Policies targeting the sale of tobacco and youth smoking behaviour

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This chapter addresses objective one of this thesis, to understand the relationship between age-of-sale laws and youth smoking behaviour. We first provide a summary and interpretation of the findings and corresponding policy implications, and then zoom in on one future policy measure that may be of particular importance for age-of-sale laws: an increase in the tobacco age-of-sale to 21 years old.

**SUMMARY OF FINDINGS**

In part I of this thesis we aimed to understand the relationship between age-of-sale laws and youth smoking behaviour. Chapter 2 consisted of an in-depth realist review of adolescent’s access behaviour in the presence of age-of-sale laws. Two primary mechanisms and several contra-mechanisms were identified. The first mechanism found that when commercial sources of cigarettes become limited as a result of the age-of-sale law, youth experience access to be difficult and therefore reduce their cigarette consumption. This mechanism was mainly influenced by enforcement of the law. We also identified two contra-mechanisms that may undermine this mechanism: 1) when commercial sources become limited, some minors may resort to social sources of cigarettes and continue smoking, and 2) some minors may find ways to circumvent the ban and continue accessing commercial sources cigarettes and thereby continue smoking. Both contra-mechanisms are influenced by contextual factors such as sex, age, and an individual’s smoking network. The second primary mechanism would be that when commercial sources become limited, a negative social norm towards smoking may be created leading to a reduction in smoking. A contra-mechanism in this case is the forbidden fruit effect- adolescents may increase consumption if they feel their personal freedom is being restricted. Empirical evidence for the second primary mechanism and respective contra-mechanism is however limited. Overall, the findings of this study show that a ban on sales to minors can be effective when properly enforced, but contra-mechanisms can undermine its effectiveness and additional policy measures are needed to limit the influence of these contra-mechanisms.

Chapter 3 expanded on the previously established mechanisms and contra-mechanisms, by examining how European adolescents access cigarettes and how different policy environments (countries) influence these mechanisms. The findings show that adolescents are using similar access mechanisms across countries, but that the extent to which a mechanism or contra-mechanism prevails depends on the context the individual resides in. Direct access to commercial sources was more common in contexts with low perceived enforcement such as in Belgium. Proxy purchases were more common in contexts where perceived enforcement was high such as in Finland. Overall, the manner in which age-of-sale
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laws are implemented and enforced influences the effectiveness. These findings can be informative for policy makers to identify where adolescents continue to access cigarettes despite the presence of age-of-sale laws, and can thereby optimize effectiveness of these laws by targeting vulnerabilities in the law.

Chapter 4 examined smoking initiation ages across four birth cohorts, during a time when youth tobacco control policies had been implemented- including an age-of-sale law of 16 years old. We hypothesized that the smoking initiation age would shift as a result of age-of-sale laws targeting adolescents. This hypothesis was not confirmed as no shift in smoking initiation ages was found. Smoking initiation continued to occur primarily between ages 12 and 16 years in this population. The findings of this study suggest that the implementation of new policies directed at youth, such as age-of-sale laws, are unlikely to lead to a shift in the age of smoking initiation, thus making adolescents a primary target group for prevention measures.

Chapter 5 examined the effect of an increase in the age-of-sale from 16 to 18 in the Netherlands, paired with corresponding mass media campaigns, on perceived accessibility to cigarettes. Adolescents in the Netherlands were compared to adolescents in Belgium where the age-of-sale remained 16. This study focused on never-smokers, a subgroup that has not gained much attention in previous literature on age-of-sale laws. Our findings showed a similar decrease in perceived accessibility in both the Netherlands and Belgium. This implies that there is no evidence for an effect of the increase in the age-of-sale and mass media campaigns on the perceived access over and above the secular trend. This suggests that other factors such as general denormalisation trends may have contributed to the decrease in perceived accessibility seen in both the Netherlands and Belgium. Poor enforcement of the age-of-sale law in the Netherlands may have also contributed to a lessened effect on perceived accessibility.

POLICY RECOMMENDATIONS

Given the findings of these four studies, several policy recommendations can be considered.

Enforcement of age-of-sale laws

The findings from Chapter 2 and 3 emphasize the fact that young people continue to be able to access cigarettes and highlight the importance of retailer compliance in young people’s access. The findings also showed that in cases of non-compliant retailers, adolescents successfully purchase cigarettes either directly or by using circumvention strategies such as looking older, using letters
from parents, and/or borrowing ID cards to continue accessing commercial sources of cigarettes. Adolescents also mentioned knowing which retailers were non-compliant, often local non-franchised stores, whereas supermarkets were perceived to be compliant to the law and therefore avoided.

