete cessation of tobacco smoking. The efficacy of NRT used in this way is well established.²⁷ More recently, however, NRT has been licensed in the UK for use together with continued smoking, to relieve withdrawal symptoms during temporary abstinence from smoking, or to cut down on smoking,²⁸ ie for dual use. Before the advent of e-cigarettes, up to 15% of current smokers in England used NRT in this way, although the proportion is now closer to 5% (Fig 8.1).²⁹ Although cutting down on smoking achieves relatively little in terms of health benefits, use of NRT together with tobacco smoking does appear to reduce compensatory smoking to a modest extent³⁰ and, among smokers with no intention to quit, to increase, by as much as twofold, the likelihood of a subsequent quit attempt.³¹ It also protects those around the smoker from the harmful effects of passive smoking. For this and other reasons, dual use of NRT and tobacco smoking is licensed by the Medicines and Healthcare products Regulatory Agency (MHRA)³² and recommended by the National Institute for Health and Care Excellence

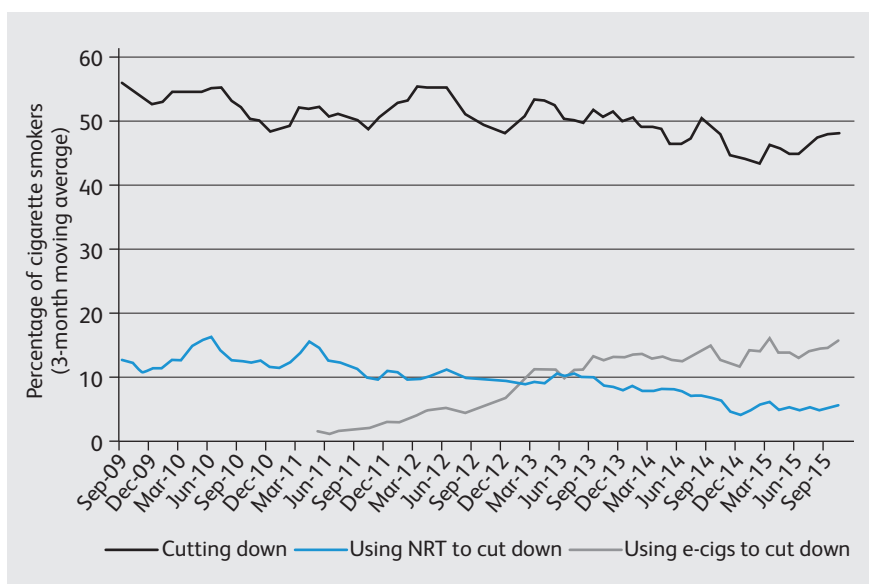


Fig 8.1 Self-reported use of NRT or e-cigarettes to aid cutting down on smoking, England, 2009–15.²⁹ (Adapted from the Smoking Toolkit Study²⁹ with permission.)

(NICE) as a tobacco harm-reduction strategy.^{3,24} As use of NRT in this way increases the likelihood of quitting, in these circumstances NRT acts as a gateway from smoking.

8.4.4 Population health effects of substitution of smoking by NRT

With the possible exception of use during pregnancy, complete substitution of smoking by NRT achieves much the same in health terms as quitting both smoking and all nicotine completely. Widespread uptake of NRT by non-smokers would therefore result in little harm to public health, but is in any case rare. Gateway progression from NRT to smoking among those who have never smoked does not, for practical purposes, occur. Dual use results in a modest reduction in tobacco smoking of little or no significance to health, but promotes quitting. Promotion of NRT as a reduced harm substitute for smoking is therefore unequivocally good for health. Economic analysis of the use of NRT in a harm-reduction strategy, including a range of scenarios in which opting to cut down rather than quit detracted to different degrees for those who would otherwise have quit, found that all options were cost-effective in relation to preventing major disease costs to the NHS,³³ and hence were acting in favour of population health.

8.5 Substitution with e-cigarettes

8.5.1 Health harm

As e-cigarettes have been in widespread use in the UK and most other countries for less than a decade, the health effects of long-term use are as yet unknown. As outlined in Chapter 5, there is very little evidence that short-term use of e-cigarettes causes any appreciable harm to users or to others, but information on long-term health effects of repeated and sustained inhalation of e-cigarette vapour is of necessity limited to inference, based on knowledge of the vapour's constituents. The oxidant, particulate, carcinogen and other toxin contents summarised in Chapter 5 would be expected, from first principles, to increase the risk of lung cancer, COPD, cardiovascular disease and other diseases caused by smoking, but at much lower levels of risk. For the less common health sequelae of smoking,¹¹ levels of increased risk are likely to be negligible. The risks attributable to long-term inhalation of nicotine in isolation from tobacco smoke, and of the propylene glycol, glycerine and other components unique to e-cigarettes, are also uncertain but likely to be low. The health harm to long-term users of e-cigarettes is therefore likely to be marginally greater than for those who use conventional NRT.

Harm to others from vapour exposure is negligible (see Chapter 5). The effects of maternal use on the fetus are unknown but, on the grounds of the very low levels of toxins in vapour, are probably close to those of NRT. Accidental poisoning in children from ingestion of e-cigarette solutions, which has been reported and typically results in nausea and vomiting,³⁴ are preventable through the use of childproof fasteners.

8.5.2 Renormalisation and gateway to smoking

First-generation e-cigarettes were designed to resemble tobacco cigarettes in approximate shape and size, and hence their use provides a behavioural model similar to smoking, which could appeal to young people or smokers trying to quit smoking, appear to undermine smoke-free policy, and be used by the tobacco industry to cross-promote smoking imagery and hence tobacco products through e-cigarette advertising (see Chapter 9). However, even first-generation products are visually distinct from cigarettes, and exhaled vapour easily distinguishable from tobacco smoke in terms of appearance, smell and irritancy, making confusion unlikely between e-cigarettes and tobacco cigarettes in areas covered by smoke-free legislation.³⁵ Later-generation e-cigarettes have less or no physical resemblance to tobacco cigarettes. Use of e-cigarettes to generate smoking imagery in advertisements is prevented under UK advertising codes of practice.^{36,37}

Data from Wales indicate that children whose parents or peers use e-cigarettes are more likely to experiment with e-cigarettes themselves,³⁸ and to intend to smoke in the future, than children without this exposure.³⁸ However, as parental e-cigarette use occurs almost exclusively among current or former smokers, children in these households would be expected to have higher smoking intentions,¹⁹ and it is unclear whether this risk is either increased or decreased by the availability of e-cigarettes as opposed to tobacco cigarettes.

The prevalence data on the use of e-cigarettes by both adults and children presented in Chapter 7 demonstrate that e-cigarette use in Britain is, to date, almost entirely restricted to current, past or experimental smokers. As with NRT, there is no evidence thus far that e-cigarette use has resulted, to any appreciable extent, in the initiation of smoking in either adults or children; the extremely low prevalence of use of e-cigarettes among never-smoking adults³⁹ and children^{40–42} indicates that, even if such gateway progression does occur, it is likely to be inconsequential in population terms. Although it remains important to monitor the use of e-cigarettes in young people, to ensure the quick identification of evidence of any increase in uptake of smoking arising from e-cigarette use, it appears that, to date, concerns over gateway progression into smoking are unfounded. The association between e-cigarette and tobacco cigarette use is therefore more likely to arise from common liability to use of these products, and to use of e-cigarettes as a gateway from, rather than to, smoking.

8.5.3 Dual use and gateway from smoking

Office for National Statistics data indicate that, in the first quarter of 2014, 11.8% of smokers, 4.8% of ex-smokers and 0.14% of never-smokers in Britain used e-cigarettes; smoking prevalence data from the same source indicate that these proportions represented approximately 2.2%, 2.6% and 0.08% of the total adult population, respectively.⁴³ On these figures, therefore, about 45% of e-cigarette users in Britain are using them together with smoking, which is about twice as many as do so with NRT.⁴⁴ As dual use of NRT is recommended as a means of increasing the likelihood that smokers will attempt to quit smoking,³ and early-generation e-cigarettes appear to be approximately as effective as NRT as a cessation aid,⁴⁵ it follows that the same is likely to apply to e-cigarettes. Observational data from England confirm that smokers who use e-cigarettes at least daily are indeed twice as likely to make a quit attempt, or else to reduce their smoking, than those who do not, although in this study the likelihood of success among those attempting to quit was not increased by e-cigarette use.⁴⁶ Independent clinical trials⁴⁵ and observational data from the Smoking Toolkit Study⁴⁷ indicate that e-cigarette use is associated with an increased chance of quitting successfully, but further longitudinal and trial data would be helpful to define any such effect more precisely.

These findings suggest, however, that, among smokers, e-cigarette use is likely to lead to quit attempts that would not otherwise have happened, and in a proportion of these to successful cessation. In this circumstance, e-cigarettes act as a gateway from smoking. However, it is not yet known whether, or by how much, e-cigarettes are being dually used by smokers who would otherwise have quit completely, and hence act as a barrier or delay to cessation. It is also not known whether or by how much a preference to try to quit using e-cigarettes is displacing uptake of the more effective conventional NHS Stop Smoking Services (SSSs)⁴⁸ or other services combining pharmacotherapy with behavioural support, and hence reducing overall quit numbers, or whether this effect is counteracted by the much broader reach and uptake of e-cigarettes relative to NHS SSSs.

It seems likely that the chance of successfully quitting with e-cigarettes would be increased if smokers who chose to use them, whether for cutting down or quitting, could also receive additional behavioural support,⁴⁹ and perhaps, given the evidence that the combination of two nicotine products is more effective than one alone, were encouraged to combine e-cigarette use with a nicotine transdermal patch.⁵⁰ Research and development of methods are clearly needed to engage and support smokers who start to use e-cigarettes, for whatever reason, to increase the likelihood of successfully quitting.

8.5.4 Population health effects of substitution of smoking with e-cigarettes

Thus far, the availability of e-cigarettes appears to have been positive for UK public health. Uptake has been rapid among adults and limited almost entirely to smokers, and has contributed to a continued downward trend in UK smoking prevalence. Use by children who would not otherwise smoke appears to be minimal. In many ways, therefore, their availability and adoption as a consumer alternative to smoking share many parallels with the use of *snus* as a consumer harm-reduction product in Sweden.⁵¹ Although long-term safety remains a concern, it appears likely that the combined influences of impending regulatory controls (see Chapter 10) and technological advances will lead to significant improvements in the probable long-term hazard profile of these products in the near future. These developments mean that unlicensed e-cigarettes are likely, in the near future, to approximate to NRT in terms of long-term hazard. The arrival on the market of licensed products, whether e-cigarettes or other novel designs, will make that prospect even more of a reality. In that case, e-cigarettes are likely to share the efficacy of NRT as a harm-reduction option under most circumstances.³³

However, the creation of models of these beneficial effects for products available today, and also those of potentially adverse influences such as widespread uptake

by non-smokers, gateway effects into smoking and sustaining dual use rather than quitting among established smokers, is difficult and inevitably dependent on assumptions about the probable magnitude of these influences. At the time of writing, we are aware of only two published attempts to do so. A proof-of-concept study applying Markov modelling to a cohort of adults aged 18–24 in the USA developed two models of smoking and e-cigarette use, the more conservative of which predicted that the prevalence of adult cigarette smoking within the cohort would increase from 15% at baseline to 21% after 10 years.⁵² These figures do not therefore appear applicable to the UK, where a 6 percentage point increase in smoking prevalence after the age of 25 has not happened in over 40 years (see Fig 2.11). A Monte Carlo analysis approach, modelling various scenarios of relative uptake by smokers and non-smokers, and at levels of harm relative to smoking ranging from 1% to 50%, predicted population benefits as long as use of e-cigarettes is concentrated among those who already smoke, or would otherwise have become smokers.⁵³ As the true magnitude of e-cigarette harm is likely to lie at the low end of that modelled range, and experience to date indicates that use of e-cigarettes is almost entirely confined to smokers, these predictions support the notion that e-cigarettes, within the context of a regulatory environment designed to discourage use among youth and never-smokers, are likely to benefit public health.

8.6 Summary

- Uptake of smoking is falling in the UK, but most current smokers are likely to continue smoking for many years.
- Most of the morbidity and mortality caused by smoking in the short- and near-term future will occur in people who are smoking now.
- More effective measures to help existing smokers to quit smoking, as soon as possible, are therefore urgently needed.
- Harm reduction has the potential to complement conventional tobacco control policy by offering an alternative means for smokers to stop smoking tobacco.
- Substituting medicinal nicotine (NRT) for tobacco almost completely prevents any further damage to self or others from nicotine use.
- Although the long-term hazards of e-cigarette use are not yet clearly defined, e-cigarettes are probably close to NRT in the harm that their use confers on the user and others.
- The long-term hazard associated with e-cigarette use is likely to fall, as a result of regulatory and technological developments.
- There is no evidence that either NRT or e-cigarette use has resulted in renormalisation of smoking.
- None of these products has to date attracted significant use among adult never-smokers, or demonstrated evidence of significant gateway progression into smoking among young people.

- NICE guidance recommends dual use of NRT for harm reduction, largely because dual users are more likely eventually to quit smoking.
- Evidence on the natural history of smoking among dual users of e-cigarettes is less well established, but a similar effect is likely.
- Promotion of the use of non-tobacco nicotine, including e-cigarettes, as widely as possible as a substitute for smoking, in the context of a regulatory framework designed to discourage use among youth and never-smokers, is therefore likely to generate significant health gains in the UK.

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9 E-cigarettes, harm reduction and the tobacco industry

9.1 Introduction

In 2013, the investment bank Goldman Sachs identified e-cigarettes as one of eight emergent themes in the global economy capable of ‘creative destruction’, representing a new technology that could offer consumers a significantly superior proposition and potentially ‘forcing established companies and business models to either adapt or die’.¹ In the same year, *The Economist* newspaper similarly asked whether the rise of e-cigarettes represented the tobacco industry’s ‘Kodak moment’ – ‘its version of the point at which the world’s leading maker of camera film realised that consumers had gone digital, and it was too late to chase them’.² The continuing profitability of the tobacco industry, which arises overwhelmingly from sales of tobacco cigarettes,^{3–6} suggests that such reports of the industry’s demise are at best premature. However, these claims do highlight the substantial degree of uncertainty about the commercial implications of e-cigarettes for the future of the tobacco industry and therefore for the strategic development of tobacco control.

The disruptive effect of e-cigarettes is not confined to the tobacco industry. The chairman of the pharmaceutical giant GlaxoSmithKline, for example, has acknowledged that, in response to the declining performance of their nicotine replacement therapies (NRTs), the company considered manufacturing e-cigarettes before concluding that such a step would be ‘just too controversial’.⁷ Leading tobacco companies have, perhaps predictably, made a different decision, implementing a rapid programme of investment in and acquisition of vapour devices. The public health implications of such developments remain uncertain and contested, and reflect broader debates about the role of harm reduction in general. At one end of the spectrum, harm-reduction advocates and researchers see advantages in engaging an industry skilled in marketing nicotine in the promotion of products that could offer a potential exit strategy from selling cigarettes: identifying, for example, the ‘need to create a situation in which there are incentives for tobacco companies to gradually become nicotine companies ... [such] that their long-term profits are going to be in other products than cigarettes’.⁸ At the other end of the spectrum are those who see no such prospect,

claiming, for example, that ‘only the most naive or captured advocates for vaping could fail to acknowledge that the tobacco industry wants people who vape to smoke and vape, not vape instead of smoking’.⁹ This chapter explores the motives for and potential consequences of the tobacco industry’s engagement in harm reduction and, in particular, the emerging e-cigarette market.

9.2 The tobacco industry and e-cigarettes

E-cigarettes have emerged as a significant component of the market in nicotine products with astonishing rapidity, both in the UK and globally. The market research company Nielsen identified e-cigarettes as the fastest-growing product in British supermarkets during 2014, with sales across large grocers increasing by almost 50%.¹⁰ A report on the UK market in nicotine vapour devices by the industry analysts Euromonitor suggested even greater growth, with a category that was worth only £25 million as recently as 2011 having reached overall sales of £459 million in 2014. This growth also reflected changing consumer preferences, with first-generation (‘cigalike’) devices (see Chapter 5) being displaced in the UK by the rapid expansion of tank systems and of e-liquids, which experienced value growth of 110% and 145% respectively in 2014.¹¹ This shift is also strongly evident in other leading western European markets, although ‘cigalikes’ retain majority shares in both Russia and the USA.¹² The UK e-cigarette market is now estimated to be the world’s second largest, being exceeded only by the USA,¹³ whereas global sales of an estimated \$US6.5 billion now dramatically outstrip the declining international market for NRT (\$US2.4 billion), and are equivalent in value to cigarette sales in the world’s 20th-largest cigarette market.¹²

Having perhaps been taken by surprise by the rise of e-cigarettes, the transnational tobacco companies have all now committed to major initiatives in this emergent industry. A key moment was the April 2012 acquisition of the e-cigarette brand blu™ by the US-based cigarette manufacturer Lorillard for \$US135 million,¹⁴ marking the tobacco industry’s first major foray into the e-cigarette market. In December 2012, British American Tobacco (BAT) became the first leading tobacco company to buy a British e-cigarette manufacturer through its purchase of CN Creative, the maker of Intellicig.¹⁵ This complemented BAT’s earlier formation of what was billed as a stand-alone start-up company, Nicoventures, to ‘focus exclusively on the development and commercialisation of innovative regulatory approved nicotine products’.¹⁶ All of the leading international cigarette manufacturers have now made substantial acquisitions or launched strategic initiatives in nicotine products, principally in e-cigarettes. Altria and Philip Morris International (PMI) manage vapour brands including Mark Ten, Nicolites and the heat-not-burn product iQOS; BAT brands include Vype, Intellicig and an inhaled nicotine device called Voke; Japan

Tobacco International have purchased E-Lites and launched Ploom; RJ Reynolds have developed Vuse and Revo, whereas Imperial Tobacco launched Puritane through its Fontem Ventures subsidiary and, in July 2014, obtained the blu™ brand that was sold as part of Reynolds' takeover of Lorillard.^{11–12,17}

These investments have, to date, been weighted heavily towards first-generation 'cigalikes', which mimic tobacco cigarettes more closely, but tend to deliver lower doses of nicotine than, later-generation devices (see Chapter 5), and it has been suggested that this is a deliberate strategy to avoid promoting products likely to be effective in aiding cessation.¹⁸ Recent developments suggest diversification, with tobacco companies looking beyond 'cigalikes': the Vivid Vapours e-liquid brand has become increasingly prominent in the UK after its acquisition by PMI, and the blu™ product range is expanding via its e-liquid portfolio.¹⁹ Investments in heat-not-burn technology (positioned as reducing risks associated with combustion by electronically heating tobacco rather than burning it⁶), as well as in non-tobacco nicotine products (see Chapter 5), further increase the diversity of tobacco company initiatives in reduced risk products, and PMI's launch of its iQOS Heatsticks, under its flagship Marlboro brand in test markets in Japan and Italy, suggests that this development is of major strategic importance to PMI.²⁰ It does appear that tobacco industry efforts to build a market for reduced-risk products are now centred on vapour devices, as epitomised in July 2015 by PMI announcing the dissolution of its *snus* joint venture with Swedish Match while extending its international strategic collaboration with Altria in vaping products.²¹

The engagement of the tobacco industry in the reduced-risk product sector is thus changing rapidly, and in relation to e-cigarette products is likely to continue to do so, given, among other things, the expected changes in regulatory context, new patterns of ownership and investment, the currently fragmented market, absence to date of dominant brands, and continuing technological innovation and shifting consumer preferences. Such uncertainties notwithstanding, however, rapid growth in the e-cigarette market is predicted to continue over the next few years, with Euromonitor suggesting that the global market for vaping products could reach US\$50 billion by 2030. This is clearly a substantial and enticing prospect from a commercial perspective, although it needs to be interpreted alongside an expectation that it will remain a fraction of the market in tobacco products, with cigarettes remaining the dominant product category.²²

9.3 E-cigarette marketing

The first television advertisement for an e-cigarette, promoting the then independently owned E-Lites brand, was broadcast in the UK in January 2013.¹¹ This was followed a year later by advertisements for Vype, an e-cigarette

marketed by BAT and representing the first overt paid-for television advertisement by a tobacco company in over two decades,²³ and then, later in 2014, by advertisements showing the act of vaping for the VIP e-cigarette brand.²⁴ Such developments occurred amid considerable ambiguity about how and whether existing regulatory frameworks applied to reduced-risk nicotine products. This led to a public consultation by the Committees of Advertising Practice,²⁵ followed by the issuance of specific guidance^{25,26} intended to govern the period until the implementation of more stringent regulation of advertising, sponsorship and promotion under the 2014 revision of the EU Tobacco Products Directive 2014/40/EU.

The development of television advertising campaigns forms one strand of an extensive array of marketing, sponsorship and promotional efforts that have contributed to the rapid growth of the e-cigarette market. Sports sponsorship deals, for example, have included Nicolites partnering with Birmingham City Football Club, whereas E-Lites secured distribution deals and designated vaping areas in Celtic and Rangers football stadiums in Glasgow, and invoked the strong association between tobacco and motorsport in announcing its sponsorship of the British Superbike Championship.^{27–29} E-Lites secured the first product placement for e-cigarettes in a music video by the artist Lily Allen. Packaging innovations have included ‘smart packs’ produced by blu™ e-cigarettes that vibrate and flash a blue light when within 50 feet of other users, and which can transmit to Facebook and Twitter profiles, whereas Vapestick has created a retro-style computer game named *Electronic cigarette wars*. PMI also offered retailers free retail display shutter cases heavily branded with its Vivid e-liquid and Nicolites e-cigarettes, in preparation for the second stage of UK point-of-sale display legislation, which prohibited point-of-sale display of any tobacco product from April 2015.³⁰

Such high-profile activity is indicative of the recent rise of e-cigarette promotions across multiple fields, driven by rapidly escalating expenditure. During 2013, around £8.4 million was spent in the UK promoting five leading brands (E-Lites, Vype, SkyCig, NJOY King and Gamucci) across press, television, radio, the internet and outdoor media, figures that were to be dwarfed in 2014³¹ with BAT’s television advertising for Vype as part of a £3.6 million marketing campaign and Skycig announcing investment in a £20 million marketing campaign.²⁷ A similar surge in marketing spending has occurred in the USA, where a study of advertising spending across television, print, radio and the internet found that expenditure in the second quarter of 2013 amounted to \$US28 million, some eight times more than that for the equivalent period in 2012.³²

This escalation of marketing expenditure reflects the increased resources available following the wave of investments in e-cigarettes by the tobacco industry, with the latter’s engagement in marketing raising distinct concerns.

Looking at the future development of the market in vapour devices from a commercial perspective, this represents both opportunity and risk, because leading tobacco companies ‘have the capital to turn e-liquid brands into household names but also the reputational impairment to attract draconian regulation to the category’.¹⁹ In this context, discussions about how to regulate the marketing of e-cigarettes are inevitably coloured by the tobacco industry’s long-standing global reliance on advertising and marketing to promote and maintain cigarette consumption, particularly by targeting young people.^{33,34} Health campaigners have raised concerns about the extent to which some e-cigarette advertising has sought to replicate imagery and themes that have long been central to marketing cigarettes. Magazine adverts for e-cigarettes in the USA have, for example, been seen as depicting equivalents to the rugged masculinity of the Marlboro Man or the glamorous independence of the Virginia Slims woman, sponsorship of sports and music events, and the development of sweet flavours are seen as enhancing appeal among youth, and blu™ e-cigarettes’ use of a cartoon ‘Mr Cool’ evoked the notorious Joe Camel cartoons.^{35,36} In the UK, rules on advertising limit such opportunities and the Advertising Standards Authority recently upheld complaints about an advert for VIP e-cigarettes that showed a woman vaping ‘in a sultry and glamorous way’, creating a strong association with traditional smoking and thereby ‘indirectly promoting the use of tobacco products’.³⁷ Complaints about a UK advert for Vape Nation were upheld as encouraging use of e-cigarettes among ex-smokers.³⁷

Maintenance of extensive marketing freedom and potentially controversial promotional strategies for e-cigarettes has been defended as likely to appeal to smokers,³⁸ and it has been argued that excessive regulation is likely to protect the market monopoly of tobacco cigarettes by inhibiting competition from e-cigarettes.³⁹ Analyses from a social marketing perspective, however, have emphasised risks associated with e-cigarette marketing in general, and the role of tobacco companies within such activities in particular.^{15,28} In presenting the promotion of e-cigarettes as a reinvention of tobacco marketing, de Andrade *et al*²⁸ highlight the active promotion of dual use, in which marketing activities are identified to have been ‘promoting long term use as a permanent alternative to tobacco, and a temporary one in public places where smoking is banned’. An analysis of the marketing strategy of tobacco company-owned e-cigarettes for Cancer Research UK was organised around a distinction between marketing targeted at potential consumers and those activities oriented towards ‘stakeholders’, such as policymakers and public health agencies²⁸ (Table 9.1).

Although debate about the potential for such campaigns to renormalise or inadvertently promote smoking continues, attention is increasingly focused on the tobacco industry’s use of e-cigarettes and the wider harm-reduction agenda to rebuild its links with policymakers, and public health and other key stakeholders.²⁸

Table 9.1 Tobacco-owned e-cigarettes – the marketing strategy¹⁵

Marketing challenge	Marketing strategy	
	Consumers	Stakeholders
Objective	Long-term sales of tobacco through ‘next-generation’ product (especially in developed countries), profit maximisation	Responsibility, legitimacy, credibility, access to policymakers/regulatory processes, public–private partnership, scientific proof
What	Reduced-harm product, safer alternative to cigarettes, used for pleasure, lifestyle products	Harm reduction
How	Product: safe nicotine, used anywhere, flavoured lifestyle products	Product: harm reduction
	Price: financial – affordable; psychological – safer and glamorous	Price: financial – priceless, saving lives; psychological – it would be negligent to ignore this offering
	Promotion: where tobacco products cannot be advertised, lifestyle and celebrity	Promotion: health bodies/experts, charities, politicians, regulators
	Place: everywhere tobacco is available, company websites, point-of-sale displays	Place: regulated space
	Positioning: safer smoking alternative, necessity, capitalise on consumer’s preference	Positioning: differentiation from NRT products, reframe perceptions of nicotine use, alternative for those who cannot or will not quit

9.4 Undermining tobacco control

The recognition of a fundamental conflict between public health objectives and tobacco industry interests has become a central tenet of tobacco control, epitomised by Article 5.3 of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC), which requires countries to protect the setting and implementation of tobacco control policies from the industry’s commercial and other vested interests.⁴⁰ The emergence of a distinctive model of

health governance, centred on minimising engagement with the industry,⁴¹ has led to tobacco companies experiencing increasing political marginalisation and difficulty obtaining access to policy elites.^{42,43} In this context, investments in harm reduction and e-cigarettes offer potential opportunities to claim legitimacy in re-engaging with policymakers, and even to rehabilitate what has become a pariah industry. If realised, these opportunities may therefore undermine tobacco control.

