

Raising the Minimum Legal Sale Age for Tobacco to 21

The Estimated Effect for Minnesota

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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.

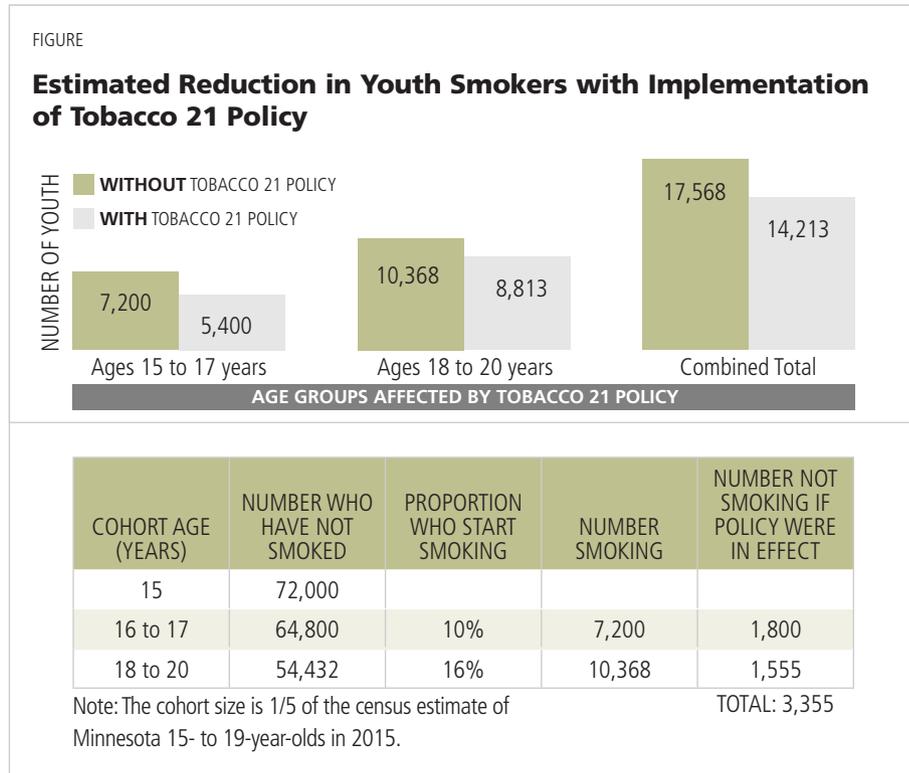
Methods and Assumptions

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,



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**

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