In order to tackle circumvention strategies being used by minors, compliance of retailers is crucial. We found that adolescents residing in contexts with high perceived compliance (i.e. in Finland) did not report accessing cigarettes directly from commercial sources. This suggests that strong perceived compliance may prevent young people from accessing cigarettes commercially.\(^1\) Enforcement—which we define as anything that obliges retailers to be compliant with the law—can improve compliance and limit access to cigarettes further. Previous studies have shown that comprehensive enforcement of age-of-sale laws is associated with a stronger reduction in smoking prevalence among adolescents.\(^2,3\) These studies have examined the effects of a package of measures including increased compliance checks, vendor penalties, purchaser penalties and retailer education, as well as other tobacco control policies such as licensing fees, vending machine bans, and community education.\(^2-5\) These studies found stronger reductions in smoking prevalence and increases in retailer compliance in the intervention communities compared to control communities.\(^2-5\) However, they also point out that adolescents still continue to access cigarettes and that the differences between the intervention and control communities were not always found to be significant.\(^2-5\) This may be due to continued access via other sources such as from friends and family. Overall, sufficient enforcement of age-of-sale laws is essential, yet based on the current evidence it is unclear which enforcement measures are most effective and which should be implemented.

**Educational campaigns for family members and proxy buyers**

Our findings also highlighted the importance of family members, friends, and proxy buyers (acquaintances and strangers) in adolescent’s access to cigarettes. Limiting their role can further prevent young people from accessing cigarettes. One way to do this is by raising awareness among these groups about their role in adolescent’s access to cigarettes, through for example educational campaigns. Educational campaigns can inform family members about their responsibilities, as was done in the NIX18 campaign in the Netherlands in which parents were encouraged to make agreements with their children about no tobacco and alcohol use before 18.\(^6\) The evaluation of the NIX18 campaign between 2013 and 2016 found that more parents made agreements with their children and were more positive about making such agreements in the future.\(^7\) However, this campaign was not directed at youth, and in Chapter 5 we did not see an effect of the campaign on perceived accessibility of adolescents. It may therefore also be important for campaigns to directly target young people. Educational campaigns
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can also target proxy buyers over the age of 18 to discourage them from buying cigarettes for minors. In Scotland, such a campaign is currently running with the slogan “Don’t buy for teens, #notafavour.” An evaluation of this campaign has not yet been done.

School tobacco policies to limit social exchange between friends

In addition to raising awareness, limiting the social exchange of cigarettes between friends can also further prevent access. A large proportion of cigarette exchanges take place at school. School tobacco policies, such as smoking bans inside and outside school premises may limit the possibility for such exchanges, perhaps by influencing youth smoking norms making smoking less acceptable. However, evidence on whether school policies result in reduced cigarette exchanges is lacking.

A comprehensive package of enforcement measures, educational campaigns, and school tobacco policies can further limit access to cigarettes by minors and thereby improve the effectiveness of current age-of-sale laws. Nevertheless, it is also relevant to consider the potential of new future policy measures that may improve current laws as well. Below we discuss the theoretical support and empirical evidence for an increase in the age-of-sale to 21 years old and its potential within the European context.

FUTURE POLICY MEASURE: AN INCREASE IN THE TOBACCO AGE-OF-SALE TO 21

As previously identified in Chapter 2 and 3, minors find ways to continue accessing cigarettes. One way is via proxy purchases- adolescents ask acquaintances or strangers to buy cigarettes for them. Many minors ask friends or acquaintances over the age of 18. A previous study from the U.S. reported that 90% of proxy buyers are under the age of 21. Our research also found that adolescents are known to ask young people in their early 20s as they are perceived to be most willing to buy cigarettes for them (see Chapter 2 and 3). Furthermore, adolescents that look older. are still able to access cigarettes from commercial sources.

Given this evidence, the current legally set age of 18 years is proving to be inadequate as adolescents continue to access cigarettes. Increasing the legal age to 21 may be able to optimize the effect of age-of-sale laws by limiting access to cigarettes via proxy buyers between 18 and 20 years old, and by preventing adolescents that look older from buying cigarettes themselves. An age-of-sale of 21 can make it more difficult for adolescents to make use of social
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sources from friends and acquaintances.\textsuperscript{11} It is likely to have the highest effect among adolescents aged 15 to 17 as they are less likely to have friends and/or acquaintances above the age of 21 within their social network than they are to have 18 year old friends and/or acquaintances.\textsuperscript{11} As seen in Chapter 3, our research shows that adolescents in Europe often have friends and/or acquaintances of 18 years or over within the school environment.