Tobacco companies have long sought to redress the challenge of a toxic reputation by seeking to establish partnerships or common ground with public health researchers and advocates. A key element of PMI's 'Project Sunrise' in the mid-1990s, for example, was to 'enhance our credibility' by linking with 'moderate' tobacco control organisations on issues such as youth access legislation.⁴⁴ Tobacco companies' interest in the concept of harm reduction increased markedly following a 2001 Institute of Medicine report,⁴⁵ driven by recognition of a dual opportunity to both '(re-)establish dialogue with and access to policymakers, scientists and public health groups and to secure reputational benefits via an emerging corporate social responsibility agenda'.⁴⁶ The emergence of pure nicotine alternatives to traditional forms of tobacco consumption has thus created increased opportunities for both interaction with policymakers and the depiction of common ground with public health. In the context of a public consultation on the future of the NHS, for example, Imperial Tobacco met with the then minister for public health,⁴⁷ and subsequently made a submission in which the company invoked its interests in harm reduction to argue against exclusion from policymaking and to position itself as a potential partner for the government.⁴⁸ Several tobacco industry submissions to a Department of Health consultation on the future of tobacco control similarly used interests in harm reduction as a basis for suggesting that it could positively contribute to the challenge of reducing health inequalities.⁴⁹

Exploiting such opportunities was a key part of the remit of Nicoventures following its establishment by BAT. In 2012, Nicoventures initiated a medical education plan named the Smoking Harm Reduction Education Programme (SHARE), holding a series of meetings with healthcare professionals, including a round table at the Royal Society of Medicine, and publishing proceedings in *GP* and *Pharmacy Magazine*. In June 2013, Nicoventures approached public health officials across various regions in the UK to discuss harm reduction and regulation, with a sales representative describing the company as complying with the regulatory standards required of a pharmaceutical company.⁵⁰ BAT also appointed Dr Richard Tubb to their board of directors in January 2013, describing this former physician to the president of the USA and ex-director of the White House Medical Unit as 'a prominent and well respected expert in the field of tobacco harm reduction' whose appointment 'further demonstrates our commitment to putting science at the heart of our business'.⁵¹ The company

devoted its 2013 sustainability focus report to the issue of harm reduction, depicting BAT as a potential partner in a public health revolution; this included an endorsement of the group's strategy by Dr Delon Human, a global health consultant and former head of the International Food and Beverage Alliance, as having the expertise and public commitment to harm reduction to suggest that 'BAT could become part of the solution to addressing the epidemic of tobacco-related disease'.^{50,52} The report claims that '(m)ore collaboration between the tobacco industry, academia and tobacco research centres is ... key to establishing an evidence-based regulatory framework to assess new products'.⁵²

Alongside such examples of formal endorsements, tobacco companies have also opportunistically cherry-picked statements from leading public health organisations and researchers so as to imply common ground and a shared perspective. The harm-reduction section of the PMI website⁵³ cites a 2014 report from Public Health England (PHE) as recognising a need for 'appropriate regulation, careful monitoring, and risk management' for harm-reduction products;⁵⁴ the citation is presented under a headline claim that the 'public and private sectors are starting to embrace the public health opportunity new products provide',⁵³ but does so without noting that the PHE report highlights the involvement of the tobacco industry among 'potential hazards, unintended consequences, (and) harms to public health'.⁵⁴

A key element of the strategic value of harm-reduction discourse to tobacco companies is its ability to polarise opinions held by those involved in tobacco control policy, fracturing the remarkable degree of political consensus that has characterised the tobacco control movement and been central to its success.⁵⁵ PMI's 'Project Sunrise' centred on the recognition of unity as a key strength of tobacco control, and promoting division was seen as critical to combating the movement's success. The company's strategy sought to exploit latent tensions between groups that it labelled 'moderates' and 'prohibitionists',⁴⁴ and this finds strong contemporary echoes in the depiction of competing wings of tobacco control comprising 'pragmatists' who favour harm-reduction approaches being opposed by 'idealists'⁵⁶ or 'zealots'.⁵⁷

In this context, the very public dispute in 2014 between competing perspectives on harm reduction via 'duelling letters' from public health researchers and practitioners to the director-general of WHO, Dr Margaret Chan, appears very welcome from a tobacco industry perspective.⁵⁸ The initial open letter of 24 May 2014 with 53 prominent signatories was prompted by a concern that harm reduction was being 'overlooked or even purposefully marginalised'⁵⁹ in preparing for the forthcoming sixth Conference of Parties of the WHO FCTC. The letter began to receive significant media coverage on 29 May 2014,^{60,61} and on the same day BAT issued a press release calling 'for tobacco harm reduction to be adopted as a progressive public health policy'.⁶² A quotation from a

subsequent letter remains prominent on the harm-reduction pages of BAT's website,⁶³ emphasising 'the importance of dispassionate presentation and interpretation of evidence' and the challenge to find 'an appropriate framework' of regulation balancing opportunities and risks.⁶⁴ These twin themes are also repeatedly invoked in the company's subsequent 2014 harm-reduction report. Its introduction by chief executive Nicandro Durante suggests that 'the challenge is that these are new products which many governments are still unsure how to regulate' and cites 'the growing weight of evidence and arguments in support of harm reduction'.⁶⁵ The report highlights a call from a paper by three of the letter's signatories for regulatory decisions to be 'proportional, based on evidence, and incorporate a rational appraisal of likely risks and benefits',⁶⁶ presenting a variation on BAT's long-standing claim to 'support sensible regulation'.⁶⁷

Although neither the reputational management nor policy engagement opportunities afforded by harm reduction have yet been exploited with success that can be considered transformational, a number of strategically valuable 'wins' for the tobacco industry can be identified. Notable here is the success of BAT's Nicoventures in securing marketing authority from the UK Medicines and Healthcare products Regulatory Agency (MHRA) for its nicotine inhaler Voke, a success has been described as 'an important waypoint on the industry's journey to self-rehabilitation'.⁵⁶ Vype, also owned by BAT's Nicoventures, is marketed as a 'pharmaceutical-grade product' and sold via Lloyds Pharmacy, whereas Puritane e-cigarettes, owned by the Imperial Tobacco subsidiary Fontem, are exclusively available in Boots. Such distribution deals are inconsistent with advice from the Royal Pharmaceutical Society,²⁷ and both bring reputational benefits of association with prominent high-street chemists and create strategic opportunities. Puritane's deal with Boots is seen as leaving it well placed to benefit from any reclassification of e-cigarettes to 'directly rival smoking cessation aids'.¹¹

9.5 E-cigarettes and the future of the tobacco industry

Tobacco companies' investments in e-cigarettes, as with earlier incarnations of the harm-reduction debate, have been characterised by considerable uncertainty, false starts and fluctuations, and there is nothing to suggest that the recent developments outlined above constitute a fixed and settled strategic direction, whether for specific companies or for the industry as a whole. There is, however, now a sufficient basis to draw some preliminary conclusions informed by marketing campaigns, investor presentations and stated strategic priorities. Such conclusions need to be informed by the historical experience of how and why tobacco companies viewed earlier reduced-risk products, with which striking similarities are becoming evident. One potential parallel has recently been drawn

in light of the history of NRT,⁶⁸ via tension between two competing conceptions of NRT as a therapeutic device to aid cessation and as a cigarette alternative capable of delivering nicotine in the 'right way'. This analysis highlights the dangers of the potential of e-cigarettes being 'easily compromised in the hands of tobacco companies, reflected by their tendency for imagining nicotine replacements ... as creatively complementing rather than creatively destroying the market for combustible tobacco products'.⁶⁸

More broadly, the tobacco industry's recent involvement with e-cigarettes carries echoes of its earlier rise to dominance of the Swedish *snus* market via acquisitions and joint ventures between 2001 and 2009,⁶⁹ eg an analysis of BAT corporate documents from this period yielded no substantive evidence of the company encouraging smokers to switch permanently to smokeless tobacco, but indicated instead that these were essentially defensive investments that protected the status quo and the dominance of the cigarette by shifting '*snus* from a threat (a product that may have competed with cigarettes) to a major opportunity' that presented common interests with public health and an alternative future amid long-term decline in cigarette sales.⁷⁰

One significant difference that emerges from comparison with the *snus* experience is the prominence afforded e-cigarettes and reduced-risk products in contemporary investor presentations. This contrasts with a near absence of *snus* from earlier BAT and PMI presentations, which suggest that *snus* was not central to business strategy.⁷⁰ The reformulation of BAT's vision statement to become 'the world's best at satisfying consumer moments in tobacco and beyond'⁷¹ indicates newfound strategic centrality for nicotine projects, mirrored in PMI's designation of reduced-risk products as 'our greatest growth opportunity'.⁷² Although the reputational and stakeholder engagement advantages of e-cigarettes for tobacco companies are clearly considerable, this does seem also to represent a consumer market in which growth prospects are being taken seriously.

The extent to which this constitutes a transformation of the strategic landscape for tobacco companies should not, however, be overstated. To return to the image of creative destruction, the emphasis seems to be very much on e-cigarettes creatively complementing conventional products within an expanded portfolio, not on displacing the industry's ongoing reliance on the conventional cigarette. Hence BAT has been unequivocal that their 'ambition remains to lead the global tobacco industry',⁷¹ retaining confidence in the growth of the global tobacco business and developing their portfolio of 'beyond tobacco products' within a single integrated view of the consumer. New products are therefore positioned alongside traditional cigarettes, combustible innovations and non-combustible offers in creating multiple satisfying 'consumer moments'.⁷³ Similarly, PMI chairman Louis Camilleri's speech to the company's 2015 annual meeting emphasised that 'we expect our combustible products to be the core of our

profitability growth for many years to come', notwithstanding the significance attached to investing in and developing reduced-risk products.⁷⁴ The decision to launch the company's heat-not-burn iQOS system under the Marlboro brand is also consistent with ongoing concerns that tobacco companies are using e-cigarette marketing to promote dual use,²⁸ thereby complementing and sustaining rather than challenging the future dominance of the cigarette.

Any suggestion that tobacco companies are using investments in e-cigarettes as a vehicle to secure their long-term exit from the cigarette market therefore looks like misplaced optimism. Their engagement in harm reduction is likely to be better understood in terms of exploring an emerging opportunity that can buttress their core business, and promise the maintenance of both their licence to operate and the prospect of rehabilitation. Appraising the implications of this perspective for the broader role of harm reduction within the future of tobacco control remains contentious, but it does serve to highlight the ongoing importance of protecting health policy from tobacco industry interference and of maximising compliance with guidelines for the effective implementation of WHO FCTC Article 5.3.⁷⁵ Although the most optimistic interpretations^{8,76} of increased tobacco industry interests in reduced-risk products might suggest the prospect of some degree of shared interest with public health, the economic and political contexts within which such products are being promoted suggests that any such appraisal is dangerously naive and holds the potential significantly to undermine tobacco control policy and practice internationally. Interests in e-cigarettes and other reduced-risk products create important strategic opportunities for the tobacco industry, and therefore compound the complexities confronting public health in dealing with the harm-reduction agenda. The appropriate response is therefore to strengthen and broaden protections against conflicts of interest, protecting 'tobacco control activities from all commercial and other vested interests related to [e-cigarettes], including interests of the tobacco industry'.⁷⁷

9.6 Summary

- The e-cigarette market has demonstrated massive growth in value and, until relatively recently, has been driven by independent e-cigarette companies.
- This success represents a potential challenge to the traditional business model of the tobacco industry, but also creates important commercial and political opportunities.
- After some delay the tobacco industry is now engaging in the e-cigarette market, and the possible reasons for doing so include:
 - promotion of low-efficacy products that are likely to fail and hence minimise the threat to tobacco sales
 - use of intellectual property rights to bring legal challenges against competitors

- ensuring a share in the emerging e-cigarette market to harness a new, disruptive technology
 - using these products to sustain tobacco smoking by promoting them as a complement rather than an alternative to tobacco
 - using the products also to promote smoking through advertising and promotion to adults and children
 - attracting customers who currently use competitors' tobacco products
 - creating justification to re-engage with policymakers, hence undermining the WHO FCTC (Article 5.3)
 - exploiting harm reduction to build credibility in corporate social responsibility initiatives
 - using harm reduction as a pretext to engage with and disrupt the activities of scientists and advocates in tobacco control.
- The engagement of the tobacco industry in the e-cigarette market thus represents a significant potential threat to UK national and global tobacco control.

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10.1 What does nicotine product regulation need to achieve?

Products are regulated to ensure that they are safe and fit for purpose; the general product regulations that apply to all consumer products sold in the UK, and their equivalents in other countries, are intended to achieve this for general consumer goods. In the case of products for which safety is particularly important, these general product regulations are often supplemented or superseded by higher levels of specific safety regulation, with medicines, for example, being required to meet especially high standards of manufacturing, safety, product information and efficacy. The overall purpose of all of this regulation is, however, to ensure that consumers can access products that serve their purpose within reasonable bounds of safety, quality and efficacy.

The rationale for regulating nicotine products is the same as for any other, but is complicated by the fact that the market leader in nicotine products in the 20th and 21st centuries, the cigarette, is so intrinsically hazardous that it is beyond the scope of conventional general product regulations, and as an addictive product is too entrenched in society to be amenable to prohibition. It is therefore important that the approach to regulating non-tobacco nicotine products recognises the need not only to meet the general requirements of safety and fitness for purpose, but also to encourage the development and uptake of competitive alternatives to the fatally toxic product currently chosen by most habitual nicotine users. Therefore, although regulation of all products should be proportionate to their potential hazard, proportionality in nicotine regulation must also incorporate the consideration that regulation that discourages or delays the development and use of non-tobacco nicotine is likely, in effect, to sustain tobacco smoking and hence perpetuate harm to smokers and wider society.

This report has argued that nicotine use, of itself, presents relatively little risk to users or wider society, and that most of the harm that arises from nicotine use is attributable to the vehicle of delivery, with tobacco smoke being by far the most hazardous. It therefore follows that, although the ideal course of action for any smoker is to quit smoking and all nicotine use, quitting smoking by long-term

substitution with a less hazardous nicotine source is the next best option. Nicotine regulation should therefore be designed to make non-tobacco nicotine a more attractive, available and affordable option for smokers than cigarettes, to prevent, as far as possible, uptake of nicotine use by never-smokers, particularly children, and to make smoked tobacco products as unappealing as possible.

When the RCP last reported on nicotine regulation in 2007,¹ the range of available nicotine products fell into three classes: smoked tobacco, smokeless tobacco and nicotine replacement therapy (NRT). We argued then that the prevailing regulatory structure intrinsically favoured smoked tobacco over both NRT, which was regulated as a medicine, and smokeless tobacco, of which the lowest-hazard product, Swedish *snus*, is prohibited in the UK. The emergence of e-cigarettes has added a whole new product class to this range, and this spectrum of choice is likely to be increased still further by new technologies in development (see Chapter 5). The nicotine regulatory framework has also undergone substantial change since 2007.

This chapter describes recent developments and impending changes in UK nicotine regulation, identifies key areas of concern, and discusses alternative approaches that might increase the public health benefit accrued from the emergence of e-cigarettes and other non-tobacco nicotine. The discussion is based in the UK setting and pertains to the three broad types of nicotine product available on the UK market: tobacco, unlicensed nicotine products (predominantly e-cigarettes) and nicotine products that are licensed as medicines.

10.2 Current regulation of tobacco, and licensed and unlicensed nicotine products

10.2.1 Tobacco products

Since 1998, a comprehensive tobacco control strategy has been introduced in the UK, the component measures of which are discussed in more detail in Chapter 3. Regulatory approaches have included: reducing affordability by increasing taxation and reducing the size of the cheap and illicit market; imposing packaging and labelling requirements (including the implementation of standardised packaging legislation from May 2016); prohibiting all advertising, promotion and sponsorship; restrictions on where, how and to whom tobacco products can be sold; and smoke-free policies determining where tobacco can be used. After unsuccessful attempts to regulate the cigarette itself by restricting tar levels, regulation of product contents and emissions has not been extensively pursued, other than to prevent fires by reducing ignition propensity. The overall package of tobacco control policies in place in the UK is one of the most

advanced in the world, with the UK currently highest in the European tobacco control league table.² The new EU Tobacco Products Directive (TPD)³ will, from May 2016, impose a range of new restrictions on tobacco products, which include a minimum pack size of 20 cigarettes (and 50 g hand-rolling tobacco), restrictions on the shape of packs, combined pictorial and text health warnings that cover 65% of the front and back of the pack, and prohibition of flavourings including, after a delay, menthol.

10.2.2 Unlicensed nicotine products

E-cigarettes (most of which contain nicotine) and other unlicensed nicotine products are currently regulated in the UK by the EU General Product Safety Directive. This has recently been supplemented by legislation in England imposing a minimum purchase age of 18 years, which is currently in the process of being introduced elsewhere in the UK.⁴ General product regulations do not require products to be tested before being put on the market, but do allow retrospective action to remove products found to be faulty or harmful. In July 2015, the British Standards Institute (BSI) published a fast-track voluntary standard for e-cigarettes (PAS 54115), which was sponsored by the Electronic Cigarette Industry Trade Association (ECITA (EU) Ltd) and facilitated by the BSI.^{5,6} This standard gives guidance on the manufacture, import, labelling, marketing and sale of vaping products, including e-cigarettes, e-shishas and e-liquid mixing kits. However, at the time of writing it is not clear how widely this standard is being adopted by manufacturers and importers.

E-cigarette marketing in the UK has to comply with compulsory advertising codes administered by the Advertising Standards Authority (ASA). Although those codes contain general rules that apply to all advertising, concerns about the promotion of e-cigarettes led the ASA to introduce sector-specific rules in November 2014.⁷ These require the following of e-cigarette advertising: to be socially responsible; not to promote any design, imagery or logo that might be associated with a tobacco brand or show the use of a tobacco product in a positive light; to make clear that the advertised product is an e-cigarette and not a tobacco product; not to undermine quit smoking messages; and not to contain health or medicinal claims unless the product holds a medicines licence. There is a commitment to review progress with these rules after 12 months.

Although not subject to the smoke-free legislation that prohibits tobacco smoking in enclosed public places and workplaces, some businesses and organisations prohibit e-cigarette use in places where this legislation already prohibits smoking. Given the lack of evidence on the harmfulness of e-cigarette vapour to others (see Chapter 5), it would be inappropriate for national legislation to prohibit their use in public places and workplaces. At the time of

going to press, an attempt by the Welsh government to legislate to ban the use of e-cigarettes in some enclosed places and workplaces had failed and was considered unlikely to be reintroduced in the next parliament after the elections in May.⁸

There are some circumstances, such as prisons and mental health settings, where tobacco smoking is particularly prevalent. The option to use e-cigarettes where tobacco smoking is banned could help to introduce and sustain fully smoke-free policies, eg the South London and Maudsley NHS Foundation Trust implemented a policy that allows some types of e-cigarette to be used, as part of a care treatment pathway, in private spaces or grounds where smoking is prohibited.⁹ Prisons in England and Wales have made single-use e-cigarettes available for sale to prisoners as a smoking substitute, in preparation for implementing fully smoke-free policies across the prison estate which started in late 2015.¹⁰

10.2.3 Licensed nicotine products

Nicotine products licensed as medicines, generally known as nicotine replacement therapy (NRT), have been available in the UK since 1980. They were initially licensed by the Medicines Control Agency (MCA) for use to relieve nicotine withdrawal symptoms during attempts to quit smoking, and were subject to an extensive range of cautions and contraindications that arose from the use of comparison of adverse effects with those of placebo, rather than continued smoking.

The MCA was replaced in 2003 by the UK Medicines and Healthcare products Regulatory Agency (MHRA), which was established with a wider remit, including a new objective to make ‘an effective contribution to public health’. In 2005 the MHRA made some substantial changes to their regulation of NRT products in response to a review and recommendations by the Committee on Safety of Medicines, an advisory committee to the MHRA.¹¹ These included the adoption of smoking rather than placebo as the comparator for NRT, which allowed some contraindications (eg stable cardiovascular disease) that inhibited use of NRT by smokers to be removed, extending the licence for NRT to include pregnant smokers, and smokers aged 12 and over, and allowing some NRT products to be used for cutting down in order to quit, as well as for abrupt quitting. There has also been a progressive relaxation of restrictions on the availability of NRT over recent years, starting in 2001 when prescriptions of NRT products became reimbursable through the NHS, and subsequently through extensions to retail availability by allowing NRT products to be sold by general retailers as well as pharmacies. Direct advertising of NRT to the public is permitted subject to regulations¹² requiring the following from promotions: they are not misleading and do not imply that products are ‘safe’; they are compliant with the details listed in the summary of product characteristics; they are presented objectively to encourage rational use of

the product; and they are not directed exclusively or principally at people aged under 16. Provision of free samples of NRT for promotional purposes remains prohibited. Since 2007, NRT sold over the counter has been subject to VAT at a reduced rate of 5% to help make products more affordable.¹³

In 2010, the MHRA expanded the indication for NRT to allow long-term use as a harm-reduction alternative to smoking for those who were unwilling or unable to quit.¹⁴ The question of whether e-cigarettes should be regulated as medicines was considered by the MHRA at this time, which proposed that nicotine be deemed a medicine by function, thereby requiring that e-cigarettes should either be licensed as medicines or removed from the market. However, as immediate classification as medicines would have caused all e-cigarettes on the market at the time to be withdrawn, and hence potentially cause the many smokers who had already switched from using tobacco cigarettes to e-cigarettes to go back to tobacco smoking, the MHRA consulted on options¹⁵ that included implementing medicines regulation immediately, or after a delay allowing e-cigarette manufacturers and importers to comply, or else imposing no additional regulation. The proposed licensing option was described by the MHRA as 'light touch' and presented as a simplified, and hence quicker and less costly, route to medicines licensing. In particular, the proposed 'light touch' approach assumed that any product that delivered nicotine to a degree comparable with existing licensed nicotine products was clinically effective, thus removing the requirement for manufacturers or importers of e-cigarettes or other nicotine-containing products to carry out clinical trials to demonstrate efficacy.

The consultation received over 1,000 responses, most of which came from e-cigarette users opposed to any regulation, or else supporting regulation introduced in a way that allowed e-cigarettes to remain available to them. Responses from public health organisations, including the RCP, were generally supportive of 'light touch' regulation, but most recommended a delay to allow time for manufacturers to comply. Support for immediate regulation, with removal of unlicensed products from the market within 21 days, came from organisations including pharmaceutical companies, pharmacist and trading standards groups, and Imperial Tobacco.¹⁵ The MHRA responded by allowing e-cigarettes to remain on the market pending further consideration, and in 2013 announced that it would require all nicotine products to be licensed as medicines from the date of implementation of a revision of the TPD (see Section 10.3 below). The TPD version under consideration at that time required medicines regulation for all but very-low-dose products. The MHRA later rebadged the medicines licensing process for nicotine products as 'right touch' regulation.

In 2014, a revised version of the TPD, which superseded the MHRA proposal by providing an alternative route to market for e-cigarettes without a medicines licence, was negotiated and agreed.^{3,16} Medicines regulation remained an option

for manufacturers and importers of e-cigarettes, and the MHRA continues to encourage companies to apply voluntarily for licences.¹⁷ However, licensing is no longer mandatory and, at the time of going to press in early 2016, only one e-cigarette, owned by British American Tobacco (BAT), had been awarded a medicines licence by the MHRA and was not yet commercially available.¹⁸ It is not known whether medicines licence applications have been made for other e-cigarette products. A medicines licence has, however, been awarded to a nicotine inhaler (not an e-cigarette) called Voke, developed by Kind Consumer and licensed to BAT, but at the time of going to press this product had not been marketed.¹⁹

10.3 The 2014 EU TPD

The 2014 revision of the EU TPD,³ which comes into effect from May 2016, imposes significant new regulations on nicotine products, including e-cigarettes and refill containers that do not have a medicines licence. Although limited areas of flexibility in implementation for member states remain, the main provisions of the TPD in relation to e-cigarettes are as follows:

- 1 Manufacturers and importers of e-cigarettes must provide a detailed notification to the government-appointed 'competent authority' of a range of details relating to each product, and make this information publicly available. Non-compliant products can be manufactured until 20 November 2016 and sold until 20 May 2017. Products already on the market by 20 May 2016 must be notified by 20 November 2016. New products or substantial modifications introduced into the market between 20 May and 19 November 2016 must be notified at least 1 day in advance of going on sale. From 20 November 2016 all new products or substantial modifications must be notified 6 months in advance of going on sale.
- 2 Required details include: quantification and toxicological data for all ingredients and emissions, including when heated, and their potential health and addictive effects; nicotine delivery and uptake; a description of the product components and production process; and a declaration of responsibility for the quality and safety of the product when used under normal or reasonable foreseeable conditions.
- 3 There will be a limit on total nicotine content in e-cigarettes, which will be allowed to contain a maximum of 2 mL nicotine solution at a maximum nicotine concentration of 20 mg/mL. Refill containers will be subject to a maximum volume of 10 mL. Nicotine and all other ingredients used in manufacture must be of high purity and not pose a risk before or after heating, and substances other than those declared should be present only in trace quantities, which are unavoidable during manufacture. Products must be child and tamper proof, and protected against breakage and leakage.

- 4 Nicotine doses are required to be delivered at consistent levels under normal conditions of use.
- 5 Products should include a leaflet, which, among other things, contains instructions, warnings, and information on contraindications, possible adverse effects, addictiveness and toxicity. Outside packaging must list ingredients, nicotine content and delivery per dose, carry a batch number, and a health warning stating 'This product contains nicotine which is a highly addictive substance'. Outside packaging must not include any promotional element or feature to suggest that the product is less harmful or has other health or lifestyle benefits.
- 6 Cross-border advertising, sponsorship and promotion in the press and broadcast and internet media are prohibited, as are cross-border sales unless subject to a registration scheme. Domestic advertising through billboards, at point of sale, on public transport or other local media is permitted unless prohibited by domestic legislation, as is under consideration in Scotland. Provision of information about products online is still legal.
- 7 Manufacturers and importers must deliver an annual submission on their products to governments, which should include comprehensive data on sales volumes, consumer preferences, mode of sale and market developments. These submissions should be made publicly available unless classified as trade secrets.
- 8 Manufacturers, importers and distributors of products are required to establish and maintain a system for collecting information about all the suspected adverse effects on human health. Corrective action is required if there are reasons to believe that products are not safe or of good quality, or not conforming to the directive.
- 9 Regulation of flavours, and age of sale, remains the responsibility of member states.

