



FEDERAL RESEARCH PROGRAM ON DRUGS

End report

ALCOLAW

The Law of 2009 concerning the selling and serving of alcohol to youths: from state of the art to assessment

Contract - DR/00/071

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Published in 2017 by the Belgian Science Policy
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Van Havere, T., Dirkx, N., Vander Laenen, F., De Clercq, B., Buijs, T., Mathys, C., van Praet S., Deforche B., El Houti, A., Van Damme, J., Van der Kreeft, P., & Lemaitre A. ***The Law of 2009 concerning the selling and serving of alcohol to youths: from state of the art to assessment***. Final Report. Brussels : Belgian Science Policy 2017 – 239p. (BRAIN-be - (Belgian Research Action through Interdisciplinary Networks)

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Introduction

Alcohol consumption is a widely discussed topic in the field of health issues in the world. Delaying the onset of drinking should be a key issue in alcohol prevention (WHO, 2014c). Although age limits on the use of alcohol exist throughout Europe, alcohol use by youngsters of 15 and 16 years of age is common (Mulder & De Greeff, 2013a). Also in Belgium, where the minimum age limit for the use of alcohol is 16, it is clear that the majority of less than 16 year olds already drank alcohol in their life (Melis, Rosiers, & Geirnaert, 2014). Indeed, a recent study related to alcohol use among adolescents in Europe (Steketee, Jonkman, Berten, & Vettenburg, 2013) showed, from a sample size of 33.566 students from 25 countries (from 11 to 18 years old, x age= 13,90), that overall lifetime prevalence rate for beer, wine and breezers was 60,1% and 34,2% for spirits. Similar data were found in Belgium by the CRIOC study (2010) including 2.519 youths (from 10 to 17 years olds) where 65% of them had already drunk alcohol and 28% drank at least one glass of alcohol every week.

Many factors may contribute to these high figures of underage alcohol consumption, but easy access to alcohol is generally assumed to play a significant role (Gosselt, van Hoof, de Jong, & Prinsen, 2007). Availability can be influenced by national policies that restrict supply and availability; such seems to be a proven effective policy (Babor et al., 2010). One of the possible measures taken by a government to reduce availability is establishing a minimum legal drinking age which has been a proven effective national health policy measure (Achterberg, 2011). Therefore, the legislation in Belgium was adapted in 2009. However, a newly introduced alcohol policy relies on retailers' willingness to refuse to sell alcohol to underage customers. Before they are willing to comply, their knowledge of the new legislation is key. Indeed, another study of CRIOC (2009) including 160 sellers and shops showed that underage youths, using the *mystery shopping* method, obtained alcohol in 8 out of 10 selling points. Some possible reasons of non-compliance have been suggested but have not been clearly examined (e.g. motivational, psychological, economic, educational reasons) (Kuendig et al., 2008). Finally, legal age restrictions without enforcement at different levels (federal, regional and local) are not sufficient (Gosselt et al., 2007) and so different levels (federal, regional and local) should pay attention to enforcement. The effect of enforcement is considered to be twofold: it influences the direct availability of alcohol and it influences the societal norms, attitudes and beliefs in society (Wagenaar, 2011 in Mulder & de Greeff, 2013).

So far, the Belgian alcohol law from 2009, has not been evaluated. Therefore, the aim of this project is sixfold. The project has 6 objectives which we refer to as Work Packages (WP):

WP 1. A critical analysis of relevant indicators of the new law of 2009 on drinking age limits which influence the behaviour of young people. Views on enforcement.

a. Existing health indicators can be used to measure the results of the change in the alcohol legislation. A multifactorial model will be set forward after a systematic review and will be adapted to the Belgian situation. This model will integrate overall and immediate indicators which can shed a light on the impact of the new legislation. The different indicators will be linked to existing data already collected and available for the government on a federal and regional level.

b. Next to the indicators, we will also focus on enforcement. It is a process evaluation whereby interviews with key figures will be used to give an overview of existing enforcement activities and of the opportunities and challenges regarding this enforcement.

WP 2. Evaluate empirically the impact of the alcohol law from 2009 on alcohol availability and consumption.

This WP will be based on WP1: the theoretical framework with linked databases will be tested in WP2. The following goals will be addressed through secondary data analysis of available databases in Belgium.

- a. To investigate trends in alcohol availability and consumption over time, starting in 2002, in European countries with information available on changes in the alcohol law on drinking onset in the period 2002-2014.
- b. To investigate whether the 2009 alcohol law has a different impact in different socioeconomic groups.
- c. To investigate whether the 2009 alcohol law affects trends in social inequalities in alcohol consumption.

WP 3. Evaluate the knowledge of sellers and young people regarding the 2009 law.

Primary goal

a. Examine and test the knowledge of the 2009 law by young people and different groups of sellers (see sections below). Examining the knowledge of a law is a complex task, especially because we study two different populations (youths and sellers). Moreover, it could be a sensitive topic for sellers (Deakin & Spencer, 2011). Since we want to obtain standardized data, it could be worthwhile to evaluate the knowledge of the law in the same way for these two populations. Indeed, from an interactionism point of view, customers and sellers share the same environment. Up to now, studies on the knowledge of the law prohibiting alcohol sales to minors has been evaluated in the sense of sellers (e.g. Karsenty et al., 2013; Kuending et al., 2008) but not from the point of view of youths.

Secondary goal

- b. Evaluate the prevalence rates and the severity index of alcohol use for young people and identify profiles (by age, gender, cultural background, type of school, neighbourhood,...)
- c. Identify the specific locations where young people buy alcohol
- d. Evaluate the experience with selling alcohol to underage customers for sellers and their relationships with the enforcements actors (e.g. the measurements already received in the last five years)
- e. Identify the measures that sellers have already implemented to comply with the legal age limits on alcohol sales (tips and tricks to comply and difficulties to non-comply)

WP 4. Feasibility study on test purchasing research (“mystery shopping”)

In this WP a feasibility study will be performed on a protocol based on the methods of VAD and STAP (and other international models) of research on the compliance with the legal age limits of the 2009 law targeting young people below 16 years and 18 years old (cf. Gosselt et al., 2006). VAD is already doing some small studies on a local level. With this protocol purchasing attempts by youngsters are

being conducted. This WP will evaluate and propose a model to use as an instrument to control the compliance of sellers. Different perspectives will be looked at before making recommendations concerning this model: ethical, legal, pragmatical, ... Subcontracting partner VAD will give access to process results of previous trials in Belgium and for the international comparison we refer to Mulder & de Greef (2013 – Eyes on age) and the contributions of STAP. The deliverance will be a report on the feasibility of a compliance monitoring and/or a control instrument.

WP 5. A practice-based perspective on the 2009 legislation by prevention workers and health promoters

How do actors working with the changed law on alcohol consider the influence of this framework on their work? In this WP a qualitative method will be used to take into consideration the views and opinions of prevention and health promotion professionals and key persons concerning the 2009 law. We will use the Nominal Group Technique which is an expertise of the co-promoter of this WP (Vander Laenen, 2009). This technique has the purpose to generate ideas, to identify and to rank problems or issues of importance (Vander Laenen, 2009). In this WP we choose group judgments because they are preferable to individual judgments, which are prone to personal bias (Campbell et al., 2003).

WP6: General conclusions and policy recommendations

Chapter 1: Literature review of the minimum legal drinking age

By Thomas Buijs, dr. Bart De Clercq, dr. Joris Van Damme & Prof. dr. Bénédicte Deforche

Introduction

According to the latest available data, the World Health Organization ranks the harmful use of alcohol among the top five risk factors for disease, disability and death in 2012 (WHO, 2014b). Worldwide, approximately 5.9% of deaths are attributable to alcohol consumption, making alcohol use a greater global health issue than HIV/Aids and worldwide violence. This result is even more significant when taking into account that half of the world's population does not consume alcohol (Anderson, Møller, & Galea, 2012). Additionally, alcohol is causally related to more than 200 acute and chronic medical conditions (Room, Babor, & Rehm, 2005), resulting in an estimated 5.1% of the global burden of disease and injury. For Belgium specifically, the WHO estimated that in 2010, 5.8% of the population suffered from an alcohol use disorder (WHO, 2014b). In addition to physical and mental health problems, harmful alcohol consumption is very often associated with socioeconomic consequences and it can also lead to substantial harm caused to other individuals such as relatives and friends, or, in the case of an accident, even strangers. For the society at large, the global burden of disease and injury is relevant considering the significant impact of harmful use of alcohol on social and economic costs (WHO, 2014b). In Belgium, a recent study has investigated the social cost of legal and illegal drug use, including alcohol consumption, in 2012 (Lievens et al., 2016). By measuring both direct (e.g. hospital visits) and indirect (e.g. productivity loss) costs of substance use, the authors calculated that the overall social cost of substance use accounted for 1.19% of Belgium's GDP. The results also showed that 45%, roughly 2.1 billion euro, of the overall economic burden of legal and illegal drug use was caused by the effects of alcohol consumption.

Within this framework of alcohol consumption, epidemiologic research has paid special attention to harmful alcohol consumption by young people. In Belgium, alcohol consumption by adolescents is common. A recent survey showed that 41.4% of 12-14 year olds had consumed alcohol at some point in their life, a percentage that increased to 89.8% for 17-18 year olds (Melis et al., 2014). Within the public health framework, alcohol consumption by adolescents should be of major concern for numerous reasons. Throughout adolescence, significant structural and developmental changes cause the brain to evolve at a high pace, an evolution that is said to continue until the mid-twenties (Giedd, 2004). Alcohol has been shown to act as a neurotoxin throughout adolescence, suggesting that heavy alcohol consumption can lead to significant long-term effects on the brain structure and function, thus adversely impacting adolescent development and future health (Tapert & Schweinsburg, 2005). Most notably, the association between early onset of alcohol consumption and problematic substance use later in life has been researched extensively, showing that early drinking initiation greatly increases the likelihood of heavy alcohol consumption and the development of an alcohol use disorder later in life (Hingson, Heeren, & Winter, 2006; Hingson & Zha, 2009; Pitkänen, Lyyra, & Pulkkinen, 2005). Moreover, for each year drinking initiation is delayed, the likelihood is reduced by approximately 14% (Grant & Dawson, 1997). In addition, age of drinking initiation has also been linked to an increased risk of both intentional and unintentional injury that drinkers may inflict on themselves and others (Hingson & Zha, 2009; Swahn, Bossarte, & Sullivent, 2008). Moreover, an extensive body of research has examined the social, health and economic consequences of underage alcohol consumption. Results showed that underage consumption is a major factor in intentional and unintentional injuries

and deaths (Institute of Medicine National Research Council, 2004), unprotected sexual activity (Champion et al., 2004), mental health issues (Windle, 2003), delinquent behavior (Miller, Levy, Spicer, & Taylor, 2006) and decreased academic performance (Dee & Evans, 2003).

In an effort to curb the adverse impact of alcohol on population health, one strategy that has been used by many governments, is to restrict adolescent access to alcohol by imposing minimum legal drinking age (MLDA) legislation. In December 2009, the Belgian government amended its existing alcohol legislation, to prohibit access to distilled alcoholic beverages to adolescents under the age of 18 and access to all (both distilled and fermented) alcoholic beverages to adolescents under the age of 16. This restriction applied to both the possession by adolescents, as well as alcohol sales by retailers, bars and restaurants. As such, the effectiveness of the legislation is contingent on several factors, including the willingness of both supply and demand to comply with the law.

So far the 2009 legislative change has not been evaluated. In order to do so however, a theoretical model is required on which future analysis can be framed. The following chapter will provide an in-depth review of the existing literature on the effects of minimum legal drinking age (MLDA) legislation, covering the different measures that have been employed over the years and the concurrent results. Chapter 2 will go beyond the discussion on the effectiveness of MLDA legislation and provide a general model to gain insight in the drinking behavior of underage people. The model is based on the interaction between supply and demand and will serve as the basis for a valid and meaningful evaluation. As such, this section will cover demand-related and supply-related variables, as well as any other relevant factors. In light of the further development of the project, special attention will be paid to the enforcement of MLDA legislation. The final sections will translate the reviewed theory into the Belgian (Chapter 3) and European situation (Chapter 4) and will review which data can be used to evaluate the 2009 law change.

Methodology

In order to provide a comprehensive review of minimum legal drinking age legislation research, as well as to provide the building blocks for a valid theoretical model, a structured search was conducted, identifying peer-reviewed studies, reviews and commentaries of underage alcohol consumption, health consequences of alcohol consumption and alcohol policies. This search was conducted on PubMed, Web of Science, Embase and Ebscohost. Moreover, any notable policy articles were included, to the extent that they supported a further understanding of the objective. The search strategy was conducted by using very broad search terms, such as “minimum legal drinking age” and “underage drinking”. The scope was purposefully kept wide, in order not to miss any relevant information. Additionally, once certain key research was identified, forward and backward citation was applied, in order to find any works that were potentially missed by the original search. Overall, this study provides a narrative literature review, highlighting all relevant key elements with regards to adolescent alcohol consumption.

1.1 Effectiveness of the minimum legal drinking age

1.1.1 Research designs

The extensive research on the significant correlation between alcohol consumption and potential negative outcomes was discussed in the introduction of this report. Data showcasing this correlation is of limited value however when determining the exact impact of the minimum legal drinking age. This is due to two main limitations: firstly, the correlation between alcohol consumption and negative consequences is hypothesized to be at least partly due to other factors, such as individual variation in risk tolerance. This implies that people with a high risk tolerance are more likely to put themselves in risky situations, even when they are not drinking. Moreover, MLDA legislation is likely to have a disproportionate effect among the most law-abiding citizens. Both cases can cause significant, upward bias; hence there is a need for direct estimates of the effect of the drinking age on alcohol consumption and alcohol-related outcomes.

In order to gain a valid estimation of the effect of MLDA legislation, the alcohol consumption patterns and outcomes of adolescents, subjected to the law, should be compared to those of adolescents not subjected to it. To achieve valid results, it is of great importance that the test and control group are very similar in all aspects other than their subjection to the law. Over the years, researchers have applied two main research designs to do this (Carpenter & Dobkin, 2011b). A first design, called panel approach, is to investigate consumption patterns before and after a change in legislation, or between similar areas with different MLDA legislation. In Belgium, the minimum age changed in 2009. So, one may expect that adolescents aged 15-18 right before the law was changed, grew up in different circumstances as those aged 15-18 right after 2009 - when the MLDA legislation was changed. Similarly, a large body of research has accumulated between 1960 and 2000 from MLDA changes in the United States (see section 3.2.1.). The panel approach is a good means of investigating the effects of a changed MLDA, with its major advantage being that it provides the most direct measure. Despite this clear advantage, several limitations pose a threat to the validity of this approach. One potential limitation is that of confounding factors. In cases where multiple policies targeting alcohol consumption and its adverse consequences are implemented simultaneously, a panel approach will likely overstate the true effect of the MLDA. In the case of US legislation, this concern was voiced by several authors, such as Miron and Tetelbaum (2009). Closely related is the drawback that a panel approach only offers a meaningful result as long as other societal factors remain relatively stable. MLDA legislation in the United States was altered over 30 years ago. Since then, many factors such as enforcement, public norms and car safety may have changed. These changes can bias the panel estimation results in different directions. A final threat to validity is the 'learning from experience effect'. If adverse consequences of alcohol use are inherent to people who start consuming alcohol, regardless of age, the effect of a changed MLDA will be overstated since alcohol-related problems will merely shift to a different age group. So far, very few studies have looked into this hypothesis, but the available research does not seem to support the claim that the effect exists (Carpenter & Dobkin, 2011b; Conover & Scrimgeour, 2013).

A second research design applies to any given period of time when a minimum age is in place. Since the MLDA functions as a discrete cut-off point, this design compares people who are just under the minimum age with those who are just over. Both groups are likely to be similar, except for their subjection to the MLDA. A disproportionate increase in alcohol consumption or alcohol-related outcomes would indicate that the MLDA legislation is an effective means to curb underage drinking. This design is called the regression discontinuity method and was first applied by Thistlethwaite and Campbell (1960) as an alternative to the ex-post-facto experiment. This quasi-experimental approach can provide credible estimates of the causal effect of an intervention on a specific outcome. Compared to the panel approach, a regression discontinuity design has fewer limitations that threaten validity. Apart from the learning effect, the most significant drawback is that any estimation is only valid for people very near the MLDA. If a change in minimum legal drinking age affects people who are substantially younger or older than the MLDA, this information will be lost through the regression discontinuity design.

1.1.2 Research overview

United States

A large body of research on the effectiveness of the minimum legal drinking age has accumulated over the past few decades. The vast majority of this research was conducted in the United States. After the end of prohibition in 1933, all US states enacted a minimum legal drinking age, with most states opting for age 21 as the legal limit. Age limits remained unchanged until the Vietnam era. Social distress during this period caused many states to decrease the minimum age for privileges of adulthood including the voting age, the legal age of consent and also the minimum legal drinking age. From 1970 to 1975, 29 states decided to lower their MLDA, setting the age limit at ages 18, 19 or 20 (Wagenaar, 1993). The years after these decreases were marked by a significant rise in alcohol sales, consumption and alcohol-involved traffic fatalities among underage people in the involved states, as was shown by a plethora of studies (Cook & Tauchen, 1984; Ferreira & Sicherman, 1976; US Government Accountability Office, 1987). On the basis of these consequences, supported by statistically sound research, several states once more increased their MLDA, eventually leading up to the introduction of the National Minimum Drinking Age Act in 1984, through which the federal government sought to harmonize all states' MLDA legislation to set 21 as the nationwide minimum age. By 1988 all states had done so accordingly.

This period of change in the US has been intensely reviewed by researchers (Carpenter & Dobkin, 2011b; McCartt, Hellinga, & Kirley, 2010; Shults et al., 2001; US Government Accountability Office, 1987; Wagenaar & Toomey, 2002). All reviews confirmed that there is strong evidence supporting the claim that the MLDA is an effective policy measure to reduce alcohol consumption and alcohol related crashes of underage drinkers. Research can be categorized in three broad sections: effects on alcohol consumption, alcohol-related traffic accidents and other social/health issues.

