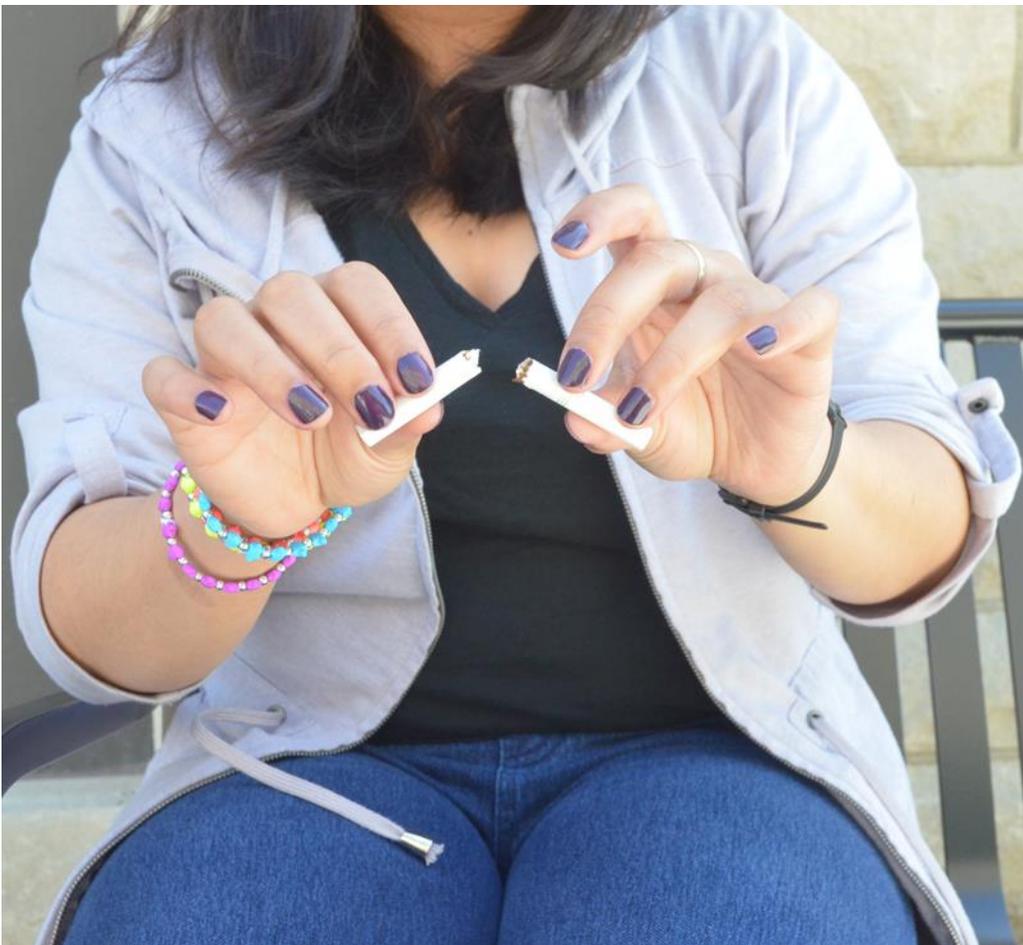


RUNNING THE NUMBERS

Raising the minimum tobacco sales age to 21 will reduce tobacco use and improve public health



THE OHIO STATE UNIVERSITY

COLLEGE OF PUBLIC HEALTH

Micah Berman, JD
Rob Crane, MD
Natalie Hemmerich, JD
Thomas Geist

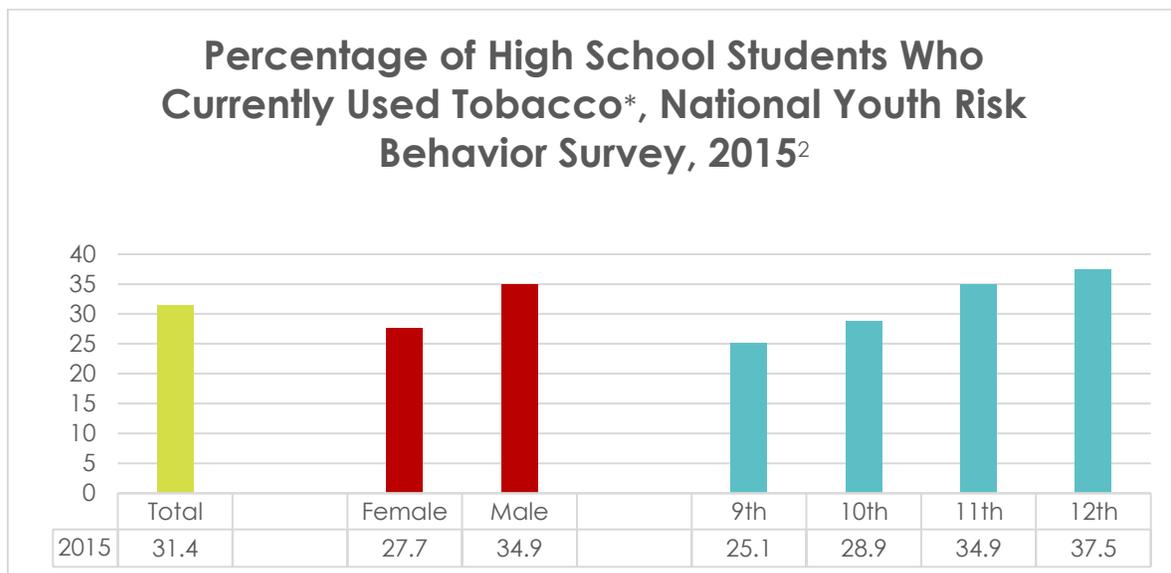
The Ohio State
University College of
Public Health