At the time of going to press, the UK government's intention to transpose the TPD into UK law was still the subject of a legal challenge by an e-cigarette company, Totally Wicked. However, in December 2015 the advocate general dismissed this and other challenges to the TPD²⁰ and, although a final court ruling is not due until 4 May, it now seems likely that the TPD will be implemented as originally proposed on 20 May 2016. The UK competent authority for e-cigarettes under the EU TPD will be the MHRA.²¹ From 20 May 2016, therefore, all e-cigarettes sold in the UK will be regulated by the MHRA either under the provisions of the TPD or as medicines, or both.

10.4 Advantages and disadvantages of medicines and TPD regulation of non-tobacco nicotine

The impending need for e-cigarettes and other non-tobacco nicotine products, either currently on the market or in development, to comply with one of the above regulatory options has significant implications for suppliers of these devices, and for wider public health. Both approaches have significant advantages and disadvantages, which suppliers will have to balance in their decision on which route or routes to pursue. These are as follows.

10.4.1 Medicines licensing

Key advantages to manufacturers who pursue medicines licensing include:

- higher consumer confidence in product quality and safety
- relief from TPD limits on nicotine solution concentration and volume
- freedom to advertise on TV, radio and in printed media, in line with MHRA rules¹²
- freedom to make justified health claims in relation to quitting and harm reduction
- no obligation to carry health warnings informing consumers that nicotine is addictive
- eligibility for use in, and for subsidised prescription through, the NHS
- potentially subject to 5% rather than 20% VAT in the UK.

The main disadvantage of medicines licensing is the cost in time and money of the application process itself, and of the much higher manufacturing standards required of medicines. It is understood that the MHRA estimates first application costs at between £252,000 and £390,000, and annual recurring costs at between £65,000 and £249,000 for each product.²² In practice, however, it is likely that application costs incurred by companies inexperienced in negotiating this regulatory system may be significantly higher, whereas the additional cost of manufacturing to the medicines standard is estimated at several million pounds.²² These financial and related opportunity costs inevitably represent a significant barrier to innovation and market entry for new licensed nicotine products, and favour larger, better resourced entities such as pharmaceutical and transnational tobacco companies. Licensing and presentation of products as medicines may also undermine the perception of e-cigarettes as a consumer rather than a medical product, and hence inhibit experimentation and use.

That only one licence has been awarded to an e-cigarette product in the 5 years since the MHRA announced its 'light touch' licensing option, despite the rapid growth and hence evident value of the e-cigarette market and verbal reports from

the MHRA that ‘several’ e-cigarette companies had enquired about licensing, indicates that mandatory medicines regulation, had it been imposed as originally intended by the MHRA, would indeed have resulted in a period of several years in which no e-cigarettes were available for sale in the UK. Mandatory medicines licensing, as originally proposed, would therefore have been counterproductive to public health. Given the high product quality and safety standards that medicines licensing guarantees, as well as the option of providing products on prescription to those on low incomes, it is clearly desirable that the range of e-cigarette products available to consumers and health professionals includes some that are licensed as medicines. As recommended elsewhere,²² a review of the MHRA licensing process for e-cigarettes, to minimise the extent to which licensing procedures and demands unnecessarily obstruct the progress of new medicinal products to market, is clearly needed.

10.4.2 TPD regulation

At the time of writing, the exact detail of how the proposed TPD regulation will operate has not been published. It appears likely, however, that regulation under the TPD will offer e-cigarettes and other non-tobacco nicotine products a route to market that is less onerous, and hence quicker and less expensive, than medicines regulation.

The principal benefits of TPD regulation to consumers are that they will ensure that products that claim to deliver nicotine actually do so, and therefore that consumers are likely to find them effective, and provide reassurance that toxins and other by-products in vapour are at known and pragmatically low levels, thus protecting consumers from easily avoidable harm. Although it is inevitable that these reporting and performance requirements will impose costs on manufacturers and importers, these TPD measures appear to be congruent with the basic regulatory objective of ensuring that products are fit for purpose, and reasonably safe.

Other measures imposed by the TPD on e-cigarettes are less overtly constructive, however. The cap on nicotine concentrations may limit the effectiveness of e-cigarettes as a smoking substitute, particularly for heavier smokers. The derogation to member states of limits on the use of flavours, which may be a significant source of oxidant activity in e-cigarette vapour²³ (see Chapter 5), may result in marked differences in relative potential harm of e-cigarettes available in different member states. Restrictions may also result in non-compliance. The restrictions on e-cigarette marketing, in effect limiting these to the point of sale, billboards, bus stops and other advertising that does not cross borders, limits opportunities for inappropriate promotion of e-cigarettes to non-smokers, including children, but also inevitably inhibits promotion to smokers. However,

as most smokers are aware of e-cigarettes, and word of mouth and social media appear to have been the main drivers of use to date, it remains to be seen whether these advertising restrictions will reduce uptake by smokers. The Scottish Parliament is currently considering going further than the TPD to prohibit all advertising of e-cigarettes in Scotland other than at the point of sale.²⁴

The requirement for nicotine products covered by the TPD to carry a health warning emphasising the risks of nicotine, when licensed nicotine products do not, appears illogical, as does the restriction on statements comparing the relative risks of e-cigarettes and tobacco cigarettes. The health warning required under the TPD provisions may also reinforce misperceptions about nicotine (see Section 10.7 below).

A further concern about TPD regulation is that, although a facility to recall products from the market is written into the legislation, there are no powers to relax regulations if usage and innovation are unnecessarily or inappropriately constrained by them. Despite requiring a review 3.5 years after implementation and at 2-yearly intervals thereafter, the previous EU TPD was not revised for 13 years, which is of great concern because much quicker mechanisms of feedback and revision will be required to maximise the benefits as well as minimise the risks of e-cigarettes. For these reasons, it is clearly important that TPD implementation be closely monitored to assess the extent of unintended, as well as intended, effects on the availability and use of non-tobacco nicotine products and, in particular, the consequences of these effects on tobacco smoking rates; it should also ensure that prompt action be taken if TPD regulation proves to work against, rather than for, the benefit of public health. We therefore recommend annual review in the UK.

10.5 The future of nicotine regulation

The UK is currently ahead of most countries in having an agreed set of principles on what nicotine regulation should be designed to achieve, which, as stated in our last report, is that ‘The current nicotine regulatory framework needs to be changed so that it encourages as many smokers as possible to quit smoking and all nicotine use completely, and encourages those who cannot quit to switch to a safer source of nicotine, while minimising use by people who would not otherwise have used nicotine products’. The UK government has reinforced the need for harm reduction alongside abrupt cessation and preventive approaches to tobacco control by introducing ‘new routes to quitting’,^{25,26} which involve encouraging smokers to reduce their cigarette consumption as a precursor to complete quitting, manage their nicotine addiction by using a safer alternative product when unable to smoke, and dramatically reduce harm to themselves and

others by using a safer alternative to smoking whenever possible at other times. The UK government also encouraged innovation in the design and marketing of nicotine delivery medicines.^{25,27} The MHRA, by relaxing its regulation of nicotine-containing products, is following the same path. In 2013, the National Institute for Health and Care Excellence (NICE) produced public health guidance on harm-reduction approaches to smoking,²⁸ recommending the integration of harm reduction into NHS and other care pathways. Public Health England²⁹ has also recently endorsed the principles of the approach set out in the RCP's 2007 report,¹ as has civil society, through the more than 120 health-related organisations that endorsed the recent *Smoking still kills* policy document published by Action on Smoking and Health in 2015.³⁰

However, there is still some disagreement about the appropriate level of regulation to meet these principles. Some argue that medicines regulation is the best guarantee of safety, although experience to date suggests that it is too restrictive; some argue that the TPD regulatory framework about to be introduced is too stringent and will undermine the growing market for less harmful alternative nicotine products and restrict innovation; some believe that proposed TPD regulation does not sufficiently address the potential short- and long-term hazards of e-cigarette use which, although likely to be far less than those of smoking (see Chapter 5), could be minimised by medicinal quality and safety standards.

In 2007, the RCP argued for the creation of a regulatory authority specifically designed to cover all nicotine products, and to rationalise regulatory controls by making them proportionate to product hazards.¹ However, experience elsewhere of giving powers to regulatory bodies to cover all nicotine products, eg in the USA and Canada, has not been encouraging (see Chapter 11), although in any case the current aversion to new regulation in the UK does not make a new regulatory body a feasible option at present.³¹ Some countries have regulated e-cigarettes in the same way as tobacco products, which we believe to be entirely inappropriate because e-cigarettes do not contain tobacco, and have a very different profile of risk. The political reality is therefore that, for the coming years, unless the legal challenge to the TPD is successful (see below), non-tobacco nicotine products in the UK will be regulated either by the TPD or as a medicine, whereas tobacco products will continue to be limited by the TPD and other national restrictions on use and presentation. It remains to be seen whether this approach will benefit public health by encouraging widespread substitution of smoked tobacco by non-tobacco nicotine in current and future smokers, or will in effect sustain smoked tobacco as the most widely used nicotine product. Much will depend on the approach taken by the MHRA in its role as the competent authority for TPD implementation. It is, however, crucial that the UK takes care to implement the revised TPD in such a way as to minimise, as far as is consistent with the regulations, the burden to manufacturers and importers in

meeting the TPD requirements. It is also important to look again at the medicinal licensing route to market, to try to make compliance more attractive to producers.

10.6 If e-cigarettes are removed from the TPD, what are the alternatives?

Following the December advocate general's legal opinion, it seems likely that regulation under the TPD will go ahead. However, starting from the counterfactual³² allows options for a more appropriate regulatory structure to be set out within a European context. If the legal challenge to e-cigarette regulation under the revised TPD succeeds, then the previous status will prevail, unless and until the EU develops a new regulatory framework. This could be in the form of a new revision to the TPD, but past experience indicates that this would be likely to take years to materialise. An alternative is the earlier MHRA proposal to regulate all nicotine products as medicines, which to date has proved to operate against public health interest and has, in any case, been subject to successful legal challenges in other EU member states.³² Another option is to develop harmonised EU-wide standards under the General Products Safety Directive process, which could be less costly for manufacturers and importers to comply with than if each member state developed its own.³³ Such standards could build on those being developed under the European CEN/TC 437 process,³⁴ which is one of the three European standardisation organisations officially recognised by the EU and the European Free Trade Association (EFTA) as responsible for developing and defining voluntary standards at the European level.

A balance is needed to make products attractive, palatable, satisfying and effective substitutes for tobacco smoking, but also as safe as is reasonably possible, and avoiding use by adolescents and never-smokers. A pragmatic approach would retain the reporting requirements on nicotine delivery and toxins in e-cigarette vapour proposed under the TPD (see Section 10.3 above), adhere to industry and product standards, incorporate obvious safety measures such as childproof and tamper-proof seals and design, and simple advice on how to charge e-cigarettes safely. Advertising should be permitted as per current codes of practice administered by the ASA (with regular reviews to ensure that they remain fit for purpose), with the facility to promote claims of reduced risk in relation to tobacco smoking. Limits on nicotine dose and the requirement for health warnings are probably not appropriate. Any voluntary approach would have to build on the current BSI PAS 54115 standard for product regulation and the compulsory advertising codes, which are currently under review. Alternatives to the above approaches have been suggested, such as regulation as food or cosmetics, but neither regulatory structure seems appropriate to a product that is

inhaled. Whatever approach is taken, it will remain essential to monitor sales and uptake of non-tobacco nicotine products, so that early action can be taken to deal with any trends or patterns of use likely to be detrimental to public health interest.

10.7 Providing consistency in messages to smokers

Recent evidence indicates that smokers are confused about the relative risks of tobacco and e-cigarettes,³⁵ with many coming to believe that the health hazards of e-cigarettes and tobacco cigarettes are similar. Health professionals are also uncertain about the role of unlicensed nicotine products in healthcare provision, with many feeling reluctant to recommend or endorse a product or product class that is relatively unregulated and has unknown long-term health effects. The introduction of a regulatory structure for unlicensed products, as, for example, proposed under the TPD, may help to overcome these reservations, but there is a need for clear guidance on the role of unlicensed nicotine products in clinical services. The National Centre for Smoking Cessation and Training has produced new guidance on integrating e-cigarette use into the provision of smoking cessation services*, but to date NICE, which has issued extensive guidance on smoking cessation and harm reduction to organisations responsible for public health and tackling tobacco use, health professionals and the general public,^{28,36–39} has not addressed this issue. Some stop smoking services are providing advice and behavioural support to smokers interested in using e-cigarettes with encouraging results (see Chapter 6), but health professionals have a wider role to play in providing support and reassurance to e-cigarette users in routine contacts. NICE guidance should, therefore, be updated to include pragmatic recommendations on the role of e-cigarettes in tobacco harm reduction.

10.8 Taxation and price

Price is a key driver of consumer behaviour and, if the potential for e-cigarettes and other non-tobacco nicotine products to act as a widespread substitute for smoked tobacco is to be fully realised, it is crucial that they are priced as advantageously as possible in relation to tobacco. It is for this reason that the VAT applied to NRT products in the UK was reduced from 20% to 5% in 2007. Adding to the tax burden of e-cigarettes by including them in the remit of the EU Tobacco Tax Directive, and hence requiring them to be taxed as tobacco products in addition to the current taxation through VAT,⁴⁰ would therefore be counterproductive. A rational approach to nicotine taxation would be to apply

*www.ncsct.co.uk/usr/pub/Electronic_cigarettes._A_briefing_for_stop_smoking_services.pdf

tax in proportion to their hazard, in which case the tax on e-cigarettes and other non-tobacco nicotine products should be held stable or even reduced. The availability of these products as a viable alternative for people addicted to nicotine does, however, provide justification for further tax increases on tobacco.

10.9 Summary

- The ideal regulatory framework for nicotine products is one that minimises harm to society arising from nicotine use.
- At present, nicotine is in widespread use in UK society and the most popular source of nicotine, the cigarette, is by far the most hazardous of those available.
- Nicotine regulatory approaches should therefore be designed to encourage as many smokers as possible to either quit all nicotine use, or switch completely from smoking to an alternative source of nicotine.
- Products are regulated to ensure that they are safe and fit for purpose. Regulation of e-cigarettes and other similar products should therefore aim to minimise potential exposure to harmful vapour constituents, ensure that those that deliver nicotine do so in doses that smokers find satisfying, and encourage substitution for smoked tobacco.
- Regulatory restrictions should therefore be designed to safeguard against unnecessary hazard but should also be proportionate, so as not unnecessarily to inhibit the development, availability and use of viable alternatives to smoking.
- Attempts by the MHRA over the past 5 years to adapt medicines licensing to the rapidly developing e-cigarette market has resulted in the award of only two medicines licences for alternative nicotine products, and no licensed e-cigarette has come to market.
- Regulations for e-cigarettes proposed in the new revision of the EU TPD include quality controls that are more permissive and, in our view, more proportionate than medicines regulation, but include some measures that may inappropriately constrain the e-cigarette market and hence inhibit e-cigarette use.
- At the time of going to press, the TPD regulations for e-cigarettes are still the subject of a legal challenge, but are expected to come into effect from 20 May 2016.
- In the event that the legal challenge succeeds, then a replacement regulatory approach should retain the requirements on reporting of nicotine delivery and toxins in e-cigarette vapour proposed under the TPD, and adhere to industry and product standards.
- To encourage smokers to switch from tobacco to less hazardous sources of nicotine, it is vital that non-tobacco nicotine products be excluded from tobacco taxes.

- It is essential that NICE and other health organisations give clear guidance on the role of e-cigarettes, licensed or unlicensed, in smoking cessation and tobacco harm reduction.
- Effective regular surveillance, which we recommend should be annual, will be required to monitor intended and unintended impacts of regulation, and a rapid feedback mechanism to allow changes to be made to ensure that the potential benefits of e-cigarettes are maximised, while minimising the risks.

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11 | Harm reduction and e-cigarettes: an international perspective

11.1 Harm reduction and tobacco control policy implementation in the UK

Since the publication of the white paper *Smoking kills* in 1998,¹ the UK has introduced an extensive and comprehensive range of tobacco control measures (see Chapter 3) and, having been at the forefront of the global smoking epidemic of the 20th century, is now a world leader in smoking prevention.² As a result, UK smoking prevalence has declined substantially and at a rate similar to that observed in other countries that have also implemented comprehensive tobacco control programmes such as Australia, Canada, the USA (in California) and Uruguay.^{3,4} As discussed in Chapter 10, in addition to this comprehensive package of conventional tobacco control policies, England has also adopted a complementary harm-reduction policy strand that is embedded in national policy through government health and tobacco control strategies,^{5–8} guidance by the National Institute for Health and Care Excellence (NICE)⁹ and medicines regulation.^{10–12} To our knowledge the UK is the only country in the world to have developed, and to be in the process of implementing, a proactive tobacco harm-reduction approach to smoking prevention. This chapter describes the regulation of e-cigarettes and their use in other countries.

11.2 Approaches to regulation of e-cigarettes in other countries

There is a wide variation in approaches taken in different countries to the regulation of e-cigarettes and other unlicensed, non-tobacco nicotine products. The Institute for Global Tobacco Control (IGTC)¹³ summarises policy approaches in a total of 123 countries, including 90 from a World Health Organization (WHO) report on e-cigarette policies.¹⁴ Regulations are evolving rapidly, so the discussion here and in the following sections is based on data reported on the IGTC website* unless otherwise stated, and was accurate at the time of going to press. A discussion of whether published regulations have actually been enforced is beyond the scope of this chapter.

*<http://globaltobaccocontrol.org>

Also at the time of going to press, the use of e-cigarettes had been completely prohibited in three countries (Cambodia, Jordan and the United Arab Emirates), prohibited in enclosed public places in 15 countries and restricted in a further eight, prohibited on public transportation in 19 countries and restricted (or limited to non-nicotine-containing products) on certain public transportation vehicles in three. Restrictions on purchase or sale comprise: a minimum age for e-cigarette purchase which is usually the same as that for traditional cigarettes, and ranges from 18 to 21 years in 16 countries; prohibition (26 countries) or restrictions (21 countries) on the sale of all types of e-cigarette, including restriction or prohibition of sale or requirement for marketing authorisation for products that have nicotine. Of the 47 countries banning or restricting sale, 33 also prohibited or restricted advertising, promotion or sponsorship of e-cigarettes in their policies. Twelve other countries had explicit promotion bans/restrictions. Two countries (Togo and the Republic of Korea) impose taxes on e-cigarettes in addition to general sales taxes. Similar to the UK, some countries, including the USA, allow e-cigarettes to be sold under general consumer product regulations.

The experience of regulating e-cigarettes along with other nicotine products in a single regulatory structure, as proposed by the RCP in 2007,¹⁵ has since proved less encouraging than hoped. The US Food and Drug Administration (FDA), already responsible for regulating medicinal nicotine, was given responsibility for regulating tobacco products in 2009 and, after a legal decision, announced in 2011 that e-cigarettes would be brought within the remit of tobacco product regulation.¹⁶ At the time of writing the FDA still has more stringent regulations on the sale of medicinal nicotine than the UK, and has not yet put a regulatory process for e-cigarettes in place. Similar to the US experience with FDA regulation, Health Canada's jurisdiction over all tobacco and nicotine products, which regulates nicotine under the Food and Drug Act, requires a marketing authorisation for e-cigarettes containing nicotine, and none has yet been awarded. The effect of this is therefore an actual prohibition of sale. In practice, however, this is not being observed, because a recent Canadian House of Commons' report concluded that e-cigarettes with nicotine were still available in Canada.¹⁷ The report put forward recommendations to develop a new legislative framework for e-cigarettes that would probably allow their sale with nicotine, but with strict controls on marketing in line with those for tobacco.¹⁷ In the absence of a clear regulatory approach by Health Canada at the federal level, a number of provinces have already moved to impose strict regulations on e-cigarettes, including prohibition of use in public places, and of advertising and display.*

*See <https://ca.news.yahoo.com/quebec-cracks-down-e-cigarettes-111950643.html>, www.huffingtonpost.ca/2015/05/12/provincesmove-to-fill-vo_n_7269088.html and www.theglobeandmail.com/life/health-and-fitness/health/provinces-cities-move-to-regulate-e-cigarettes-in-absence-of-federal-rules/article24490523

Thus, the experience of a single regulatory authority in both the USA and Canada is that, in both cases, the authority has been unable to use its powers effectively to regulate nicotine products in relation to their hazard. Indeed, in both cases, single-body regulation of all nicotine products has probably hindered, rather than enabled, access to reduced-hazard nicotine products.

11.3 Awareness and use of e-cigarettes in different countries

Although there is a rapidly growing body of research on the prevalence of e-cigarette use in adults and adolescents internationally, methodological differences in the definition and measurement of ever, past or current use, particularly in adolescent research, make direct comparisons between studies difficult. This section therefore describes trends internationally drawing predominantly on between-country surveys; Section 11.4 analyses the relationship between regulatory frameworks and use where the evidence enables such comparisons to be made.

11.3.1 Awareness and use of e-cigarettes in adults

Significant variability in the prevalence of use of e-cigarettes has been observed between countries over time, but international surveys demonstrate rapid global increases in e-cigarette use across high-, middle- and low-income countries. The earliest between-country study¹⁸ assessed e-cigarette awareness and use among nationally representative samples of smokers and recent ex-smokers based on 2010–11 data from the International Tobacco Control policy evaluation project (ITC) in the UK, the USA, Australia and Canada. In the UK and the USA, e-cigarettes are regulated as consumer products; in Canada, e-cigarettes containing nicotine require authorisation, but none has been authorised; in Australia there is a ban on the sale and importation of e-cigarettes with nicotine, although there is a mechanism for legal import as an unapproved medicine with a doctor's prescription. Awareness and current use were higher in the two countries where there were fewer restrictions (the USA and the UK).

The Canadian Tobacco, Alcohol and Drugs Survey (CTADS) also found, in 2013, much lower levels of e-cigarette use among adults in Canada than in the UK.¹⁹ Another ITC study compared trends in awareness, trial and use of e-cigarettes among nationally representative samples of smokers and ex-smokers in the UK and Australia.²⁰ Use (defined as less than monthly or more often) of e-cigarettes was 18.8% in the UK and 6.6% in Australia in 2013; however, use increased at the same rate in both countries between 2010 and 2013.²⁰ It therefore appears that prohibition may have delayed the uptake of e-cigarettes in Australia, but has not prevented a subsequent rapid increase in use.

A further ITC study²¹ presented data from 10 countries (the USA, the UK, Australia, Canada, the Netherlands, South Korea, Malaysia, Brazil, Mexico and China) surveyed at different time points between 2009 and 2013. Again, there was considerable variation in e-cigarette awareness and use among them: awareness varied from 88% in the Netherlands (where e-cigarettes are regulated as a consumer product with some restrictions¹³) to 31% in China (where sale and purchase are legal at the national level, although may be restricted in some regions²²); self-reported trials varied from 20% in Australia to 2% in China; and current use from 14% in Malaysia (where sale, distribution or importation of unlicensed nicotine-containing e-cigarettes is prohibited; nicotine-containing e-cigarettes can be sold only by licensed pharmacies or registered medical practitioners¹³) to 0.05% in China. These differences are likely to be due in part to differences in survey dates, but also to differences in regulations, market forces and enforcement. However, Malaysia had the highest prevalence of e-cigarette use despite tight restrictions on their sale.

The Global Adult Tobacco Survey²³ has also published data on e-cigarette use among smokers and non-smokers from four middle- and low-income countries: Indonesia (in 2011), Malaysia (2011), Qatar (2013) and Greece (2013). At the time of the surveys, all these countries prohibited the sale of e-cigarettes apart from Malaysia, where only nicotine-containing e-cigarettes were restricted.¹³ E-cigarette awareness was highest in Greece (88.5%), followed by Qatar (49%), Malaysia (21%) and Indonesia (10.9%). Current use (daily and non-daily) of e-cigarettes among smokers was again highest in Malaysia (in this survey prevalence of use was 10.4%), followed by Qatar (7.6%), Indonesia (4.2%) and Greece (3.4%). Use of e-cigarettes among non-smokers was highest in Greece (1.3%), followed by 0.4% in each of the other three countries. Again, these data demonstrate little evidence that more restrictive national policies on e-cigarettes result in lower levels of use.

The most recent Eurobarometer 429 survey,²⁴ carried out in November and December 2014, enabled an assessment of use of both tobacco cigarettes and e-cigarettes (defined as e-cigarettes or other similar electronic device) among people aged 15 years and over in the 28 European Union (EU) member states. France, Cyprus and Estonia (where e-cigarettes are regulated as either consumer or medicinal products according to nicotine content)^{13,25} had the highest proportions of respondents stating that they had ever tried e-cigarettes (17% or higher); France and the UK had the highest prevalence of current e-cigarette use (both 4%) and the UK had the highest proportion of current smokers who also used e-cigarettes (11%). Fewer than 1% of never-smokers currently used e-cigarettes in every country surveyed. The most common reason given for using e-cigarettes was to stop or reduce smoking. Across the EU, 14% of smokers or ex-smokers who had tried e-cigarettes reported that they had helped them to stop smoking completely, 13% that they had helped them to stop for a while before

relapsing, 45% that they had not reduced their tobacco smoking and 21% that they helped them to reduce, but not stop, tobacco use. Ireland (24%) and the UK (21%) had the highest proportions of respondents who reported successfully stopping smoking with the help of e-cigarettes. The proportion of smokers using e-cigarettes in their quit attempts was highest in countries regulating them as consumer products: the UK and Ireland (19%), France (18%) and Cyprus (16%). The Eurobarometer noted that there were continuing declines in smoking across the EU at a time when e-cigarette use was increasing, as has been observed in UK surveys (see Chapters 2 and 7) and in the USA.²⁶

11.3.2 Awareness and use of e-cigarettes by adolescents

We have been unable to find any survey using a consistent methodology to compare awareness and use of e-cigarettes among adolescents in different countries. Data on people aged 15 and over are included in the 2014 Eurobarometer study referred to above,²⁴ which reported the prevalence of current use of e-cigarettes among people who had never smoked at 0%, suggesting that there were few such users among young or older people.