Effect of MLDA on alcohol consumption

Several of the early studies concluded that MLDA's are inversely related to alcohol consumption (Hingson et al., 1983; O'Malley & Wagenaar, 1991). O'Malley and Wagenaar (1991) investigated the

relationship between the minimum age and self-reported drinking between 1976 and 1981, using data from the Monitoring the Future survey, an ongoing US study of the behaviors, attitudes and values of American students. They found that high school seniors consumed more alcohol in states where the MLDA was lower. Even after controlling for socio-demographic and other variables, a higher MLDA was found to be a significant predictor of lower alcohol consumption. Moreover lower alcohol consumption was associated with declines in fatal nighttime crashes among underage people. Lastly, the study suggested that the effects had a long-term impact, leading to less alcohol consumption even after becoming of age, which was later confirmed by several other studies (Krauss, Cavazos-Rehg, Agrawal, Bierut, & Grucza, 2015; Norberg, Bierut, & Grucza, 2009; Plunk, Cavazos-Rehg, Bierut, & Grucza, 2013)

In a comprehensive review of the effects of the MLDA on alcohol consumption in the United States, Wagenaar and Toomey (2002) analyzed all published studies on the MLDA in the period between 1960 and 1999. A total of 132 documents was coded according to key variables such as jurisdiction studied, selected outcome measures, results (direction of relation and significance), methodological quality (probability sample, design, control group) and whether they were college specific or not. Wagenaar and Toomey identified 33 high quality studies (i.e. that include longitudinal design, comparison group and probability sampling or census) that investigated the relation between the MLDA and alcohol consumption. Of these studies, 33% found a significant inverse relation between the MLDA and alcohol consumption, whereas only 1 study found a significant positive relation (Hingson et al., 1983).

Other studies at that time, did not find significant evidence of the relationship between MLDA and alcohol consumption (Rooney & Schwartz, 1977) or questioned the actual significance of the MLDA (Grabowski & Morrissey, 2001). Miron and Tetelbaum (2009) for example used 30 years of state-level panel data and found that any positive effects of an increased MLDA only existed in early-adopting states and did not persist over time. Based on these results, they assert that the impact of the MLDA is minimal at best.

In response to these mixed results, Carpenter and Dobkin (2011b) introduced the regression discontinuity approach to determine the MLDA effect. Based on Monitoring the Future data from 1975-1993, their study concluded that increasing the MLDA from 18 to 21 significantly reduced drinking frequency and binge drinking. These findings were later confirmed by several studies (Gruenewald, 2011; Subbaraman & Kerr, 2013). In their study, Subbaraman and Kerr (2013) found that, controlling for income, unemployment and socio-demographic characteristics, an increase in MLDA by 3 years between 1950-2002, was significantly associated with a decrease in total alcohol consumption of 1.51%.

Effect of the MLDA on alcohol-related crashes

As mentioned in the previous section, early research by O'Malley and Wagenaar (1991) found that the minimum legal drinking age affected self-reported alcohol use among young people and reduced traffic crashes. Moreover, the effect on car crashes was found to continue long after reaching the minimum age. Other research confirmed these results by showing that the implementation of a uniform MLDA of 21 in the United States reduced the prevalence of drinking and driving (Klepp,

Schmid, & Murray, 1996; Saffer & Grossman, 1987). Voas, Tippetts and Fell found similar results for all 50 states between 1982-1997, observing that on average, after controlling for driving exposure, beer consumption and other relevant legal changes, the rate of fatal accidents involving intoxicated young drivers was 19% lower in those states that had a higher MLDA (Voas, Tippetts, & Fell, 1999).

In their overview study of the 1960-2000 period, Wagenaar and Toomey (2002) identified 57 studies, containing 102 separate analyses of the relationship between MLDA and motor vehicle collisions, including measures such as self-reported driving after drinking, fatal crashes, drink-driving crashes, etc. Of these 102 analyses, 65% reported significant effects, with 98% of these finding an inverse relationship and a mere 2% finding the opposite. Similarly, a systematic review by Shults et al. (2001) identified 33 studies that met their qualification criteria and found that a change to MLDA 21 resulted in a 10% to 16% decrease in alcohol-related crash outcomes. The effects were consistent across follow-up times, which ranged from 7 to 108 months.

More recent studies confirm the early findings and reaffirm the considerable evidence that MLDA legislation reduces the amount of underage alcohol-related traffic fatalities (Fell, Fisher, Voas, Blackman, & Tippetts, 2008; Ponicki, Gruenewald, & LaScala, 2007; Voas, Tippetts, & Fell, 2003; Voas, Tippetts, Romano, Fisher, & Kelley-Baker, 2007). Ponicki et al. (2007) found that an MLDA increase, from 18 to 21, was associated with a 5%-9% decrease in alcohol-related traffic fatalities among 18-20 year old drivers. Moreover, the study found that the level of state beer taxes moderates the relationship between MLDA and alcohol-related traffic accidents so that, in case of low beer taxes, the relationship was even more pronounced. A very impactful study is that of Fell et al. (2008), who used data from the Fatal Analysis Reporting System between 1982-2004 to examine the relationship between the MLDA-21 and the ratio of underage, drinking to non-drinking drivers. Moreover, this analysis controlled for the presence of 16 additional state laws, designed to deter alcohol-impaired driving or to otherwise reduce fatal traffic accidents. Despite controlling for so many variables, the MLDA was found to be associated with a 16% decline in the ratio of drinking to non-drinking drivers. In comparison, Blood Alcohol Control (BAC) legislation was only associated with a 5% decline. Another study examines the importance of having a national MLDA, rather than allowing individual states to set different ages. The study used county-level data from 1977-2002 and found that those counties with a high MLDA, but located within 25 miles of a county with low MLDA, saw no reductions in traffic crashes, as opposed to other counties (Lovenheim & Slemrod, 2010). Evasive behavior is therefore a key argument against those arguing that states should be allowed to experiment with lower MLDA legislation (McCardell, 2008).

Effect of the MLDA on other social/health problems

The vast majority of minimum age research in the United States focuses on the association between alcohol consumption, alcohol-related traffic accidents and the MLDA. Limited research is available however on other social and health related problems, most notably on suicide, homicide, other accidents, crime and birth outcomes. In their systematic review, Wagenaar and Toomey (2002) found 24 published studies that assessed the effects of MLDA changes on indicators of these issues. Overall, some evidence was found of an inverse relationship between MLDA and social/health problems, with 35% of the higher quality studies finding a significant association. The evidence was not found to be

as consistent as the evidence on associations with alcohol consumption and alcohol-related traffic accidents. More recently, Carpenter and Dobkin (2009) examined the causal link between the MLDA and suicide, homicide and other external causes of death, using the regression discontinuity approach. Their study found a 10% increase in deaths due to external causes right after young people reached the minimum age, as well as a noticeable increase in suicides (see below), but no changes in homicide rates.

Extensive research confirms the association between alcohol consumption and suicide (Brent, 1995; Hufford, 2001; Shaffer, Garland, Gould, Fisher, & Trautman, 1988). Estimations are that 33-66% of adolescent suicide victims have an increased blood alcohol content (BAC) (Brent, 1995). Alcohol consumption is even more likely to be a risk factor among adolescents in case of stress or other mental disorders such as interpersonal struggles or problems at school. The mechanisms through which alcohol could increase the likelihood of suicide include exacerbation of depressive symptoms, adverse effects on decision-making skills under stress and interference with medication. Since minimum legal drinking age legislation is aimed at restricting access to young people, it could be expected to find an association between the MLDA and the suicide rate. So far, little research is available on this topic but the available studies point towards an association between the MLDA and youth suicide attempts, indicating that a higher minimum age would be a protective factor against suicide attempts. Birckmayer and Hemenway (1999) used pooled cross-sectional time-series data on youth suicide and the MLDA from 1970-1990 for 48 US States. They reported that in the studied timeframe, the suicide rate of 18-20 year-olds living in states with a lower MLDA was 8% higher than suicide rates among the same age groups in states with a higher MLDA. In a more recent study, Miller, Teti, Lawrence, and Weiss (2010) examined the alcohol involvement in suicide attempts in 1997 for 20 US states. They observed a sharp increase in suicide attempts through poisoning between the ages of 20-21, suggesting the MLDA works as protective factor. Using linear regression to trend alcohol involvement, Miller et al. (2010) conclude that in absence of the MLDA, the alcohol involvement in suicide attempts for ages 18-20 would increase by an estimated 3.5 percentage points. This means that alcohol-involved suicide admissions among this age group would increase by approximately 27%. Whether the overall rate in suicide attempts would be affected or whether these attempts happen independently from alcohol use was unclear. Similarly, Grucza et al. (2012) analyzed US data from the Multiple Cause of Death files in the period 1990-2004 and found that women who were exposed to more permissive drinking age laws were at a higher risk for suicide (12.95%). Using a regression discontinuity design, Carpenter and Dobkin (2009) found noticeable discontinuities in alcohol-related deaths due to suicide, confirming a 16% increase in suicide rate at the minimum age.

Another health aspect that has been examined is the relationship between MLDA and birth outcomes for young mothers (Fertig & Watson, 2009; Zhang & Caine, 2011). Using data from the National Vital Statistics survey, Fertig and Watson (2009) found that between 1978-1988, there was an adverse relationship between the MLDA and adverse outcome for mothers ages 14-24, including premature birth and low birth-weight. The effects were strongest for African-American women, who were also less likely to report paternal information on birth certificates (the authors make a suggestion that this could be partially due to there being more unplanned pregnancies). Moreover, this study found that

the prevalence of alcohol consumption in the 12 months prior to childbirth and during the prenatal period, is higher in states where age 18 was the legal minimum drinking age. Zhang and Caine (2011) obtained similar results in their study while controlling for other risk factors such as the mother's smoking behavior, economic conditions and other alcohol policies, linking a higher minimum age to lower rates of premature birth and low birth weight for 14-year-old mothers from 1985-2002. This study confirmed Fertig and Watson's findings that these effects were more outspoken for African-American women.

Canada

In Canada the minimum legal drinking age is 19 years in every province and territory, except for Alberta, Manitoba and Quebec, where the MLDA is 18 years (Canadian Center on Substance Abuse, 2015). Most Canadian research was published between 1970-1981, when Canadian provinces last made changes to the MLDA regulation. During the 70's, all Canadian provinces lowered their MLDA to coincide with the legal age of majority. Based on research results demonstrating the association between minimum age and alcohol intoxication among high school students and the resulting negative consequences however, the provinces of Ontario and Saskatchewan swiftly increased the MLDA to 19 years instead of 18 (Smart, 1980; Smart & Goodstadt, 1977). In recent years, policy debates on raising the MLDA to 21 have rekindled the interest of researchers, thus leading to newly available research on the effects of the MLDA (Callaghan, Sanches, Gatley, & Stockwell, 2014; Giesbrecht et al., 2013; Vallance, Thompson, Stockwell, Giesbrecht, & Wettlaufer, 2013).

Similar to the United States, early Canadian research used a panel approach to investigate the effects of the MLDA changes on alcohol consumption (Smart & Finley, 1976; Vingilis & Smart, 1981) and alcohol-related traffic accidents (Bako, Mackenzie, & Smith, 1976; Vingilis & Smart, 1981; Warren, Simpson, Page-Valin, & Collard, 1977). Overall results confirmed the inverse relationship between MLDA and alcohol consumption. Results concerning alcohol-related traffic accidents were less consistent however with Vingilis and Smart for example (1981) not finding any evidence of a relationship between the MLDA increase, from 18 to 19, and alcohol-related traffic accidents. A 2001 study however did find reductions in fatal, alcohol-related crashes with MLDA increase (Hedlund, Ulmer, & Preusser, 2001). The study used data between 1980 and the mid 1990's and studied both Canada and the US. The study concluded that the MLDA is an effective tool to reduce both alcohol consumption and alcohol-related traffic fatalities, however it also stressed that other factors were at least partially responsible for the decline.

Recent Canadian MLDA research has adopted the use of the regression discontinuity approach to investigate the connection between the MLDA and both mortality and morbidity (Callaghan, Gatley, Sanches, & Asbridge, 2014; Callaghan, Sanches, & Gatley, 2013; Callaghan, Sanches, Gatley, & Cunningham, 2013; Callaghan, Sanches, Gatley, Liu, & Cunningham, 2014; Callaghan, Sanches, Gatley, & Stockwell, 2014). Research by Callaghan and his colleagues found that between 2000-2012, male and female drivers in Quebec, who are just older than the minimum age, experienced an abrupt and significant increase of approximately 6% in motor vehicle collisions, as well as a significant 11.1% increase in nighttime motor vehicle collisions (Callaghan, Gatley, et al., 2014). Moreover, these results

were bolstered by their study investigating the impact of the MLDA on overall mortality in Canada between 1980-2009. Results showed that, in provinces with MLDA 18, young men, slightly older than the minimum age, had a significant increase in all-cause mortality of 14.2% from a broad class of injuries. Specifically focusing on mortality from motor vehicle collisions, the study found a 12.7% increase immediately after reaching the minimum age. Provinces with MLDA 19 showed similar results although the impact was clearly lower: male, all-cause mortality jumped up by 7.2%. They found some mortality increases among female drinkers but these jumps were not statistically significant (Callaghan, Sanches, Gatley, & Stockwell, 2014).

Canadian research went further however by identifying a gap in the large body of MLDA research (Callaghan, Sanches, & Gatley, 2013; Callaghan, Sanches, Gatley, et al., 2013). Despite the many studies on the relationship between MLDA and alcohol consumption, motor vehicle collisions and overall mortality, very little is known about the relationship between MLDA and morbidity. This seems rather illogical since most alcohol-related accidents and injuries are likely not to be fatal. As such, MLDA research is bound to grossly underestimate the full impact of underage alcohol use if morbidity is not taken into account. Callaghan and his colleagues first applied the regression discontinuity approach on all Canadian in-patient hospital admissions between 1997-2007. The results showed that, compared with the baseline hospitalization rate just prior to the minimum age, admissions of both males (17.3%) and females (21.1%) that had just come of age, rose significantly for alcohol-use disorders, as well as for suicide events for the combined sample (9.6%). Moreover, they saw a significant increase in a broad class of injuries for males (Callaghan, Sanches, & Gatley, 2013). A follow-up study bolstered these results by not only looking at in-patient records (which only represents a fraction of all alcohol-related morbidity), but also including emergency department records. The study focused on Ontario, the most populous state in Canada, and used census data on alcohol-related in-patient and emergency department data. Results showed significant increases in both in-patient and emergency department events upon reaching the minimum age, with suicide cases even skyrocketing as much as 51.8%. These results are in line with findings from Carpenter and Dobkin (2011a) in the only American study on the relationship between the MLDA and morbidity. In their study, Carpenter and Dobkin apply a regression discontinuity design to administrative data comprising a near-universe of emergency department visits in three states (Arizona, New Jersey and Wisconsin) and in-patient hospital admissions in four states (Arizona, New York, Texas and Wisconsin). They found that emergency department visits and hospital admissions increased by 69.4 and 9.2 per 10,000 population on an annual basis at the minimum age. These rates were found to be due mainly to increases in male accidental injuries, alcohol overdoses and injuries inflicted by others.

New Zealand

Apart from the United States and Canada, the most relevant MLDA research originated from New Zealand. New Zealand lowered its minimum legal drinking age from 20 to 18 in 1999. In the wake of this decision, several research studies have examined the negative consequences of a lower MLDA on alcohol consumption (Boes & Stillman, 2013) alcohol-related traffic crashes (Guria, Jones, Leung, & Mara, 2003; Huckle & Parker, 2014; Kypri et al., 2006), driving under influence (Huckle, Pledger, & Casswell, 2006), admissions for intoxications (Everitt & Jones, 2002) and disorder offenses (Huckle et

al., 2006; Kypri, Davie, McElduff, Connor, & Langley, 2014). In contrast to US research on alcohol consumption, Boes and Stillman (2013), using data from the New Zealand Health Survey, did not find any evidence that lowering the MLDA has led to increases in average alcohol consumption or binge drinking among 15-17 or 18-19 year-olds. Huckle, You, and Casswell (2011) on the other hand found a modest increase in alcohol consumption among 18-19 year-olds but a much more substantial increase among 16-17 year-olds, thus suggesting that the MLDA constitutes a trickle-down effect.

Significant changes in negative alcohol outcomes have been found: Everitt and Jones (2002) studied patient intoxication at emergency department of Auckland Hospital. The study found a 50% increase in the fraction of 18-19 year-olds appearing intoxicated as well as a smaller increase in 15-17 year-olds. Conover and Scrimgeour (2013) expanded this study by examining data from the New Zealand Health Information System, incorporating all hospitalizations in public hospitals between 1993 and 2006. Using both a difference-in-difference and a regression discontinuity approach, they found a substantial increase in alcohol-related hospitalizations for newly eligible drinkers (24.6% for males, 22% for females). In line with these results, Kypri et al. (2006) found that the alcohol-related traffic accident rate for males ages 18-19 increased by 12% after the MLDA legislation was changed in 1999. For females the study even found a 51% increase. Moreover, the study also found a 14% increase in accident rate for males ages 15-17 showing that the MLDA change did not merely affect people closely around the minimum age but also those significantly younger. A recent study by Huckle and Parker (2014) reevaluated data between 1994-2010 to examine if the MLDA effect on alcohol-related traffic crashes persists in the long run. Prior to the law change, drivers ages 18-19 were at a similar risk as 20-24 year-olds to be involved in alcohol-related traffic crashes. Directly following the law change, 18-19 year olds saw their odds increase by 15%. In the long run, Huckle and Parker found 18-19 year olds to have a 21% higher chance of being involved in an alcohol-related car accident, thus concluding that the MLDA effect persists in the long run.

Conclusion

Research provides evidence of the beneficial impact of minimum legal drinking age legislation on public health. A plethora of studies indicated that a higher minimum age leads to reduced alcohol-related traffic accidents, mortality and morbidity rates among young people. The studies on the consumption of alcohol within the group of young people show mixed results: a substantial group finds no significant effects, some only a minimal effect, however, the majority of the results show that a higher MLDA is associated with a lower rate of alcohol consumption.