July 2016

Raising the minimum tobacco sales age to 21 is an effective way to reduce youth tobacco use and prevent lifelong addiction.

For the reasons discussed below, increasing the minimum sales age to 21 is one of the most powerful measures a community can take to protect its youth from lifelong addiction to tobacco.

If current trends continue, 5.6 million American youth alive today will die prematurely from tobacco use.¹ While cigarette smoking has declined among U.S. youth in recent years, overall use of tobacco products, including e-cigarettes and cigars, has increased or remained stable.² In 2015, nearly one in three high school students reported using some form of tobacco (including e-cigarettes) in the past 30 days, and between 2011 and 2015, e-cigarette use among high school students shot up from 1.5% to 16%.^{2,3}



* Cigarette, smokeless tobacco, cigar, or electronic vapor products use on at least 1 day during the 30 days before the survey.

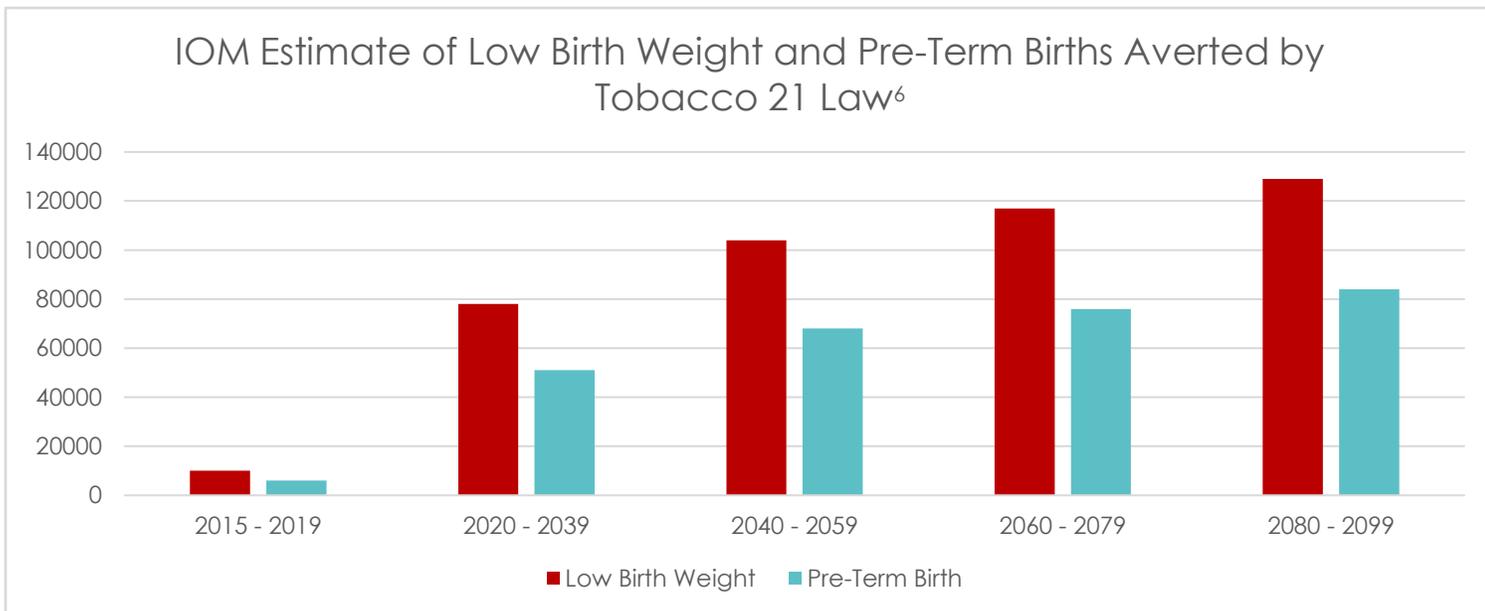
Nearly all adult smokers began smoking by the age of 18 – almost no one starts smoking after 21. The U.S. Surgeon General has referred to tobacco use as a “pediatric epidemic,” because most tobacco use starts in the high school years. Of those who begin smoking as youth, 80 percent will smoke into adulthood because of the powerful effects of nicotine, and one-half of adult smokers will die prematurely from tobacco-related diseases.⁴