Survey data on the prevalence of e-cigarette use in young people at the country level are more extensive, but methodological differences, including the use of different definitions or terms to describe the different stages of e-cigarette use (ever, trial, current use), and differences in age ranges studied, limit the comparability of these findings. A recent review concluded that the common pattern emerging in countries where data were available was of very high awareness and increasing trial of e-cigarettes among young people, but very low levels (3% or less) of regular use.²⁷ However, there were two countries where current use was substantially higher: Poland (where e-cigarettes are classified as consumer products, but with cartridges subject to regulations on chemical mixtures) at around 30%²⁸ and Hawaii (where e-cigarettes are classified as consumer products), where 29% of the sample of young people had tried e-cigarettes and 18% had used them in the past month.²⁹

Serial surveys of young people in the USA have documented a rising prevalence of ever use of e-cigarettes^{30–32} and demonstrated that, as in the UK (see Chapter 7), those who use e-cigarettes are more likely also to smoke tobacco.³¹ A cohort study from California³³ found that secondary school pupils who had not smoked, but reported having ever tried an e-cigarette, were more likely at 6- or 12-month follow-up to have ever tried a tobacco cigarette. A cohort study of a national US sample of 694 never-smokers who were classified as non-susceptible to tobacco smoking at baseline in 2013–14, and restudied in 2015,³⁴ found that the 16 participants who reported ever

having used an e-cigarette at baseline were significantly more likely, after controlling for other covariates, to have become susceptible to cigarette smoking or have smoked at least one puff of a cigarette at follow-up. However, claims that these findings indicate that e-cigarette use may cause uptake of tobacco smoking have been challenged on the grounds of common liability (see Chapter 8), lack of measures of more regular use of either e-cigarettes or tobacco cigarettes, and that, during the time that these studies have been carried out, the prevalence of tobacco smoking among young people in the USA fell to a 22-year low.^{35–37} There is evidence from the USA that adolescent smokers using e-cigarettes are also more likely to use products such as tobacco hookahs or shisha and blunts (marijuana and tobacco).³⁸

11.4 Patterns of use across countries with different regulatory regimens

Although standardised between-country data on e-cigarette use over time are generally lacking, it is clear from the evidence presented above that, whereas countries with more liberal policies (which typically involve regulating e-cigarettes as consumer products) have higher levels of adult e-cigarette use, prohibition and tight restrictions have not prevented increasing uptake of e-cigarette use among adults in other countries. For adolescents the data are less clear but, as an example, the 2013 CTADS of Canadians aged 15 years and older found that 9% had ever tried an e-cigarette, with trials being higher among young people aged 15–19 years at 20%.¹⁹ This latter percentage is not dissimilar from the percentage who had tried e-cigarettes in the UK in 2015 (12.7% of 11- to 18-year-olds). Again, therefore, it appears that prohibition of sale has had little effect on experimentation with e-cigarettes in Canada, at least not in the younger age groups in these studies. A recent US study assessed the impact of state bans on sales of e-cigarettes on smoking rates among 12- to 17-year-olds across the USA,³⁹ and found that reducing access through age-of-sale laws increased smoking among 12- to 17-year-olds, suggesting that restrictive regulations on e-cigarettes may be counterproductive.

In the EU, as set out in Chapter 10, the introduction of the Tobacco Products Directive⁴⁰ will lead to a common regulatory platform from May 2016, although individual member states will be able to go further in prohibiting all advertising (as is under consideration in Scotland), restricting or prohibiting their use in public places (recently under consideration in Wales), legislating for an age of sale (set at 18 in England), restricting or prohibiting flavours, and implementing additional taxation. Monitoring the impact of these regulatory changes, and of their variations across the EU, will provide a useful indicator of the impact of different regulatory approaches.

11.5 Harm reduction and the WHO Framework Convention on Tobacco Control

E-cigarettes were not available when the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) was first negotiated. However, the FCTC⁴¹ alludes to harm reduction in Article 1, where tobacco control is defined as including ‘harm reduction strategies that aim to improve the health of a population by eliminating or reducing their consumption of tobacco products and exposure to tobacco smoke’. This is further considered in Article 5.2(b), which states that ‘each Party shall, in accordance with its capabilities ... adopt and implement effective legislative, executive, administrative and/or other measures and cooperate, as appropriate, with other Parties in developing appropriate policies for preventing and reducing tobacco consumption, nicotine addiction and exposure to tobacco smoke’. The FCTC does not have a remit for the regulation of medicinal nicotine, although it has produced guidelines on tobacco dependence and cessation (Article 14 of the FCTC).⁴²

The growing popularity of e-cigarettes led to discussions on their role at the biennial FCTC Conference of the Parties (COP), the governing body of the treaty, in 2010 and 2012. At the 2012 COP5, the WHO was asked to produce a report on ‘options for prevention and control’ of e-cigarettes (referred to as electronic nicotine delivery systems or ENDSs) for consideration at the next COP.⁴³ The WHO report to COP6¹⁴ focused on three areas of concern: health risks to users and non-users; efficacy in helping smokers to quit smoking and (ultimately) nicotine use; and interference with existing tobacco control efforts and implementation of the FCTC. The main focus of the report was on the latter issues, but, in terms of health risks, the report concluded that ‘well-regulated ENDS’ would be likely to be less toxic than tobacco cigarette smoking for established adult smokers. In relation to smoking and nicotine cessation, the report concluded that e-cigarettes might have a role in supporting attempts to quit for individuals who had failed treatment, or who were intolerant of or refused conventional treatments. The report discussed and recommended parties to regulate e-cigarettes as either medicines or tobacco products, in accordance with the FCTC.

In response, the Framework Convention Alliance (FCA, a coalition of over 350 non-governmental organisations from over 100 countries) developed a consensus position.⁴⁴ The FCA concluded that, because of differences in regulatory systems and national circumstances, it would be difficult to reach consensus at COP6 on specific regulatory approaches to ENDSs. Instead, the FCA position paper set out the following principles as a starting point for reaching agreement on the role and regulation of e-cigarettes, for consideration by the COP:

- 1 The global burden of death and disease from tobacco is primarily caused by smoking.
- 2 Although quitting tobacco use is paramount, quitting nicotine use altogether is the best option.
- 3 For those unable to quit, switching to alternative sources of nicotine that are less harmful than tobacco can reduce, often very substantially, the harm that smoking causes to the individual.
- 4 The benefits of such an approach would be maximised if uptake were limited to existing smokers who are unable to quit.
- 5 The risks of such an approach would be minimised by limiting uptake by never-smokers, in particular among young people, and by taking measures to protect non-users and discourage long-term dual use.
- 6 There could be negative unintended consequences from over-regulation, just as there could be from under-regulation.
- 7 The involvement of tobacco companies in the production and marketing of e-cigarettes is a matter of particular concern, because there is an irreconcilable conflict of interest between those profiting from the sale of tobacco and public health.

After discussion by the COP, a decision was taken to ask parties to the FCTC to take note of the WHO report, and the WHO was asked to produce a further report with updated intelligence for consideration in time for COP7, which will be held in the last quarter of 2016. The decision also asked parties to the FCTC to consider 'prohibiting or regulating' e-cigarettes, suggesting that this could be as tobacco, or medicinal or consumer products, and to comprehensively monitor their use.⁴⁵ E-cigarettes will therefore be discussed again at the next WHO FCTC COP in November 2016 in India.

In the case of tobacco, a range of comprehensive tobacco control measures has been found to be effective and been codified in the FCTC. E-cigarette regulation does not sit appropriately within the context of the FCTC, the explicit objective of which is control of the supply of and demand for a lethal product, tobacco, through the introduction of increasingly restrictive and prohibitive regulatory measures. Furthermore, there is as yet an insufficient evidence base or range of national experience that would enable the development of a detailed set of recommendations for the specific approaches to many of the complicated regulatory issues that these products raise at the global level.

11.6 Summary

- A variety of different approaches to tobacco harm reduction and regulation of e-cigarettes, including extension of regulations for alternative products to e-cigarettes and including complete prohibition, have been adopted in different countries around the world.
- The prevalence of use of e-cigarettes is rising or already significant in some countries that have attempted to prohibit use, suggesting that prohibition is not an effective approach to regulation.
- Surveillance data are limited in most countries, as are the use of consistent terminology and standardised measures of e-cigarette use, so between-country differences are difficult to assess.
- There is general recognition that comprehensive monitoring and surveillance of the evidence and national regulatory experience of e-cigarettes are essential.
- The WHO recognises a role for e-cigarettes as part of a harm-reduction strategy for smokers, but in the context of a recommendation by the FCTC COP that they be regulated to minimise any potential risks.
- However, currently there is no consensus about what this regulatory framework should be, and as yet an insufficient evidence base, or range of national experience, that would justify the development of a regulatory structure at a global level.

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12

Ethics and conclusions

12.1 Moral and ethical considerations of harm-reduction strategies

This report has made the case for applying harm-reduction principles to tobacco smoking, principally to prevent avoidable harm to smokers. There is, however, a strong ethical dimension to the use of harm-reduction strategies in tobacco control that were discussed in some detail in our earlier report;¹ these strategies include a duty to ensure that options to reduce harm are made available to smokers, and provision of a substitute for tobacco to smokers, particularly those on low incomes, to protect them from the hardship that might otherwise arise from applying tax increases to provide a stronger fiscal disincentive to smoke. There are, however, wider considerations arising from concerns over the broader effects of applying harm-reduction strategies in society.

The central ethical concern is with harm, and whether the harm-reduction strategies identified and adopted will, in practice, reduce it. However, there are also wider questions relating to the ethos of harm reduction itself, over and above any examination of the effectiveness of particular strategies. In some areas of public health (particularly in drug control, alcohol control and sex work control, for example), there is a societal concern that the behaviour being targeted is inherently wrong. Drug addiction, prostitution and drunkenness, it is sometimes thought, are inherently bad, and the proper focus of public health should not be on making the use of drugs, or sex work, or excess alcohol consumption safer; it should be on eradicating these behaviours. In tobacco control, however, this argument is rarely made: few people acknowledge smoking as a behaviour that is immoral. Its harms are real and serious, and inflicting these on unwilling third parties is wrong, but these concerns fit quite naturally within the harm-reduction model.

A second concern is with the distribution of harm. A harm-reduction strategy could be considered to have failed if the net harm were reduced, but the distribution of harm changed in a way that was unjust, eg if, as a result of the harm-reduction strategy, some socially or economically vulnerable group

became *more* at risk of harm, or systematically less able to benefit from smoking cessation and prevention strategies. The benefit to existing smokers of switching to e-cigarettes is clear, but, if large numbers of never-smokers were to take up e-cigarette use, they would be exposing themselves to health risks that would otherwise be avoided, and financial costs, which are of particular detriment to poorer smokers, that they would not otherwise incur. At present this does not appear to be happening, but it could occur, for example, if the addictive potential of e-cigarettes and other non-tobacco nicotine products increases over time.

A third concern relates to social responsibility: if engaging in harm reduction involves working with corporate actors with a track record of deceit or other socially irresponsible business practices, and particularly of undermining public health, then there is a concern that doing so may have wider ramifications than the harm-reduction strategy itself. Such engagement might, for example, discredit other public health interventions or institutions that are focused on ending these bad practices. We can think of this as ‘reputational harm’. Conversely, it may be that such corporate actors acquire some perverse benefit from such engagement: by appearing to be responsible in one area (the provision of reduced-harm products) they might be able to reclaim a good reputation in other areas, however undeservedly. From a ‘harm-reduction’ point of view, these factors must be considered, but these harms may be inchoate and hard to measure, certainly compared with the real benefits accruing to harm-reduction products in terms of reductions in mortality and morbidity.

Setting aside these objections to harm reduction in principle, we turn instead to the objections that might be raised against particular harm-reduction strategies from within a focus on harm. Obviously, the most important consideration is whether the harm-reduction intervention actually does reduce harm, in terms of reduction of lives (and life years) lost, increase in numbers of smokers who successfully quit smoking tobacco, reductions in the numbers of new smokers, etc. However, as for any other medical or public health intervention, we need to consider any particular strategy in the light of available alternatives: in particular, if we focus on regulation of a tobacco harm-reduction product, we need to ask whether the regulatory mechanism is the most effective in reducing harm, or whether some other approach would be more effective. We need to ask whether adoption of a particular regulatory approach makes the production of some products more likely than others, and whether the products favoured by this approach are, in fact, better from a harm-reduction and public health point of view than those disfavoured. As within the harm-reduction model, the least harmful intervention is the most ethical intervention, we need always to keep in mind that choice of regulatory approach must be seen in ethical terms. The evidence summarised in this report goes some way towards addressing these questions.

12.2 Smoking and public health

Tobacco smoking is the biggest avoidable cause of death and disability in the UK. In 2014, 21% of men and 16% of women were smokers,² which in absolute terms represents almost 9 million people. Half these smokers, or 4.5 million people, alive in the UK today will have their lives cut short by smoking and, if their smoking continues unabated, their total loss of life will amount to nearly 90 million years.^{3,4} Their smoking will also cause thousands of fetal deaths and cases of childhood illness, and deaths in non-smoking adults, and cost our health services and wider society billions of pounds. This massive burden of death, disability and lost opportunity has been entirely avoidable, and much of it can still be prevented by measures that encourage as many smokers as possible, as soon as possible, to stop smoking. As the biggest beneficiaries of preventing smoking are individuals who are disadvantaged, marginalised or have mental health problems, prevention of smoking will make society both healthier and more equal. Smoking may be less prevalent today than when the RCP published its first report on smoking and health in 1962,⁵ but it is still our biggest health problem. All measures that can be deployed to prevent smoking should therefore be applied, as quickly as possible, and to their maximum effect.

12.3 The effect of conventional tobacco control approaches

The UK is a world leader in tobacco control policy. Since the late 1990s, a comprehensive package of policies, including an advertising ban, smoke-free legislation, high taxes, minimum purchase age, mass media campaigns, a point-of-sale display ban and clinical services to help smokers to quit, has been introduced, and will be enhanced in 2016 by standardised packaging legislation. The result in the UK has been the same as in other countries that have followed this approach: smoking prevalence has fallen steadily, but slowly. However, the decline in smoking prevalence that has occurred over recent decades appears to owe more to success in preventing the uptake of smoking: quit rates among established smokers have changed relatively little. However, it is the adults smoking today, particularly those in middle and older age, who will generate most of the burden of death and disability caused by smoking in the short- and near-term future, and it is these adults whom tobacco control policies need to target in particular if this burden of harm is to be reduced. All existing and new policies with the potential to promote smoking cessation, particularly among disadvantaged groups, should therefore be applied to their fullest extent.

12.4 Priorities for conventional tobacco control policy implementation

Of the range of policies available, the UK has already achieved a relatively high level of prohibition of tobacco advertising and smoke-free policy. Opportunities to promote tobacco brands will be further reduced by the introduction of mandatory standardised packaging in May 2016, although a great deal more could be done to reduce exposure of children and young people to the normalising effect of smoking imagery in the media, including films, television programmes, music videos and computer games. Children may also be less likely to grow up thinking that smoking is a normal or aspirational adult behaviour if they were exposed less to smoking behaviour among adults in their everyday lives, which could be achieved by extending smoke-free policies to outdoor areas, eg at school gates, play areas, town centres and other areas where smokers congregate in view of children. Making hospital premises completely smoke free generates an opportunity to initiate and support cessation among the many smokers, and their visitors, who use hospital services. Similarly, making prisons smoke free will provide an opportunity to reduce the very high prevalence of smoking among prisoners. More could also be done to reduce retail availability of tobacco to children, particularly in areas close to schools, and the requirement that tobacco retailers be licensed would be a useful step towards making enforcement of regulations easier. Mass media campaigns are effective in motivating smokers to try to quit, but require funding to achieve and sustain the necessary intensity and salience for success. Cessation services also need to be adequately funded, and in clinical settings integrated much more systematically into routine health service delivery. Large increases in tobacco prices, particularly in the lower cost range of products preferred by low-income smokers, have a particular potential to reduce smoking among disadvantaged groups. Proper funding of enforcement measures against illicit tobacco and measures to curtail the tobacco industries' own involvement in this trade are crucial. All these measures would be likely to help to achieve further reductions in smoking prevalence. However, almost all would be complemented by promoting harm-reduction approaches that encourage smokers, who otherwise prove unwilling or unable to quit smoking, to switch to an alternative, low-hazard source of nicotine.

12.5 Nicotine addiction and its effects

Nicotine is the main addictive component of tobacco smoke. Although other tobacco smoke components probably contribute to the development of nicotine addiction, it is the capacity to achieve rapid increases in systemic arterial levels through pulmonary absorption that makes tobacco smoking particularly addictive, as well as lethal, although factors such as the taste and smell of

cigarette smoke, and the behavioural action of smoking, can reinforce nicotine use and hence themselves become important drivers of continued smoking. At low doses, nicotine is a stimulant, which in the short term increases heart rate and may improve attention, memory and fine motor skills. Although potentially lethal at very high doses, at the blood levels typically achieved by smoking nicotine does not result in clinically significant short- or long-term harms. Nicotine is not a carcinogen; there is no evidence that sustained human use of nicotine alone increases the risk of cancer. It is possible that nicotine exposure during the fetal and/or adolescent periods causes cognitive impairment, but in all other respects, and certainly in relation to tobacco smoke, the real and potential hazards of sustained nicotine use are negligible. The harm of smoking is therefore caused not by nicotine, but by other constituents of tobacco smoke. Non-tobacco nicotine products that reproduce the nicotine delivery and behavioural characteristics of smoking, without the many other toxins in tobacco smoke, therefore have the potential to allow smokers to continue to use nicotine and avoid the significant harm to themselves and others that smoking causes.

12.6 Non-tobacco nicotine products

A wide range of nicotine replacement therapy (NRT) products, licensed as medicines to reduce symptoms of nicotine withdrawal among people trying to quit smoking, is available. In clinical trials, NRT has been shown consistently to be effective in helping smokers to quit smoking. Although initially developed to help people give up all smoking and nicotine use, NRT licences have been extended to include short-term use to relieve withdrawal symptoms during temporary abstinence from smoking, and long-term use as a partial or complete substitute for smoking (harm reduction).⁶ These licensed applications of NRT, which are endorsed by the National Institute for Health and Care Excellence (NICE),⁷ promote dual use of NRT and tobacco on the grounds that smokers who learn to use NRT in this way are more likely to quit smoking completely.⁷ NRT products have to date been produced by pharmaceutical companies and offer high levels of purity and hence safety, such that a smoker who switches from tobacco to NRT use, but continues to use NRT in the long term, probably achieves much the same in health terms as a smoker who quits all tobacco and nicotine use.

The choice of non-tobacco nicotine products in the UK has been substantially extended by the emergence of e-cigarettes, which have to date been marketed as consumer alternatives to smoking. E-cigarettes offer a behavioural experience that is much closer to smoking than is the case with NRT products, and later-generation e-cigarettes appear able to achieve venous nicotine levels similar to those of tobacco smoking. The extent to which inhalation of e-cigarette vapour results in rapid pulmonary absorption remains uncertain, but it seems likely that,

as the technology improves, the degree of pulmonary absorption will increase, making the products more effective as smoking substitutes, but also increasing addictiveness, and hence posing the new ethical problems highlighted above. E-cigarettes generate vapour from a solution that typically contains nicotine, propylene glycol and glycerine, but, in addition to these constituents, e-cigarette vapour contains a variable range of compounds arising from impurities in the solutions or generated by the heating process that produces vapour. There appear to be few, if any, significant short-term adverse effects of e-cigarette use, but adverse health effects from long-term exposure to constituents of vapour cannot be ruled out. Although unknown, the hazard to health arising from long-term vapour inhalation is unlikely to exceed 5% of the harm from tobacco smoke. Switching from tobacco to e-cigarettes is therefore likely to be almost as effective in preventing harm as switching to NRT. However, the recent award of a medicines licence to an e-cigarette product raises the prospect of e-cigarettes with safety profiles similar to NRT becoming available in the near future.

12.7 How smokers in the UK try to quit, and their chances of success

Around one in three smokers in the UK tries to quit each year, but only around one in every six of those who try to quit is successful. Those who try are slightly more likely to be younger and female, and to be in non-manual occupations; those in non-manual occupations are also more likely to succeed. Most of those who try to quit do so without help, or until recently by using NRT bought over the counter. Over the past 3 years, however, e-cigarettes have become the most widely used aid to quitting.

The observational data on quitting used in this report suggest that those who use prescribed medication and behavioural support from a qualified stop smoking adviser (typically through NHS Stop Smoking Services (SSSs)) are two to three times more likely to succeed than those using no help. However, the use of NHS SSSs has declined significantly in recent years, such that they are now accessed by only a small minority of smokers. For reasons that are not clear, those who use over-the-counter NRT appear to be no more likely to succeed in quitting smoking than those using no help, whereas those who use e-cigarettes, or NRT or other pharmacotherapy provided by a healthcare professional, are around 50% more likely to succeed than those using no help at all.

The popularity of e-cigarettes has thus resulted in a substantial increase in the proportion of smokers using effective help to quit. It is probable that adding behavioural support would increase the likelihood of quitting with e-cigarettes still further, and this is an important area for new research. Possible explanations for the popularity of e-cigarettes, and their effectiveness relative to NRT, include

their ability to replace some of the behavioural components of smoking, their relatively high nicotine delivery, the fact that smokers tend to try them for longer and with more frequent dosing than NRT, and their cultural acceptability.

Smokers are motivated to make a quit attempt in particular by cost and health concerns. Price rises, media campaigns and health professional advice are therefore likely to increase the numbers of smokers trying to quit.

12.8 Use of e-cigarettes by smokers and non-smokers

E-cigarettes are used almost exclusively by smokers who are trying to cut down or quit smoking, or who have quit smoking. Among adults, use by non-smokers is extremely rare. A higher proportion of non-smoking children than adults have experimented with e-cigarettes, but most of those who do have smoked in the past, or are current smokers. More than experimental use among children who are not also experimenting with tobacco is rare. Among regular users, whether children or adults, second- and third-generation devices are now much more widely used than first-generation ‘cigalike’ devices. Fruit flavours are popular among e-cigarette users, whether adults or children.

12.9 Harm reduction and population health

The emergence and consumer success of e-cigarettes, as a partial or complete substitute for smoking, reflects significant potential to reduce the harm caused by smoking to society by encouraging as many smokers as possible to use e-cigarettes, or indeed other non-tobacco nicotine products, rather than tobacco cigarettes. There are many, however, who retain significant concerns over the potential risks and adverse effects of this approach, for both individuals and wider society.

Concerns that e-cigarettes are not hazard free are justified, but this hazard could be minimised by a combination of technological development and appropriate regulation. Concerns that e-cigarettes will be used dually by smokers are inconsistent with current guidance and licence indications for NRT, which encourage dual use as a step towards quitting smoking and of protecting those around the smoker from the harmful effects of second-hand smoke. All the UK evidence, and almost all the international evidence, on the use of e-cigarettes by children and young people to date indicates that concerns about e-cigarettes helping to recruit a new generation of tobacco smokers through a gateway effect are, at least to date, unfounded, although vigilant surveillance is required to ensure that the emergence of any such effect is detected and reversed promptly. Renormalisation concerns, based on the premise that e-cigarette use encourages

tobacco smoking among others, also have no basis in experience to date. Exploitation of e-cigarette advertising as a means of promoting tobacco smoking by tobacco companies is perhaps a more real concern, but will largely be prevented by impending controls on advertising in the EU Tobacco Products Directive (TPD).⁸

12.10 Regulation and harm reduction

It is difficult to determine, and more difficult still to apply, the right level of regulation for reduced-harm products. The wide range of different regulatory approaches adopted in different countries in relation to e-cigarettes, which spans a spectrum from freedom to market as a consumer product to complete prohibition, reflects a desire, on the one hand, to encourage as many smokers as possible to switch from tobacco to e-cigarettes and, on the other, to prevent harm to users or others from e-cigarette use. A risk-averse, precautionary approach to e-cigarette regulation can be proposed as a means of minimising the risk of avoidable harm, eg exposure to toxins in e-cigarette vapour, renormalisation, gateway progression to smoking, or other real or potential risks. However, if this approach also makes e-cigarettes less easily accessible, less palatable or acceptable, more expensive, less consumer friendly or pharmacologically less effective, or inhibits innovation and development of new and improved products, then it causes harm by perpetuating smoking. Getting this balance right is difficult.

In the UK, consumer product regulation supported by advertising codes of practice has worked well to date, but does not guarantee that products actually deliver nicotine to a degree that smokers will find satisfying or, more importantly, that vapour is as toxin free as is reasonably possible. Medicines regulation guarantees efficacy and safety, but imposes high manufacturing, compliance and opportunity costs. That even the streamlined Medicines and Healthcare products Regulatory Agency (MHRA) ‘right touch’ medicines regulation has to date awarded a licence to only one e-cigarette, and none that has come to market, indicates that mandatory medicines regulation of e-cigarettes, although valuable as a complement to other regulatory approaches, is not ideal as a single regulatory approach. EU TPD regulation, if implemented as planned, offers a compromise between these two approaches by requiring emission reporting that will enable consumers to identify the best and cleanest nicotine delivery systems, but includes much, such as health warnings and nicotine content limits (see Chapter 10), that is potentially counterproductive. None of these approaches is therefore ideal, and experience in other countries does not offer better alternatives. The UK needs a nicotine regulatory system that applies controls on products in proportion to their potential harm, to promote innovation and diversity, ensure reasonable levels of protection for consumers and, above all, discourage tobacco use.

The use of reduced-harm products, and hence the health gains that they generate, is also influenced by other regulatory policies. Applying low levels of tax to non-tobacco nicotine products, as, for example, the 5% VAT rate levied on NRT, helps to make reduced-harm products attractive to smokers and offset the potentially regressive effect of tobacco tax increases. Allowing messages on harm relative to smoking in commercial and government media campaigns could help to reverse the growing misconception that e-cigarettes and tobacco cigarettes are similarly harmful (see Chapter 10). Prohibition of use of e-cigarettes where smoking is also prohibited may discourage smokers from trying e-cigarettes, and may also contribute to a false impression that they are similarly harmful. The inclusion of recommendations on use of unlicensed (and, in due course, licensed) e-cigarettes in NICE guidance is another example of an area where policies can change to encourage more smokers to switch from smoking to a non-tobacco nicotine product.