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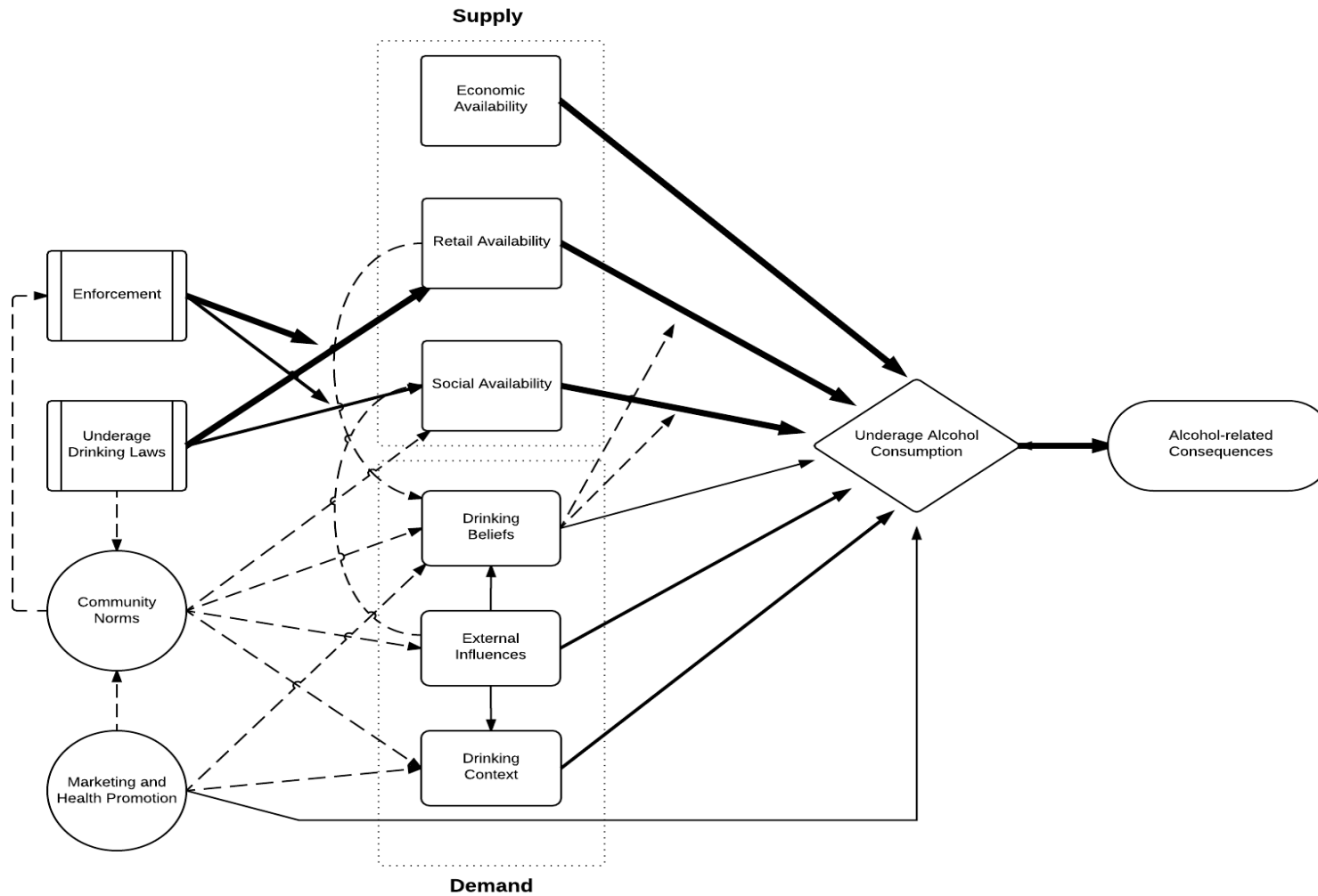
Chapter 2: Logic model of adolescent alcohol consumption

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Introduction

In order to provide a thorough public health analysis of the effects, incurred by the amended Belgian MLDA legislation, a logic model of underage drinking is presented based on Birckmayer, Boothroyd, Fisher D. A., and Holder (2008), cf. Figure 1. Intermediate variables depicted in this figure have either been identified as empirically associated with underage alcohol consumption and its related consequences, as well as to other intermediate variables, or, in the absence of empirical study results, have a theoretical rationale for inclusion in the model. At the very basis of this model is the dynamic economic relationship between supply and demand: desire for alcohol creates demand, which stimulates supply through the expectation of profit. Suppliers in turn attempt to stimulate demand to increase their profits. The intermediate variables that are identified in this interaction between supply and demand are: drinking beliefs, drinking context, external influences, availability, marketing, community norms, legislation and enforcement. In order to provide a valuable review of the public health implications of a change in the drinking age legislation, it is imperative to first understand the intricacies of how supply, demand and other variables interact with the outcome as well as with each other, and together lead to specific drinking behavior. Drinking beliefs are the most fundamental aspect related to the demand for alcohol and refer to attitudes, expectancies, subjective availability and normative beliefs towards alcohol. Availability of alcohol, consisting of price, social- and retail availability, is the key component representing the supply side in the model. Without alcohol availability, there can be no consumption nor related health consequences. Since profit is a main driver for retail availability, attempts to increase demand happen through marketing, which is therefore included in the model. Drinking context refers to the conceptualization of where and with whom alcohol is consumed and is relevant to policy makers for developing accurate programs. External influences refer to all family, school and peer related influences that may have an impact on drinking behavior. Community norms on the other hand, refer to the historically grown values and standards regarding the acceptability of alcohol use within the community. These norms in turn can be formally codified into legislation, policies or regulations, which in turn can affect availability, promotion or alcohol consumption and its related health consequences. Much of the potential effect of the MLDA legislation is directly affected by enforcement. All variables will be discussed in the following paragraphs with special focus on minimum legal drinking age legislation and enforcement since those topics are the focal point of this report.

Figure 1 Causal model of underage drinking. Based on Birckmayer et al. (2008)



1.1 Demand for alcohol

Considerable research has been performed about the key intermediate variables that shape the demand for underage alcohol consumption. Most notably, research has focused on individual characteristics, including genetics, values, attitudes, and social associations, as key contributors to individual substance use decisions. Thus far, four major individual-level perspectives have been identified: biological, social control, social learning and general strain theory (Petraitis, Flay, & Miller, 1995). Biological theory argues that alcohol consumption stems from a hereditary predisposition, whereas social control theory states that alcohol consumption is tied to social institutions, since they promote conformity to group norms. Social learning theory on the other hand, posits that all behavior, both legitimate and illegitimate, is learned. Finally, general strain theory argues that alcohol use is a direct result of failure to achieve positively-valued goals, the presence of noxious stimuli and the removal of positively-valued stimuli (Birckmayer, Holder, Yacoubian, & Friend, 2004, p. 135). Each of these theories has found results that are relevant in a model of underage alcohol consumption: a significant body of biological research has showed that alcohol use can be attributed to biochemical and genetic factors (Hawkins, Catalano, & Miller, 1992; Merikangas, 1990; Tabakoff & Hoffman, 1988). Concurrently, social control theorists have successfully showed the associations between underage alcohol consumption and divorce, single parent families, religion and poor school performance, among many others (Boardman, Finch, Ellison, Williams, & Jackson, 2001; Rhodes & Jason, 1990). Additionally, social learning theory has confirmed that familial alcohol consumption is a strong predictor of underage drinking behavior (Chassin, Pillow, Curran, Molina, & Barrera, 1993; Sher, Walitzer, Wood, & Brent, 1991), while general strain theory, in its initial results suggest a positive association between the level of strain and alcohol consumption (Agnew, 2001; Mazerolle, Burton, Cullen, Evans, & Payne, 2000). It should be clear that all of the above theories are interlinked and are different pieces of the puzzle that is underage alcohol consumption. Overarching these separate theoretical models, three intermediate variables have been identified in the logic model: drinking beliefs, external influences and drinking context. Each variable has been found to be significantly associated with underage alcohol consumption and its related consequences, as well as to other intermediate variables.

1.1.1 Drinking beliefs

The intermediate variable 'drinking beliefs' refers to the five most commonly used correlates of individual, underage drinking behavior: alcohol attitudes, alcohol expectancies, normative beliefs, subjective availability and resistance/refusal efficacy beliefs (Birckmayer et al., 2008). The inclusion of these variables in previous research has been based on a multitude of theoretical approaches such as cognitive social learning theory (Bandura, 1977), problem behavior theory (Jessor, 1987) and the theory of planned behavior (Ajzen, 1991; Fishbein, Hennessy, Yzer, & Douglas, 2003; Godin & Kok, 1996). An extensive body of research relating to all five facets of drinking beliefs exists, showcasing the strong association between drinking beliefs and alcohol consumption. Recently, a study among Belgian college students showcased a positive relationship between perceived binge drinking norms and individual consumption (Van Damme et al., 2016). Concerning alcohol attitudes, both longitudinal and cross-sectional research found that underage drinking increases if attitudes are more favorable

(Andrews, Hampson, & Peterson, 2011; Grube & Morgan, 1990; Hampson, Andrews, Barckley, & Severson, 2006). Moreover, positive expectancies are commonly hypothesized to increase underage alcohol consumption, which has been consistently confirmed, both in cross-sectional and longitudinal research (Grube & Agostinelli, 1999). Additionally, normative beliefs have been demonstrated to predict alcohol consumption and changes in alcohol consumption over time (Ames & Grube, 1999; Grube & Morgan, 1990). Supportive normative beliefs may encourage risky behavior when drinking. This process can be reinforced by peers through peer pressure and the reinforcement of expectations, such as the expectation that alcohol makes one attractive and mature. Subjective alcohol availability refers to how easy underage people think it is to obtain alcohol. Research has shown a significant association between subjective availability and alcohol consumption among underage people (Ames & Grube, 1999). In Belgium, according to the latest available data, 58.4% of adolescents under the minimum age state that it is easy to access beer and wine, whereas only 28.0% says they can definitely not access any alcohol (Melis et al., 2014). Lastly, resistance/refusal efficacy theory refers to an individual's perception of one's ability to resist drinking, refuse drinks offered by peers and resist peer pressure. Previous research indicates that resistance/refusal efficacy beliefs are negatively correlated with alcohol consumption (Ehret, Ghaidarov, & LaBrie, 2013; Young, Hasking, Oei, & Loveday, 2007).

1.1.2 External influences

External influences impacting the demand for alcohol refer to the fact that adolescents do not grow up in a vacuum, yet acquire values, knowledge and attitudes about a variety of issues, including alcohol consumption, through a gradual process of assimilation with several social sources. The most important interaction levels are family, school and peers, all three of which have been found to have an impact on adolescent drinking behavior.

Many of the studies examining the relationship between underage alcohol consumption and external factors have focused on the role of parental influence (Koutakis, Stattin, & Kerr, 2008; Sieving, Maruyama, Williams, & Perry, 2000; Yu, 2003). Families are one of the main socializing contexts where children learn about alcohol and develop their drinking beliefs and behavior. Most of these studies have consequently found that, after controlling for individual-level characteristics, parents influence underage drinking behavior, both through their actual behavior (by drinking alcohol as well as providing alcohol to their children), as well as indirectly through the formation of descriptive and injunctive norms (McCann, Perra, McLaughlin, McCartan, & Higgins, 2016; Rossow, Keating, Felix, & McCambridge, 2016). Moreover, studies of family-focused interventions to improve parenting practices, such as clear communication, conflict reduction, education, imposing rules, etc. have resulted in positive outcomes in terms of alcohol abuse both in the short run and in the long run (Bauman et al., 2001; Kaynak, Winters, Cacciola, Kirby, & Arria, 2014a; Ozdemir & Koutakis, 2016; Soper, Wolchik, Tein, & Sandler, 2010). Considering the above, it should be no surprise that family influence has been linked to drinking beliefs by a large body of research (Ennett, Jackson, Bowling, & Dickinson, 2013; van der Vorst, Engels, Meeus, & Dekovic, 2006). Finally, research indicates that family influence moderates the relationship between drinking context and harmful alcohol consumption, in the sense that adult-supervised drinking settings tend to lead to higher levels of harmful alcohol consumption (McMorris, Catalano, Kim, Toumbourou, & Hemphill, 2011).

Other studies have focused on the association between peer influence and drinking behavior. Peer influence consists of a wide array of concepts, from peer behavior, direct peer pressure to drink, to peers providing drinking opportunities, all the way to the subjective concept of alcohol approval by peers. A vast body of research has accumulated over the years, showing that higher perceived peer drinking and peer approval is significantly associated with a higher drinking frequency and an increased risk of binge drinking (Arnett, 1992; Brook, Brook, Gordon, Whiteman, & Cohen, 1990; Dishion & Owen, 2002; Kiesner, Poulin, & Dishion, 2010; Prinstein, Boergers, & Spirito, 2001). Empirical results indicate that similarities between youngsters and their peers, in terms of drinking behavior, gradually appear throughout adolescence. This evolution is assumed to be the mixed result of two separate pathways: peer influence and peer selection (Brechwald & Prinstein, 2011; Osgood et al., 2013). In early adolescence, peer influence is considered to be the most influential of the two whereas peer selection becomes more prominent in mid-adolescence (Mercken, Steglich, Knibbe, & Vries, 2012). Moreover, peer influence is assumed to impact the development of drinking behavior through both a direct process and an indirect process (Borsari & Carey, 2001). The direct process refers to the fact that social availability of alcohol will increase when peers consume alcohol (Wood, Read, Palfai, & Stevenson, 2001), whereas the indirect process refers to the formation of descriptive and injunctive norms (Eisenberg, Toumbourou, Catalano, & Hemphill, 2014; Lee et al., 2015; Rimal & Real, 2005). Descriptive norms refer to the perception, or actual, drinking behavior of peers within an adolescent's social network. Injunctive norms on the other hand, refer to an individual's perception of peer expectation, i.e. if an adolescent thinks his friends want him to drink much, this result in the adolescent drinking more than he would under different circumstances (Borsari & Carey, 2001). Finally, a relationship between peer influence and drinking context is assumed since drinking with peers often involves drinking in private settings, away from adults (Clapp, Shillington, & Segars, 2000). Research on this assumption is limited.

A final external influence that is often researched is school influence. The influence of a school can imply both the physical and the social environment of the institution. Within a school, there is a formal and an informal environment. The formal environment consists mainly of teachers and administration, whereas the informal environment is more closely linked to peer influences. Several studies have found a significant, negative association between school connectedness and alcohol consumption (Bond et al., 2007; Henry, Swaim, & Slater, 2005; Wong et al., 2014). This association appears to be unrelated to the connectedness of each individual student, but rather to the average connectedness of all students instead (Henry et al., 2005). Interestingly, a recent study found that Korean students' drinking behavior is inversely related to formal school connectedness (e.g. teacher attachment), but positively related to extracurricular activities (e.g. school clubs), stressing the importance of peer influence even within the school environment. Moreover, researchers assume school influence to be connected to both drinking beliefs and drinking context (Han, Kim, & Ma, 2015; Henry et al., 2005).

1.1.3 Drinking context

A final variable in this section on the demand for alcohol is drinking context. Drinking context lacks a standard definition but encompasses three main ideas: where does one drink, whom does one drink with and why does one drink? Research has found significant relationships between the drinking

context and underage alcohol consumption, and especially binge drinking (Lipperman-Kreda, Mair, Bersamin, Gruenewald, & Grube, 2015; Mayer, Forster, Murray, & Wagenaar, 1998). Underage people are less likely to drink with parents or other adults and more likely to drink in someone else's home and in large, underage groups. Moreover, drinking behavior and its related consequences can be significantly different, depending on the specific context. Firstly, different policies may apply at different locations and with varying levels of enforcement. Additionally, drinking context is found to have a moderating influence on external influences: interventions by friends and servers may differ based on location (e.g. homes versus bars). This was showcased by Collins and Frey (1992) who found that the likelihood of college freshmen stopping a friend from drunk driving was higher in public spaces than at home or work. A study by Clapp et al. (2000) reported that parties and other socializing events were most common among heavy drinking locations. Drinking occurred both in public and private places (42.2% bars, 43.1% homes) and led to self-reported problems almost half of the time (47.3%). In public settings, significant protective factors were found, including the availability of food, friends or a bartender. Moreover, a study recently showed that drinking in specific locations, more specifically in restaurants and bars, is a strong mediator of both drunk driving and riding with a drunk driver (Freisthler, Lipperman-Kreda, Bersamin, & Gruenewald, 2014; Walker, Waiters, Grube, & Chen, 2005).

1.2 Supply of alcohol

The supply of alcohol refers to the availability, through different sources. Availability of alcohol is one of the key components in the logic model, since without availability there can be neither consumption nor associated consequences. Previous research has identified three sub-domains to availability: retail, social and economic availability. Supported by empirical results, the general rule of economics applies: if alcohol is easily accessible, convenient and inexpensive, underage alcohol consumption and its related health consequences tend to increase. The opposite is true if alcohol is expensive, not easily accessible and inconvenient.

1.2.1 Retail availability

Similar to all other goods, alcohol is typically acquired through either social sources or in retail markets. Retail availability refers to the physical accessibility of alcohol through commercial sources, including both on premise sources, such as bars and restaurants, and off-premise sources like liquor stores, traditional retail outlets and the internet. Several studies have used a diverse range of measures to examine the relationship between retail availability and underage alcohol consumption, all of which have found a significant association between easily accessible alcohol and drinking behavior (Gruenewald & Ponicki, 1995; Popova, Giesbrecht, Bekmuradov, & Patra, 2009; Todd, Gruenewald, Grube, Banerjee, & Remer, 2006; Voas, Romano, Kelley-Baker, & Tippetts, 2006; Williams & Ribisl, 2012). Measures that have been used include outlet density, hours and days of alcohol sales. Outlet density has been found to have a significant impact on drinking behavior. Treno, Grube, and Martin (2003) found that at the aggregate or city level, alcohol outlet density was associated with driving under influence and riding with drunk drivers. Similarly, other research has found that higher outlet density leads to increased rates of binge drinking (Chaloupka & Wechsler, 1996; Popova et al., 2009; Weitzman, Folkman, Folkman, & Wechsler, 2003). A 2009 meta-analysis found a positive

association between outlet density and population-level alcohol consumption in five different studies (Campbell, Hahn, Elder, Brewer, Chattopadhyay, Fielding, Naimi, Toomey, Lawrence, & Middleton, 2009). Concerning days and hours of sales, a large body of research found clear positive associations with underage alcohol consumption, as is summarized in Gruenewald (2011), meaning that more days and hours of sales leads to higher alcohol consumption. Important for the research on MLDA legislation and enforcement, is that is that a higher retail availability at the community-level was found to be inversely related to perceived compliance and enforcement of MLDA laws (Dent, Grube, & Biglan, 2005). Similarly, Paschall, Grube, Black, and Ringwalt (2007) found that compliance rates were inversely related to adolescent use of commercial sources. This can impact underage alcohol consumption indirectly, however the use of social sources have a stronger relationship to underage drinking than the use of commercial sources.

1.2.2 Social availability

In contrast to commercial sources, social availability of alcohol refers to the procurement of alcohol through social sources such as strangers, friends and relatives (Birckmayer et al., 2004). Research indicates that social availability is the most common source of alcohol among adolescents, especially among those who are below the minimum age (Harrison, Fulkerson, & Park, 2000; Jones-Webb et al., 1997; Wagenaar et al., 1996). In the United States, parties where older adolescents or young adults introduce their younger friends to alcohol was found to be the major source of alcohol for high school students (Wagenaar et al., 1996). Harrison et al. (2000) found that, in the United States, 32% of 6th grade (11-12 year old), 56% of 9th grade (14-15 year old) and 60% of 12th grade (17-18 year old) students reported having obtained alcohol at parties, held at home, an outdoor area or other locations. Another social pathway through which underage people obtain alcohol is “shoulder-tapping”. Shoulder tapping refers to an underage person approaching a stranger outside of an alcohol establishment and asking this person to purchase alcohol for him/her (Birckmayer et al., 2008). A study by Toomey, Fabian, Erickson, and Lenk (2007) found that approximately 19 percent of young males older than the minimum age were willing to purchase alcohol for an underage person, or someone who appeared to be underage.