Tobacco use in the teenage years has long-term consequences.

The teenage brain is particularly susceptible to nicotine addiction. Beginning smoking at a young age increases the risk of long-term addiction to tobacco and to other drugs and makes quitting more difficult. Lung cancer and other smoking-related diseases are more common among those who begin smoking as teens.⁴

There is a significant link between teen smoking and infant mortality.

The infant mortality rate in the United States is dramatically higher than in many other high-income countries. In fact, the U.S. infant mortality rate is triple the rate of numerous other economically developed countries, including Japan and Sweden.⁵ Smoking during pregnancy causes premature birth, certain birth defects, and other risk factors for infant death.⁴ The Institute of Medicine (IOM) estimates that if the legal purchasing age for tobacco were raised to 21 nationwide, by 2100 there would be approximately 285,000 fewer pre-term births, 438,000 fewer low-birth-weight babies and 4,300 fewer deaths from sudden infant death syndrome (SIDS).⁶



The tobacco industry spends more than \$26 million every day marketing its products in the U.S.

That works out to \$30 per person (children and adults) per year.⁷ The tobacco industry knows that recruiting new “replacement smokers”—primarily youth under the age of 21—is key to its survival,⁸ We need effective policy measures to help counter this barrage of tobacco advertising.

Raising the tobacco sales age can help reduce racial and ethnic disparities.

Studies show that nonwhite young adults, particularly African Americans, are more likely than non-Hispanic white young adults to start smoking after turning 18.⁹ In particular, greater percentages of African Americans report beginning to smoke at ages 18, 19, and 20.¹⁰ Raising the legal purchasing age to 21 may therefore help to reduce smoking-related health disparities.

“Tobacco 21” is a policy approach that is catching on nationally.

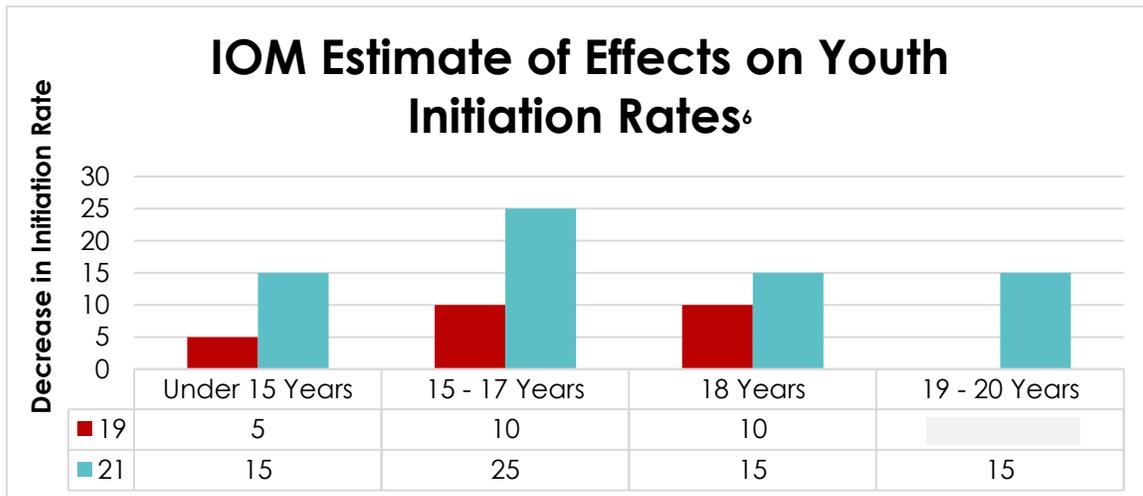
Increasing the tobacco sales age to 21 is a promising strategy that can help to delay tobacco use until after high school – at which point initiation is substantially less likely to occur.¹ Currently, 176 communities across 11 states, as well as the entire states of Hawai’i and California – have acted to protect their kids by raising the tobacco sales age. In addition to Hawai’i and California, states with local Tobacco 21 laws include Arizona, Illinois, Kansas, Massachusetts, Mississippi, Missouri, New Jersey, New York, and Ohio. The majority of these communities have included *all* forms of nicotine delivery (with the exception of FDA-approved cessation therapies) in their legislation.¹¹

THE EVIDENCE

Raising the minimum age for tobacco sales to 21 is a policy option supported by many different types of evidence.