12.11 The tobacco industry and e-cigarettes

Tobacco companies make their money by selling tobacco, and the industry's recent programme of investment and acquisitions in e-cigarettes perhaps indicates recognition that these products represent a disruptive technology that should be harnessed to protect the core business of selling tobacco, exploited to expand tobacco markets or developed as an opportunity to make nicotine products attractive to non-smokers. There is little likelihood that the industry sees e-cigarettes as a route out of the tobacco business, but it is highly likely that e-cigarettes will be exploited to enhance claims of corporate social responsibility, and to undermine implementation of Article 5.3 of the World Health Organization Framework Convention on Tobacco Control.⁹ There is no firewall between a 'good' tobacco industry that is marketing harm-reduction products in the UK and a 'bad' one that promotes smoking, or undermines tobacco control activities, in low- and middle-income countries.

12.12 Conclusions

Harm reduction was proposed by the RCP in 2007¹ as a means of reducing still further the vast burden of death and disability that tobacco smoking causes in our society. The evidence summarised in this report demonstrates that the emergence of e-cigarettes has generated a massive opportunity for a consumer- as well as a healthcare-led revolution in the way that nicotine is used in society. As the technology of these and other non-tobacco nicotine products improves, so the vision of a society that is free from tobacco smoking, and the harm that smoking causes, becomes more realistic. Experience to date suggests that, as predicted in principle in the 2007 report,¹ the availability of e-cigarettes has been beneficial to UK public health. There is, however, no room for complacency and

it is particularly important that patterns of use of tobacco and non-tobacco nicotine continue to be monitored closely, and prompt remedial measures applied to deal with changes that are counterproductive to health. The potential for the tobacco industry to exploit and appropriate harm reduction, to undermine public health and bolster sales of tobacco, is a real problem that is likely to become more acute as tobacco companies move into the licensed, as well as unlicensed, nicotine market, but that problem can be managed with vigilance and care. Large-scale substitution of e-cigarettes, or other non-tobacco nicotine products, for tobacco smoking has the potential to prevent almost all the harm from smoking in society. Promoting e-cigarettes, NRT and other non-tobacco nicotine products as widely as possible, as a substitute for smoking, is therefore likely to generate significant health gains in the UK.

12.13 Summary

- Smoking is the biggest avoidable cause of death and disability, and social inequality in health, in the UK.
- Most of the harm to society and to individuals caused by smoking in the near-term future will occur in people who are smoking today.
- Vigorous pursuit of conventional tobacco control policies encourages more smokers to quit smoking.
- Quitting smoking is very difficult and most adults who smoke today will continue to smoke for many years.
- People smoke because they are addicted to nicotine, but are harmed by other constituents of tobacco smoke.
- Provision of the nicotine that smokers are addicted to without the harmful components of tobacco smoke can prevent most of the harm from smoking.
- Until recently, nicotine products have been marketed as medicines to help people to quit.
- NRT is most effective in helping people to stop smoking when used together with health professional input and support, but much less so when used on its own.
- E-cigarettes are marketed as consumer products and are proving much more popular than NRT as a substitute and competitor for tobacco cigarettes.
- E-cigarettes appear to be effective when used by smokers as an aid to quitting smoking.
- E-cigarettes are not currently made to medicines standards and are probably more hazardous than NRT.
- However, the hazard to health arising from long-term vapour inhalation from the e-cigarettes available today is unlikely to exceed 5% of the harm from smoking tobacco.
- Technological developments and improved production standards could reduce the long-term hazard of e-cigarettes.

- There are concerns that e-cigarettes will increase tobacco smoking by renormalising the act of smoking, acting as a gateway to smoking in young people, and being used for temporary, not permanent, abstinence from smoking.
- To date, there is no evidence that any of these processes is occurring to any significant degree in the UK.
- Rather, the available evidence to date indicates that e-cigarettes are being used almost exclusively as safer alternatives to smoked tobacco, by confirmed smokers who are trying to reduce harm to themselves or others from smoking, or to quit smoking completely.
- There is a need for regulation to reduce direct and indirect adverse effects of e-cigarette use, but this regulation should not be allowed significantly to inhibit the development and use of harm-reduction products by smokers.
- A regulatory strategy should, therefore, take a balanced approach in seeking to ensure product safety, enable and encourage smokers to use the product instead of tobacco, and detect and prevent effects that counter the overall goals of tobacco control policy.
- The tobacco industry has become involved in the e-cigarette market and can be expected to try to exploit these products to market tobacco cigarettes, and to undermine wider tobacco control work.
- However, in the interests of public health it is important to promote the use of e-cigarettes, NRT and other non-tobacco nicotine products as widely as possible as a substitute for smoking in the UK.

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THE EFFECTS OF E-CIGARETTE MINIMUM LEGAL SALE AGE LAWS ON YOUTH
SUBSTANCE USE

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The Effects of E-Cigarette Minimum Legal Sale Age Laws on Youth Substance Use
Dhaval Dave, Bo Feng, and Michael F. Pesko
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ABSTRACT

We use difference-in-differences models and individual-level data from the national and state Youth Risk Behavior Surveillance System (YRBSS) from 1991 to 2015 to examine the effects of e-cigarette Minimum Legal Sale Age (MLSA) laws on youth cigarette smoking, alcohol consumption, and marijuana use. Our results suggest that these laws increased youth smoking participation by 0.7 to 1.4 percentage points, approximately half of which could be attributed to smoking initiation. We find little evidence of higher cigarette smoking persisting beyond the point at which youth age out of the law. Our initial results also show little effect of the law on youth drinking, binge drinking, and marijuana use. Taken together, our findings suggest a possible unintended effect of e-cigarette MLSA laws—rising cigarette use in the short term while youth are restricted from purchasing e-cigarettes.

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1. Introduction

Teenage substance use and abuse continues to be a major public health concern. Although rates of youth smoking are declining, each day more than 3,200 youth initiate cigarette consumption and more than 2,000 transition into daily smoking (US Department of Health Human Services, 2014). Youth drinking and marijuana use is a prevalent and costly form of teenage substance use, which has been linked to poor academic performance, impaired cognitive development, and other severe health problems (National Institute on Alcohol Abuse and Alcoholism, 2016). In 2015, 33% of youth drank, 18% binge drank, and 22% used marijuana over the past month (Centers for Disease Control and Prevention (CDC), 2015). Since use of substances is often inter-related, policies reducing one form of substance use might also impact other forms.

The introduction of electronic cigarettes (e-cigarettes) presents youth with an alternative that could disrupt their use of cigarettes, marijuana, and alcohol. E-cigarettes are a particular type of vaping device within the broader class of electronic nicotine delivery systems (ENDS). They differ primarily from conventional cigarettes by permitting the inhalation of nicotine that is heated rather than combusted, substantially reducing the harm associated with combustion-related byproducts. Since their introduction into the U.S market, e-cigarettes have been advertised and positioned as alternatives to conventional cigarettes. Their popularity among adults and youth, in particular, has been rising exponentially. Within a four-year period (2011-15), e-cigarette use has increased from 1.5% to 16.0% among high school students and from 0.6% to 5.3% among middle school students, surpassing cigarettes as the most commonly used tobacco product among adolescents (Singh, 2016).¹ The most recent estimates show that over 3 million middle and high school students currently use e-cigarettes (Singh, 2016).²

Examining the risks of e-cigarettes, and the relative risks between e-cigarettes and conventional cigarettes, has spurred a heated policy debate and has attracted significant academic interest. A recent report issued by the British government suggests that e-cigarettes

¹ E-cigarettes were not treated as tobacco products until 2016 when FDA finalized its deeming rule.

² Among adults, the 2014 National Health Interview Survey shows that 12.6% had ever used e-cigarettes at least once and 3.7% currently use e-cigarettes (Schoenborn and Gindi, 2015).

are no more than five percent as harmful as conventional cigarettes (Tobacco Advisory Group of the Royal College of Physicians, 2016). Other studies have suggested that e-cigarettes can direct smokers away from smoking and possibly help them quit (Hampton, 2014, Abrams, 2014, Brandon et al., 2015, McNeill et al., 2015). However, the 2016 Surgeon General's Report warns that e-cigarettes are dangerous to adolescents because they can interfere with cognitive development and can cause nicotine addiction (US Department of Health Human Services, 2016).

A particular concern raised by the public health community is that e-cigarettes may act as a gateway towards the use of other addictive substances, such as cigarettes, alcohol, and marijuana (Gostin and Glasner, 2014, Primack et al., 2015, Mammen et al., 2016). In response, state governments passed a wave of regulations limiting youth access to e-cigarettes. A popular initiative has been the adoption of Minimum Legal Sale Age (MLSA) laws on e-cigarettes analogous to those passed for conventional cigarettes decades ago. New Jersey became the first state to implement an e-cigarette MLSA law in March of 2010, followed by four other states later within the same year.³ Additional states adopted an e-cigarette MLSA law in each year subsequently: two in 2011, five in 2012, twelve in 2013, fifteen in 2014, eight in 2015, and two in 2016. By the time the Food and Drug Administration (FDA) mandated a federal e-cigarette MLSA law of 18 in August of 2016, all states but two had an e-cigarette MLSA law in place.

Canonical microeconomic theory suggests that youth vaping is likely to decline as costs and other components of the "full price" associated with the product rise. The magnitude of the decline in e-cigarette use caused by e-cigarette MLSA laws may be less pronounced to the extent that retailers do not abide by the law or youth bypass the law through online vendors. If e-cigarettes are economic substitutes with other tobacco products or other addictive substances, then e-cigarette restrictions may induce substitution toward smoking and other substance use, thus lessening the intended public health implication. However, relating to the public health community's concerns about e-cigarettes being a gateway to other substances,

³ Utah, New Hampshire, Minnesota, and California enforced the law on May 11, July 31, August 1, and September 27, all in 2010, respectively.

complementarity is also possible. In this case, restricting e-cigarette access may reduce not only its own use but also the use of cigarettes, both today and in the near future, through a reduction in the addictive stock of nicotine.

In this study, we explore how e-cigarette MSLA laws affect youth smoking. Other studies exploring this question have arrived at mixed conclusions (Friedman, 2015, Pesko et al., 2016, Abouk and Adams, 2017), and our study attempts to provide further clarity to this question. Specifically, we examine the impact of these laws on youth smoking behaviors by exploiting the heterogeneity in the timing of states' adoption of e-cigarette MSLA laws using a quasi-experimental difference-in-differences research design. These analyses inform whether youth, who are constrained from purchasing e-cigarettes, are currently more likely to use conventional cigarettes.

In addition to contemporaneous effects, by affecting the addictive nicotine stock, e-cigarette MSLA laws may also have dynamic effects. We therefore extend our analyses and provide some of the first evidence on the dynamic, intertemporal relationship between e-cigarette MSLA laws and youth smoking. Specifically, we provide estimates that inform whether a policy that makes vaping less attractive today makes future smoking more or less likely when youth are no longer subject to the MSLA-based restriction.

Finally, we broaden the lens to other addictive substances and provide some of the first evidence on potential spillover effects of e-cigarette MSLA laws on other substance use. Such spillover effects are plausible given the high prevalence of co-occurring alcohol, marijuana, and tobacco use among adolescents.⁴ The rest of the study is organized as follows. Section 2 provides a brief background and a review of current literature on this topic. Section 3 outlines a conceptual framework of the various channels through which e-cigarette MSLA laws may affect substance use, and also motivates our empirical specifications. Section 4 describes the dataset, and the construction of e-cigarette MSLA laws and other relevant policy variables, followed by our empirical approach in section 5. Section 6 presents the findings, followed by a discussion of the implications of our results.

⁴ Data from the 2014 National Survey of Drug Use and Health (NSDUH) suggest that, among youth ages 12-17 who have used tobacco products in the past year, 88% have also consumed alcohol and 56% have used marijuana over this period.

2. Literature

A. Cigarette MLSA Laws and Youth Smoking

Over recent decades, individual states have made several efforts to tighten tobacco control regulations by prohibiting retailers from selling tobacco products to minors. Several studies have examined the efficacy of cigarette MLSA laws adopted between the 1980s and early 1990s in curbing youth smoking. Though many of these studies suggest that the laws have been effective in reducing youth smoking (Chaloupka and Pacula, 1998, Gruber and Zinman, 2001, Ahmad and Billimek, 2007, DiFranza et al., 2009), some find limited effects. Chaloupka and Grossman (1996) find little effect of youth access restrictions on youth smoking, which they attribute to the weak enforcement of the laws. DeCicca and colleagues (2002), using indices of smoking restrictions that ranged from youth access restrictions to restrictions on smoking in public places, also find limited effects of the laws. A recent study by Yoruk and Yoruk (2015) revisits the effect of cigarette MLSA laws on youth smoking using a regression discontinuity design. They find that, although the law's impact are imprecisely estimated, gaining legal access to tobacco products once youth have aged out is associated with a 2 to 3 percentage point increase in the probability of smoking. By focusing on a subsample where youth report smoking in the prior wave, the authors find that cigarette MLSA laws lead to a statistically significant increase in the probability of smoking (five percentage points) and frequency of smoking (25% increase) over the past month.

B. Relationship Between E-Cigarettes and Traditional Cigarettes

A few studies assessing the contemporaneous relationship between vaping and smoking have suggested substitutability. Using state-level aggregated data from the National Survey on Drug Use and Health (NSDUH), Friedman (2015) find that state e-cigarette MLSA laws are associated with an increase in youth smoking rate. Pesko and colleagues (2016) also analyze the effects of e-cigarette MLSA laws on adolescent smoking and other tobacco consumption using

state-level aggregated YRBSS data. In their main findings, e-cigarette MLSA laws are associated with a 0.8 percentage point increase in regular adolescent smoking, which slowed the downward trend of youth smoking. However, they do not find any strong evidence that e-cigarette MLSA laws affect use of other tobacco products in adolescents. Abouk and Adams (2017) find opposite results. Using individual-level data from Monitoring the Future (MTF), their estimates suggest that e-cigarette MLSA laws lead to a reduced smoking rates among high-school seniors. This suggests that e-cigarettes and cigarettes are economic complements, rather than substitutes as suggested by Friedman (2015) and Pesko and colleagues (2016). Abouk and Adams (2017) attribute their use of individual-level data as one possible reason for the opposite findings.

One study uses price changes⁵ as the mechanism to study whether e-cigarettes and cigarettes are economic substitutes or complements. Using Nielsen scanner data, Huang and colleagues (2014) find little evidence that consumers substitute toward cigarettes when e-cigarette price increases.

C. Relationship Between Smoking, Drinking and Marijuana Use

The relationship between youth e-cigarette use and marijuana and alcohol use has not yet been clearly established. Equipment that is used for delivering nicotine may also be used to vaporize marijuana (Budney et al., 2015, Mammen et al., 2016). A study using YRBSS data suggests no relationship between e-cigarette MLSA laws and adolescent marijuana use (Pesko et al., 2016). While little is known about the relationship between vaping and drinking, many studies have explored the relationship between smoking and drinking. Dee (1999) suggests that smoking and drinking are complements among high school seniors. By exploiting variation in state cigarette excise taxes and state's adoption of minimum legal drinking age (MLDA) laws at different points in time, Dee finds that MLDA laws are negatively associated with youth smoking. However, the negative impact of cigarette taxes on youth drinking is imprecisely estimated. Using sales and household expenditure data on cigarettes and alcohol in Canada,

⁵ These are prices recorded during the actual transactions.

Gruber and colleagues (2003) find partial evidence supporting complementarity between smoking and drinking. Their estimates suggest that a ten percent increase in cigarette prices is associated with a one percent drop in alcohol sales, alluding to a cross-product price elasticity of -0.1. In the same study, cigarette prices are estimated to have a positive but statistically insignificant impact on household expenditure on total alcohol consumption. Focusing on the elderly population, Picone and colleagues (2004) find that complementarity and substitutability can co-exist. Higher cigarette prices are found to increase drinking, and yet smoking bans are found to decrease both smoking and drinking. Overall, the existing literature seems to lack a consensus on the relationship between smoking and drinking.

D. Summary and Contributions

As noted above, only a handful of studies have focused specifically on the impact of e-cigarette MLSA laws on youth smoking. Two of them (Pesko et al., 2016, Friedman, 2015) find that the laws increased smoking and the third (Abouk and Adams, 2017) find the opposite effect. Friedman (2015) is based on 2-year state aggregated data from the NSDUH (spanning 2002-2013) and Pesko et al. (2016) is based on the state-aggregated data from the Youth Risk Behavioral Surveillance System (YRBSS; spanning 2007-2013). Both studies indicated that e-cigarette MLSA laws increased youth smoking by 0.8 to 0.9 percentage points. Abouk and Adams (2017) focus on high school seniors and utilize micro-level data spanning 2007-2014 from the MTF. Their study suggests that e-cigarette MLSA laws led to reduced cigarette use by about 2-3 percentage points. It is unclear whether the divergence in findings stems from the use of more granular individual-level data or from the addition of one more study period.

Our study extends this seminal work by Friedman (2015), Pesko et al. (2016), and Ahouk and Adams (2017), and contributes to this literature in several respects. First, we add to the prevailing evidence by incorporating micro-level data from both the national and the state YRBSS spanning up to 2015. This yields a substantially larger sample size (between 500,000 and 1,000,000 person-wave observations) relative to previous work. Utilizing data up to 2015, just prior to the FDA's national ban on e-cigarette sales to minors, further maximizes policy

variation (8 additional states had adopted these laws in 2015) and extends the post-policy window for the other states to disentangle dynamic effects. Second-order policy responses on youth substance use (other than e-cigarettes) are likely to be small, and hence micro-level data with large sample sizes, more cleanly-defined affected groups, and longer time windows with greater policy variation may be necessary for maximizing precision.

Second, prior work has focused only on the contemporaneous effects of e-cigarette MSLA laws on smoking behaviors. Our study is the first to consider how these laws may affect youth smoking rates once they have aged out of the restrictions and are able to purchase e-cigarettes. This is particularly relevant for assessing long-term effects on smoking rates and addressing public health concerns. Finally, we also estimate the relationship that e-cigarette MSLA laws have on other substance use. With the exception of Pesko et al. (2016), who studied and found no effects on marijuana use, prior work has mainly focused on cigarette smoking.

3. Conceptual Framework

The overall effect of e-cigarette MSLA laws on smoking, drinking, and marijuana use⁶ depends on the marginal direct and indirect costs of youth obtaining e-cigarettes. Banning legal sales of e-cigarettes to minors will raise the indirect costs of obtaining the product through added inconvenience and/or associated time delays. It could also increase the direct costs of obtaining the product through additional markups or purchasers having to pay “friends” who can buy the product for them. E-cigarette MSLA laws will therefore raise the full price of e-cigarettes, which are expected to have first-order effects in the form of a decline in e-cigarette consumption. However, the predicted decrease in e-cigarette consumption may be moderated to the extent that retailers do not abide by the law or youth are able to bypass the law through online vendors.

A rise in the indirect or direct costs of purchasing e-cigarettes would also cause a *relative* increase in the cost of e-cigarettes in comparison to conventional cigarettes and other

⁶ For the purpose of this paper, the substances we focus on are conventional cigarettes, alcohol, and marijuana. Ideally, we would want to incorporate e-cigarettes into the basket, but the lack of national datasets with sufficient information on e-cigarette use prevents us from doing so. Nevertheless, we present some preliminary evidence on the effects of e-cigarette MSLA laws on youth e-cigarette use later in the study to help frame our estimates on other substance use.

addictive substances. This increase in relative costs could have spillover second-order effects on the consumption of cigarettes, alcohol, and/or marijuana through complementarity or substitution.

A priori, the effects of e-cigarette MLSA laws on the use of conventional cigarettes, marijuana, and alcohol are ambiguous. One particular mechanism through which the laws may increase smoking is if e-cigarettes are being used for smoking cessation or reduction. Losing access to e-cigarettes could therefore reduce a smoker's propensity to attempt cessation. In fact, many studies have documented the success of e-cigarettes in helping smokers quit (Etter and Bullen, 2011, Brown et al., 2014, Adkison et al., 2013). E-cigarettes could also lead to smoking initiation if they generate nicotine-induced cravings that cigarettes are then able to meet. E-cigarette MLSA laws could also raise youth interest in the motive underlying the legal change and encourage them to search for health information related to e-cigarettes and possibly other substances, which could in turn change their attitudes toward consumption.

The dynamic effects of e-cigarette MLSA laws on smoking, when youth have reached the age limit, are also a priori indeterminate. However, it should be noted that once youth turn 18, they are able to purchase both e-cigarettes and conventional cigarettes legally.⁷ In states that have passed an e-cigarette MLSA law, youth who age out of the laws will therefore experience a decrease in the *relative* cost of obtaining e-cigarettes, which could lead to an increase in e-cigarette use and a decrease in smoking. Hence, once youth are able to purchase e-cigarettes legally, they may substitute from smoking to vaping. However, if youth had turned to smoking when exposed to e-cigarette MLSA laws, the accumulation of the addictive stock of nicotine may make it difficult to cut down on smoking even when they are able to purchase e-cigarettes legally.

Ultimately, the impact of e-cigarette MLSA laws on smoking, drinking, and marijuana use is an empirical question, and one that we explore in this study.

4. Data

⁷ In most cases, youth aged 18 are old enough to legally purchase e-cigarettes and conventional cigarettes except for a few cases where states set the minimum age at 19 or 21.

To study the impact of e-cigarette MLSA laws on youth use of cigarettes, alcohol, and marijuana, we draw on all available waves of the bi-annual national and state Youth Risk Behavior Surveillance System (YRBSS) spanning 1991–2015. The national YRBSS is conducted by the CDC and the state YRBSS is usually administered by state health departments. Many states have authorized the CDC to distribute their data for secondary analyses and for states that did not, we contacted each and received their permission to use the data. The data was limited to states that participated in the survey noting that data in a given year could be withheld from secondary analyses due to sample size constraints.⁸ Appendix Table 1 shows the observation count in each state from 1991 to 2015.

The YRBSS data collection typically starts in March and ends in early June for each state. Standard demographic characteristics are consistently collected and a battery of questions relating to youth risky behaviors such as smoking, drinking, and other drug use is also included in each wave. We identify youth as current smokers, drinkers, or marijuana users using questions in the data and conventional methods in the literature.⁹ To investigate the specific question of whether e-cigarette MLSA laws cause youth to newly initiate smoking, we infer initiation based on a series of responses. We first use a question in the data asking how old the individual was when he/she smoked a whole cigarette for the first time. We use that information to create a binary indicator for smoking initiation if the reported age of first cigarette smoking matches his/her current age at the time of the survey and zero otherwise. For all the following analyses, we restrict the sample to youth with no missing demographic information.

To isolate the *ceteris paribus* relationship between e-cigarette MLSA laws and youth substance use, we control for an extensive set of confounding policy shifts over this period: federal and state cigarette excise taxes, state beer taxes, an index for medical marijuana laws

⁸ A common reason that states do not distribute their data for secondary analyses is that sample size is not large enough to meet the minimum weighting requirement.

⁹ We define being a current smoker using a question “During the past 30 days, on how many days did you smoke cigarettes?” Youth are then defined as current smokers if any days of smoking are reported. Being a current drinker is defined using the question “During the past 30 days, on how many days did you have at least one drink of alcohol?” Being a current binge drinker is defined using the question “During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?” Being a current marijuana user is defined using the question “During the past 30 days, how many times did you use marijuana?”

(MML), state unemployment rates, and the natural logarithm of state per capita income.¹⁰ Our index for MML is created using the law’s three main provisions – overall legislative decision, home cultivation, and medical marijuana dispensary (Anderson et al., 2015, Pacula et al., 2015, Choi et al., 2016). The index equals one when states only grant the legal status of using marijuana for therapeutic purposes but not for home cultivation or marijuana dispensaries. It equals three when all dimensions are allowed. To proxy for anti-smoking sentiment at the state level, we control for an index (with a maximum value of 3) capturing the restrictiveness of indoor smoking in private workplaces in each state. We also account for anti-vaping sentiment by using an indicator for if vaping in private workplaces is banned.¹¹ We do not use e-cigarette taxes as a control because only Minnesota has levied taxes on e-cigarettes over our study period. We also control for zero-tolerance laws to account for a general social perception of teenage drinking at the state level.

Table 1 reports the summary statistics for the variables investigated during our study period. Column 1, 2, and 3 present the means of each variable for the full sample, a subsample of individuals younger than 18, and a subsample of individuals 18 or above, respectively. While four states (Alabama, Alaska, New Jersey, and Utah) set the purchasing age of e-cigarettes at 19 years old during the study period, age in the YRBSS is top-coded at “18 or above” and we are unable to separate out youth who are 19 years of age.¹²

As shown in Table 1, 19% of the sample were current smokers, 20% were marijuana users, 39% were current drinkers, and 23% percent were binge drinkers. The proportion of

¹⁰ The cigarette tax data comes from the CDC STATE System and the beer tax data comes from the National Institute on Alcohol Abuse and Alcoholism (NIAAA). We use the tax rates as of March for both variables to match the period of time over which the survey was conducted. Data for state’s medical marijuana laws come from the National Conference of State Legislatures (NCSL) and National Organization for the Reform of Marijuana Laws (NORML). We obtain state unemployment rates and per capita income from Bureau of Labor Statistics (BLS). Both cigarette and beer taxes are inflation-adjusted to 2005 values using the Consumer Price Index for All Urban Consumers (CPI-U), and we transform the per capital income using a natural logarithm.

¹¹ No partial bans on vaping in private workplaces exist. We have also experimented with including smoke-free air laws in bars and restaurants to further control for state anti-smoking sentiment, which are highly collinear with private workplace laws. Our estimate of the impact of e-cigarette MLSA laws was not materially affected by adding these additional proxy variables for anti-smoking sentiment.

¹² This will result in some individuals “18 and above” being subject to the e-cigarette MLSA laws, that is, some individuals in the control group may be treated. We found that moving these youth into column 2 does not at all change the summary statistics. Based on the 2016 American Community Survey, among current high-school enrollees nationally between the ages of 12-19, only about 2% are aged 19, and only 4.3% (based on the share of the population of the affected states, AK, AL, NJ and UT) of these 19 year olds would be misclassified as being not treated. Hence, any attenuation bias from this misclassification is negligible.

current smokers, drinkers, and marijuana users among those who are 18 or above is significantly higher than that among youth 17 or younger (10, 12, and 6 percentage points higher, respectively). Questions related to youth e-cigarette use are first included in the YRBSS in 2015. These questions indicated that 45% of high-school students have tried e-cigarettes in their lifetime, and 24% are current (past 30-day) vapers.