1.2.3 Economic availability

The third and final subdomain is economic availability or price. Price simply refers to the direct monetary cost of alcohol. Just like all other goods, supply (and demand) of alcohol is influenced by price. In economics, this is measured by the so-called ‘elasticity’. This metric provides the responsiveness to price changes, measured by the percentage change in quantity supplied/demanded, resulting from a one percent change in price. A large body of research has focused on the relationship between price (or alcohol taxation as a proxy for price) and underage alcohol consumption, and its related consequences. Early research in the United States found unequivocal evidence that higher prices led to lower consumption: Laixuthai and Chaloupka (1993) for example, found that if US taxation on alcohol, beer especially, would be linked to the rate of inflation, a 19% decrease in heavy drinking and a 6% reduction in high risk drinking would be achieved. These reductions in turn would lead to substantial decreases in drunk driving cases and consequential

accidents (Chaloupka, Grossman, & Saffer, 2002; Grossman, Chaloupka, Saffer, & Laixuthai, 1994). Contrary to these early studies, subsequent research found no association between alcohol price/taxation and underage alcohol consumption nor between alcohol price/taxation and alcohol-related traffic accidents (Dee, 1999; Young & Likens, 2000). A possible explanation for this paradox was suggested by Trollid and Ponicki (2005) who claim that alcohol consumption only responds to the full price of alcohol, including opportunity costs. This means that economic, retail and social availability all interact in forming the drinking behavior of underage people. As such, demand for alcohol is expected to be less sensitive to a price change in areas where regulations and enforcement are stricter. In accordance with this hypothesis, another research study found that demand for beer and spirits was more price insensitive in those US states where distribution of alcohol was managed through monopolies, i.e. since access to alcohol is already made more difficult through retail monopolies, the effect of a price change was lower than would have been expected in a state without retail monopolies (Ponicki et al., 2007). Moreover, this study found that beer tax increases led to proportional decreases in alcohol-related traffic accidents in all situations, and even more than proportional decreases if the MLDA was low compared to if the MLDA was high (3.1% versus 1.9%). Recently, a systematic review examined all available research on the relationship between economic availability and alcohol-related morbidity and mortality (Wagenaar, Tobler, & Komro, 2010). Results showed significant population-level associations between price and alcohol-related disease and injury, violence, traffic accidents, sexually transmitted diseases, other drug use and crime. The results suggested that doubling alcohol taxes would reduce all the above consequences anywhere between 2-35%. An important concept within the recent research into the link between price and consumption is the affordability of alcohol. Rather than looking at alcohol prices, the affordability index looks at changes in alcohol prices compared to changes in income. The idea is that even if the price of alcohol rises, consumption can still increase if the disposable income of households rises at a faster pace (Burton et al., 2016; Rabinovich et al., 2009).

1.3 Other intermediate variables

1.3.1 Marketing

An important factor in the economic relationship between supply and demand, is the extent of alcohol promotion. Alcohol distributors attempt to increase demand through a wide array of advertising and promotion channels, in an effort to increase the attractiveness of alcohol consumption. Unlike marketing for tobacco, there is no legislation imposing a complete ban on alcohol marketing, though partial restrictions do apply in most countries. In Belgium for example, according to article 83 of the Act on Radio and Television Broadcasting, it is prohibited to advertise alcohol five minutes before and after a children's program. Despite existing restrictions, attempting to protect underage people, a substantial proportion of alcohol marketing reaches an underage audience. In recent years this has been even more so due to alternative marketing channels utilized by the alcohol industry such as social media, festivals, sports events and product placement in movies and TV shows (De Donder, 2014). Alcohol promotion to a large extent, influences underage people by mediating drinking beliefs and attitudes. A large body of research has examined the relationship between alcohol promotion and underage alcohol consumption and although a clear causal link has not been established yet, most

studies find significant, positive associations (Bryden, Roberts, McKee, & Petticrew, 2012; Collins, Ellickson, McCaffrey, & Hambarsoomians, 2007; Saffer & Dave, 2006; Smith & Foxcroft, 2009). A systematic review by Anderson, de Bruijn, Angus, Gordon, and Hastings (2009) assessed 13 longitudinal studies that followed a total of over 38,000 young people, measuring exposure to advertising and promotion, and alcohol consumption. Twelve of the thirteen included studies concluded that marketing exposure impacts adolescent alcohol consumption, including onset of drinking and binge drinking. This systematic review was recently updated; 12 new studies were identified, ranging in duration from 9 months to 8 years. All twelve studies reported a statistically significant, positive effect between level of alcohol marketing exposure and adolescent drinking (Jernigan, Noel, Landon, Thornton, & Lobstein, 2016). More recently, de Bruijn et al. (2016) provided the first cross-national study to examine the effect of adolescents' alcohol marketing exposure on their drinking behavior, finding a statistically significant long-term effect.

1.3.2 Community Norms

An overarching variable in the logic model, influencing both supply and demand variables, is community norms on underage drinking behavior. In each culture, community norms and values regulate the acceptability, or lack thereof, of certain behaviors, including underage alcohol consumption (Razvodovsky, 2001). Community norms are a set of informal social rules reflecting general attitudes and societal expectations regarding the level and types of consumption considered acceptable (Birckmayer et al., 2008, p. 57). An early study by Larsen and Abulaban (1968) found a significant relationship between the extent of norms proscribing drinking or limiting consumption and alcohol consumption, concluding that consumption is higher where drinking is more accepted. Despite this general connection between norms and consumption, there is very little research on the specific relationship between community norms and underage alcohol consumption. What does exist however is evidence that community norms have a significant impact on other intermediate variables in the logic model, and as such might play an important, mediating role in the level of underage alcohol consumption after all. Holder and Treno (1997) and Wagenaar, Harwood, Toomey, Denk, and Zander (2000) both mention the importance of using community concern about underage alcohol consumption as a basis for a successful consumption reduction strategy but provide no statistical associations between the level of concern and actual consumption. More recently, a study by Slater, Hayes, Goodall, and Ewoldsen (2012) found that news stories on alcohol significantly increased support for tougher enforcement of alcohol legislation. Additionally, a study by Lipperman-Kreda, Grube, and Paschall (2010) showed that perceived community disapproval of adolescent alcohol consumption was directly and positively related to perceived police enforcement of the minimum legal drinking age. This is in line with early research showing that community norms can either support or hinder enforcement of underage alcohol consumption (Little & Bishop, 1998). An important aspect concerning perceived community disapproval was highlighted in a recent study: Jones and Francis (2015) showed that while most parents and community members were opposed to underage alcohol consumption, most test subjects perceived the community norms to be more liberal than their own views, thus highlighting the need for community-based interventions. Interestingly enough, Little and Bishop (1998) show that societies may be concerned with one aspect of underage alcohol

consumption (e.g. drinking and driving), while being unconcerned about other aspects (e.g. general consumption, consumption at parties,...) because the potential consequences of the first are perceived as more serious than those of the latter. It can be theoretically assumed that community norms have an impact on the drinking context, external influences and drinking beliefs, but no empirical research was identified.

1.3.3 Enforcement of the Minimum Legal Drinking Age

A preponderance of the research evidence, presented in section 3 indicated that a higher MLDA is associated with lower alcohol consumption and fewer alcohol-related problems among underage people. In the United States alone, the National Highway Traffic Safety Administration estimates that the MLDA has accounted for a 13% decrease in traffic crashes, the leading cause of death and disability among youths, saving up to 29,292 lives between 1975 and 2012 (NHTSA, 2014). This makes the MLDA the most successful piece of alcohol legislation currently in existence. Although no similar analysis is yet available for Belgium, it is not unlikely to assume equally positive effects from the 2009 law change. Despite the positive effects of a higher MLDA, alcohol consumption among adolescents remains very high. In the United States lifetime alcohol consumption prevalence is 29.5% at age 14 and 54.0% at age 16 (Johnston & Schulenberg, 2013). In Belgium these numbers are even more elevated: the latest available data show that lifetime prevalence is 42.3% for 12-14 year old and 81% for 15-16 year olds (Melis et al., 2014).

These numbers indicate a low rate of compliance with the MLDA laws and are backed up by studies on the retail and social availability of alcohol to underage people. Minors obtain alcohol through a variety of sources, of which friends, parties and adult purchasers are the most commonly adopted (Harrison et al., 2000; Preusser & Williams, 1992; Wagenaar et al., 1996). Commercial outlets are also a source of alcohol, despite MLDA legislation. Surveys monitoring the behavior of alcohol retailers indicated that 30-90% of outlets will sell alcohol to (apparently) underage customers (Forster, Murray, Wolfson, & Wagenaar, 1995; Grube, 1997; Preusser & Williams, 1992). In view of this low compliance, a growing body of research focuses on whether enforcement of MLDA laws is effective in achieving higher compliance with the law. Enforcement refers to policies aimed at decreasing retail and social availability through the threat of sanctions. This means that both the (perceived) chance of being controlled and sanctioned as well as the severity of the sanctions are key elements of any enforcement policy, yet research has showed the prior to be much more determining than the latter (Wagenaar, 2011). The effect of enforcement is considered twofold: enforcement directly influences the availability of alcohol to minors and it influences the societal norms, values and beliefs on alcohol (Wagenaar, 2011).

Enforcement research as well as a vast majority of enforcement efforts has thus far been aimed at the direct availability of alcohol, by targeting the supply side, i.e. retailers of alcohol and drinking establishments. Early research showed enforcement can be effective in reducing alcohol possession by minors. Preusser, Williams, and Weinstein (1994) studied an enforcement program targeted at licensed alcohol retailers. The program used underage police cadets as mystery shoppers at randomly selected retailers in Denver, Colorado. Success rates were shown to be 59% during the baseline period

In addition to enforcement research, studies have also tested the use of other preventive interventions to raise compliance with MLDA legislation, such as responsible beverage training to bartenders. Most of these interventions (except for mystery shopping) have been shown not to be effective when used as standalone measures (Wagenaar, Toomey, & Erickson, 2005a). However, when used as part of a multi-component strategy, there is some evidence to suggest they can be useful. Most notably is the Stockholm STAD project, in which responsible beverage training and alcohol education to the public is combined with enhanced enforcement. Research results indicate that the project has resulted not only in increased compliance with the MLDA legislation, but also in a 29% decrease in crime (Wallin & Andreasson, 2004; Wallin, Norstrom, & Andreasson, 2003). These results correspond with other research pointing towards the importance of combining regulations with education and enforcement (Babor et al., 2010; Newman, Shell, Major, & Workman, 2006).

In Europe, mystery shopping (see chapter 6) has recently received particular attention, not just as an evaluation tool but as a means of enforcing MLDA legislation. Mystery shopping, or test purchasing, is a technique where an underage person (or seemingly underage) attempts to procure alcohol (Gosselt et al., 2007). Recent research results from the UK and Scotland indicated that the use of mystery shopping as an enforcement strategy, i.e. action is taken against offenders, decreases the alcohol availability among underage people (NHS Scotland, 2012).

Conclusion

In this chapter a logic model is introduced to gain insight in the drinking behavior of underage people. The model is based on the interaction between supply and demand and will serve as the basis for a valid and meaningful evaluation. Intermediate variables depicted in this figure have either been identified as empirically associated with underage alcohol consumption and its related consequences, as well as to other intermediate variables, or, in the absence of empirical study results, have a theoretical rationale for inclusion in the model. The intermediate variables that are identified in this interaction between supply and demand are: drinking beliefs, drinking context, external influences, availability, marketing, community norms, legislation and enforcement.

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Chapter 3: Trends in alcohol consumption

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In this chapter we only present the results of the analysis. More information on the used data sources, methodological considerations, indicators, statistical tests, dependent and independent variables, can be found back in the elaborative document.

1.1 Results

1.1.1 Descriptive analysis

Flemish level

The pooled dataset at the Flemish level consisted of 101,759 adolescents. Descriptive statistics are shown in Table 1. 50.7% of the sample was male and 0.1% of the students did not report their gender. The average age of the sample was 14.75 years.

Table 2 reports all descriptive statistics concerning the available outcome indicators at the Flemish level. The table is organized in such a way that it clearly shows absolute outcome percentages and relative changes, as well as making a clear distinction between the percentages for the full sample and those of a subsample, containing only those adolescents under the age of 16. After all, if the minimum legal drinking age had any effect in Belgium, one would expect that the rate of change in the latter subgroup is higher than that of the full sample (in case of a decreasing trend) or lower (in case of an increasing trend). Over the study period, all observed outcome measures steadily decrease. Life-time prevalence of alcohol consumption drops from 77.1% in 2002 to 55.7% in 2014, for the full sample, which is a relative decrease (rd) of 27.76%. In the same period, the rate in the age group under 16 plummets from 69.90% to 40.10%, a relative decrease of 42.63%. Similarly, life-time prevalence of spirits consumption drops from 68.0% to 46.5% (rd = 33.09%) in the full sample (Subsample under 18: from 58.1% to 29.1%, rd = 49.91%), weekly alcohol consumption declines by 53%, from 28.3% to 13.3% (under 16 subsample: 15.3% to 3.7%, rd = 75.82%) and weekly spirits consumption by 67.48%, from 16.3% to 5.3% (under 16 subsample: 10.3% to 1.8%, rd = 82.52%). The evolution of all variables is also graphically shown in **Fout! Verwijzingsbron niet gevonden.** and **Fout! Verwijzingsbron niet gevonden..**

Belgian level

At the Belgian level, the pooled dataset consisted of 100,423 adolescents, of whom 50.2% were male and 49.6 female (see Table 1). The average age of the sample was 14.2 years, with 807 missing values. On a scale from 1 to 5, the mean perceived family wealth (PFW) was 3.26. By construction, the average value of the Family Affluence Scale (FAS) was 0.50; the average value for Parental Occupational Status (OSC) was 2.82.

Table 5 provides an overview of the evolution of the available indicators at the Belgian level. Life-time prevalence of alcohol consumption decreased from 76.9% in 2002 to 54.9% in 2014 for the full sample, which is a relative decrease of 29.39%. During the same time-period, life-time prevalence dropped from 69.8% to 41.2% among those under the age of 16, which is a relative decrease of 40.97%. Similar observations can be made for the other outcome measures. Life-time prevalence of spirits decreased from 67.30% to 46.70% (rd = 30.61%) in the full sample and from 57.8% to 31.6% in the subsample (rd = 45.33%). Weekly alcohol consumption dropped from 27.7% to 14% (rd = 49.46%) in the full sample and from 16% to 5.3% in the subsample (rd = 66.88%). Weekly spirits consumption came down from 17.1% to 6.6% (rd = 61.40%) in the full sample and from 10.9% to 3% (rd = 72.48%) in the subsample. In the Belgian sample, life-time drunkenness was added as an outcome measure. The rate of

drunkenness decreased from 24.3% in 2002 to 20.6% in 2014 (rd = 15.23%) for the full sample. Among adolescents under the age of 16, it decreased from 11.8% to 7.1% (rd = 39.83%). All indicator evolutions are also graphically shown in **Fout! Verwijzingsbron niet gevonden.** and **Fout! Verwijzingsbron niet gevonden.**

Table 1 Descriptive statistics

	Flemish Sample	Belgian Sample	International Sample
Gender			
Male	N = 51,555 (50.7%)	N = 50,347 (50.2%)	N = 328,959 (49.0%)
Female	N = 50,076 (49.3%)	N = 49,849 (49.6%)	N = 342,125 (51.0%)
Missing	N = 132 (0.1%)	N = 227 (0.2%)	N = 0 (0%)
Age (mean (SD) / missing)	14.75 (2.171) / 427	14.2 (2.603) / 807	13.58 (1.648) / 5308
Perceived Family Wealth (PFW) (mean (SD) / missing)		3.26 (0.828) / 8377	3.61 (0.890) / 20,16
Family Affluence Scale (FAS) (mean (SD) / missing)		0.50 (0.284) / 7767	0.50 (0.285) / 31,389
Parental Occupational Scale (OSC) (mean (SD) / missing)		2.82 (1.237) / 22,104	

International level

At the international level, all countries and regions were added that conducted the HBSC study from 2002-2014. In total, the analysis consists of 30 countries (33 regions). The total sample consisted of 671,087 adolescents, of which 328,959 (49.0%) was male and N = 326,412 (51.0%) was female. The average age was 13.58 years (SD = 1.648) which is lower than the Flemish and Belgian sample. The descriptive information can be found in Table 1.

Fout! Verwijzingsbron niet gevonden. to **Fout! Verwijzingsbron niet gevonden.** provide a graphical representation of the evolution of life-time and weekly alcohol consumption and life-time drunkenness by geographic area. Moreover, the evolution of each outcome measure is also listed per country in Table 4 to Table 6, both in terms of prevalence and percentage change. Overall six areas are represented, each with a unique drinking context. Canada, Ireland, England, Scotland and Wales make up the Anglo-Saxon region. This region is characterized by having the highest prevalence for all outcome measures in 2002 (life-time alcohol consumption: 34.69%, weekly alcohol consumption: 19.15% and life-time drunkenness 23.59%) but has also seen the most marked decreases, to the extent even that the only region with lower weekly-alcohol consumption in 2014 was Northern-Europe. Denmark, Finland, Greenland, Norway and Sweden make up Northern-Europe. This region is characterized by having the lowest prevalence of weekly alcohol consumption, but an above average prevalence of life-time drunkenness. Austria, Belgium, France, Germany, Netherlands and Switzerland make up Western Europe. Life-time drunkenness in this area is relatively low compared to most other regions and average in terms of life-time and weekly alcohol consumption. Southern-Europe is comprised by Greece, Italy, Portugal and Spain. Life-time drunkenness among adolescents in this area

is consistently below the all country average, whereas life-time and weekly alcohol consumption are typically above the average. Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russia, Slovenia, Ukraine and Macedonia make up Eastern-Europe. This area is characterized by high rates of life-time drunkenness. Finally, Israel is recognized by low rates of drunkenness but high rates of life-time and weekly alcohol consumption.