Statistical Projections

The Institute of Medicine projects that raising the legal purchasing age to 21 will meaningfully decrease youth tobacco use. In 2015, the IOM used statistical modeling to estimate that raising the legal purchasing age to 21 would result in a 15-25% decrease in the initiation of tobacco use by adolescents. Significantly, the IOM projected that the impact of increasing the legal purchasing age to 21 would be substantially higher than increasing the legal purchasing age to 19.¹²



The IOM projects that if the legal purchasing age for tobacco were raised to age 21 nationwide, for those born between 2000 and 2019 there would be roughly 223,000 fewer premature deaths, 50,000 fewer deaths from lung cancer, and **4.2 million fewer years of life lost.**⁶

Biological Evidence

A legal age of 18 is out of touch with current scientific data on brain development and addiction in adolescents. Biologically, adolescents are particularly vulnerable to long-term neurological harm. Because of the impact of nicotine on brain development, adolescent tobacco use leads to heavier daily consumption, stronger nicotine addiction, and more difficulty quitting tobacco use later in life. Although previous research had suggested that smoking was linked to mental illness because it served a coping function, emerging research suggests that early tobacco use may predispose youth to several mental disorders or illnesses including depression, anxiety, and schizophrenia.^{13,14,15,16,17,18,19, 20, 21, 22}

Social Factors

Teen smoking is driven by sales to 18- to 20-year-olds. High school students get tobacco primarily from social sources (their friends) – but these social sources purchase them in stores. Currently, 90 percent of those who supply cigarettes to minors are themselves under the age of 21.²³ As the table below illustrates, the majority of underage users obtain their cigarettes from others. Raising the minimum sales age to 21 pushes legal purchasers outside the social circle of most high school students.

During the past 30 days, how did you get your own cigarettes?	Percent of Smokers		
	Age Group		
	9-14	15-17	18+
I bought a pack of cigarettes myself	10.8	20.3	71.1
I had someone else buy a pack of cigarettes for me	31.4	36.6	9.9
I bought cigarettes from another person	14.2	7.6	4.8
I asked someone to give me a cigarette	32.3	34.4	23.8
Someone offered me a cigarette	46.9	41.0	30.8
I took cigarettes from a store or another person	26.2	6.2	5.2
I got cigarettes some other way	40.1	12.0	4.8

Social pressure to smoke and the urge to engage in risky behaviors decreases after the teenage years. Youth who have not fully developed their capacity for self-control should not be put at risk for a deadly, lifelong addiction. If tobacco use can be delayed beyond the age of 21, it is much less likely to occur.¹

A legal age of 21 makes it much more difficult for 16- and 17-year-olds to purchase tobacco. Although most youth tobacco use results from *legal* sales to older youth, illegal sales to 16- and 17-year-olds also contribute to the problem.²⁴ Even if not fully effective at preventing purchases by those under age 21 (no law is perfectly enforced), raising the tobacco sales age to 21 would undoubtedly make it more difficult for younger teens to engage in illegal tobacco purchases.

Alcohol Sales Age

Raising the alcohol sales age to 21 resulted in reduced alcohol use by youth. When most states raised their sales age for alcohol to 21 in the 1980s, alcohol use, daily drinking, and binge drinking all dropped by more than a third among high school seniors. Deaths caused by drunk drivers under the age of 21 also fell significantly.^{25,26,27,28}