Figure 1 graphs the trend of youth smoking, drinking, and marijuana use over our study period from a sample restricted to those younger than 18 years of age. We use solid lines to represent states where laws were in place before or during February 2015 and dashed lines to represent states where laws have yet to be implemented. These figures suggest two things; first, the prevalence of youth smoking and drinking consistently declined over the past two decades while youth marijuana use spiked in the early 1990s, then decreased substantially, before trending slightly upwards again. Second, trends within both the treated states (solid line) and the non-treated states (dashed line) have been largely similar, yielding little graphical evidence on the impact of e-cigarette MLSA laws on youth smoking, drinking, or marijuana use. Limited graphical evidence notwithstanding, many confounding factors have not been taken into consideration in these graphical representations. Furthermore, second-order effects on smoking and other substance use may be small and difficult to disentangle from other confounding trends. For this reason, we turn to more rigorous quasi-experimental evidence to investigate the policy effects of e-cigarette MLSA laws on youth use of these substances.

5. Empirical Specification

Our baseline model employs the standard difference-in-differences (DD) framework, exploiting differences in the timing of policy adoption across states to identify the effects of the e-cigarette MLSA laws on youth substance use behaviors. Specifically, we estimate the following reduced-form demand function, relating substance use directly to the e-cigarette MLSA laws.

$$P(DV_{i,s,t} > 0) = \sum_i \Gamma \mathbf{X}_{i,s,t} + \mathbf{b}_1 \text{MLSA}_{s,t} + \mathbf{b}_2 \mathbf{Z}_{s,t} + \gamma_s + \lambda_t [+ \gamma_s t] + \varepsilon_{i,s,t}, (1)$$

In specification (1), $DV_{i,s,t}$ is one of the three indicators for youth substance use at the current time. For instance, when $DV_{i,s,t}$ indicates smoking, $P(DV_{i,s,t} > 0)$ denotes the probability that the youth is a current smoker. Our key variable of interest, $MLSA_{s,t}$, is an indicator for whether the state had an e-cigarette MLSA law in place. To reflect the typical data collection time in YRBSS, this variable is set equal to one if the law was effective by the end of February of that year and all the subsequent time periods and zero otherwise. The parameter of interest is $\mathbf{b}_1$, which captures the average reduced-form effect of e-cigarette MLSA laws on youth smoking, drinking, or marijuana use, including through all reinforcing and/or competing pathways as discussed earlier. The vector $\mathbf{X}_{i,s,t}$ contains a full vector of interactions across youth demographic characteristics, and the vector $\mathbf{Z}_{s,t}$ represents the time-varying, state level policy variables (inflation-adjusted cigarette and beer taxes expressed in dollars, a three-value index for the medical marijuana law, restrictions on vaping and smoking in private workplaces, an indicator for the existence of zero-tolerance laws, state unemployment rate, and the natural log transformed state per capita income). We include state and year fixed effects, denoted by γ_s and λ_t respectively, to account for time-invariant state heterogeneity and unobserved national trends. In some specifications, we also add state-specific linear time trends, denoted by γ_{st} , to account for the unobserved state-level factors, evolving at a linear rate. All specifications are estimated as linear probability models via OLS.¹³ Standard errors are clustered at the state level where the variable of interest varies (Bertrand et al., 2004).

We extend the baseline specification in several ways to address specific issues. First, to examine dynamic impacts of the policy on youth substance use and explicitly assess the parallel trends assumption between the reform and non-reform states, we transform specification (1) into an event study design. In particular, we decompose $MLSA_{s,t}$ in model (1) into $MLSA_{s,-3}$, $MLSA_{s,0}$, and $MLSA_{s,1}$ that capture a series of policy “leads”, or “placebo” laws. $MLSA_{s,-3}$ takes the value of 1 if an e-cigarette MLSA law will be passed, but not within 3 years (0 otherwise). $MLSA_{s,0}$ takes the value of 1 in the year when the law is de facto effective (0 otherwise). $MLSA_{s,1}$ takes the value of 1 if a law has been in effect for one or more years (0 otherwise). Our

¹³ Our results and conclusions are not materially affected if the specification is estimated via logit or probit regression.

omitted category, or the reference group, is an MLSA law coming into effect 1-2 years later. The new specification takes the form:

$$P(DV_{i,s,t} > 0) = \sum_i \Gamma \mathbf{X}_{i,s,t} + \alpha_1 \text{MLSA}_{s,-3} + \alpha_2 \text{MLSA}_{s,0} + \alpha_3 \text{MLSA}_{s,1} + \mathbf{b}_2 \mathbf{Z}_{s,t} + \gamma_s + \lambda_t [+ \gamma_s t] + \varepsilon_{i,s,t} \quad (2)$$

where all other variables besides the MLSA variable are defined as before. The parameter α_2 captures the contemporaneous policy effect on teen substance use and α_3 captures the lagged policy effect one or more years after the law's implementation. Hence, α_1 provides evidence of parallel or differential pre-treatment period time trends. If this coefficient is statistically distinguishable from zero, it would suggest that the treatment and control states had differential trends prior to policy adoption, which may undermine the interpretation of the DD effect as causal. Explicitly controlling for the lead effects as in the event study can also help to partly account for any non-parallel trends.

Second, we build upon the above specifications and assess the margin at which smoking is potentially affected. Specifically, we consider whether, and to what extent, e-cigarette MLSA laws have impacted youth smoking initiation and take-up.

Third, we further assess inter-temporal responses by estimating how being exposed to an e-cigarette MLSA law when underage affects smoking behaviors once youth have aged out and are able to purchase e-cigarettes. We do so by restricting the sample to those who are currently over the e-cigarette MLSA age limit and then follow three approaches.

In the first approach, we construct an indicator (denoted `MLSA_Minor`) that is set equal to one if an e-cigarette MLSA law was effective when the individual was underage and to zero otherwise.¹⁴ For instance, an e-cigarette MLSA law was effective on January 1st, 2013 in the state of New York. Therefore, a youth aged 18 in 2014 from New York would have been exposed to the law in 2013. By the same analogy, a youth aged 18 or 19 in 2015 would have also been exposed to the law two years ago. Based on this construct, restricting the sample to youth who are not currently impacted by the law based on their age, we estimate the following specification:

¹⁴ For states where no e-cigarette MLSA laws were enacted during the study period, this variable also takes on value zero.

$$P(Smk_{i,s,t} > 0) = \sum_i \Gamma \mathbf{X}_{i,s,t} + \mathbf{b}_1 \text{MLSA_Minor} + \mathbf{b}_2 \mathbf{Z}_{s,t} + \gamma_s + \lambda_t [+ \gamma_s t] + \varepsilon_{i,s,t}, (3)$$

where the dependent variable denotes the probability that the youth is a current smoker, and the other variables are as defined above.

Alternately, we use the same sample of those currently aged out of e-cigarette MLSA laws, wherein `MLSA_1Pass` denotes an indicator for whether the e-cigarette MLSA law has been in effect in the youth's state of residence for at least one or more years.¹⁵

$$P(Smk_{i,s,t} > 0) = \sum_i \Gamma \mathbf{X}_{i,s,t} + \mathbf{b}_1 \text{MLSA_1Pass} + \mathbf{b}_2 \mathbf{Z}_{s,t} + \gamma_s + \lambda_t [+ \gamma_s t] + \varepsilon_{i,s,t} (4)$$

Building upon model (4), we further decompose `MLSA_1Pass` into responses to a law that has been in effect for one year and responses to a law that has been in effect for two or more years. In each of these specifications, parameter $\mathbf{b}_1$ captures how youth exposure to the e-cigarette purchase restriction, at any point in time when the youth was underage (model 3) or when the law was passed one or more years ago when the youth was underage (model 4), affects their current smoking behaviors when the youth is no longer a minor.

In alternate specifications, we conduct additional checks to assess heterogeneous responses across gender and race. Finally, we implement a falsification check, assessing effects of the e-cigarette MLSA law on youth who should not be constrained or affected by the policy.

6. Results

A. Effects on Smoking

Table 2 presents estimates of the effects of e-cigarette MLSA laws on youth smoking among those under the age of 18. Panel A reports baseline effects from the difference-in-differences (DD) model specified in Equation (1). Model 1 suggests a 1.3 percentage point increase in smoking participation among youth exposed to an e-cigarette MLSA law, a 7% increase relative to the sample mean. The model utilizes the full sample window from the

¹⁵ Using the same example as above, `MLSA_1Pass` takes on value one in year 2014 and 2015.

YRBSS, spanning 1991-2015. Though maximizing the number of pre-policy periods¹⁶ can reduce the residual variance and improve the precision in estimating pre-policy trends within the DD framework, extending the pre-policy window too far back may introduce additional confounding. We therefore assess the sensitivity of the estimates to alternately restricting the sample window to 2005-2015 (Model 3), 2007-2015 (Model 5), and 2009-2015 (Model 7). The estimates remain quite robust and indicate a 1.0 to 1.1 percentage point increase in the probability of being a current smoker.

While all models control for additional tobacco, alcohol, and marijuana policies, we further control for state-specific linear trends in even-numbered models, in order to capture remaining time-varying state heterogeneity and potential policy endogeneity. The effect magnitudes in even-numbered models range from 0.7 to 1.4 percentage points and generally remain statistically significant. In some cases, standard errors become smaller, which may point to the presence of marked state trends, which once controlled reduces the residual variance (and hence the standard errors). One possible limitation of using state-specific trends is that it reduces the amount of identifying variation, which may be less credible (Neumark et al., 2014). Furthermore, fitting such state-specific linear trends may exacerbate bias, particularly for sample periods and pre-policy windows where trends in smoking (or other substance use) are far from linear. We therefore exercise care as the case warrants. Taking this into consideration, we continue to present models with and without state trends in all subsequent analyses.

Panel B decomposes the timing of the DD effects and presents estimates from a formal event study design. In keeping with the biennial sampling scheme of the YRBSS, these models control for indicators for the full year of policy enactment, 2 or more years post-adoption, 2 or more years pre-adoption (reference category) and 4 or more years pre-adoption. While we report models both with and without state-specific trends for completeness, we emphasize results from the latter. Wolfers (2006) cautions against adding state-specific linear trends in such timing analyses where the policy is modeled as pre-post implementation since such trends

¹⁶ As noted earlier, NJ was the first state to enact an e-cigarette MLSA law in March of 2010.

may confound both the state-specific time-varying unobservable as well as any dynamic effects of the policy itself.¹⁷ Nevertheless, both sets of specifications show largely similar patterns.

The results from the event study design underscore three points. First, e-cigarette MLSA laws appear to have a significant “contemporaneous” effect during the full year of enactment, about 1.3 percentage points on average. Owing to YRBSS’ biennial sampling frame, the enactment year indicator is defined such that it turns on if the policy took effect anytime since March of the previous wave and February of the current year.¹⁸ This ensures that the policy was active for at least 12 months, though it would also pick up some lag in the policy effect for up to 2 years. Second, as the lag increases, the response to policy becomes larger, on the order of 2-3 percentage points. This compounding of the policy effect over time is consistent with an interactive age response. Smoking participation generally increases with age among adolescents; current smoking participation among 16-year-olds is 10.2% compared to 5.0% among 14-year-olds. Hence, an e-cigarette MLSA law in effect when the adolescent was, for instance 14 years of age, would be expected to have a stronger “bite” as he/she ages and becomes more likely to contemplate smoking (or use other forms of tobacco) in the future. Third, the lead effects are generally small and insignificant, providing some validation of the research design and confirming that the policy is orthogonal to pre-adoption trends in smoking.

While our conceptual framework is agnostic about the direction of the effects given the potential for cigarette smoking to either substitute or complement e-cigarette use, the pattern of results that we find – suggesting an increase in smoking participation – is ex post validating when contrasted with unconditional declining trends in youth smoking over the sample period. As shown in Figure 1, unconditional trends suggest a decrease in youth smoking as e-cigarettes entered the market (2007) and e-cigarette MLSA laws proliferated across states (starting in 2010). Thus, if our models are simply reflecting this decline in smoking as states passing more e-cigarette MLSA laws, then the DD effects would have suggested (possibly spuriously) that the laws have reduced youth smoking. However, finding increases in smoking from the policy,

¹⁷ Hence, it is not surprising that, in disentangling the timing of the effects and separating out the lead vs. lagged responses, the estimates are more sensitive to the inclusion of state-specific trends.

¹⁸ For instance, for respondents interviewed in the 2013 YRBSS, the enactment indicator would equal 1 in 2013 if the state they lived in adopted the policy anytime between March 2011 and February 2013.

despite this declining secular trend, adds some confidence that these estimates are not just reflecting the falling smoking rates.

Estimates in Table 2 suggest that when faced with e-cigarette MLSA laws, underage youth may be more likely to turn to cigarette smoking. This may *prima facie* seem counter-intuitive since they are also restricted from purchasing cigarettes; hence, it would appear that underage youth are turning from one restricted substance to another. However, since all youth face purchase restrictions for cigarettes over the sample period, the implementation of e-cigarette MLSA laws would increase the *relative* costs of accessing e-cigarettes (relative to cigarettes), affecting the demand for these substances. Because cigarettes have been in the market for a long time, most youth who smoke may have found alternative ways to bypass the purchase restrictions and obtain their cigarettes through secondary sources, such as “bumming” or borrowing from a friend or adult (Katzman et al., 2007, Hansen et al., 2013).¹⁹ Thus, it is conceivable that these youth are increasing their participation in the secondary cigarette market when purchasing e-cigarettes is prohibited. The secondary market for e-cigarettes, however, may be less well-developed, particularly when recent estimates suggest that only 3.7% of adults vape (Schoenborn and Gindi, 2015). That said, adults may be a less reliable source of e-cigarettes for teenagers in secondary markets than cigarettes.²⁰

In Table 3, we evaluate whether an increase in smoking persists after youth are no longer constrained by the purchasing restrictions. Thus, all models are estimated for youth who have aged out of the e-cigarette MLSA laws.²¹ For models reported in Panel A, we define an indicator for whether a youth was exposed to an e-cigarette MLSA law at any time while he/she

¹⁹ A dollar increase in cigarette taxes is estimated to decrease the probability of youth getting cigarettes through a secondary market by 5 or 6 percent, but cigarette taxes had little impact on youth obtaining cigarettes through borrowing or taking from a store or family member. This may suggest that they have alternative ways to bypass the rising costs of cigarettes.

²⁰ See <https://www.cdc.gov/nchs/products/databriefs/db217.htm>. Furthermore, while it may be relatively easier for a youth to borrow or “bum” a combustible cigarette from a friend or adult, which by definition is disposed after use, the long-lasting properties of e-cigarettes (e.g. even one disposable e-cigarette can last up to 400 puffs or equivalent to one pack of cigarettes) makes it more difficult to borrow or bum from another user.

²¹ Age in the YRBSS is top-coded as 18 or above and four states (AL, AK, NJ, and UT) set the age for legally purchasing e-cigarettes at 19. We restrict the sample to youth with age top-coded as 18 or above, which may still include a few who are not old enough to buy e-cigarettes. We thus ran the same model by further excluding these four states. Our results for the variable of interest remained virtually the same.

was underage.²² There is little evidence from these specifications to suggest that exposure to an e-cigarette MLSA law when underage is associated with smoking behaviors when he/she has aged out. Models in Panels B and C are more explicit in specifying the timing of underage exposure. Specifically, Panel B separately assesses the effects of being exposed to an e-cigarette MLSA law both one year and two or more years ago (when the youth is below the e-cigarette MLSA age limit) on youth current smoking participation once they aged out of the law. Panel C assesses the combined effects of underage exposure to e-cigarette MLSA laws one or more years prior. Specifications that control for state-specific trends and are limited to shorter pre-policy windows (models 6 and 8) are weakly suggestive of some decline in smoking (about the same magnitude as Table 2 indicated, but in the opposite direction). However, large standard errors make the confidence intervals wide and difficult to rule out nil effects. In any case, we do not find any strong evidence that the increase in smoking persists as youth age out of e-cigarette MLSA laws. These models suggest that any effects on underage smoking, among youth exposed to an e-cigarette MLSA law, fade when they aged out of the law and are able to purchase e-cigarettes legally.²³

The smoking participation margin among adolescents combines first-time smoking, smoking experimentation, regular smoking, and use of multiple tobacco products including cigarettes. Table 4 presents a parallel set of models for smoking initiation to those presented in Table 3 for smoking participation. Panel A reports estimates for the baseline DD specification, and Panel B reports estimates from the event study design. We have restricted the sample to youth who have initiated smoking in the given year and youth who are non-smokers; thus youth who are current smokers but had initiated their smoking habits in prior years are excluded. As noted earlier, a youth is defined as a first-time smoker if his/her age at the time of interview matches the reported age when he/she first tried smoking. These results should be interpreted with care since smoking initiation in the YRBSS is likely coupled with recall errors in

²² Since the YRBSS is not longitudinal, this requires the implicit assumption that the youth has not changed their state of residence. Data from the 2001-2015 American Community Surveys show that, on average, about 1.3% of high-school students ages 14-18 change state of residence from one year to the next. Thus, any measurement error from assuming stable state of residence will be minimal; based on the average inter-state migration rate, only about 5% of 18 year olds may be misclassified when assigning a state of residence to when they were underage.

²³ Most smokers initiate smoking during adolescence, with 16 years of age being the mode among ever-smokers (based on the 2013 National Survey on Drug Use and Health). Hence, accumulation of the addictive smoking stock is still relatively low.

the reported age at which smoking was initiated as well as the mismatch between age and wave year.²⁴ These estimates are generally insignificant and imprecise, though we note that these estimates may be biased downwards from measurement error. At best, they may suggest some positive lagged effects on smoking initiation of about 1 to 2 percentage points, derived from models that control for state-specific linear trends. These magnitudes represent about half of the smoking participation effect identified in Table 2. Thus, the caveats regarding measurement error notwithstanding, it appears that the positive effects of e-cigarette MLSA laws on smoking among underage youth depicted Table 2 might have reflected some increase in initiation as well as movement across smoking and vaping in former initiates.²⁵

B. Magnitude of the Smoking Effect

Our estimates thus far suggest that when faced with e-cigarette MLSA laws, underage youth may be more likely to turn to cigarette smoking, at least until they age out of these laws. Models in Table 2 suggest a 1.0 to 1.4 percentage point increase in smoking post-policy adoption, which is consistent with findings reported by Friedman (2015) and Pesko et al. (2016).²⁶ To place this magnitude in context, it should be noted that the DD effect we estimate is an intention-to-treat (ITT) effect. Most adolescents in the population would not be affected by e-cigarette MLSA laws, and thus the estimated reduced-form smoking response is an average across two groups – those who are potentially affected by e-cigarette MLSA laws and those who are not. It is unlikely that e-cigarette MLSA laws would have a direct effect on smoking behaviors, independent of their effect on e-cigarette use. If e-cigarette MLSA laws had no effect on e-cigarette use, we should expect no effects on other substance use behaviors as well.

²⁴ For instance, a 15-year-old surveyed in 2013 who reported that they initiated smoking at age 15 would be coded as having initiated smoking in 2013. However, the youth may have initiated smoking in 2012 while still 15 years of age.

²⁵ It should be noted that adolescents aged 14-17 who are current smokers are likely to have initiated very recently; hence, any change in the smoking margin for this age group may still reflect initiation, experimentation, and trying out different substances.

²⁶ Both studies find about a one percentage point increase in smoking among underage youth, based on data up to 2013. Our slightly larger estimate (up to 1.4 percentage points in some models) reflect the one additional wave of data (YRBSS spanning up to 2015) in conjunction with the evidence from Table 3 that the lagged policy response is generally larger over time.

Hence, establishing the first-stage effect of how e-cigarette MLSA laws may have impacted youth e-cigarette use can help frame what the maximal effect should be for spillover responses into smoking (and other substance use) given that these individuals represent the affected group. However, estimating effects on e-cigarette use due to these policies has been a challenge because of data limitations; youth-based surveys, including the YRBSS and the MTF, have only recently started asking respondents regarding their e-cigarette use, yielding only one wave of data. Abouk and Adams (2017), for instance, estimate that the e-cigarette MLSA law is associated with a significant 10 percentage point decline in e-cigarette use among high school seniors, which may be an upper bound estimate given that it is based on cross-sectional evidence from only the 2014 MTF wave out of necessity.

The YRBSS started fielding questions on e-cigarette use in the latest 2015 wave. For suggestive evidence, we estimate a similar specification to equation (1) for outcomes related to e-cigarette use (ever use and current use) based only on the 2015 YRBSS.²⁷ Appendix Table 2 suggests that, among underage youth, e-cigarette MLSA laws reduced current use by about 1.2 percentage points (6% decline relative to the sample mean of 21% vaping participation), and ever use (as a proxy for initiation) by about 4.4 percentage points (10% decline relative to the sample mean of 40% ever vaping). Similar to Abouk and Adams (2017), the effects (not shown) are somewhat larger for older adolescents (11th and 12th graders). We previously found evidence that the laws increased youth smoking by 1.0 to 1.4 percentage points, and so we calculate a back-of-the-envelope treatment-on-the-treated (TOT) effect of 0.3 using the law's impact on ever vaping. We use ever vaping for this calculation to better match the longer duration of data available for smoking. In other words, about 1 in 3 youth may have increased their smoking as they reduced their e-cigarette use in response to the e-cigarette MLSA. These estimates should be interpreted with caution and are meant to be suggestive due to the inherent difficulties in obtaining the first-stage effect of the laws on e-cigarette use. Nevertheless, they can prove useful in gauging the credibility of the magnitudes on the second-order effects.

²⁷ Given the single wave of data, we are not able to control for state fixed effects, and year fixed effects are not necessary. Instead, we include census region fixed effects to account for unobserved heterogeneity at this geographic level. Models are saturated with all other state-level policy controls.

C. Effects on Drinking and Marijuana Use

Next we examine whether exposure to e-cigarette MLSA laws has an effect on other substance use behaviors among underage youth. In Table 5, DD estimates are presented separately for current drinking and current binge drinking, showing little evidence of any meaningful or consistent effect on alcohol use, though these average effects may mask heterogeneity in their timing. Hence, Table 6 presents models for these drinking outcomes based on the event study design. When separating out the lead and lags, the results are more sensitive to the addition of state-specific linear trends. When considering any current alcohol participation two or more years post-policy adoption, estimates that do not control for state trends suggest nil to minor negative effects. The lagged decrease in drinking becomes stronger by 1-3 percentage points (representing 4-9% relative to the sample mean) when state trends are added. For binge drinking, the variance in the estimates is greater from models with and without state trends. Lead effects are generally close to 0 and insignificant in all models, as are the contemporaneous effects. However, there appears to be a suggestively stronger response in binge drinking over time, similar to the patterns observed for smoking participation. Estimates conditional on state trends indicate about a 1.1 to 1.7 percentage point decrease in binge drinking two or more years post policy adoption. However, estimates that do not control for state trends generally show a nil (to weakly positive but insignificant) effect on binge drinking. While there is weak evidence that binge drinking may be negatively affected with some lag, standard errors are large and we cannot reject the null in most cases. Overall, the results in Tables 5 and 6 suggest no effects of e-cigarette MLSA laws on any youth drinking.

Table 7 presents estimates of the effect of e-cigarette MLSA laws on youth current marijuana use. Only one specification, model 8, which is limited to a narrow time window spanning 2009-2015 and which controls for state linear trends, suggests a significant decline in participation. This model indicates there is on average a 0.9 percentage point decline in marijuana use post e-cigarette MLSA laws. This relationship showed a stronger response over time with a 1.4 percentage point decline within 2 years post-enactment, and a 1.8 percentage

point decline two or more years post-enactment. However, these results are not robust enough to change in the sample frame or the omission of state trends.

We note that effects on substances other than tobacco are third-order effects, and so it is not surprising that they are quite weak. Various estimates in Tables 6 and 7 are suggestive of declines in binge drinking and marijuana use in association with e-cigarette MLSA laws, though the weight of the evidence confirms that the effects are expectedly quite small or nil. Hence, while our results suggest that restricting the purchase of e-cigarettes among underage youth may have spilled over into higher smoking participation, we find little evidence of additional substitution into drinking or marijuana use.

D. Placebo Checks and Heterogeneous Effects

Given that e-cigarette MLSA laws are by definition binding only for underage youth, this suggests a natural falsification test. The policy should have no causal effect on any addictive behaviors among youth who have aged out and who were not exposed to the policy while underage. That is, even if a state enacted an e-cigarette MLSA law of 18 in 2010, youth aged 18 or older in 2010 (19 years of age or older in 2011; etc.) should not be affected since they were never exposed to the restriction even when they were underage. Table 8 carries out this falsification, defining the sample as youth that have aged out of e-cigarette MLSA laws and were never exposed while underage, for each specification and substance use outcome. All of these estimates, most notably for current smoking participation, which earlier models suggested a significant effect among affected underage youth, are generally statistically insignificant and close to zero in magnitude.²⁸

In Tables 9-12, we assess whether the response in smoking behaviors is different across gender and race. Panel A of Table 9 shows the baseline DD estimate of the effects of an e-cigarette MLSA on current smoking among underage youth, separately for males and females. Panel B shows corresponding estimates from the event study. While the DD effects tend to suggest that males may be more responsive in terms of increasing their smoking participation

²⁸ Only 2 out of the 32 are significant at the 10% level, to be expected within the probability of a Type I error.

when restricted from purchasing e-cigarettes, the event study suggests that these differences may reflect the timing of the effects. The short-term response (within two years of policy enactment) tends to be slightly higher for males relative to females. This may suggest that the average age of smoking initiation for female smokers is almost one year higher than for male smokers. Over an extended period of time (two or more years post-enactment) both genders appear to be equally responsive and we find significant lagged increases in smoking participation among both males and females.