Table 2 Evolution of alcohol measures in Flanders

	Full sample				Under 16			
	Prevalence Rate				Prevalence Rate			
	2002	2006	2010	2014	2002	2006	2010	2014
Alcohol life-time prevalence	77,1%	74,4%	65,2%	55,7%	69,9%	65,4%	53,3%	40,1%
Spirits life-time prevalence	68,0%	65,1%	55,7%	46,5%	58,1%	53,5%	41,2%	29,1%
Weekly alcohol consumption	28,3%	24,8%	17,4%	13,3%	15,3%	11,7%	6,3%	3,7%
Daily alcohol consumption	2,9%	2,7%	1,4%	0,9%	2,1%	1,4%	0,7%	0,6%
Weekly spirits consumption	16,3%	12,7%	8,2%	5,3%	10,3%	6,8%	3,3%	1,8%
	Percentage Change				Percentage Change			
	2002	2006	2010	2014	2002	2006	2010	2014
Alcohol life-time prevalence		-3,56%***	-12,36%***	-14,47%***		-6,38%***	-18,56%***	-24,77%***
Spirits life-time prevalence		-4,33%***	-14,38%***	-16,44%***		-7,86%***	-22,91%***	-29,54%***
Weekly alcohol consumption		-12,46%***	-29,78%***	-23,61%***		-23,55%***	-46,23%***	-40,55%***
Daily alcohol consumption		-3,77%	-50,48%***	-33,44%***		-35,82%***	-51,22%***	-15,32%
Weekly spirits consumption		-22,28%***	-35,50%***	-35,25%***		-34,11%***	-51,13%***	-45,44%***

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Figure 2 Evolution of Flemish alcohol consumption - Full sample

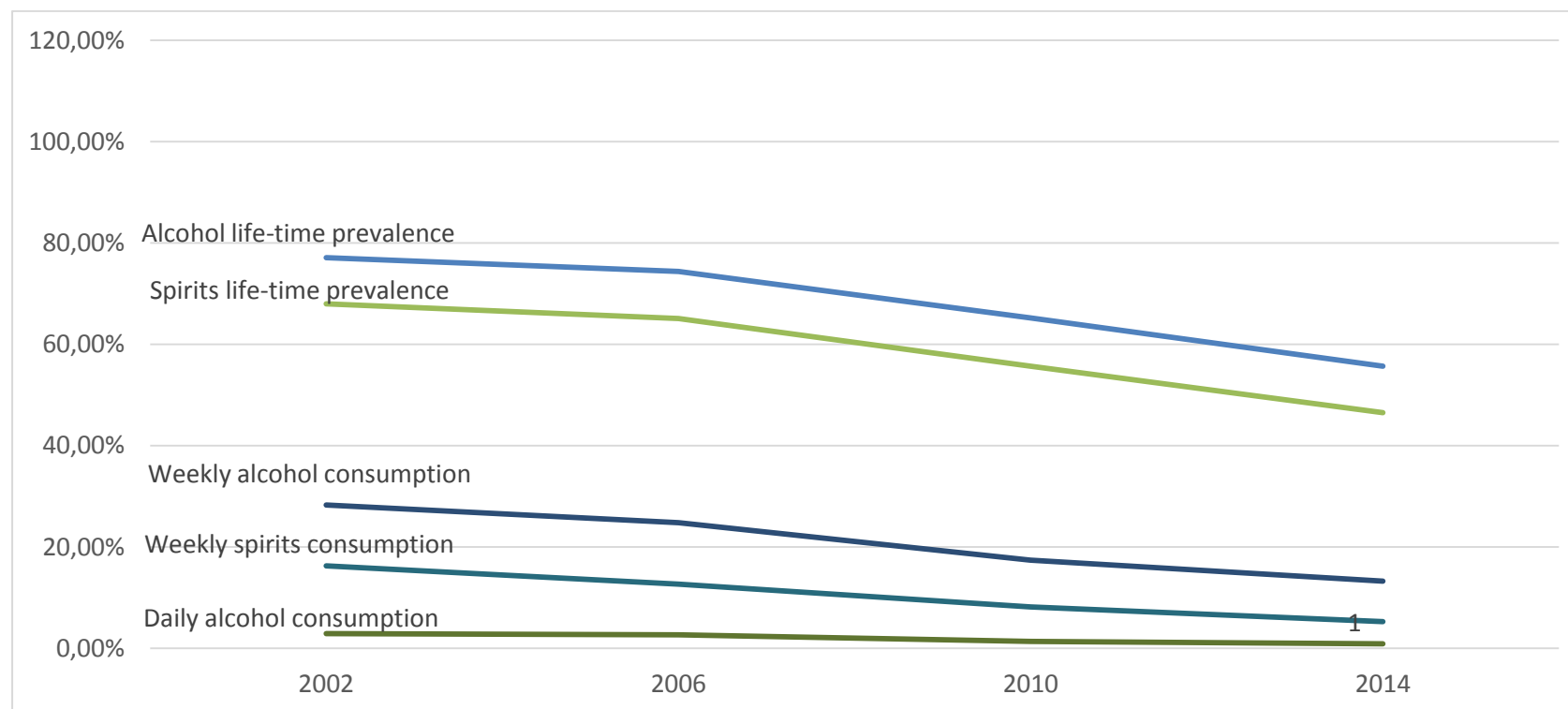


Figure 3 Evolution of Flemish alcohol consumption - Under 16

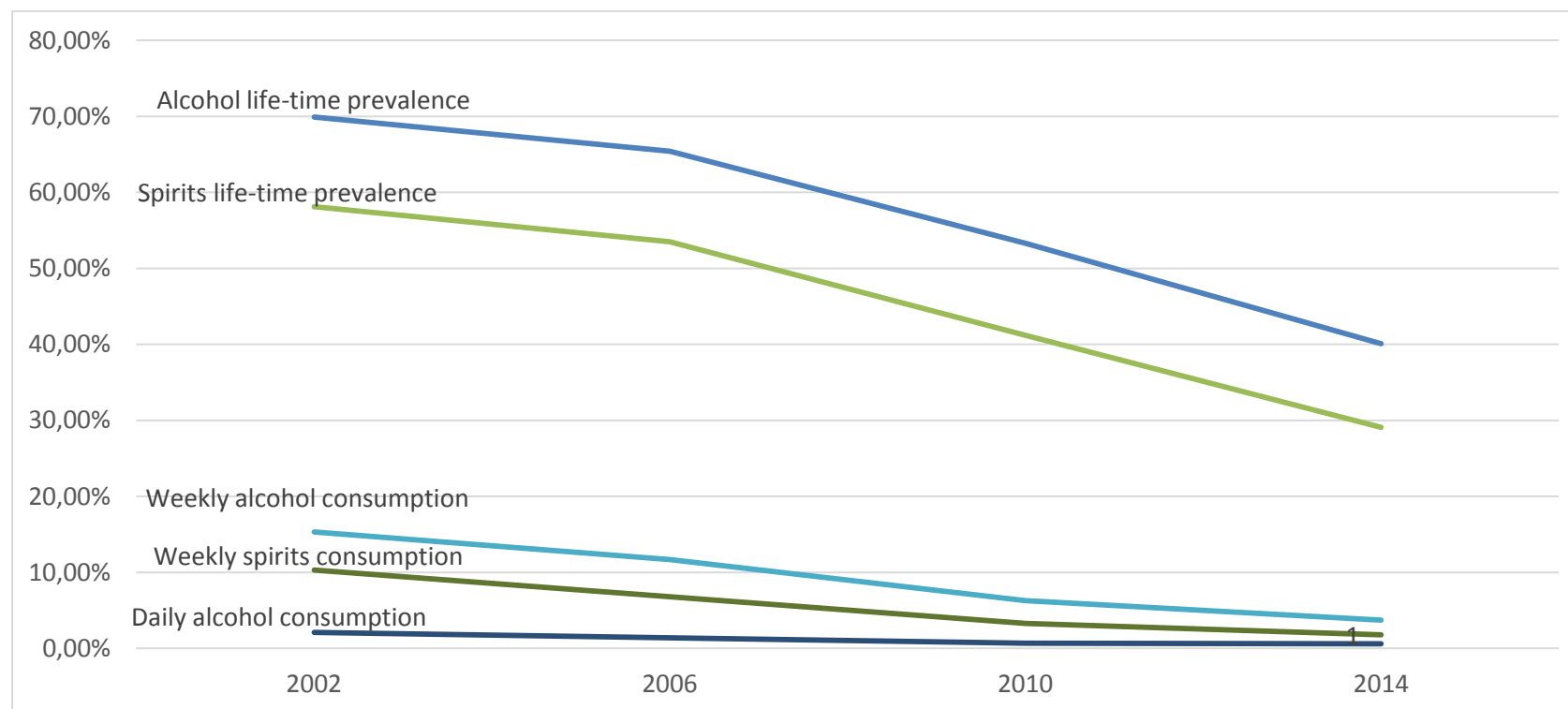


Table 3 Evolution of alcohol measures in Belgium

	Full sample				Under 16			
	Prevalence Rate				Prevalence Rate			
	2002	2006	2010	2014	2002	2006	2010	2014
Alcohol life-time prevalence	76,9%	75,3%	67,6%	54,9%	69,8%	67,1%	55,9%	41,2%
Spirits life-time prevalence	67,3%	66,3%	58,9%	46,7%	57,8%	55,2%	44,8%	31,6%
Monthly alcohol consumption	43,4%	43,4%	36,2%	28,0%	30,0%	28,3%	19,9%	13,1%
Weekly alcohol consumption	27,7%	26,8%	21,4%	14,0%	16,0%	14,0%	9,4%	5,3%
Daily alcohol consumption	3,4%	4,0%	2,6%	1,6%	2,5%	2,5%	1,5%	1,2%
Weekly spirits consumption	17,1%	16,8%	12,4%	6,6%	10,9%	9,5%	5,9%	3,0%
Life-time drunkenness (2+)	24,3%	25,1%	23,3%	20,6%	11,8%	11,2%	9,8%	7,1%
	Percentage Change				Percentage Change			
	2002	2006	2010	2014	2002	2006	2010	2014
Alcohol life-time prevalence		-2,01%***	-10,33%***	-18,79%***		-3,84%***	-16,60%***	-26,36%***
Spirits life-time prevalence		-1,55%*	-11,10%***	-20,78%***		-4,52%***	-18,79%***	-29,45%***
Monthly alcohol consumption		-0,01%	-16,61%***	-22,78%***		-5,74%***	-29,54%***	-34,50%***
Weekly alcohol consumption		-3,31%*	-19,85%***	-34,66%***		-12,43%***	-33,11%***	-43,82%***
Daily alcohol consumption		17,82%***	-34,18%***	-38,86%***		-2,60%	-39,52%***	-18,15%*
Weekly spirits consumption		-1,77%	-26,18%***	-46,46%***		-13,58%***	-37,65%***	-49,33%***
Life-time drunkenness (2+)		3,02%*	-7,00%***	-11,57%***		-5,42%*	-12,65%***	-26,82%***

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Figure 4 Evolution of Belgian alcohol consumption - Full sample