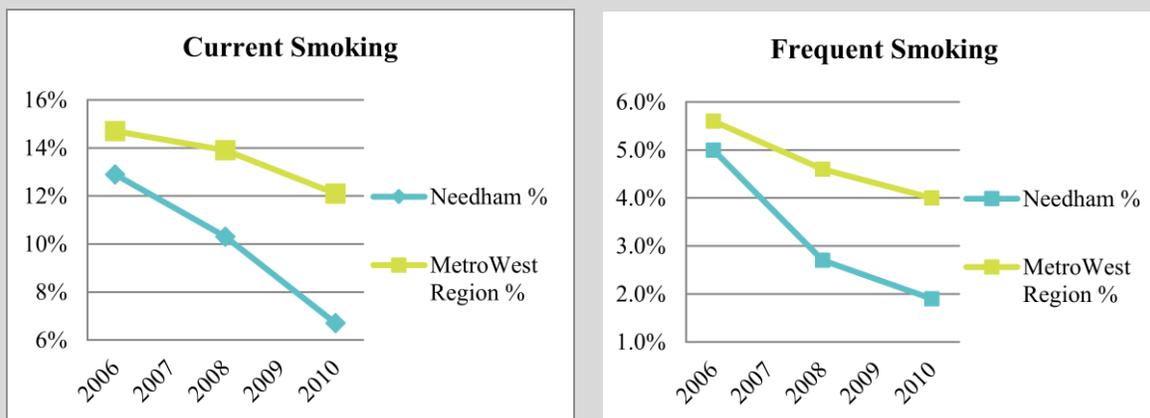
From the Tobacco Industry's Own Files

The tobacco industry knows that Tobacco 21 laws will be effective. In 1986, a Philip Morris strategist wrote in a confidential memo that “[r]aising the legal minimum age for cigarette purchase to 21 could gut our key young adult market (17-20) ... If we completely lost this market segment, it could cause nearly a \$400 million drop in [sales].”²⁹ The industry will lobby against raising the tobacco sales age to 21 because it knows that such laws threaten its ability to recruit new customers. In a Lorillard memo, an executive stated, “Younger adult smokers are the only source of replacement smokers... If younger adults turn away from smoking, the industry must decline.”³⁰

Other Communities

Needham, Massachusetts saw a significant decrease in youth smoking after raising its tobacco sales age to 21. In 2005, Needham, Massachusetts became the first city in the U.S. to increase its tobacco sales age to 21. Data from Needham show a dramatic decline in youth smoking after the law was put in place. Current tobacco use among high school students dropped almost in half, and the rate of frequent tobacco use fell by 62 percent. Tobacco use among high school students fell significantly faster in Needham than in the sixteen surrounding suburbs.³¹

MetroWest Adolescent Health Surveys 2006-2010 – High School Smoking²⁸



The Needham experience suggests that raising the tobacco sales age is effective, even if surrounding communities do not make the same change.

Needham's Tobacco 21 law effectively blocked the social sources that had been providing tobacco to Needham's high school students. Even without similar laws in place in surrounding communities, the law had a dramatic impact.

Addressing Concerns

The economic impact would be minimal. Sales to those under 21 account for only 2 percent of total cigarette sales.³³ Relatively few cigarettes are sold to those under 21, but those cigarettes are the ones that set American teens on a path to lifelong addiction.⁴ Increasing the sales age will have a significant impact on public health, while the impact on tobacco retailers will be minimal. Moreover, raising the tobacco sales age to 21, equal to that of alcohol, will provide clerks with a uniform birth date reference when checking identification.

Sales will not shift to other cities. Opponents claim that the law will be ineffective because people will travel to other cities to purchase tobacco. A large amount of research demonstrates, however, that when customers need to travel a significant distance to obtain tobacco products, they are likely to decrease their use.^{34,35} This is particularly true for youth, who often have limited transportation options.

The minimum age of military service does not equal readiness to enlist in a lifetime of nicotine addiction. Tobacco use is not a right or a privilege; it is an addictive and deadly activity. For the overwhelming majority of smokers, tobacco use is not an “adult choice;” it is the result of an addiction that began when they were in high school or younger. “*If someone is young enough to fight for their country, they should be free from addiction to a deadly drug.*” -Navy Rear Adm. John Fuller³⁶

These concerns raised by the opponents of Tobacco 21 laws echo the unfounded scare tactics used to oppose smoke-free laws in the past. There is no evidence that raising the tobacco sales age to 21 would harm the economy or lead to an increase in illegal cigarette sales.

There are no legal barriers to raising the minimum age to 21. There is nothing natural or unchangeable about the minimum age of 18. The fact that tobacco products are legal for adults does not mean the minimum age cannot be raised. Although federal law prohibits the FDA from requiring a minimum age higher than 18, it clearly permits state and local governments to increase the tobacco sales age.³⁶ (Note, however, that some state laws might limit the authority of local governments to raise the minimum age to 21.³⁷)

Tobacco 21 laws do not represent an expansion of government regulation. Such laws merely update and adjust existing regulations that already set a minimum age for tobacco sales. At the local level, such laws are typically enforced by health inspectors as part of the health code.

Tobacco is not like other products. Cigarettes are the most deadly product sold in America and the only legal product that, when used exactly as intended, will kill up to half of its long-term users.¹ Each year, tobacco use takes more lives than AIDS, automobile accidents, homicides, suicides, alcohol, and illegal drugs combined.³⁸ Unlike other products, such as alcohol, tobacco cannot be used safely in moderation.