When we stratify by race (white vs. non-white) in Table 10, the effects tend to be larger among non-whites, both in terms of the absolute magnitude as well as the relative increase since baseline smoking rates tend to be lower among non-white adolescents. In the event study results for white youth, an e-cigarette MLSA law is associated with at most a 1-2 percentage point increase in current smoking within 2 years of enactment and a 2-4 percentage point increase 2 or more years post-enactment. These findings can be compared to a 2-3 percentage point increase in the short-term and about a 3-5 percentage point increase over the longer term for non-white youth. Similar to females, some of this differential pattern may be related to a higher mean age of smoking initiation among non-white youth. The differential policy impact on youth smoking between white and non-white may seem puzzling since white youth tend to use e-cigarettes at a higher rate than non-white youth and one may expect the e-cigarette MLSA laws to be more binding on white youth. We therefore further decompose the non-white sample into African American, Hispanic, and Other races and see if the policy impact was clustered among Hispanic youth who are also likely to use e-cigarettes at a higher rate.²⁹ Appendix Table 3 confirms that Hispanic youth and other race are much more likely to increase their smoking in response to e-cigarette MLSA laws than African Americans, confirming our hypothesis. In particular, an e-cigarette MLSA law is associated with a 1.7–3.0 percentage point increase in smoking among Hispanic youth, compared to a 1.4–2.7 percentage point increase in smoking among all non-white youth.

²⁹ According to the 2015 national YRBSS, the prevalence of having ever used e-cigarettes among Hispanic, white, and black youth is 52%, 43%, and 42% respectively. The prevalence of current e-cigarette use among Hispanic, white, and black youth is 26%, 25%, and 18%

Tables 11-12 consider the heterogeneity across gender and race, respectively, for the inter-temporal effect of being exposed to an e-cigarette MLSA law. Using the models depicted in Table 11, we find no consistent differences across males and females, suggesting that exposure to an e-cigarette MLSA law when underage does not appear to have any persistent effects on smoking when the youth is no longer subject to the restrictions. However, with respect to race (Table 12), there appears to be some marked differences in these effects. Our findings show that the increase in current smoking persists even when youth are no longer subject to the age-based e-cigarette purchase restrictions for non-whites, suggesting a 2-3 percentage point increase in smoking participation. In contrast, white adolescents are less likely to smoke if exposed to an e-cigarette MLSA law when underage, once they have met the legal age. The racial difference in the inter-temporal effects mirrors that in the “contemporaneous” response while the youth is underage (Table 10). As non-white youth were significantly more likely to turn to smoking when constrained from purchasing e-cigarettes, we find that this increase persists even when the youth have aged out. However, the increase in smoking does diminish in magnitude compared to the underage effects in Table 10. For white youth, we found smaller increases in smoking when underage, and the results in Table 11 suggest that white youth reduce their smoking participation (presumably substituting to e-cigarettes) when they are no longer constrained from purchasing e-cigarettes.

7. Conclusion:

Economic theory suggests that e-cigarette MLSA laws may reduce e-cigarette use, and we find suggestive evidence of this using a single cross-section of data. Using MTF data, Abouk and Adams (2017) reached a similar conclusion. We also find strong evidence that e-cigarette MLSA laws increased the probability of youth smoking conventional cigarettes by approximately 1 to 1.4 percentage points (8-12 % relative to the mean smoking rate). In particular, youth who have not smoked in the past but initiated their first cigarettes due to the e-cigarette MLSA laws may have contributed to about half of the increase in smoking participation. The other half of the smoking increase may have come from smokers continuing to smoke rather than using e-cigarettes to quit smoking due to the restrictions. The positive

effect of e-cigarette MLSA laws on youth smoking appear to fade once youth have aged out of the law, implying that these youth eliminated their smoking once they could legally buy e-cigarettes again. Our estimates of the effect of the laws on youth smoking are slightly larger than estimates from Friedman (2015) and Pesko et al. (2016), who both found that the laws increased smoking participation by roughly 0.9 percentage points. Our slightly larger estimate reflects two additional years of data in conjunction with the evidence we find that the lagged policy response tends to be stronger than the contemporaneous response. We find some heterogeneity in these average responses based on gender and race. However, our finding that e-cigarette MLSA laws increased cigarette use is different from findings by Abouk and Adams (2017). Given that both our study and Abouk and Adams (2017) use individual-level data, this alone does not appear to account for the differences in results. Given the disagreement in the literature on if e-cigarette MLSA laws increase or decrease smoking, further research exploring this relationship is warranted.

While federal regulations require all states to have a cigarette MLSA law of at least 18, some states have made the age limit for purchasing both cigarettes and e-cigarettes higher. As of the 4th quarter of 2016, four states had an MLSA of 19 and three states (California, D.C., and Hawaii) had MLSA laws of 21. Our results suggest some caution in raising MLSA laws for both cigarettes and e-cigarettes to 21. It may be preferable to raise cigarette MLSA laws to 21, but keep e-cigarette MLSA laws at 18 to encourage youth to quit smoking using e-cigarettes. Preventing them from legally buying e-cigarettes until age 21 may harden preferences for cigarettes and make quitting at that age more difficult.

We find little evidence that e-cigarette MLSA laws impact alcohol or marijuana use. Given that alcohol or marijuana is less related to e-cigarettes than conventional cigarettes, the null results we found for youth use of these two substances are somewhat expected.

In sum, results from our study suggest that it is unclear if e-cigarette MLSA laws have a positive impact on public health. It appears that some portion of the decrease in e-cigarette use, about 30% based on crude TOT estimates, may come at the cost of higher conventional cigarette use, at least in the short-term until the youth has aged out of the restrictions. If e-cigarettes are only 5% as harmful as traditional cigarettes (Tobacco Advisory Group of the Royal

College of Physicians, 2016), then e-cigarette MLSA laws leading to increased smoking may cause greater harm than benefits. However, such net costs need to be balanced against other considerations such as the potential use of e-cigarettes for smoking cessation among older youth and among longer-term smokers.

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Table 1 Summary Statistics

	Full Sample	Youth younger than 18	Youth 18 or above
<i>Youth substance use</i>			
Current smoker	0.19 [0.40]	0.18 [0.39]	0.28 [0.45]
Current drinker	0.39 [0.49]	0.38 [0.48]	0.50 [0.50]
Current binge drinker	0.23 [0.42]	0.22 [0.41]	0.33 [0.47]
Current marijuana user	0.20 [0.40]	0.19 [0.40]	0.25 [0.44]
<i>Youth demographic characteristics</i>			
Females	0.51 [0.50]	0.52 [0.50]	0.45 [0.50]
White	0.58 [0.49]	0.58 [0.49]	0.57 [0.49]
Black	0.15 [0.36]	0.15 [0.36]	0.17 [0.38]
Hispanics	0.14 [0.35]	0.14 [0.35]	0.15 [0.35]
Other races	0.12 [0.33]	0.12 [0.33]	0.11 [0.31]
Grade = 9 th	0.28 [0.45]	0.32 [0.47]	0.01 [0.08]
Grade = 10 th	0.27 [0.44]	0.30 [0.46]	0.01 [0.11]
Grade = 11 th	0.24 [0.43]	0.26 [0.44]	0.11 [0.31]
Grade = 12 th	0.21 [0.41]	0.12 [0.32]	0.87 [0.33]
<i>Merged state-level policies</i>			
E-cigarette MLSA Laws	0.20 [0.40]	0.21 [0.41]	0.15 [0.36]
Cigarette taxes	1.75 [1.04]	1.78 [1.05]	1.59 [0.98]
Beer taxes	0.29 [0.25]	0.29 [0.25]	0.31 [0.26]
Medical Marijuana Law	0.57 [1.04]	0.59 [1.04]	0.50 [1.00]
State unemployment rate	5.92 [1.92]	5.91 [1.91]	5.95 [1.98]
Natural log of per capita income	10.43 [0.19]	10.44 [0.19]	10.40 [0.18]
Indoor cig restrictions in private workplaces	1.60 [1.32]	1.63 [1.32]	1.42 [1.30]
Indoor E-cig restrictions in private workplaces	0.01 [0.09]	0.01 [0.09]	0.01 [0.10]
Zero-tolerance law	0.30 [0.46]	0.30 [0.46]	0.28 [0.45]

Notes: Means and standard deviation (in bracket) are reported. Youth substance use variables are defined in the text. E-cigarette MLSA Laws and cigarette taxes data come from CDC STATE System. Beer taxes come from NIAAA. State unemployment rate and per capita income data come from Bureau of Labor Statistics. Indoor cigarette use restrictions in private workplaces are created as a three-value index ("0"—no restriction; "1"—partial restriction; "2"—full restriction) Indoor e-cig restrictions in private workplaces and zero-tolerance laws are created as indicators. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Figure 1 Youth Substance Use Trends from 1991-2015

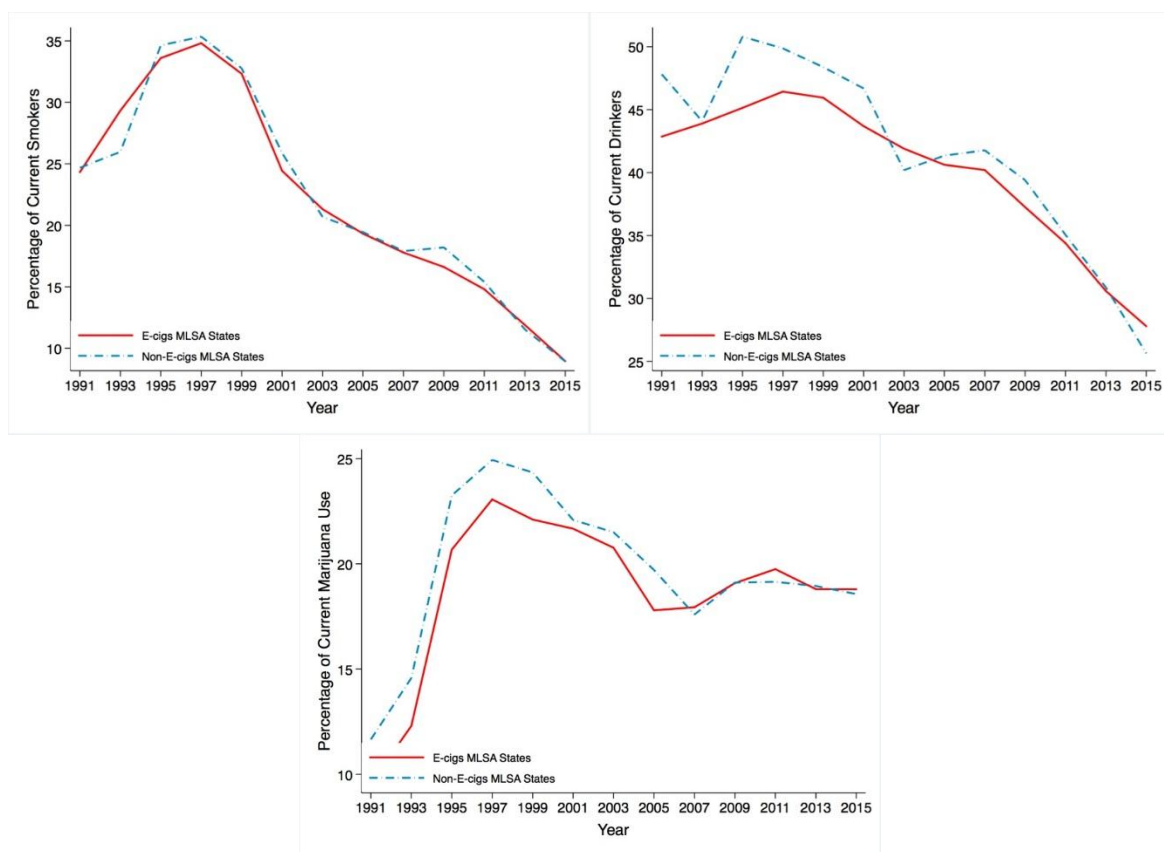


Table 2 – E-cigarette MLSA Laws and Youth Smoking

National and State YRBSS

Panel A: Difference-in-Difference								
DV: <i>Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.013 [*] (0.005)	0.013 [*] (0.006)	0.010 [*] (0.005)	0.014 ^{**} (0.004)	0.010 [*] (0.005)	0.011 ^{**} (0.004)	0.011 [*] (0.005)	0.007 (0.005)
Panel B: Event Study Design								
DV: <i>Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.004 (0.005)	-0.012 [*] (0.005)	-0.004 (0.004)	-0.008 [*] (0.004)	-0.004 (0.004)	-0.006 (0.005)	-0.009 (0.005)	-0.003 (0.006)
E-cig MLSA Law	0.012 [*] (0.005)	0.017 [*] (0.007)	0.011 [*] (0.006)	0.019 ^{***} (0.005)	0.011 [*] (0.006)	0.014 [*] (0.007)	0.014 [*] (0.006)	0.004 (0.007)
E-cig MLSA Law 1yr Post	0.022 [*] (0.010)	0.033 [*] (0.013)	0.023 [*] (0.010)	0.030 [*] (0.011)	0.023 [*] (0.011)	0.017 (0.015)	0.027 [*] (0.012)	-0.006 (0.016)
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015
Mean of DV	0.18	0.18	0.14	0.14	0.13	0.13	0.12	0.12
Observations	1,075,651	1,075,651	724,413	724,413	634,364	634,364	543,510	543,510

Note: Standard errors, clustered at the state level, are in parentheses

^{*} $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

The sample has been restricted to youth younger than 18 years of age.

E-cig MLSA Law is set equal to one if the law was effective before February of that year and all the subsequent years.

Table 3 — Inter-temporal Relationship Between E-cigarette MLSA Laws and Youth Smoking
National and State YRBSS

Panel A:								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA_Minor	0.005 (0.009)	0.009 (0.010)	0.005 (0.009)	0.006 (0.009)	0.004 (0.009)	0.000 (0.010)	0.007 (0.008)	0.004 (0.014)
Panel B:								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA Passed 1 Yr Ago	-0.004 (0.010)	-0.006 (0.014)	-0.004 (0.010)	-0.004 (0.015)	-0.003 (0.011)	-0.015 (0.016)	-0.004 (0.011)	-0.019 (0.015)
MLSA Passed 2 or more Yrs Ago	0.012 (0.013)	0.017 ⁺ (0.009)	0.013 (0.011)	-0.002 (0.010)	0.014 (0.010)	-0.012 (0.013)	0.013 (0.010)	-0.032 ^{**} (0.010)
Panel C:								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA Passed 1 or more Yrs Ago	0.005 (0.010)	0.007 (0.010)	0.006 (0.009)	-0.003 (0.010)	0.007 (0.009)	-0.013 (0.011)	0.005 (0.009)	-0.026 ⁺ (0.011)
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015
Mean of DV	0.28	0.28	0.23	0.23	0.22	0.22	0.22	0.22
Observations	148,593	148,593	89,728	89,728	77,566	77,566	64,854	64,854

Note: Standard errors, clustered at the state level, are in parentheses.

^{**} $p < 0.01$, ^{***} $p < 0.001$

All models include controls for gender, race, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current smoker if he/she reported smoking at least one day in the past 30 days

The sample has been restricted to youth aged 18 or above.

In Panel A, the policy variable “MLSA_Minor” is set equal to one if an e-cigarette MLSA law was effective when the youth was underage, but he/she has now aged out of the restriction.

In Panel B, the policy variable “MLSA Passed 1 Yr Ago” is set equal to one if e-cigarette MLSA laws have been in effect for one year.

In Panel C, the policy variable “MLSA Passed 1 or more Yrs Ago” is set equal to one if e-cigarette MLSA laws have been in effect for one or more years.

Table 4 – E-cigarette MLSA Laws and Youth Smoking Initiation
National and State YRBSS

Panel A: Difference-in-Difference								
<i>DV: Yth is a first-time smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.005 (0.005)	0.003 (0.003)	0.003 (0.004)	0.003 (0.003)	0.003 (0.004)	-0.000 (0.003)	0.004 (0.004)	-0.004 (0.003)
Panel B: Event Study Design								
<i>DV: Yth is a first-time smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.004 (0.003)	-0.006 (0.004)	-0.004 (0.003)	-0.007 ⁺ (0.004)	-0.005 (0.004)	-0.008 ⁺ (0.004)	-0.007 (0.005)	-0.005 (0.005)
E-cig MLSA Law	0.004 (0.004)	0.002 (0.004)	0.003 (0.004)	0.008 ⁺ (0.004)	0.003 (0.005)	0.006 (0.004)	0.004 (0.005)	0.001 (0.004)
E-cig MLSA Law 1yr Post	0.002 (0.006)	0.002 (0.007)	-0.000 (0.006)	0.018 ⁺ (0.008)	0.001 (0.007)	0.019 ⁺ (0.008)	0.005 (0.009)	0.010 (0.008)
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015
Mean of DV	0.10	0.10	0.08	0.08	0.08	0.08	0.08	0.08
Observations	725,311	725,311	530,574	530,574	469,598	469,598	405,568	405,568

Note: Standard errors, clustered at the state level, are in parentheses.

⁺ $p < 0.10$, ^{*} $p < 0.05$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a first time smoker if his/her age at the time of the survey matches his/her age of first-time smoking cigarettes; Youth never smoked a cigarette are coded zero and youth who initiated smoking when he/she was younger than the time of the survey were excluded. Age≤12 and ≥18 are dropped due to perfect collinearity.

Table 5 – E-cigarette MLSA Laws and Youth Drinking (DD)
National and State YRBSS

<i>DV: Yth is a current drinker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.014 [*] (0.006)	-0.003 (0.008)	0.004 (0.007)	0.002 (0.008)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)	-0.002 (0.007)
Mean of DV	0.38	0.38	0.34	0.34	0.33	0.33	0.31	0.31
<i>DV: Yth is a binge drinker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.015 ^{**} (0.004)	-0.001 (0.004)	0.007 (0.005)	0.002 (0.005)	0.004 (0.004)	0.001 (0.004)	0.005 (0.004)	-0.002 (0.005)
Mean of DV	0.22	0.22	0.19	0.19	0.19	0.19	0.18	0.18
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015
Observations	1,034,886	1,034,886	683,964	683,964	594,461	594,461	507,232	507,232

Note: Standard errors, clustered at the state level, are in parentheses

^{*} $p < 0.05$, ^{**} $p < 0.01$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current drinker if he/she reported drinking at least on day in the past 30 days

Youth is defined as a current binge drinker if he/she, in at least 1 day of the past 30 days, drank 5 or more drinks of alcohol in a row within a couple of hours

The sample has been restricted to youth younger than 18 years of age

Table 6 – E-cigarette MLSA Laws and Youth Drinking (Event Study Design)
National and State YRBSS

<i>DV: Yth is a current drinker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.019** (0.006)	-0.009 (0.006)	-0.009 (0.006)	-0.009 (0.009)	-0.008 (0.007)	-0.005 (0.009)	-0.012 (0.009)	-0.019* (0.010)
E-cig MLSA Law	0.012* (0.006)	-0.006 (0.007)	0.003 (0.007)	-0.001 (0.009)	0.001 (0.007)	-0.002 (0.010)	0.002 (0.008)	0.006 (0.007)
E-cig MLSA Law 1yr Post	0.014 (0.008)	-0.025* (0.012)	-0.006 (0.011)	-0.014 (0.020)	-0.009 (0.012)	-0.014 (0.021)	-0.003 (0.014)	0.012 (0.016)
Mean of DV	0.38	0.38	0.34	0.34	0.33	0.33	0.31	0.31
<i>DV: Yth is a binge drinker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.012* (0.005)	-0.006 (0.004)	-0.005 (0.005)	-0.003 (0.006)	-0.004 (0.006)	0.002 (0.007)	-0.006 (0.007)	-0.001 (0.007)
E-cig MLSA Law	0.014** (0.004)	-0.002 (0.004)	0.007 (0.005)	-0.001 (0.006)	0.005 (0.005)	-0.004 (0.006)	0.006 (0.005)	-0.006 (0.006)
E-cig MLSA Law 1yr Post	0.024*** (0.006)	-0.011 (0.007)	0.011 (0.009)	-0.012 (0.014)	0.007 (0.008)	-0.016 (0.014)	0.011 (0.009)	-0.017 (0.013)
Mean of DV	0.22	0.22	0.19	0.19	0.19	0.19	0.18	0.18
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015
Observations	1,034,886	1,034,886	683,964	683,964	594,461	594,461	507,232	507,232

Note: Standard errors, clustered at the state level, are in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current drinker if he/she reported drinking at least on day in the past 30 days

Youth is defined as a current binge drinker if he/she, in at least 1 day of the past 30 days, drank 5 or more drinks of alcohol in a row within a couple of hours

The sample has been restricted to youth younger than 18 years of age

Table 7 – E-cigarette MLSA Laws and Youth Marijuana Use

National and State YRBSS

Panel A: Difference-in-Difference								
DV: <i>Yth is a current MJ user</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	-0.004 (0.005)	-0.001 (0.006)	-0.004 (0.004)	-0.006 (0.005)	-0.004 (0.005)	-0.004 (0.005)	-0.004 (0.004)	-0.009 ⁺ (0.005)
Panel B: Event Study Design								
DV: <i>Yth is a current MJ user</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.009 ⁺ (0.004)	-0.011 (0.006)	-0.005 (0.003)	-0.002 (0.006)	-0.004 (0.004)	-0.006 (0.006)	-0.006 (0.005)	0.005 (0.005)
E-cig MLSA Law	-0.005 (0.004)	0.003 (0.007)	-0.004 (0.004)	-0.006 (0.008)	-0.003 (0.004)	0.002 (0.007)	-0.002 (0.005)	-0.014 ⁺ (0.008)
E-cig MLSA Law 1yr Post	0.007 (0.007)	0.018 (0.014)	0.006 (0.007)	-0.006 (0.018)	0.005 (0.008)	0.015 (0.015)	0.007 (0.008)	-0.018 (0.016)
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015
Mean of DV	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Observations	1,096,105	1,096,105	731,805	731,805	639,619	639,619	547,068	547,068

Note: Standard errors, clustered at the state level, are in parentheses.

⁺ $p < 0.10$, * $p < 0.05$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current marijuana user if he/she reported using marijuana at least once in the past 30 days

The sample has been restricted to youth younger than 18 years of age

Table 8 – Falsification Tests

National and State YRBSS

Panel A:								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.011 (0.009)	0.020 ⁺ (0.010)	0.011 (0.009)	0.011 (0.009)	0.010 (0.009)	0.005 (0.009)	0.011 (0.008)	0.007 (0.015)
Mean of DV	0.28	0.28	0.23	0.23	0.22	0.22	0.22	0.22
N	148,593	148,593	89,728	89,728	77,566	77,566	64,854	64,854
Panel B:								
DV: Yth is a current drinker	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.012 (0.012)	-0.014 (0.013)	-0.006 (0.013)	-0.017 (0.016)	-0.008 (0.013)	-0.013 (0.016)	-0.011 (0.014)	-0.019 (0.016)
Mean of DV	0.50	0.50	0.47	0.47	0.46	0.46	0.45	0.45
N	114,634	114,634	72,924	72,924	62,881	62,881	52,542	52,542
Panel C:								
DV: Yth is a binge drinker	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.018 ⁺ (0.009)	-0.008 (0.009)	-0.001 (0.009)	-0.011 (0.010)	-0.004 (0.009)	-0.010 (0.010)	-0.005 (0.009)	-0.014 (0.009)
Mean of DV	0.34	0.34	0.31	0.31	0.30	0.30	0.29	0.29
N	114,634	114,634	72,924	72,924	62,881	62,881	52,542	52,542
Panel D:								
DV: Yth is a marijuana user	1	2	3	4	5	6	7	8
E-cig MLSA Law	-0.002 (0.010)	-0.003 (0.011)	-0.005 (0.010)	-0.014 (0.012)	-0.009 (0.010)	-0.009 (0.012)	-0.010 (0.009)	-0.016 (0.011)
Mean of DV	0.25	0.25	0.26	0.26	0.26	0.26	0.27	0.27
N	113,482	113,482	74,812	74,812	65,032	65,032	54,457	54,457
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015

Note: Standard errors, clustered at the state level, are in parentheses

⁺ $p < 0.10$

All models include controls for gender, race, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

The sample has been restricted to youth aged 18 or above.

Table 9 – E-cigarette MLSA Laws and Youth Smoking (stratified by gender)

National and State YRBSS

Panel A: Difference-in-Difference								
<i>Male</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.016** (0.006)	0.018** (0.005)	0.013* (0.006)	0.018** (0.005)	0.012* (0.006)	0.017** (0.006)	0.016** (0.006)	0.015* (0.007)
Mean of DV	0.19	0.19	0.15	0.15	0.14	0.14	0.14	0.14
<i>Female</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.009* (0.006)	0.008 (0.006)	0.008 (0.005)	0.009* (0.004)	0.007 (0.006)	0.006 (0.005)	0.007 (0.005)	0.001 (0.004)
Mean of DV	0.18	0.18	0.13	0.13	0.12	0.12	0.12	0.12
Panel B: Event Study Design								
<i>Male</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.002 (0.005)	-0.010* (0.006)	-0.002 (0.004)	-0.004 (0.005)	-0.001 (0.004)	-0.001 (0.006)	-0.006 (0.006)	0.002 (0.006)
E-cig MLSA Law	0.016* (0.006)	0.021** (0.007)	0.014* (0.007)	0.021** (0.007)	0.014* (0.007)	0.016* (0.008)	0.018* (0.007)	0.008 (0.008)
E-cig MLSA Law 1yr Post	0.026* (0.010)	0.035** (0.012)	0.024* (0.012)	0.026* (0.015)	0.022* (0.012)	0.014 (0.019)	0.029* (0.013)	-0.009 (0.018)
Mean of DV	0.19	0.19	0.15	0.15	0.14	0.14	0.14	0.14
<i>Female</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.007 (0.005)	-0.014* (0.005)	-0.006* (0.004)	-0.012* (0.005)	-0.007 (0.004)	-0.010* (0.006)	-0.011* (0.006)	-0.008 (0.006)
E-cig MLSA Law	0.009 (0.005)	0.012 (0.008)	0.009 (0.006)	0.017** (0.006)	0.009 (0.006)	0.011 (0.007)	0.011 (0.006)	0.001 (0.008)
E-cig MLSA Law 1yr Post	0.019* (0.011)	0.029* (0.014)	0.022* (0.010)	0.033* (0.013)	0.023* (0.011)	0.019 (0.015)	0.025* (0.013)	-0.003 (0.017)
Mean of DV	0.18	0.18	0.13	0.13	0.12	0.12	0.12	0.12
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015

Note: Standard errors, clustered at the state level, are in parentheses

* $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current smoker if he/she reported smoking at least one day in the past 30 days

The sample has been restricted to youth younger than 18 years of age.