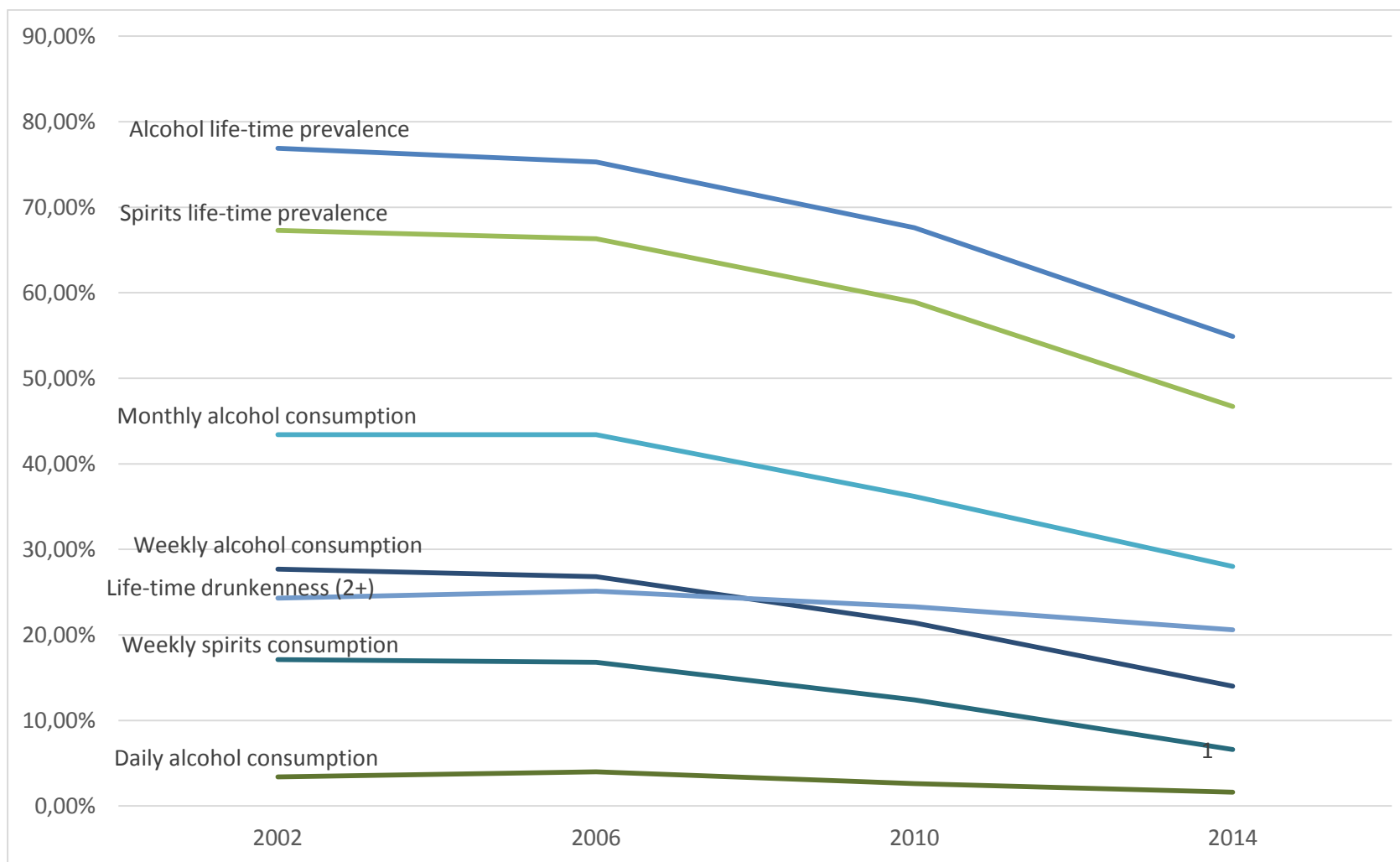


Figure 5 Evolution of Belgian alcohol consumption -Under 16

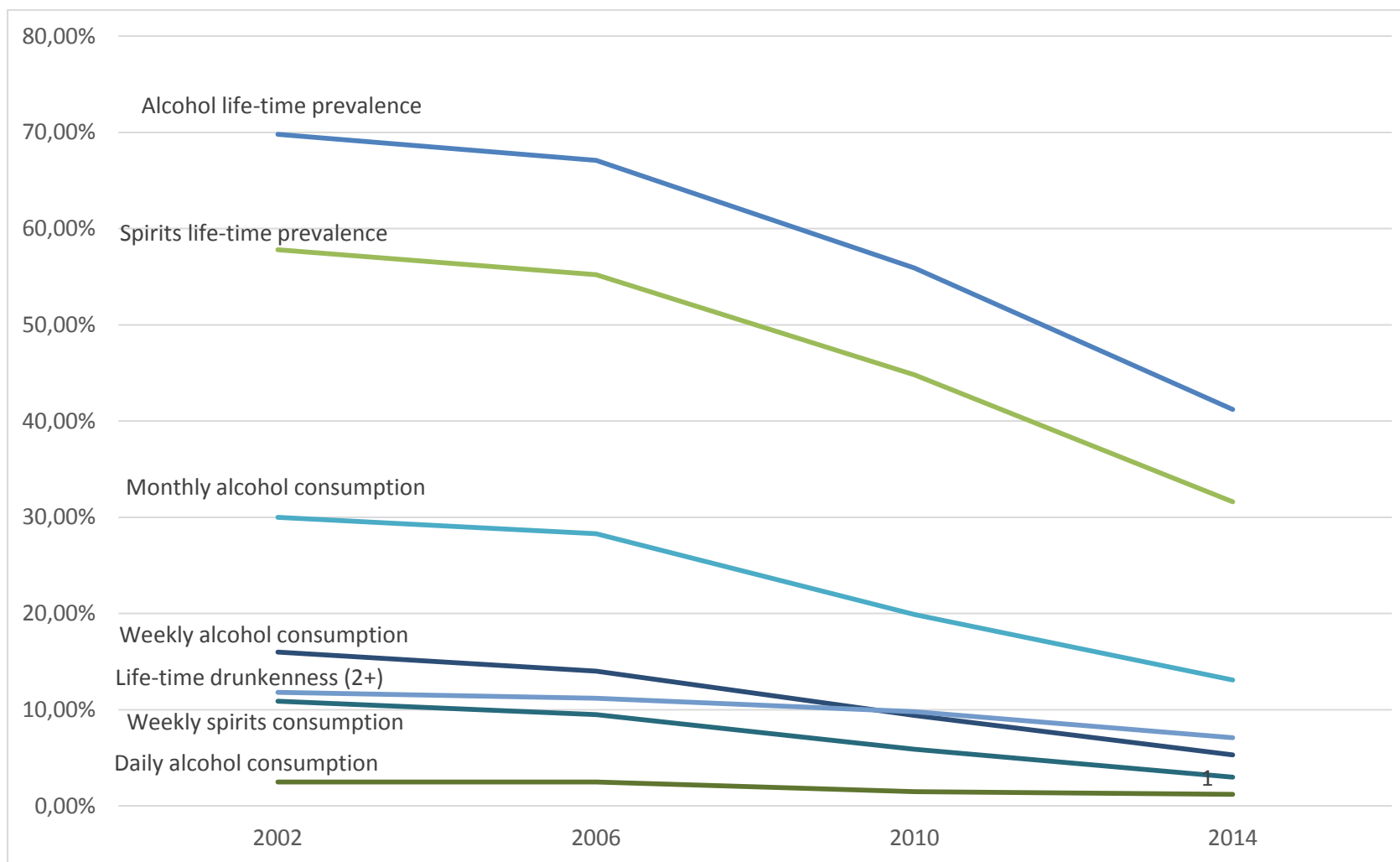


Table 4 International evolution of life-time alcohol consumption

Geographic area	Country	Prevalence rates				Percentage change		
		2002	2006	2010	2014	2006	2010	2014
Anglo-Saxon	Canada	24.19%	26.18%	18.56%	14.79%	8.23%*	-29.09%***	-20.31%***
	Ireland	13.63%	18.60%	14.30%	7.18%	36.44%***	-23.12%***	-49.78%***
	England	49.68%	41.53%	22.45%	13.54%	-16.40%***	-45.95%***	-39.67%***
	Scotland	36.56%	41.73%	30.58%	14.14%	14.15%***	-26.72%***	-53.76%***
	Wales	36.09%	42.87%	32.59%	16.82%	18.79%***	-23.99%***	-48.39%***
Western Europe	Austria	18.78%	24.14%	24.04%	17.35%	28.52%***	-0.41%	-27.83%***
	Belgium (Flemish)	25.78%	33.05%	21.00%	17.73%	28.21%***	-36.45%***	-15.58%***
	Belgium (French)	20.61%	28.83%	20.98%	14.99%	39.90%***	-27.23%***	-28.54%***
	France	17.93%	21.63%	18.21%	14.61%	20.66%***	-15.83%***	-19.74%***
	Germany	23.79%	19.83%	18.76%	14.85%	-16.66%***	-5.38%	-20.85%***
	Netherlands	21.61%	27.33%	17.00%	12.60%	26.48%***	-37.81%***	-25.85%***
	Switzerland	20.93%	19.12%	20.24%	11.27%	-8.64%*	5.82%	-44.28%***
Eastern Europe	Croatia	21.03%	31.81%	34.13%	26.72%	51.24%***	7.29%**	-21.70%***
	Czech Republic	34.75%	35.66%	39.18%	22.16%	2.63%	9.87%**	-43.43%***
	Estonia	22.26%	26.80%	23.96%	14.75%	20.41%***	-10.58%**	-38.45%***
	Hungary	26.86%	25.11%	25.19%	22.18%	-6.53%	0.33%	-11.95%***
	Latvia	19.37%	30.41%	26.50%	11.28%	56.99%***	-12.86%***	-57.45%***
	Lithuania	20.39%	23.00%	22.12%	12.98%	12.82%***	-3.84%	-41.31%***
	Poland	17.34%	21.58%	21.15%	13.65%	24.44%***	-2.01%	-35.43%***
	Russia	26.61%	29.94%	23.18%	9.32%	12.49%***	-22.56%***	-59.78%***
	Slovenia	18.31%	28.03%	27.65%	19.14%	53.13%***	-1.36%	-30.77%***
	Ukraine	36.08%	56.36%	37.27%	29.05%	56.22%***	-33.87%***	-22.07%***
	Macedonia	10.61%	15.63%	15.03%	12.16%	47.33%***	-3.87%	-19.09%***
Northern Europe	Denmark	32.99%	24.39%	26.43%	19.56%	-26.06%***	8.34%*	-25.98%***
	Finland	19.89%	17.89%	22.32%	17.13%	-10.07%**	24.79%***	-23.29%***
	Greenland	14.44%	12.13%	11.66%	7.74%	-16.00%	-3.87%	-33.61%**
	Norway	19.48%	16.30%	12.78%	6.04%	-16.29%***	-21.61%***	-52.71%***
	Sweden	17.58%	21.91%	20.33%	6.92%	24.64%***	-7.22%*	-65.96%***
Southern Europe	Greece	28.07%	31.20%	30.47%	25.12%	11.16%**	-2.33%	-17.56%***
	Italy	31.53%	31.23%	25.51%	22.88%	-0.94%	-18.33%***	-10.28%**
	Portugal	15.64%	18.36%	18.39%	9.38%	17.39%**	0.17%	-48.99%***
	Spain	14.47%	18.66%	22.51%	12.30%	28.92%***	20.64%***	-45.37%***
Israel	Israel	25.14%	23.44%	19.68%	18.45%	-6.76%*	-16.02%***	-6.25%

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Table 5 International evolution of weekly alcohol consumption

Geographic area	Country	Prevalence rates				Percentage change		
		2002	2006	2010	2014	2006	2010	2014
Anglo-Saxon	Canada	11.50%	10.27%	7.30%	5.75%	-10.66%	-28.92%***	-21.30%***
	Ireland	5.97%	8.87%	6.10%	2.33%	48.63%***	-31.20%***	-61.73%***
	England	28.73%	21.16%	10.21%	4.58%	-26.36%***	-51.75%***	-55.15%***
	Scotland	19.73%	23.18%	14.97%	5.73%	17.50%***	-35.40%***	-61.72%***
	Wales	21.57%	22.33%	15.87%	5.85%	3.53%	-28.94%***	-63.16%***
Western Europe	Austria	10.13%	14.97%	14.38%	8.30%	47.72%***	-3.95%	-42.24%***
	Belgium (Flemish)	14.39%	15.52%	9.70%	6.97%	7.87%	-37.50%***	-28.14%***
	Belgium (French)	12.40%	16.08%	10.66%	6.35%	29.70%***	-33.72%***	-40.42%***
	France	7.58%	9.64%	7.85%	5.41%	27.18%***	-18.51%***	-31.16%***
	Germany	13.37%	9.23%	7.72%	5.87%	-30.97%***	-16.34%**	-24.01%***
	Netherlands	13.73%	15.12%	8.63%	5.71%	10.10%	-42.92%***	-33.85%***
	Switzerland	10.66%	9.10%	9.56%	4.43%	-14.61%*	5.05%	-53.69%***
Eastern Europe	Croatia	13.97%	20.56%	20.28%	14.59%	47.11%***	-1.32%	-28.06%***
	Czech Republic	20.13%	19.32%	22.50%	9.79%	-3.99%	16.42%***	-56.49%***
	Estonia	10.26%	11.21%	8.67%	4.23%	9.19%	-22.65%***	-51.23%***
	Hungary	14.89%	14.32%	12.99%	11.64%	-3.81%	-9.29%	-10.39%
	Latvia	8.76%	14.59%	11.85%	3.45%	66.65%***	-18.80%***	-70.86%***
	Lithuania	10.74%	12.10%	10.40%	6.26%	12.74%*	-14.06%**	-39.84%***
	Poland	7.86%	7.97%	8.78%	6.50%	1.41%	10.19%	-25.99%***
	Russia	14.75%	16.78%	12.76%	5.86%	13.74%***	-23.93%***	-54.05%***
	Slovenia	11.40%	15.08%	13.52%	8.79%	32.33%***	-10.34%*	-34.99%***
	Ukraine	19.88%	35.68%	20.03%	13.40%	79.49%***	-43.87%***	-33.08%***
Macedonia	7.06%	11.24%	9.15%	7.25%	59.24%***	-18.61%***	-20.77%**	
Northern Europe	Denmark	18.15%	11.19%	10.67%	6.32%	-38.39%***	-4.64%	-40.77%***
	Finland	5.49%	4.43%	4.89%	4.53%	-19.38%*	10.40%	-7.39%
	Greenland	6.02%	4.90%	5.59%	3.77%	-18.56%	14.14%	-32.66%
	Norway	7.02%	5.57%	4.24%	1.54%	-20.76%**	-23.88%**	-63.75%***
	Sweden	7.18%	8.41%	7.49%	2.33%	17.14%*	-10.94%	-68.84%***
Southern Europe	Greece	17.15%	18.72%	18.27%	11.37%	9.12%	-2.39%	-37.75%***
	Italy	24.34%	23.71%	17.32%	13.01%	-2.58%	-26.97%***	-24.90%***
	Portugal	8.32%	7.83%	6.95%	4.41%	-5.96%	-11.25%	-36.48%***
	Spain	8.44%	9.14%	11.76%	4.22%	8.25%	28.70%***	-64.09%***
Israel	Israel	15.59%	12.99%	14.59%	12.90%	-16.70%***	12.38%*	-11.58%*

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Table 6 International evolution of life-time drunkenness

Geographic area	Country	Prevalence rates				Percentage change		
		2002	2006	2010	2014	2006	2010	2014
Anglo-Saxon	Canada	17.77%	19.00%	15.66%	10.51%	6.90%	-17.56%***	-32.93%***
	Ireland	13.39%	15.36%	13.31%	6.96%	14.64%*	-13.30%**	-47.71%***
	England	28.98%	23.21%	16.16%	10.47%	-19.90%***	-30.38%***	-35.18%***
	Scotland	22.39%	25.58%	21.86%	12.47%	14.23%***	-14.53%***	-42.96%***
	Wales	30.48%	27.64%	22.25%	12.99%	-9.32%**	-19.50%***	-41.61%***
Western Europe	Austria	13.74%	15.05%	15.22%	9.76%	9.53%	1.13%	-35.86%***
	Belgium (Flemish)	14.17%	13.60%	10.82%	9.49%	-4.04%	-20.40%***	-12.28%*
	Belgium (French)	12.13%	12.64%	11.13%	8.87%	4.28%	-11.98%*	-20.34%***
	France	7.83%	9.55%	8.56%	7.02%	21.92%***	-10.38%*	-17.95%**
	Germany	16.62%	12.97%	11.90%	10.27%	-21.93%***	-8.26%	-13.70%**
	Netherlands	12.19%	10.62%	6.80%	6.05%	-12.90%*	-35.99%***	-10.93%
	Switzerland	13.60%	9.89%	10.71%	5.69%	-27.29%***	8.30%	-46.86%***
Eastern Europe	Croatia	13.26%	19.06%	18.31%	14.70%	43.76%***	-3.94%	-19.74%***
	Czech Republic	14.55%	17.07%	20.97%	12.82%	17.32%***	22.87%***	-38.87%***
	Estonia	23.45%	25.51%	21.17%	12.16%	8.75%*	-17.01%***	-42.57%***
	Hungary	15.25%	16.35%	18.21%	13.90%	7.23%	11.36%*	-23.69%***
	Latvia	15.80%	22.62%	22.75%	11.92%	43.16%***	0.56%	-47.58%***
	Lithuania	24.97%	25.64%	24.85%	15.87%	2.68%	-3.08%	-36.12%***
	Poland	15.27%	18.33%	14.30%	11.70%	20.07%***	-21.99%**	-18.20%***
	Russia	19.23%	20.32%	13.35%	6.67%	5.69%	-34.30%***	-50.02%***
	Slovenia	16.18%	16.09%	17.51%	12.21%	-0.57%	8.81%	-30.25%***
	Ukraine	28.10%	19.26%	15.48%	8.77%	-31.47%***	-19.62%***	-43.37%***
	Macedonia	5.26%	8.47%	6.50%	11.51%	60.86%***	-23.26%***	77.15%***
Northern Europe	Denmark	27.71%	20.67%	21.29%	13.75%	-25.41%***	2.99%	-35.40%***
	Finland	24.04%	18.68%	24.66%	18.24%	-22.32%***	32.01%***	-26.01%***
	Greenland	27.15%	18.32%	22.85%	9.29%	-32.52%***	24.74%**	-59.33%***
	Norway	15.33%	10.58%	9.78%	6.31%	-31.00%***	-7.56%	-35.48%***
	Sweden	14.99%	10.42%	8.95%	6.71%	-30.51%***	-14.08%**	-25.10%***
Southern Europe	Greece	10.22%	9.53%	9.93%	8.91%	-6.75%	4.16%	-10.27%
	Italy	8.88%	9.62%	6.92%	6.48%	8.34%	-28.05%***	-6.39%
	Portugal	11.26%	10.82%	10.68%	5.94%	-3.92%	-1.33%	-44.34%***
	Spain	9.44%	10.45%	16.53%	8.57%	10.75%*	58.18%***	-48.15%***
Israel	Israel	8.59%	8.56%	7.45%	4.08%	-0.39%	-12.94%	-45.24%***

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Figure 6 International evolution of life-time alcohol consumption by geographic area

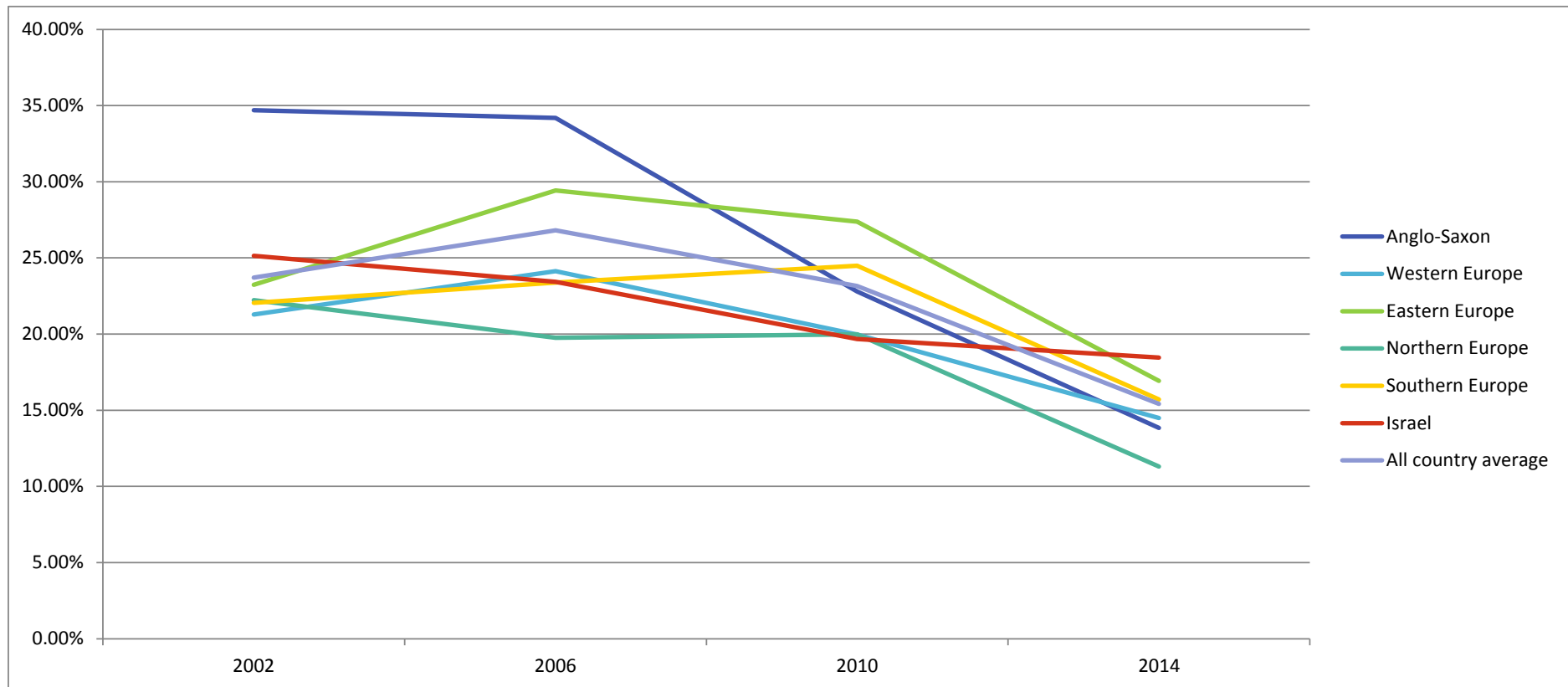


Figure 7 International evolution of weekly alcohol consumption by geographic area

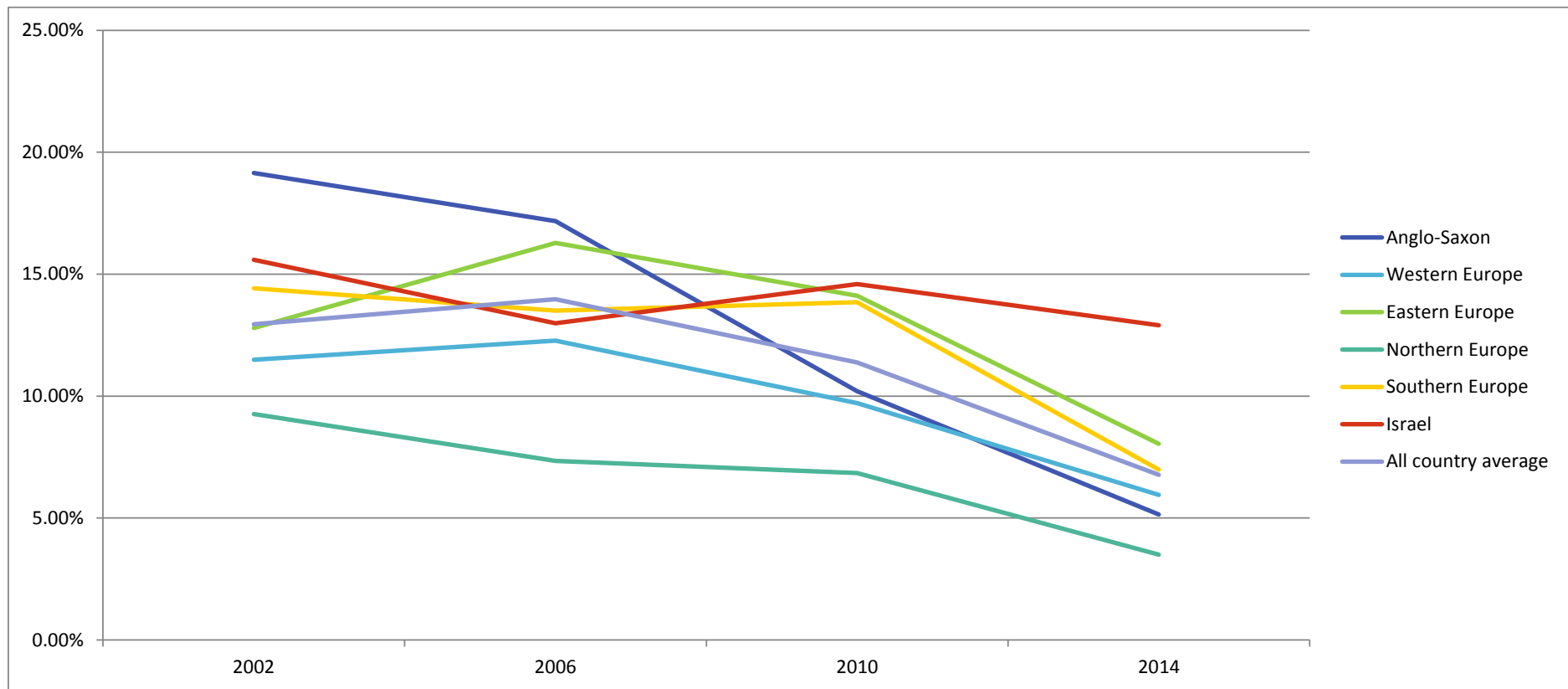
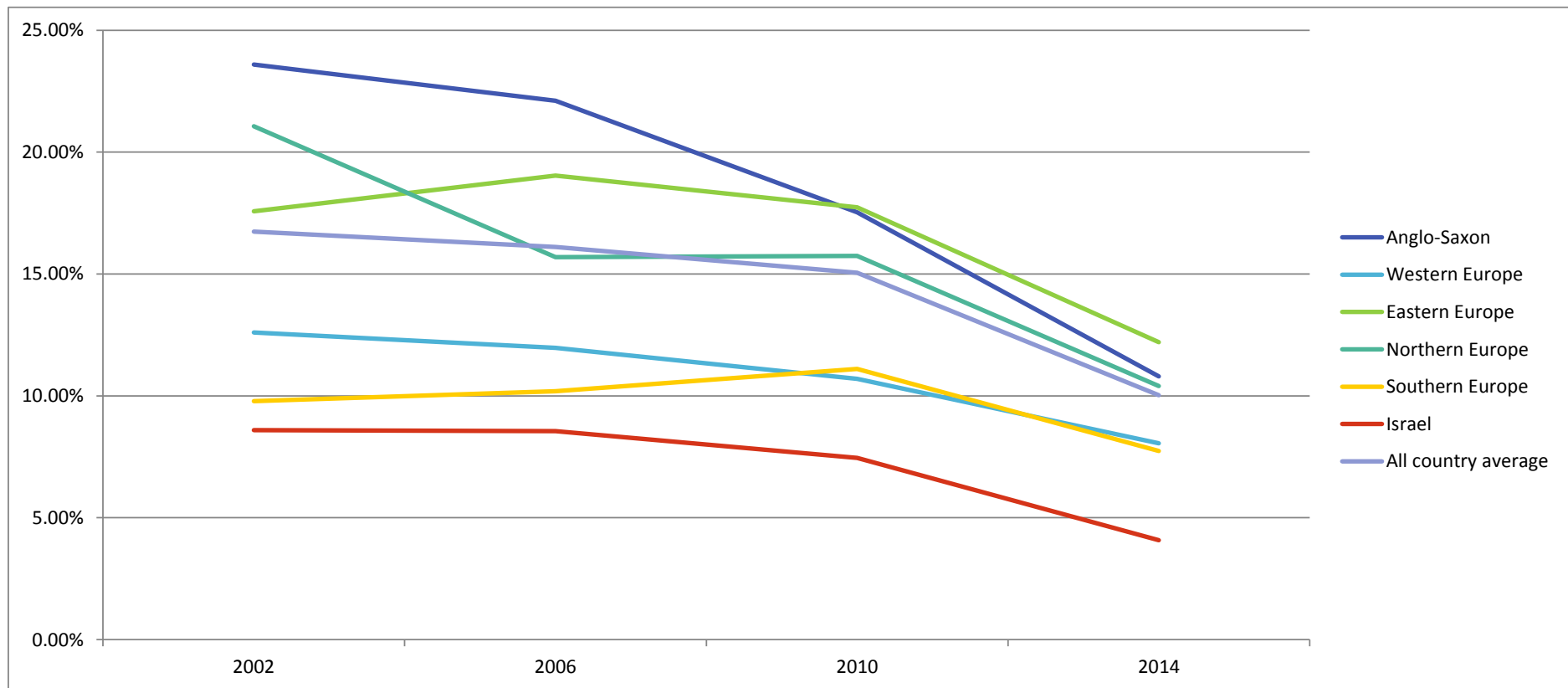