It is unlikely that smoking initiation is postponed instead of prevented as a result of the increase in age-of-sale to 21. Young adults over the age of 21 will have entered a different phase of life, which may reduce their intentions to smoke.\textsuperscript{11} The reward effect of nicotine on the brain reduces during young adulthood, and the social network of young adults may change, some may start working or leave home.\textsuperscript{11} The probability of them starting to smoke after 21 is therefore much lower.

An increasing number of countries and localities have adopted an age-of-sale of 21 (also referred to as ‘Tobacco 21’), including 440 localities and 7 states in the United States (U.S.).\textsuperscript{14} Needham, Massachusetts was the first town to adopt Tobacco 21 in 2005. Since then, more and more localities have followed suit and between 2016 and 2018 Hawaii, California, New Jersey, Oregon, Maine, Massachusetts, and Virginia adopted an age-of-sale of 21.\textsuperscript{14}

Evidence on the effectiveness of an age-of-sale increase to 21 is limited. Only two studies in the U.S. have evaluated the effectiveness of which one showed favourable results.\textsuperscript{15, 16} A stronger decrease in 30-day smoking was found following the implementation of an age-of-sale of 21 in Needham (after a 5-year follow-up) from 13\% to 7\% compared to control communities where a decrease from 15\% to 12\% was found.\textsuperscript{15} The percentage of youth under 18 purchasing cigarettes from stores also decreased more strongly in Needham from 18.4\% to 11.6\% compared to a decrease from 19.4\% to 19.0\% in control communities.\textsuperscript{15} A study evaluating the increase to 21 in New York City also found a decrease in tobacco use, although it was smaller than the decrease seen in control communities. The authors argue that this may be due to the unique setting with respect to its size, population density, and the predominance of small retailers (where enforcement and compliance is often lower).\textsuperscript{16} Other studies in the U.S. have looked at public support and awareness of the law among adolescents and retailers following the ban, which were both found to be high.\textsuperscript{17, 18} No other effectiveness studies have been done following the increase in age-of-sale to 21, mainly due to the fact that they are relatively new.\textsuperscript{19} These studies are however currently being conducted.

Policy adoption in Europe

A tobacco age-of-sale of 21 is not being widely considered in Europe and is not on the political agenda of the European Commission or on the national policy
agenda of most European countries. We ascertained this following a thorough examination of policy documents and minutes from EU expert meetings with national representatives of various European countries.\(^\text{20}\) The United Kingdom (U.K.) is an exception, as it currently considering a tobacco sales age of 21.\(^\text{21, 22}\) The question remains as to why not more countries are considering an age-of-sale of 21 and whether there is potential in other European countries.

Scandinavian countries all had an age-of-sale of 16 since the 1970s and were among the first to adopt a tobacco age-of-sale of 18 years old between 1995-1997.\(^\text{23}\) This was followed by a number of Eastern-European countries, between 2002-2004, which often adopted an age-of-sale of 18 years with no prior age-of-sale in place. In addition, Ireland also increased its age-of-sale from 16 to 18 in 2002.\(^\text{24}\) Between 2006 and 2009 a large number of countries increased their age from 16 to 18 including Denmark, France, Portugal, Spain, England, Wales and Scotland. The Netherlands adopted an age-of-sale of 18 in 2014.\(^\text{25}\) Belgium and Austria are the only two European countries with a current age-of-sale of 16 years.\(^\text{26}\)

Age-of-sale laws were first proposed at a European level in the 2003 Recommendation by the European Commission (Recommendation 2003/54/EC, which is not legally binding), which focused on measures to reduce cigarettes supply to young people.\(^\text{27}\) Article 16 of the World Health Organization (WHO) Framework Convention for Tobacco Control (FCTC), which is legally binding, requires countries to prohibit the sale of tobacco products to minors, but does not specify an exact age limit.

**Differences in starting points U.S. and EU**

There are three main factors that may give Europe a different starting point than the United States, which may influence the likelihood of Tobacco 21 adoption in Europe in the near future.