Table 10 – E-cigarette MLSA Laws and Youth Smoking (stratified by race)

National and State YRBSS

Panel A: Difference-in-Difference								
<i>White</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.004 (0.007)	0.003 (0.006)	-0.000 (0.006)	0.009 ⁺ (0.005)	-0.001 (0.006)	0.007 (0.006)	0.001 (0.005)	0.001 (0.006)
Mean of DV	0.21	0.21	0.16	0.16	0.15	0.15	0.14	0.14
<i>Non-white</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.027 ^{**} (0.008)	0.020 ^{***} (0.005)	0.024 ^{***} (0.006)	0.018 ^{***} (0.005)	0.023 ^{***} (0.006)	0.016 ^{**} (0.005)	0.024 ^{***} (0.006)	0.014 ^{**} (0.005)
Mean of DV	0.15	0.15	0.12	0.12	0.11	0.11	0.11	0.11
Panel B: Event Study Design								
<i>White</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.006 (0.006)	-0.010 ⁺ (0.005)	-0.006 (0.004)	-0.012 ⁺ (0.005)	-0.007 ⁺ (0.004)	-0.013 ⁺ (0.006)	-0.006 (0.004)	-0.007 (0.006)
E-cig MLSA Law	0.003 (0.007)	0.006 (0.007)	0.001 (0.006)	0.018 ^{**} (0.006)	0.001 (0.006)	0.015 ⁺ (0.007)	0.002 (0.006)	0.001 (0.010)
E-cig MLSA Law 1yr Post	0.010 (0.011)	0.020 (0.013)	0.008 (0.009)	0.037 ^{**} (0.012)	0.009 (0.010)	0.029 ⁺ (0.016)	0.007 (0.011)	-0.004 (0.020)
Mean of DV	0.21	0.21	0.16	0.16	0.15	0.15	0.14	0.14
<i>Non-white</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law 3yr Prior	-0.003 (0.007)	-0.010 ⁺ (0.006)	-0.003 (0.006)	-0.003 (0.006)	-0.002 (0.006)	0.001 (0.006)	-0.010 (0.007)	-0.003 (0.007)
E-cig MLSA Law	0.027 ^{**} (0.008)	0.025 ^{***} (0.005)	0.026 ^{***} (0.007)	0.020 ⁺ (0.008)	0.025 ^{***} (0.007)	0.013 ⁺ (0.008)	0.029 ^{***} (0.006)	0.012 ⁺ (0.007)
E-cig MLSA Law 1yr Post	0.040 ⁺ (0.017)	0.044 ^{***} (0.010)	0.042 ^{**} (0.013)	0.024 (0.017)	0.040 ^{**} (0.013)	0.008 (0.017)	0.049 ^{***} (0.013)	0.004 (0.017)
Mean of DV	0.15	0.15	0.12	0.12	0.11	0.11	0.11	0.11
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015

Note: Standard errors, clustered at the state level, are in parentheses

⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current smoker if he/she reported smoking at least one day in the past 30 days

The sample has been restricted to youth younger than 18 years of age.

Table 11 — Inter-temporal Relationship Between E-cigarette MLSA Laws and Youth Smoking (stratified by gender)

National and State YRBSS

Panel A:								
Male								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA_Minor	0.003 (0.010)	0.009 (0.012)	0.002 (0.011)	0.008 (0.013)	0.004 (0.011)	-0.005 (0.014)	0.008 (0.010)	-0.002 (0.019)
Female								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA_Minor	0.008 (0.012)	0.009 (0.012)	0.009 (0.011)	0.004 (0.011)	0.005 (0.011)	0.007 (0.012)	0.006 (0.010)	0.011 (0.013)
Panel B:								
Male								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA Passed 1 Yr Ago	-0.006 (0.015)	-0.017 (0.019)	-0.010 (0.015)	-0.013 (0.022)	-0.007 (0.016)	-0.033 (0.023)	-0.009 (0.017)	-0.044 ⁺ (0.026)
Female								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA Passed 1 Yr Ago	-0.000 (0.014)	0.006 (0.015)	0.003 (0.012)	0.008 (0.019)	0.003 (0.012)	0.007 (0.022)	0.001 (0.013)	0.014 (0.018)
Panel C:								
Male								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA Passed 1 or more Yrs Ago	0.001 (0.011)	0.000 (0.012)	-0.001 (0.011)	-0.007 (0.015)	0.002 (0.011)	-0.025 (0.017)	0.003 (0.011)	-0.039 ⁺ (0.017)
Female								
DV: Yth is a current smoker	1	2	3	4	5	6	7	8
MLSA Passed 1 or more Yrs Ago	0.010 (0.013)	0.014 (0.011)	0.015 (0.011)	0.004 (0.013)	0.013 (0.011)	0.001 (0.014)	0.010 (0.011)	-0.010 (0.014)
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015

Note: Standard errors, clustered at the state level, are in parentheses.

⁺ $p < 0.10$, * $p < 0.05$

All models include controls for gender, race, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current smoker if he/she reported smoking at least one day in the past 30 days

The sample has been restricted to youth aged 18 or above.

Table 12 — Inter-temporal Relationship Between E-cigarette MLSA Laws and Youth Smoking (stratified by race)

National and State YRBSS

Panel A:								
<i>White</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
MLSA_Minor	-0.004 (0.013)	0.001 (0.014)	-0.007 (0.013)	-0.005 (0.012)	-0.008 (0.013)	-0.010 (0.012)	-0.007 (0.012)	-0.018 (0.016)
<i>Non-white</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
MLSA_Minor	0.019 ⁺ (0.011)	0.025 ⁺ (0.013)	0.022 ⁺ (0.011)	0.018 (0.011)	0.020 ⁺ (0.011)	0.018 (0.012)	0.022 ⁺ (0.011)	0.028 ⁺ (0.014)
Panel B:								
<i>White</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
MLSA Passed 1 Yr Ago	-0.013 (0.018)	-0.026 (0.023)	-0.018 (0.019)	-0.029 (0.020)	-0.017 (0.019)	-0.037 ⁺ (0.021)	-0.017 (0.019)	-0.060 ^{**} (0.019)
<i>Non-white</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
MLSA Passed 1 Yr Ago	0.016 (0.014)	0.022 (0.015)	0.018 (0.013)	0.019 (0.017)	0.019 (0.013)	0.007 (0.017)	0.014 (0.012)	0.027 (0.021)
Panel C:								
<i>White</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
MLSA Passed 1 or more Yrs Ago	-0.006 (0.013)	-0.007 (0.013)	-0.007 (0.012)	-0.016 (0.012)	-0.005 (0.012)	-0.030 ⁺ (0.014)	-0.005 (0.012)	-0.051 ^{***} (0.014)
<i>Non-white</i>								
<i>DV: Yth is a current smoker</i>	1	2	3	4	5	6	7	8
MLSA Passed 1 or more Yrs Ago	0.021 ⁺ (0.011)	0.026 ⁺ (0.013)	0.023 ⁺ (0.010)	0.002 (0.015)	0.022 ⁺ (0.011)	0.001 (0.015)	0.017 (0.011)	0.003 (0.018)
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015

Note: Standard errors, clustered at the state level, are in parentheses.

⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

All models include controls for gender, race, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current smoker if he/she reported smoking at least one day in the past 30 days

The sample has been restricted to youth aged 18 or above.

Appendix Table 1 National and State YRBSS Observation Counts

State	1991	1993	1995	1997	1999	2001	2003	2005	2007	2009	2011	2013	2015	Total
Alabama	2,444	5,120	3,917	4,421	2,099	1,862	1,721	1,026	483	2,528	1,654	1,845	1,810	30,930
Alaska			1,596				1,439		1,268	1,218	1,279	1,183	1,343	9,326
Arizona		435		1,107	131	408	3,714	3,502	3,545	2,846	3,876	1,744	2,698	24,006
Arkansas		395	2,536	2,336	1,435	1,670	281	1,503	1,979	1,927	1,327	1,802	2,746	19,937
California	1,742	1,974	1,202	1,985	2,479	2,198	1,730	1,553	2,110	2,802	1,877	2,463	5,779	29,894
Colorado	141	259	101	268		658				193	297	304	270	2,491
Connecticut			242	1,887				2,442	1,997	2,319	2,000	2,377	2,429	15,693
Delaware			214		2,131	2,863	3,333	2,633	2,357	2,257	2,421	2,590	2,638	23,437
D.C			508								316			824
Florida	1,177		547	675	863	5,130	5,461	4,982	5,098	5,591	7,409	6,840	6,854	50,627
Geogia	2,728	2,491	445	344	811	486	2,469	3,579	2,744	3,146	2,033	2,278	402	23,956
Hawaii		1,550	1,231	1,382	1,531			1,627	1,148	1,692	4,172	4,467		18,800
Idaho	4,107	3,970				1,843	1,702	1,667	1,384	2,102	1,921	2,090	2,050	22,836
Illinois	416	4,272	3,303		230	440	315	492	2,956	4,432	4,500	3,793	4,022	29,171
Indiana	269					178	2,061	1,682	2,653	1,473	3,062	824	2,057	14,259
Iowa			242	2,284				1,588	1,666		1,513			7,293
Kansas		171		204			340	1,909	1,692	2,196	2,133	2,089		10,734
Kentucky			354	1,455			1,563	3,766	3,842	1,726	1,973	2,257	2,465	19,401
Louisiana			768	6,039	624		691	158	1,299	1,437	1,115	1,063		13,194
Maine		249	1,528	2,060	198	1,525	1,830	1,325	1,267	8,445	9,079	8,343	9,112	44,961
Maryland	214	145		823			261	1,398	1,486	1,590	2,793	51,769	54,356	114,835
Massachusetts		370	274	1,632		255	213	257	718		289		264	4,272
Michigan	766	144	1,110	4,385	3,134	3,864	3,772	3,479	3,723	3,636	4,711	4,627	4,879	42,230
Minnesota		322						95		188		292	745	1,642
Mississippi	479	1,749	1,746	1,827	2,178	2,133	1,471		1,923	1,763	1,846	2,144	2,040	21,299
Missouri	247	183	5,386	1,459	2,175	2,095	1,798	1,963	1,865	1,681	344	1,825	1,594	22,615
Montana		2,489	2,493	2,402	2,820	2,810	2,678	2,987	3,846	1,785	4,022	4,745	4,308	37,385
Nebraska	2,426	3,560					2,913	3,706			3,719	1,824	1,634	19,782
Nevada		2,005	1,507	1,453	1,652	1,676	1,947	1,529	1,729	2,403	207	2,069	1,787	19,964
New Hampshire	252	2,662	2,072				1,298	1,249	1,581	1,450	1,359	1,590	14,310	27,823
New Jersey	454			737	235	2,324	305	1,800	689	2,203	1,730	2,027	208	12,712
New Mexico	3,259	661		280		155	104	5,417	2,780	5,495	5,685	5,325	8,486	37,647
New York	373	491	273	4,043	3,995	309	9,987	9,939	13,688	15,335	13,161	10,409	10,406	92,409
North Carolina		2,712	1,873	339	509	3,191	2,522	4,466	3,975	5,550	3,324	2,171	5,891	36,523
North Dakota			1,509		1,789	1,580	1,649	1,710	1,722	1,767	1,863	1,919	2,064	17,572
Ohio	135	524	553	556	564	224	299	279				158	227	3,519
Oklahoma				223		397	1,366	1,923	2,842	1,397	1,136	1,465	1,934	12,683
Oregon		188				184		268		247				887
Pennsylvania	488	362	671	272	487		316	423	210	1,067	450	264	483	5,493
Rhode Island				1,494	75	1,361	1,775	2,316	2,133	3,106	3,814	2,357	4,004	22,435
South Carolina	6,020	4,619	5,434	6,003	5,313		887	1,567	1,206	1,070	1,437	1,553	1,311	36,420
South Dakota	1,638	1,336	1,177	1,589	1,643	1,596	2,100	1,567	1,577	2,122	1,502	1,273	1,257	20,377
Tennessee		3,735		578	265	611	1,919	1,924	2,182	2,176	2,874	1,847	4,371	22,482
Texas	2,517	1,358	1,198	949	2,715	9,022	2,628	5,821	4,906	4,766	5,841	3,479	1,226	46,426
Utah	4,513	4,338	3,144	1,349	1,479	1,042	1,537	1,710	2,097	1,544	1,657	2,118		26,528
Vermont	141				6,868	6,967	6,184	6,997	5,744	8,190	8,267		20,151	69,509
Virginia	687		64		746		245	349	439	98	1,603	7,776	4,310	16,317
Washington	422	376	83	108		54		101		246	167	195	102	1,854
West Virginia		3,107	2,071	1,808	1,308	261	1,719	1,549	1,598	2,071	2,375	1,753	1,803	21,423
Wisconsin		3,272		1,603	1,855	2,327	2,278	2,593	2,234	3,074	3,615	2,776		25,627
Wyoming			1,674	2,033	1,590	2,684	1,507	2,455	2,174	2,802	2,439	2,924	2,317	24,599
Total	38,055	61,594	53,046	64,392	55,927	66,383	84,328	107,271	108,555	127,152	136,187	171,026	203,143	1,277,059

Appendix Table 2 – Cross-sectional Relationship Between E-cigarette MLSA Laws and Youth Use of E-cigarettes
National and State YRBSS

	Ever used e-cigarettes	Current vapor
E-cig MLSA Law	-0.044** (0.016)	-0.012 (0.015)
Mean of DV	0.40	0.21
Full controls	Yes	Yes
Census Region FEs	Yes	Yes
Year	2015	2015
N	145,950	178,444

Note: Standard errors, clustered at the state level, are in parentheses

** p < 0.01

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current vapor if he/she reported using e-cigarettes at least one day in the past 30 days

The sample has been restricted to youth younger than 18

E-cig MLSA Law is set equal to one if the law was effective before February 2015.

John Tingley

From: Regan Murphy
Sent: Monday, September 25, 2017 12:40 PM
To: John Tingley
Subject: Fwd: Please oppose Tobacco 21

Regan

Begin forwarded message:

From: Melissa Plotnick
Date: September 25, 2017 at 12:21:43 PM CDT
To: Regan Murphy
Subject: Please oppose Tobacco 21
Reply-To:

Dear Mayor Regan Murphy,

I am writing to respectfully urge you to oppose legislation that would raise the age to purchase vapor products and other smoke-free nicotine products to 21-years-old (Tobacco 21). There is very little evidence supporting this policy and no research has been done to confirm its efficacy in areas where Tobacco 21 has been imposed. Generally, support for this policy is predicated on the notion that more prohibition is the best option for protecting the public. But we know from experience that this strategy has grave unintended consequences.

Raising the minimum legal purchase age to 21 is intended to disrupt the supply chain between 18-20-year-olds and young people still in their social circles. But, this policy ignores two very important groups of people; smokers between the ages of 18 and 21 who will lose access to low-risk products like e-cigarettes and snus, and young people who live with parents, guardians, or older siblings who smoke.

The 18-20 age group is still likely to acquire cigarettes because their social group includes people 21 and over. Young people living with smokers will continue being influenced by their family members behavior and they will continue to have easy access to cigarettes in their home.

Perhaps most egregious, by applying the minimum purchase age of 21 to all nicotine containing products, Tobacco 21 laws send the confusing and inaccurate message to smokers that cigarettes and smoke-free products are equally harmful. As a result, parents and older siblings are less likely to switch to a low-risk product.

I look forward to your response on this issue. I, along with my fellow members of CASAA (Consumer Advocates for Smoke-free Alternatives Association), thank you for considering my comments and hope you will oppose misguided attempts to limit adult use of low-risk, smoke-free e-cigarettes.

Regards,

Melissa Plotnick
4127 Co Rd 29
Nisswa, MN 56468

John Tingley

From: Regan Murphy
Sent: Monday, September 25, 2017 10:59 AM
To: John Tingley
Subject: Fwd: Please oppose Tobacco 21

Begin forwarded message:

From: Michelle Martinson
Subject: Please oppose Tobacco 21
Date: September 25, 2017 at 10:18:44 AM CDT
To: Regan Murphy
Reply-To:

Dear Mayor Regan Murphy,

I am writing to respectfully urge you to oppose legislation that would raise the age to purchase vapor products and other smoke-free nicotine products to 21-years-old (Tobacco 21). There is very little evidence supporting this policy and no research has been done to confirm its efficacy in areas where Tobacco 21 has been imposed. Generally, support for this policy is predicated on the notion that more prohibition is the best option for protecting the public. But we know from experience that this strategy has grave unintended consequences.

Raising the minimum legal purchase age to 21 is intended to disrupt the supply chain between 18-20-year-olds and young people still in their social circles. But, this policy ignores two very important groups of people; smokers between the ages of 18 and 21 who will lose access to low-risk products like e-cigarettes and snus, and young people who live with parents, guardians, or older siblings who smoke.

The 18-20 age group is still likely to acquire cigarettes because their social group includes people 21 and over. Young people living with smokers will continue being influenced by their family members behavior and they will continue to have easy access to cigarettes in their home.

Perhaps most egregious, by applying the minimum purchase age of 21 to all nicotine containing products, Tobacco 21 laws send the confusing and inaccurate message to smokers that cigarettes and smoke-free products are equally harmful. As a result, parents and older siblings are less likely to switch to a low-risk product.

I look forward to your response on this issue. I, along with my fellow members of CASAA (Consumer Advocates for Smoke-free Alternatives Association), thank you for considering my comments and hope you will oppose misguided attempts to limit adult use of low-risk, smoke-free e-cigarettes.

Regards,
Michelle Martinson
1940 Roosevelt Dr
Northfield, MN 55057



Robbinsdale City Council
4100 Lakeview Ave N.
Robbinsdale, MN 55422

Dear Mayor Murphy and Members of the City Council:

Tobacco-Free Alliance is a nonprofit organization in the Twin Cities dedicated to reducing tobacco harms by engaging all segments of the community through assessment, education and advocacy. We are committed to reducing health inequities and using the community's strengths to create sustainable change. TFA strongly supports Robbinsdale's efforts to increase the tobacco sales age to 21, to restrict the sale of flavored tobacco to adult-only tobacco shops, and to set a minimum price for cigars at \$2.60 apiece.

Robbinsdale's leadership considering these evidence-based policies to address youth tobacco use is very exciting to see. Tobacco companies strategically target youth and encourage them to smoke and use other tobacco products. The tobacco industry targets youth with their products to ensure that they have lifelong customers. In Minnesota alone, 6,300 people die each year from tobacco use. Further, smoking costs Minnesota more than \$3 billion annually in excess health care costs and \$4.3 billion in lost productivity.

The goals of Robbinsdale's proposed measures are to lower the appeal of tobacco to teens and prevent 13-17 year-olds from ever starting to use tobacco in the first place. Hopefully, bold ordinances like these will prevent another generation from becoming lifelong tobacco users. Thank you for putting the health of your residents above the tobacco industry's profits.

Sincerely,

A handwritten signature in black ink, appearing to read "Elyse Levine Less".

Elyse Levine Less, JD, MPH
Executive Director, Tobacco-Free Alliance

2395 University Avenue W, Suite 304, Saint Paul, MN 55114-1512

Website: www.mntobaccofreealliance.org

John Tingley

From: Marcia Glick
Sent: Monday, September 25, 2017 10:01 AM
To: John Tingley
Subject: FW: Support of proposed tobacco ordinance
Attachments: TFA_LOS_Robbinsdale.pdf

From: Elyse Less
Sent: Monday, September 25, 2017 9:54 AM
To: Regan Murphy; William A. Blonigan; Dan P. Rogan; George B. Selman; Pat Backen; Marcia Glick
Subject: Support of proposed tobacco ordinance

Dear Mayor Murphy and Members of the Robbinsdale City Council:

Attached is Tobacco-Free Alliance's letter of support for the proposed ordinance to increase the tobacco sales age to 21, to restrict the sale of flavored tobacco to adult-only tobacco shops, and to set a minimum price for cigars at \$2.60 apiece.

Thank you for your consideration.

Sincerely,

Elyse Levine Less

--



Elyse Levine Less, JD, MPH
Executive Director
Tobacco-Free Alliance MN
www.mntobaccofreealliance.org

Appendix Table 3 – E-cigarette MLSA Laws and Youth Smoking
(Stratified non-white sample)
National and State YRBSS

Difference-in-Difference (<i>DV: Yth is a current smoker</i>)								
<i>African American</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.013 ⁺ (0.007)	0.007 (0.007)	0.009 (0.008)	0.013 ⁺ (0.007)	0.009 (0.007)	0.014 ⁺ (0.006)	0.010 (0.007)	0.012 ⁺ (0.005)
Mean of DV	0.11	0.11	0.08	0.08	0.07	0.07	0.07	0.07
<i>Hispanic</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.030 ^{***} (0.006)	0.029 ^{***} (0.008)	0.028 ^{***} (0.008)	0.020 ^{**} (0.007)	0.027 ^{**} (0.008)	0.018 ^{**} (0.007)	0.028 ^{***} (0.007)	0.017 ⁺ (0.007)
Mean of DV	0.17	0.17	0.14	0.14	0.13	0.13	0.13	0.13
<i>Other races</i>	1	2	3	4	5	6	7	8
E-cig MLSA Law	0.036 ^{***} (0.009)	0.025 ^{**} (0.008)	0.031 ^{***} (0.009)	0.023 ^{**} (0.009)	0.031 ^{**} (0.010)	0.021 ⁺ (0.008)	0.031 ^{**} (0.010)	0.016 ⁺ (0.008)
Mean of DV	0.18	0.18	0.14	0.14	0.13	0.13	0.12	0.12
Full Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific trend	No	Yes	No	Yes	No	Yes	No	Yes
Time span	1991–2015	1991–2015	2005–2015	2005–2015	2007–2015	2007–2015	2009–2015	2009–2015

Note: Standard errors, clustered at the state level, are in parentheses

⁺ $p < 0.10$, ^{*} $p < 0.05$, ^{**} $p < 0.01$, ^{***} $p < 0.001$

All models include controls for gender, race, age, grade, cigarette and beer taxes, zero tolerance laws, smoke-free air laws, indicator for comprehensive restrictions on e-cigarette use in private work places, state unemployment rate, and natural log of state per capita income. Both cigarette and beer taxes are inflation-adjusted using CPI-U.

Youth is defined as a current smoker if he/she reported smoking at least one day in the past 30 days

The sample has been restricted to youth younger than 18 years of age.

Dear Councilmember Rogan

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

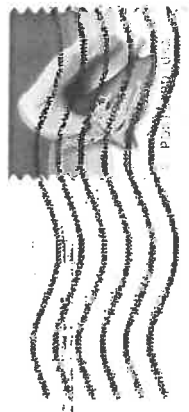
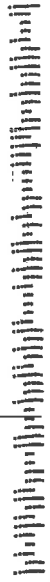
By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

Tom Gacek

Address 3842 Lakeland Ave N

City Robbinsdale Zip 55422



Councilmember Rogan
4100 Lakeview Dr N
Robbinsdale, MN 55422

Dear Mary & Councilmember Bader

The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Sincerely,

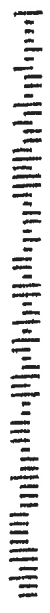
Diane Stoneking

Address:

3605 France Ave N
Robbinsdale, MN
55422



Mayor Murphy & Councilmember Bader
City of Robbinsdale
4100 Lakeview Ave N,
Robbinsdale, MN 55422



Dear MAYOR and Councilmember Blonigan

Tobacco use is still the number one cause of preventable death and disease in Minnesota. ~~Increasing the age gap~~ between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

GARE ALBERN

Address 4112 - 46 AVE N

ROBBINSDALE

City MN Zip 55422



Councilmember Blonigan
4100 Lakeview Ave N,
Robbinsdale, MN 55422

Dear

Mayor & city council

Tobacco use is still the number one cause of preventable death and disease in Minnesota. ~~Increasing the age gap~~ between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

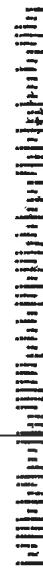
By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,

Elizabeth Fern

Address 4243 Vera Court AVE N

City Robbinsdale Zip 55422



Mayor Murphy and Councilmember
Blonigan
4100 Lakeview Ave N.
Robbinsdale, MN 55422



Dear Councilmember Bill Blonigan

The tobacco industry is targeting our kids with cheap and flavored tobacco. These toxic and addictive products come in candy, fruit and other sweet flavors. By regulating the sale of flavored tobacco products in our community you can help prevent addiction and tobacco-related disease. Please act now to protect our youth.

Sincerely,

R. Smothers

Address:

4004 Quigley Ave N.
Robbinsdale, MN 55422

Councilmember Bill Blonigan
4100 Lakeview Ave N,
Robbinsdale, MN 55422



Dear

Robbinsdale Council

Tobacco use is still the number one cause of preventable death and disease in Minnesota. ~~Increasing the age gap~~ between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

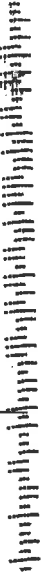
Sincerely,

Colleen Patterson

Address 4516 Grimes Ave. N.

City Robbinsdale 55422

Mayor Murphy
4100 Lakeview Ave N,
Robbinsdale, MN 55422





Dear Mayor & City Council,

The tobacco industry targets our communities and our youth with menthol tobacco. Menthol cools and numbs the throat, disguising the harshness of the smoke. Menthol tobacco is easy to start and even harder to quit. By regulating the sale of menthol tobacco, you can help prevent addiction and tobacco-related disease. Please act now to protect our community and our youth.

Sincerely,
Mayor Murphy and Councilmember Selman
 4100 Lakeview Ave N.
 Robbinsdale, MN 55422

**BEAUTIFUL LIE
 UGLY TRUTH**
 ABOUT MENTHOL TOBACCO

www.BeautifulLieUglyTruth.org



Mayor and Councilmember Backen

to use is still the number one cause of preventable and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure youth don't suffer from a lifetime of tobacco addiction. Increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Mayor Murphy & Councilmember Backen
 4100 Lakeview Ave N,
 Robbinsdale, MN 55422

Sincerely,
Diane Storking
 Address 3605 France Ave N
 City Robbinsdale Zip 55422



Dear B. Blonigan,

Tobacco use is still the number one cause of preventable death and disease in Minnesota. Increasing the age gap between young people and those who can legally buy tobacco will reduce youth access to tobacco and ensure our youth don't suffer from a lifetime of tobacco addiction.

By increasing the tobacco sale age to 21, you can help prevent addiction and tobacco-related diseases. Please act now to protect our community and our youth.

Sincerely,
Rose Racher
 Address 3854 Noble N
Robbinsdale
 City _____ Zip _____



C.M. Blonigan
4100 Lakeview Ave N.
Robbinsdale, MN
55422