Figure 8 International evolution of life-time drunkenness by geographic area



1.1.2 Regression analysis

Flemish level

Life-time alcohol consumption

The results of the multilevel logistic regression models investigating life-time alcohol consumption are shown in

Table 7. The intercept-only model showed a school-level variance of 1.44 (SD = 1.2). The VPC measure shows that 30.44% of total variance life-time alcohol consumption can be attributed to differences between schools, thus confirming the multilevel structure of the model. Moreover, the log likelihood of the model (L.L = -55315.4) showed better fit for a 2-level model compared to a single-level model (L.L = -60660.0). As such, the choice of a 2-level model with schools at level-2 is justified. In model 2, sociodemographic variables (age and gender) were added, as well as time. As mentioned in the methods section, age is dichotomized to “under 16” and “16 or older”, the reference category for gender was male and time was dichotomized to “before legislation” and “after legislation”. The log likelihood of model 2 (L.L = -50316.2) was significantly lower than that of model 1, thus showing a better model fit. Simultaneously, the VPC dropped to 0.699 or 17.52%. This is still significantly high to remain confident about the current 2-level structure. The coefficients in this model provide the main effects of age, gender and time on life-time alcohol consumption. All coefficients in model 2 are significant with $p < 0.001$. The respective coefficients for age, gender and time were -1.581 (SE = 0.024), -0.199 (SE = 0.017) and -0.960 (SE = 0.053). **These results show that adolescents younger than 16 years have a significantly lower chance of ever having consumed alcohol compared to older adolescents (regardless of the time period). Similarly, girls have a lower chance of ever having consumed alcohol. Alcohol consumption in general has evolved negatively over time, which is confirmed by the descriptive statistics shown before.** Finally, model 3 provides an estimate for the interaction effect between age and time, which is -0.365 (SE = 0.049). The interaction effect constitutes that, on top of the main effects of age and time, **adolescents under the age of 16 are at a decreased risk of ever having consumed alcohol after 2009**. The VPC in model 3 is 17.64% and the log likelihood (L.L = -50288.3) show a better fit compared to model 2.

To better understand the concept of the interaction effect, and why it is relevant for the current study, a graphical representation is presented in Figure 9. The difference in life-time alcohol consumption before and after the legislation is represented by the solid line. If the legislation had an impact one would expect the line to shift down (for a decrease in alcohol consumption) for adolescents younger than 16 compared to those 16 or older. In the absence of any events, this shift is assumed to leave the slope of the line unchanged however. Since the interaction between age and time is significant however, the slope changes, thus indicating that after 2009, the relative difference in life-time alcohol consumption between adolescents younger than 16 and those 16 or older became larger than would have been expected in the absence of any event. **The interaction could therefore be interpreted as a potential effect of the minimum drinking age legislation, although it could also be due to other events (e.g. 2008 financial crisis) or due to differentiating trends that occur without policy intervention (e.g. increased alcohol prices).**

Figure 9 Interaction effect of life-time alcohol consumption in Flanders

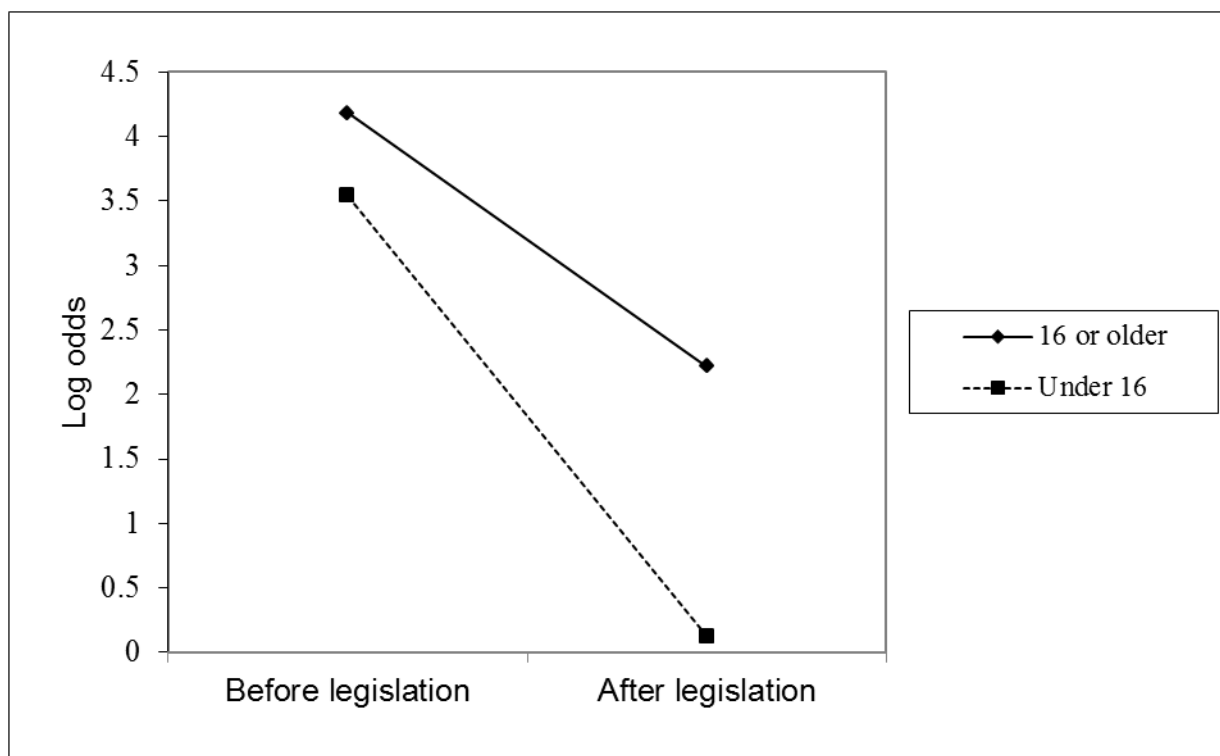


Table 7 Regression results for life-time alcohol consumption in Flanders

	Model 1		Model 2		Model 3	
	β	S.E.	β	S.E.	β	S.E.
Fixed effects						
Intercept	1.087***	0.036	2.695***	0.041	2.516***	0.047
Age ^a			-1.581***	0.024	-1.345***	0.039
Gender ^b			-0.199***	0.017	-0.201***	0.017
Time			-0.960***	0.053	-0.683***	0.064
Age * time					-0.365***	0.049
Random effect						
σ_u^2	1.44	1.2	0.699	0.836	0.7045	0.8393
VPC	30.44%		17.52%		17.64%	
Model evaluation						
Log likelihood	-53315.4		-50316.2		-50288.3	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 16 years or older, b reference category is Male, c reference category is before introduction of the legislation

Weekly alcohol consumption

The results of the multilevel logistic regression models for weekly alcohol consumption in Flanders are found in Table 8. Model 1 shows the results of the intercept-only mode. The VPC is 1.695 (SD = 1.302), which means that 34% of total variance is caused by between-school variance. The log likelihood is -44248.5 which is significantly better than that of the single level model (L.L = -50916.9). The 2-level structure is therefore appropriate for this analysis. In model 2, the main effects for age, gender and time are added. All effects are significant with $p < 0.001$. **Adolescents younger than 16 have a significantly lower chance of ever weekly alcohol consumption compared to older adolescents. Girls have a lower chance of weekly alcohol consumption compared to boys. The significant time coefficient shows the decreasing weekly consumption that was shown in the descriptive results.** Moreover, the model shows a better fit compared to the intercept-only model, with a log likelihood of -40130.4 and a VPC of 14.32%. In model 3, the interaction effect is added, which is -0.400 and is significant with $p < 0.001$ indicating a potential effect of the minimum drinking age legislation, although it could also be due to other events or due to differentiating trends (that occur without policy intervention). Model 3 also shows better fit than model 2.

Table 8 Regression results for weekly alcohol consumption in Flanders

	Model 1		Model 2		Model 3	
	β	S.E.	β	S.E.	β	S.E.
Fixed effects						
Intercept	-1.766***	0.040	0.062	0.036	-0.039	0.038
Age ^a			-1.764***	0.023	-1.577***	0.020
Gender ^b			-0.791***	0.020	-0.790***	0.031
Time			-0.883***	0.050	-0.696***	0.055
Age * time					-0.400***	0.046
Random effect						
σ_u^2	1.695	1.302	0.550	0.742	0.559	0.748
VPC	34.00%		14.32%		14.52%	
Model evaluation						
Log likelihood	-44248.5		-40130.4		-40092.5	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 16 years or older, b reference category is Male, c reference category is before introduction of the legislation

Life-time spirits consumption

The regression results for life-time spirits consumption in Flanders are represented in Table 9. The intercept only model showed a VPC of 1.4 (SD = 1.183), which means 29.85% of the total variance is explained by the between-school variance. Moreover, the log likelihood of the model (-59047.5) showed a better fit compared to the single-level model (L.L. = -67008.8). As such, the 2-level model structure is justified for this outcome measure. The main effects in model 2 are all significant

with $p < 0.001$, except for gender, which shows to be unrelated to life-time spirits consumption. The dichotomization of age in this model is different from the previous model in order to reflect the letter of the legislation. The reference category in this model is adolescents aged 18 years or older, the other category is everyone younger than 18. Age showed to have a significant effect on life-time spirits consumption with a coefficient of -1.651 ($SE = 0.021$). Similarly, time was significant with a coefficient of -0.897 ($SE = 0.049$). **Adolescents younger than 16 have a significantly lower chance of life-time spirits consumption compared to older adolescents. The significant time coefficient ($\beta = -0.897$, $SE = 0.049$) shows the decreasing life-time spirits consumption that was shown in the descriptive results.** Moreover, model 2 showed a better fit than the intercept-only model with a log likelihood of -55101.0 and a VPC of 0.6191 ($SD = 0.787$) or 15.84% of total variance. Model 3 shows an additional improvement over model 2 with a log likelihood of -55066.5 and a VPC of 0.625 ($SD = 0.791$). The interaction effect between age and time was significant at the 0.001 level. **Once again the interaction effect being significantly negative could be a sign of positive effect of the minimum drinking age, although similar to the previous outcomes, the effect might also be caused by other factors.**

Table 9 Regression results for life-time spirits consumption in Flanders

	Model 1		Model 2		Model 3	
	β	S.E.	β	S.E.	β	S.E.
Fixed effects						
Intercept	0.533***	0.035	2.045***	0.037	1.883***	0.042
Age ^a			-1.651***	0.021	-1.433***	0.033
Gender ^b			-0.006	0.016	-0.007	0.016
Time			-0.897***	0.049	-0.643***	0.058
Age * time					-0.349***	0.042
Random effect						
σ_u^2	1.4	1.183	0.6191	0.787	0.625	0.791
VPC	29.85%		15.84%		15.96%	
Model evaluation						
Log likelihood	-59047.5		-55101.0		-55066.5	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 18 years or older, b reference category is Male, c reference category is before introduction of the legislation

Weekly spirits consumption

The final outcome variable at the Flemish level is weekly spirits consumption. Regression results are found in Table 10. The intercept-only model had a log likelihood of -29160.7 and a VPC of 1.208 ($SD = 1.099$), thus explaining 26.86% of total variance. This model is a significantly better fit than the single-level model, which had a log likelihood of -31923.5 . The main effects of age, gender and time were all found to be significant with $p < 0.001$ in model 2. Their respective coefficients were -1.269 ($SE = 0.029$), -0.293 ($SE = 0.026$) and -0.932 ($SE = 0.052$). **Adolescents younger than 16 have a significantly lower**

chance of weekly spirits consumption compared to older adolescents. Girls have a lower chance of weekly spirits consumption compared to boys. The significant time coefficient shows the decreasing weekly spirits consumption that was shown in the descriptive results. Model 2 also showed a better fit than the intercept-only model. Model 3 included the interaction between age and time, which showed to be -0.535 (SE = 0.060) and significant with $p < 0.001$. **Once again, this result could point towards an effect of the minimum legal drinking age although confounding factors might also play a role.** The final model also showed the best fit, with a log likelihood of -27822.3 and a VPC of 0.506 (SD = 0.711).

Table 10 Regression results for weekly spirits consumption in Flanders

	Model 1		Model 2		Model 3	
	β	S.E.	β	S.E.	β	S.E.
Fixed effects						
Intercept	-2.609***	0.037	-1.278***	0.039	-1.383***	0.041
Age ^a			-1.269***	0.029	-1.061***	0.037
Gender ^b			-0.293***	0.026	-0.293***	0.026
Time			-0.932***	0.052	-0.698***	0.058
Age * time					-0.535***	0.060
Random effect						
σ_u^2	1.208	1.099	0.502	0.708	0.506	0.711
VPC	26.86%		13.24%		13.33%	
Model evaluation						
Log likelihood	-29160.7		-27862.4		-27822.3	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 18 years or older, b reference category is Male, c reference category is before introduction of the legislation

Belgian level

Similar analyses were performed at the Belgian level but instead of using a pooled database consisting of J&G and VADLLB data, the Belgian database consists of J&G and FWB data. This was done to enable the inclusion of socioeconomic status as a predictor of alcohol outcome measures (research question 4).

Life-time alcohol consumption

The results of the regression results for life-time alcohol consumption are represented in Table 11. The intercept only model (model 1) showed an improved fit over the single-level model with a log likelihood of -51223.7 and a VPC of 1.963 (SD = 1.401), compared to a log likelihood of -55292.4 for the single-level model. As such, the 2-level model structure with schools at level-2 is justified. The main effects for the sociodemographic variables age and gender are added in model 2, as well as the time variable and the three measures of adolescent socio-economic status, as discussed in the methods section. The coefficient for age was -1.356 (SE = 0.032), showing that adolescents younger

than 16 have a significantly lower chance of ever having consumed alcohol compared to older adolescents. Gender was significant with $p < 0.001$ and a coefficient of -0.267 ($SE = 0.020$) indicating that girls have a lower chance of ever having consumed alcohol compared to boys. **Time was significant with a coefficient of -0.947 ($SE = 0.064$) showing the decreasing life-time consumption that was shown in the descriptive results.** Concerning the variables accounting for socioeconomic status, all three were found to be significant. Parental Family Wealth (PWF) and Family Affluence Scale (FAS) were significant with $p < 0.001$, family occupational status (OSC) was significant with $p < 0.05$. Their respective coefficients were -0.066 ($SE = 0.013$), 0.487 ($SE = 0.038$) and 0.017 ($SE = 0.009$). These results are rather interesting since they show that different indicators of socioeconomic status can give contrasting results. PWF is a subjective measure of socioeconomic status, believed to measure the psychological pathway through which social inequality impacts health. This measure is negative, indicating that higher subjective SES decreases the chance of ever having consumed alcohol, although the coefficient is very low. On the other hand, FAS is assumed to measure the material pathway of social inequality and OSC a mixture of both. Both indicators are positive, indicating that higher SES increases the chance of ever having consumed alcohol. Model 2 also provides a better fit than model 1, with a log likelihood of -34753.0 and a VPC of 0.967 ($SD = 0.983$). Model 3 adds the difference-in-difference effect, i.e. the interaction between age and time. The interaction effect is significant with $p < 0.001$ and a coefficient of -0.167 ($SE = 0.065$). This suggests that **the difference in life-time alcohol consumption between adolescents younger and older than 16 has increased more than what would be expected in the absence of any events** (see Figure 10). Model 3 provides a better fit than model 2 with a log likelihood of -34749.7 and a VPC of 0.973 ($SD = 0.986$). Models 4 and 5 test whether significant interactions exist between measures of socioeconomic status and age (model 4) and time (model 5). No interactions between time and socioeconomic status were found in model 4, moreover the model did not provide a better fit compared to model 3. Model 5 does provide a better fit with a log likelihood of -34545.9 and a VPC of 0.974 ($SD = 0.987$).