First, in the United States, policies regarding age-of-sale can be introduced at the state or community level. The U.S. Food and Drug Administration (at the federal level) is not authorized to increase the legal sales age over the age of 18 years old. Adoption of Tobacco 21 laws therefore started at the local level (e.g. municipalities and states).\(^\text{28, 29}\) Unlike the United States, the adoption of policies in Europe is limited to the national level. The opportunities to implement new laws at the local level in Europe are more difficult and restricted.\(^\text{30}\) An age-of-sale of 21 is therefore unlikely to be adopted at the municipal level, as was seen in the United States, and countries may be more dependent on the political parties in place at the national level, and their willingness to adopt new measures.\(^\text{31}\)
Second, while both the U.S. and Europe have legal ages of adulthood of 18 years old, they differ with regards to drinking and smoking ages. For the past 25 years, the U.S. has had a legal alcohol age-of-sale of 21, which is often used as a strong argument for increasing the age-of-sale for tobacco.\(^{32}\) In Europe, most countries have a legal purchasing age for alcohol and tobacco of 18 years old, with three countries having a legal age between 16 and 17, and 5 countries having a legal age dependent on alcohol content.\(^{33}\) Generally, the alcohol age-of-sale is not higher than 18 years old in Europe, with the exception of Sweden which does not allow alcohol of more than 3.5% to be sold to those under 20 years old. An increase of the tobacco age-of-sale to 21 may lead to a discrepancy between tobacco and alcohol if the alcohol age-of-sale remains 18, which may be a reason that a tobacco age-of-sale of 21 has not been considered thus far. In the Netherlands for example, a strong argument to increase the tobacco age-of-sale from 16 to 18 was to bring it in parallel with the legal age-of-sale for alcohol.\(^{34}\)

Third, public support for Tobacco 21 appears to be low when compared to other tobacco control policies targeting young people. In the Netherlands, public support figures from a general population survey from 2014 funded by the Dutch Cancer Society found 84.1% supported a smoking ban in cars with children, 85.3% supported smoking bans at schools, whereas 47.4% supported an increase in the age-of-sale to 21. In Germany, 43.1% supported an increase from 18 to 21 in 2016.\(^{35}\) These figures are still relatively low, especially when compared to other tobacco control policies, and are therefore not yet conducive to discussion.

**Future prospective in Europe**

While the adoption of an age-of-sale of 21 is currently not a ‘hot topic’ in Europe, there may be potential for a discussion on this topic primarily among countries that have adopted a smoke-free generation movement, including Scotland, Ireland, Finland, France and the Netherlands. The aim of this movement is to reduce the smoking prevalence under 5% within the next 15-20 years.\(^{36-40}\) To reach this goal, these countries are adopting more and more restrictive policies such as point-of-sale display bans, plain packaging, and smoke-free playgrounds.\(^{41}\) Adopting a tobacco age-of-sale of 21 can provide an opportunity to further limit access to cigarettes and contribute to the reduction in smoking prevalence. For example, the U.K., one of the leading countries in tobacco control with the highest Tobacco Control Scale score in 2016, has recently adopted plain packaging and a smoking ban in cars with minors. The U.K. government is currently considering a sales age of 21 as a next step in a range of more restrictive policies.\(^{22,42}\)

The discussion of an age-of-sale of 21, once initiated, can spread via policy diffusion- the spread of policy ideas from one context to the next. This is most likely to occur among countries from the same “family of nations”- groups of
countries that share cultural and political values (i.e. continental European, Southern European, English-speaking, and Scandinavian countries). National tobacco advocacy groups in Europe are often influenced by examples set by Anglo-Saxon countries such as the U.K. If countries such as the U.K. were to adopt an age-of-sale of 21 years old as a step towards a smoke-free generation, then this may instigate the policy diffusion process for this policy in Europe. However, evidence of past policy adoption progress in Europe showed that the timing of adoption differed greatly between countries. If the policy in question was not covered by EU regulations then adoption was dependent on political factors, as is the case with age-of-sale laws. Policy diffusion of tobacco 21 laws may therefore not progress uniformly and the timing of adoption may differ across countries.

For the diffusion of Tobacco 21 laws to Europe there may need to be more evidence on the effectiveness of the laws on smoking prevalence. This evidence can persuade policy makers to implement new measures, and may provide strong arguments against pushback from the tobacco industry.

Conclusion

A discussion on the adoption of a tobacco age-of-sale of 21 is currently gaining momentum in the U.K.. Based on the potential contribution of this increase in age-of-sale to smoking prevention, we believe it likely for this discussion to spread throughout Europe, specifically among countries that have adopted a smoke-free generation movement.
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