Raising the tobacco sales age to 21 does not change anything for current smokers age 21 or older. Raising the tobacco sales age to 21 would protect our youth without changing any laws or regulations that apply to current smokers over the age of 20.

There is overwhelming support for this policy approach. There is broad agreement that we should do everything possible to protect the next generation from tobacco. A 2014 national poll of more than 3000 participants revealed 71% support for raising the minimum age. All demographic groups sampled, including current smokers, strongly endorsed an increase in the sales age to 21. Of the most affected by this policy, respondents aged 18-20 years old, 61.7% supported raising the legal purchase age to 21.³⁹

FINAL POINTS TO CONSIDER

Communities that raise the tobacco sales age to 21 are on the leading edge of the fight against the nation's leading preventable cause of death.

Raising the minimum sales age to 21 also protects youth from newly emerging products such as electronic cigarettes and hookah. Recent survey evidence suggests that high school students are using electronic cigarettes (“e-cigarettes”) and other electronic nicotine products more often than conventional cigarettes.^{2,40} While much is unknown about the health effects of these products, we know they often contain nicotine at addictive levels, in addition to other toxins.⁴¹ Hookah use has also been increasing among youth – from 4.1% in 2011 to 7.2% in 2015.³ Many youth mistakenly believe that hookah use is safe.⁴² To protect our youth from new products that could lead to lifelong addiction, laws that increase the tobacco sales age to 21 should also include e-cigarettes, hookah, and other nicotine products, with an exception for products approved as tobacco cessation aids by the FDA.

A minimum age of 21 for purchasing all nicotine and tobacco products draws a bright policy line that is easy to understand and enforce. This low-cost option is beneficial from both a public health and economic perspective.

Raising the minimum age is a simple and effective way to save lives, while failure to do so endangers our youth.

Micah Berman, JD
Rob Crane, MD
Natalie Hemmerich, JD
Thomas Geist

The Ohio State University
College of Public Health
July 2016

Consider This...

Smoking is costly to our community – in many ways.

Each American taxpayer pays approximately \$1000 per year in state and local taxes that goes toward government expenditures for smoking-related costs.³⁸ The American Lung Association estimates that each pack of cigarettes consumed costs our society \$18.05 in increased health care and work-related expenditures.⁴³ An Ohio State University study demonstrated that an employee who smokes costs his or her employer more than \$5800 per year compared to a non-smoking employee. Those costs include markedly increased absenteeism, reduced productivity, increased health costs, and time lost to smoking breaks.⁴⁴

Many less risky activities have a minimum legal age of 21.

All U.S. states prohibit the sale of alcohol to individuals under 21, and most states with casino gambling set 21 as the minimum gambling age. Those states with legal marijuana use set the minimum age at 21. The difference in minimum sales age cannot be explained on the basis of risk, as tobacco use is far more deadly than these other activities.⁴⁵

Raising the minimum purchasing age to 21 is an effective way to reduce tobacco and protect American youth at minimal cost.

Notations

- ¹U.S. Department of Health and Human Services. The health consequences of smoking—50 years of progress. 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, 2014. Printed with corrections, January 2014.
- ²Centers for Disease Control and Prevention. Youth risk behavior surveillance—United States, 2015. *Morbidity and Mortality Weekly Report*, 65(6). <http://www.cdc.gov/mmwr/volumes/65/ss/ss6506a1.htm?s_cid=ss6506_w>.
- ³Centers for Disease Control and Prevention. Tobacco Use Among Middle and High School Students—United States, 2011–2015. *Morbidity and Mortality Weekly Report*, 65(14):361–7, 2016.
- ⁴U.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. <<http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/exec-summary.pdf>>.
- ⁵World Bank. Mortality Rate, Infant. UN Inter-agency Group for Child Mortality Estimation, IBRD, IDA, 2015. <<http://data.worldbank.org/?display=default>>.
- ⁶IOM (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>>.
- ⁷Federal Trade Commission. Federal Trade Commission Cigarette Report for 2012. Washington: Federal Trade Commission, 2015. <<https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-cigarette-report-2012/150327-2012cigaretterpt.pdf>>.
- ⁸RJ Reynolds. Younger adult smokers: Strategies and opportunities. Legacy Tobacco Documents Library, 1984. <<http://legacy.library.ucsf.edu/tid/fet29d00>>.
- ⁹Freedman KS, Nelson NM, Feldman LL. Smoking initiation among young adults in the United States and Canada, 1998–2010: a systematic review. *Prev Chronic Dis* 2012;9:110037. <<http://dx.doi.org/10.5888/pcd9.110037>>.
- ¹⁰Trinidad DR, Gilpin EA, Lee L, Pierce JP. Has there been a delay in the age of regular smoking onset among African Americans? *Ann Behav Med* 2004;28(3):152–7.
- ¹¹Tobacco 21. List of all tobacco 21 cities. Tobacco21.org, 2015. <<http://tobacco21.org/wp-content/uploads/2014/02/Tobacco-21-Cities-new1.pdf>>.
- ¹²The simulation statistical models used were the Cancer Intervention and Surveillance Modeling Network (CISNET) and the SimSmoke Model, taking into consideration projected trends. IOM (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>>.
- ¹³Adriani W, Macrì S, Pacifici R, Laviola G. Peculiar vulnerability to nicotine oral self-administration in mice during early adolescence. *Neuropsychopharmacology*, 2002;27(2):212–224.
- ¹⁴Counotte DS, Goriounova NA, Moretti M, Smoluch MT, Irth H, Clementi F, Schoffelmeer AN, Mansvelder HD, Smit AB, Gotti C, Spijker S. Adolescent nicotine exposure transiently increases high-affinity nicotinic receptors and modulates inhibitory synaptic transmission in rat medial prefrontal cortex. *FASEB Journal*, 2012;26(5):1810–1820.
- ¹⁵Goriounova NA, Mansvelder HD. Nicotine exposure during adolescence alters the rules for prefrontal cortical synaptic plasticity during adulthood. *Frontiers in Synaptic Neuroscience*, 2012;4.
- ¹⁶Goriounova NA, Mansvelder HD. Nicotine exposure during adolescence leads to short- and long-term changes in spike timing-dependent plasticity in rat prefrontal cortex. *The Journal of Neuroscience*, 2012;32(31): 10484–10493.
- ¹⁷Kawai HD, Kang HA, Metherate R. Heightened nicotinic regulation of auditory cortex during adolescence. *The Journal of Neuroscience*, 2011;31(40):14367–14377.
- ¹⁸Kota D, Robinson SE, Imad Damaj M. Enhanced nicotine reward in adulthood after exposure to nicotine during early adolescence in mice. *Biochemical Pharmacology*, 2009;78(7):873–879.
- ¹⁹Gage S.H, Munafò MR. Rethinking the association between smoking and schizophrenia. *The Lancet Psychiatry*, 2015;2(2):118–119 <[http://doi.org/10.1016/S2215-0366\(14\)00057-1](http://doi.org/10.1016/S2215-0366(14)00057-1)>.
- ²⁰Goriounova NA, Mansvelder HD. Short- and Long-Term Consequences of Nicotine Exposure during Adolescence for Prefrontal Cortex Neuronal Network Function. *Cold Spring Harbor Perspectives in Medicine*, 2012: 2(12). <<http://doi.org/10.1101/cshperspect.a012120>>.
- ²¹Gurillo P, Jauhar S, Murray RM, MacCabe JH. Does tobacco use cause psychosis? Systematic review and meta-analysis. *The Lancet Psychiatry*, 2015;2(8):718–725. <[http://doi.org/10.1016/S2215-0366\(15\)00152-2](http://doi.org/10.1016/S2215-0366(15)00152-2)>.

- ²² Kutlu MG, Parikh V, Gould TJ. Nicotine Addiction and Psychiatric Disorders. *International Review of Neurobiology*, 2015;124: 171–208. <<http://doi.org/10.1016/bs.irn.2015.08.004>>.
- ²³ DiFranza J, Coleman M. Sources of tobacco for youths in communities with strong enforcement of youth access laws. *Tobacco Control*, 2001;10:323-328.
- ²⁴ Winickoff JP, Hartman L, Chen ML, Gottlieb M, Nabi-Burza E, DiFranza JR. Retail impact of raising tobacco sales age to 21 years. *American Journal of Public Health*, 2014;e1-e4. Published online ahead of print. <<http://tobacco21.org/wp-content/uploads/2014/10/Retail-impact-of-raising-tobacco-sales-age-to-21-years.pdf>>.
- ²⁵ Wagenaar AC, Toomey TL. Effects of minimum drinking age laws: Review and analyses of the literature from 1960 to 2000. *Journal of Studies on Alcohol*(14): 206–225, 2002.
- ²⁶ Johnston LD, O'Malley PM., Miech RA, Bachman, JG, Schulenberg, JE. Monitoring the Future national survey results on drug use: 1975-2014: Overview, key findings on adolescent drug use. Ann Arbor: Institute for Social Research, The University of Michigan, 2015.
- ²⁷ Pacific Institute for Research and Evaluation. Impaired driving in the United States. National Highway Traffic Safety Administration. <http://www.nhtsa.gov/people/injury/alcohol/impaired_driving_pg2/US.htm>.
- ²⁸ Johnston LD, O'Malley PM, Bachman JG, Schulenberg, JE. Monitoring the Future national survey results on drug use, 1975–2012: Volume 2, College students and adults ages 19–50. Institute for Social Research, The University of Michigan, 2013.
- ²⁹ Phillip Morris. Discussion draft sociopolitical strategy. Legacy Tobacco Documents Library, 1986. <<http://legacy.library.ucsf.edu/tid/aba84e00>>. Accessed 2015 Feb 1. *See also* RJ Reynolds. Estimated change in industry trend following federal excise tax increase. Legacy Tobacco Documents Library, 1982. <<http://legacy.library.ucsf.edu/tid/tib23d00;jsessionid=211D4CCF0DBD25F9DC2C9BB025239484.tobacco00>>.
- ³⁰ Lorillard. Memo from executive TL Achey to former Lorillard President Curtis Judge re Newport brand, Bates No. TINY0003062. 1978.
- ³¹ Thirteen Years of Tobacco Efforts in Needham. City of Needham. <<http://www.needhamma.gov/DocumentCenter/Home/View/1868>>. Accessed 2015 Feb 1.
- ³² Winickoff JP, Hartman L, Chen ML, Gottlieb M, Nabi-Burza E, DiFranza JR. Retail impact of raising tobacco sales age to 21 years. *American Journal of Public Health*, 2014;e1-e4. Published online ahead of print. <<http://tobacco21.org/wp-content/uploads/2014/10/Retail-impact-of-raising-tobacco-sales-age-to-21-years.pdf>>.
- ³³ Reitzel LR, Cromley EK, Li Y, Cao Y, Dela Mater R, Mazas CA, Cofta-Woerpel L, Cinciripini PM, Wetter DW. The effect of tobacco outlet density and proximity on smoking cessation. *American Journal of Public Health*, 2011;101(2):315-320.
- ³⁴ Chiou L, Muehlegger E. Crossing the line: The effect of cross border cigarette sales on state excise tax revenues. Harvard, 2008. <http://www.hks.harvard.edu/fs/emuehle/Research%20WP/Chiou%20and%20Muehlegger_Feb08.pdf>.
- ³⁵ Fuller J. Young enough to not die from smoking. *Navy Medicine*, 2016. <<http://navymedicine.navylive.dodlive.mil/archives/9815>>.
- ³⁶ 21 U.S.C. § 387f (d)(3)(A)(ii) (2011).
- ³⁷ Berman M. Law and the public's health: Raising the tobacco sales age to 21: Surveying the legal landscape. *Pub Health Reports* 2016: 131(2): 378-381.
- ³⁸ The toll of tobacco in United States. 2015 Jan 8. Campaign for Tobacco-Free Kids. <http://www.tobaccofreekids.org/facts_issues/toll_us/>.
- ³⁹ Winickoff JP, McMillen R, Tanski S, Wilson K, Gottlieb M, Crane R. Public support for raising the age of sale for tobacco to 21 in the United States. *Tob Control*, 2015. Published online ahead of print. <<http://tobaccocontrol.bmj.com/content/early/2015/02/20/tobaccocontrol-2014-052126.full>>.
- ⁴⁰ University of Michigan. E-cigarettes surpass tobacco cigarettes among teens. 2014 Dec 16. Michigan News. <<http://monitoringthefuture.org/pressreleases/14cigpr.pdf>>.
- ⁴¹ Schober W, Szendrei K, Matzen W, Osiander-Fuchs H, Heitmann D, Schettgen T, Jörres RA, Fromme H. Use of electronic cigarettes (e-cigarettes) impairs indoor air quality and increases FeNO levels of e-cigarette consumers. *International Journal of Hygiene and Environmental Health*, 2013;217(6):628-37.
- ⁴² World Health Organization (WHO) Study Group on Tobacco Product Regulation. Waterpipe tobacco smoking: Health effects, research needs, and recommended action by regulators. Geneva: WHO. 2005.
- ⁴³ The American Lung Association. Smoking cessation: the economic benefits. <<http://www.lung.org/stop-smoking/tobacco-control-advocacy/reports-resources/cessation-economic-benefits/states/united-states.html>>.
- ⁴⁴ Berman M, Crane R, Seiber E, Munur M. Estimating the cost of a smoking employee. *Tob Control*, 2014;23:428–433. <<http://ucanr.edu/sites/tobaccofree/files/175136.pdf>>.
- ⁴⁵ Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual Causes of Death in the United States. *JAMA*, 2004;291(10):1238–45.