Figure 10 Interaction effect between age and time for life-time consumption in Belgium

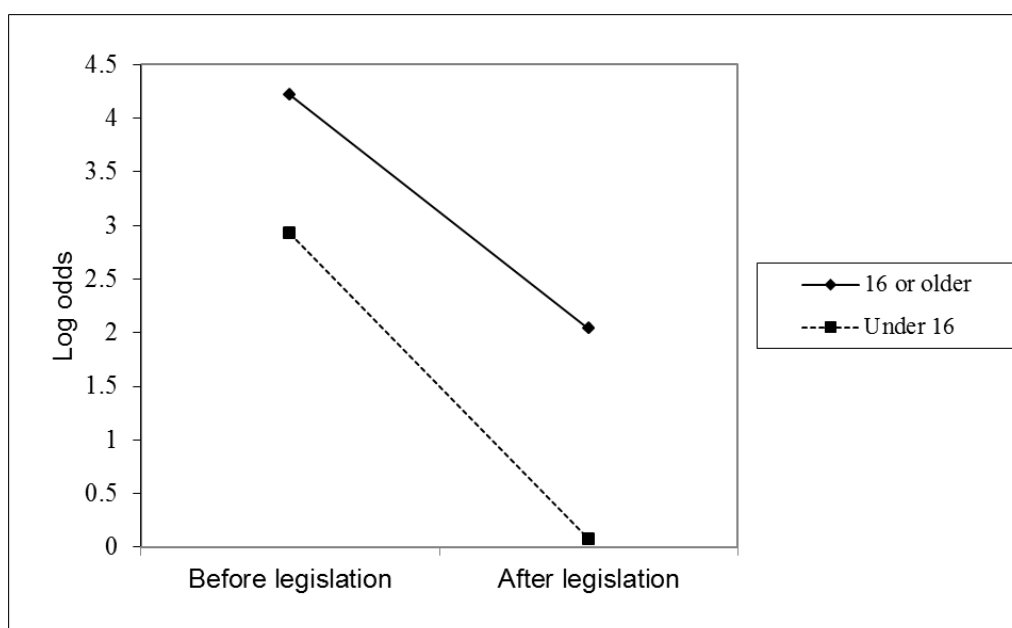


Table 11 Regressions results for life-time alcohol consumption in Belgium

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Fixed effects												
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Intercept	0.687***	0.040	2.394***	0.0686	2.315***	0.075	2.414***	0.085	2.069***	0.119	2.185***	0.095
Age a			-1.356***	0.032	-1.256***	0.050	-1.356***	0.032	-0.949***	0.127	-1.069***	0.083
Gender b			-0.267***	0.020	-0.268***	0.020	-0.267***	0.020	-0.268***	0.020	-0.268***	0.020
Time c			-0.947***	0.064	-0.815***	0.082	-0.983***	0.118	-0.947***	0.064	-0.991***	0.114
PFW			-0.066***	0.013	-0.066***	0,013	-0.059**	0.018	-0.047	0.029	-0.068***	0.013
FAS			0.487***	0.038	0.487***	0,038	0.431***	0.052	0.954***	0.087	-0.758***	0.127
Family OSC			0.017*	0.009	0.017*	0,009	0.013	0.013	0.029	0.018	0.019*	0.009
Age * time					-0.167**	0,065					0.015	0.109
Age * PFW									-0.025	0.033		
Age * FAS									-0.572***	0.096	-0.378***	0.166
Age * OSC									-0.013	0.021		
Time * PFW							-0.014	0.026				
Time * FAS							0.119	0.076			0.358*	0.166
Time * OSC							0.008	0.017				
Age * time * PFW												
Age * time * FAS											-0.361*	0.182
Age * time * OSC												
Random effects												
σ_u^2	1.963	1.401	0.967	0.983	0.973	0.986	0.967	0.984	0.974	0.987	0.972	0.986
VPC	37.37%		22.72%		22.83%		22.72%		22.84%		22.81%	
Model evaluation												
Log likelihood	-51223.7		-34753.0		-34749.7		-34751.7		-34545.9		-34725.9	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 16 years or older, b reference category is Male, c reference category is before introduction of the legislation

Weekly alcohol consumption

The results of the regression models for weekly alcohol consumption in Belgium are represented in Table 12. Model 1 represents the intercept-only model and has a log likelihood of -44251.2 and a VPC of 2.296 (SD = 1.515), thus representing 41.10% of total variance. As such, this model provides a better fit than the single-level model (L.L. = -52364.3). The addition of sociodemographic variables, time and variables for socioeconomic status provide a further improvement of fit in model 2 (L.L. = -31700.3, VPC 0.883 (SD = 0.939)). All variables were found to be significant with $p < 0.001$, except for OSC which was insignificant. Coefficients for age, gender and time were -1.424 (SE = 0.027), -0.759 (SE = 0.022) and -0.785 (SE = 0.067) respectively; coefficients for PFW and FAS were 0.089 (SE = 0.014) and 0.446 (SE = 0.040). The latter indicates that higher socioeconomic status appears to be related to higher weekly alcohol consumption. The difference-in-difference interaction between age and time was added in model 3 (L.L. = -31676.1, VPC = 0.899 (SD = 0.949)). The effect was significant with a coefficient of -0.375 (SE=0.054) indicating a potential effect of the minimum drinking age legislation, although it could also be due to other events or due to differentiating trends (that occur without policy intervention). Models 4 and 5 tested for interactions between age/time and socioeconomic status but none were significant. In a final model, a three-way interaction was tested for age, time and FAS but no significant effect was found.

Life-time spirits consumption

The results of the regression models for life-time spirits consumption are represented in Table 13. The intercept-only model (model 1) showed an improved fit over the single-level model with a log likelihood of -55393.0 and a VPC of 2.064 (SD = 1.437), compared to a log likelihood of -67205.9 for the single-level model. As such, the 2-level model structure with schools at level-2 is justified. The main effects for the sociodemographic variables age (again younger than 18 versus 18 or older) and gender are added in model 2, as well as the time variable and the three measures of adolescent socioeconomic status, as discussed in the methods section. The coefficient for age was -0.791 (SE = 0.039), showing that adolescents younger than 18 have a significantly lower chance of ever having consumed spirits compared to older adolescents. Gender was significant with $p < 0.001$ and a coefficient of -0.074 (SE = 0.019) indicating that girls have a lower chance of ever having consumed spirits compared to boys. **Time was significant with a coefficient of -0.819 (SE = 0.079) showing the decreasing life-time consumption that was shown in the descriptive results.** Concerning the variables accounting for socioeconomic status, only PWF and FAS were significant with $p < 0.001$, family occupational status (OSC) was not significant. Their respective coefficients were -0.064 (SE = 0.012) and 0.477 (SE = 0.035) indicating that lower perceived wealth and higher family affluence relates to higher life-time consumption. Model 2 also provides a better fit than model 1, with a log likelihood of -39542.0 and a VPC of 1.533 (SD = 1.238). Model 3 adds the difference-in-difference effect, i.e. the interaction between age and time. The interaction effect is significant with $p < 0.001$ and a coefficient of -0.206 (SE = 0.070). This suggests that **the difference in life-time spirits consumption between adolescents younger and older than 18 has increased more than what would be expected in the absence of any events.** Model 3 provides a better fit than model 2 with a log likelihood of -25564.2 and a VPC of 1.189 (SD = 1.09). Models 4 and 5 tested whether significant interactions exist between measures of socioeconomic status and time (model 4) and age (model 5). However, these models did not provide

a better fit compared to the more simple model 3 and thus were not interpreted. Considering the lack of any improvement of model fit in model 4 and 5, it is not unexpected that model 6, where the three-way interaction between age, time and PFW was tested, did also not provide a better fit than model 3.

Table 12 Regression results of weekly alcohol consumption in Belgium

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Fixed effects												
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Intercept	-2.095***	0.046	-0.721***	0.069	-0.818***	0.072	-0.773***	0.084	-0.646***	0.082	-0.873***	0.067
Age ^a			-1.424***	0.027	-1.274***	0.035	-1.305***	0.109	-1.424***	0.027	-1.186***	0.055
Gender ^b			-0.759***	0.022	-0.761***	0.022	-0.759***	0.022	-0.759***	0.022	-0.775***	0.021
Time ^c			-0.785***	0.067	-0.566***	0.074	-0.785***	0.067	-0.976***	0.128	-0.829***	0.087
PFW			0.089***	0.014	0.088***	0.014	0.105***	0.019	0.084***	0.018	0.087***	0.013
FAS			0.446***	0.040	0.445***	0.040	0.458***	0.054	0.364***	0.051	0.413***	0.062
Family OSC			0.001	0.009	0.001	0.009	-0.001	0.012	-0.005	0.013		
Age * time					-0.375***	0.054					-0.305***	0.091
Age * PFW							-0.036	0.028				
Age * FAS							-0.029	0.079			-0.022	0.086
Age * OSC							0.006	0.018				
Time * PFW									0.009	0.0291		
Time * FAS									0.225**	0.084	0.241**	0.093
Time * OSC									0.014	0.019		
Age * time * PFW												
Age * time * FAS											-0.222	0.143
Age * time * OSC												
Random effects												
σ_u^2	2.296	1.515	0.883	0.939	0.899	0.949	0.885	0.941	0.882	0.939	0.979	0.989
VPC	41.10%		21.16%		21.46%		21.20%		21.14%		22.93%	
Model evaluation												
Log likelihood	-44251.2		-31700.3		-31676.1		-31699.0		-31695.6		-36881.7	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 16 years or older, b reference category is Male, c reference category is before introduction of the legislation

Table 13 Regression results for life-time spirits consumption in Belgium

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Fixed effects												
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Intercept	0.109**	0.041	1.445***	0.076	-2.105***	0.088	1.455***	0.088	0.972***	0.176	1.038***	0.169
Age a			-0.791***	0.039	-0.493***	0.043	-0.789***	0.039	-0.279	0.176	-0.449***	0.170
Gender b			-0.074***	0.019	-0.371	0.026	-0.074***	0.019	-0.074***	0.019	-0.094***	0.017
Time c			-0.819***	0.079	-0.574	0.099	-0.831***	0.121	-0.820***	0.079	-1.356***	0.229
PFW			-0.064***	0.012	0.095***	0.016	-0.051**	0.017	0.049	0.043	-0.027	0.049
FAS			0.477***	0.035	0.440***	0.046	0.429***	0.048	0.549***	0.134	0.521***	0.032
Family OSC			-0.001	0.008	-0.004	0.011	-0.012	0.012		0.028		
Age * time					-0.206**	0.070					0.261	0.228
Age * PFW									-0.124**	0.044	-0.040	0.052
Age * FAS									-0.076	0.138		
Age * OSC									-0.024	0.029		
Time * PFW							-0.031	0.025			0.135*	0.066
Time * FAS							0.108	0.071				
Time * OSC							0.019	0.016				
											-0.162*	0.069
Age * time * PFW												
Age * time * FAS												
Age * time * OSC												
Random effects												
σ_u^2	2.064	1.437	1.533	1.238	1.189	1.09	1.529	1.237	1.529	1.236	1.647	1.283
VPC	38.55%		31.79%		26.55%		31.73%		31.73%		33.36%	
Model evaluation												
Log likelihood	-55393.0		-39542.0		-25564.2		-39545.4		-39542.6		-48047.6	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 18 years or older, b reference category is Male, c reference category is before introduction of the legislation

Weekly spirits consumption

The results of the regression models for weekly spirits consumption in Belgium are represented in Table 14. Model 1 represents the intercept-only model and has a log likelihood of -34452.5 and a VPC of 1.623 (SD = 1.274), thus representing 33.04% of total variance. As such, this model provides a better fit than the single-level model (L.L. = -38121.7). The addition of sociodemographic variables, time and variables for socioeconomic status provide a further improvement of fit in model 2 (L.L. = -25568.4, VPC 1.19 (SD = 1.091)). All variables were found to be significant with $p < 0.001$, except for OSC which was insignificant. Coefficients for age, gender and time were -0.569 (SE = 0.034), -0.371 (SE = 0.026) and -0.752 (SE = 0.078) respectively; coefficients for PFW and FAS were 0.095 (SE = 0.016) and 0.442 (SE = 0.046). The latter indicates that higher socioeconomic status appears to be related to higher weekly spirits consumption. The difference-in-difference interaction between age and time was added in model 3 (L.L. = -25564.2, VPC = 1.189 (SD = 1.09)). The effect of the interaction term was significant with $p < 0.01$ and a coefficient of -0.26 (SE = 0.070) indicating a potential effect of the minimum drinking age legislation, although it could also be due to other events or due to differentiating trends (that occur without policy intervention). In models 4 and 5 interactions were tested between socioeconomic status and time and age respectively. No significant interactions were found however indicating **that socio-economic inequalities in weekly spirits consumption remained stable over time**. Moreover, neither model provided a better fit. As such, model 6 was not calculated.

Life-time drunkenness

A final outcome measure that was investigated is life-time drunkenness (cut-off point is life-time drunkenness = 2). The results of the regression models can be found in Table 15. Model 1 represents the intercept-only model which provided a better fit than the single-level model (L.L. = -52633.7), with a log likelihood of -44050.6 and a VPC of 3.183 (SD = 1.784). Since 49.17% of the total variance is caused by between-school variance, the 2-level structure of the models is justified. Addition of sociodemographic variables, time and variables measuring socioeconomic status in model 2 improved the model fit even more (L.L. = -313304.1, VPC = 1.081 (SD = 1.04)). Moreover all independent variables were significant with $p < 0.001$, except for PFW which was insignificant. Coefficients were -1.645 (SE = 0.027) for age, -0.547 (SE = 0.022) for gender, -0.301 (SE = 0.073) for time, 0.249 (SE = 0.040) for FAS and -0.029 (SE = 0.009) for OSC. Addition of the difference-in-difference interaction term between age and time improved the model fit (model 3). Moreover, the interaction was significant with $p < 0.001$ and a coefficient of -0.201 (SE = 0.053) **indicating a potential effect of the minimum drinking age legislation, although it could also be due to other events (e.g. 2008 financial crisis) or due to differentiating trends that occur without policy intervention (e.g. increased alcohol prices)**. Interactions between socioeconomic status and time, respectively, age were added in models 4 and 5. A significant interaction was found between FAS and time (coefficient = 0.424, SE = 0.083), indicating that **the effect of socio-economic inequalities on life-time drunkenness increased over time**.

Table 14 Regression results for weekly spirits consumption in Belgium

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Fixed effects												
	B	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Intercept	-2.641***	0.042	-2.038***	0.084	-2.105***	0.0875	-2.006***	0.094	-2.115***	0.148		
Age a			-0.569***	0.034	-0.498***	0.043	-0.568***	0.034	-0.476**	0.155		
Gender b			-0.371***	0.026	-0.371***	0.025	-0.370***	0.025	-0.371***	0.025		
Time c			-0.752***	0.078	-0.575***	0.099	-0.862***	0.151	-0.752***	0.078		
PFW			0.095***	0.016	0.095***	0.016	0.088***	0.019	0.131***	0.036		
FAS			0.442***	0.046	0.441***	0.046	0.416***	0.055	0.343**	0.106		
Family OSC			-0.004	0.011	-0.004	0.011	-0.004	0.137	-0.001	0.024		
Age * time					-0.206**	0.070						
Age * PFW									-0.045	0.039		
Age * FAS									0.121	0.117		
Age * OSC									-0.004	0.026		
Time * PFW							0.019	0.034				
Time * FAS							0.079	0.098				
Time * OSC							0.001	0.022				
Age * time * PFW												
Age * time * FAS												
Age * time * OSC												
Random effects												
σ_u^2	1.623	1.274	1.19	1.091	1.189	1.09	1.196	1.094	1.197	1.094		
VPC	33.04%		26.56%		26.55%		26.66%		26.68%			
Model evaluation												
Log likelihood	-34452.5		-25568.4		-25564.2		-25564.2		-25564.0			

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 18 years or older, b reference category is Male, c reference category is before introduction of the legislation

Table 15 Regression results for life-time drunkenness (2+) in Belgium

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Fixed effects												
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Intercept	-2.335***	0.055	-0.557***	0.073	-0.614***	0.075	-0.456***	0.087	-0.584***	0.085	-0.474***	0.080
Age ^a			-1.645***	0.027	-1.553***	0.036	-1.646***	0.027	-1.577***	0.109	-1.673***	0.064
Gender ^b			-0.547***	0.022	-0.548***	0.022	-0.547***	0.022	-0.547***	0.022	-0.548***	0.022
Time ^c			-0.301***	0.073	-0.183*	0.079	-0.518***	0.129	-0.301***	0.073	-0.511***	0.095
PFW			0.021	0.014	0.021	0.014	0.033*	0.018	0.028	0.018	0.019	0.014
FAS			0.249***	0.040	0.249***	0.041	0.076	0.053	0.259***	0.052	-0.012	0.067
Family OSC			-0.029**	0.009	-0.029**	0.053	-0.045***	0.013	-0.029*	0.011	-0.028**	0.009
Age * time					-0.201***	0.053					0.111	0.099
Age * PFW									-0.015	0.028		
Age * FAS									-0.023	0.081	0.225*	0.099
Age * OSC									-0.001	0.018		
Time * PFW							-0.032	0.028				
Time * FAS							0.424***	0.083			0.624***	0.099
Time * OSC							0.033*	0.018				
Age * time * PFW												
Age * time * FAS											-0.577***	0.155
Age * time * OSC												
Random effects												
σ_u^2	3.183	1.784	1.081	1.04	1.092	1.045	1.079	1.039	1.083	1.04	1.091	1.044
VPC	49.17%		24.73%		24.92%		24.70%		24.77%		24.90%	
Model evaluation												
Log likelihood	-44050.6		-313304.1		-31296.8		-31289.0		-31303.8		-31276.9	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05, a reference category is 16 years or older, b reference category is Male, c reference category is before introduction of the legislation

International level

Life-time alcohol consumption

The results of the regression models for the international analysis of life-time alcohol consumption can be found in Table 16. First, an intercept-only model was estimated to see if the nested structure, using four levels, is justified. By including the random intercepts, the model fit improved compared to a single level model, with the multilevel model showing a log likelihood of 527332. Moreover, the variance partition coefficients for each level were significant, with 18.63% of the total variation being situated at the school-level, 6.45% at the country-year level and 5.13% at the country level. In model 1, the individual-level sociodemographic covariates age and gender were added. Note that age is no longer dichotomous but rather a continuous variable in the international models, since all respondents are under the age of 16. Both age ($\beta = 0.609$, $SE = 0.003$) and gender ($\beta = -0.392$, $SE = 0.007$) were highly significant with $p < 0.001$, indicating that, as expected, older respondents had a higher chance of ever having consumed alcohol than younger respondents and girls having a lower chance than boys. In model 2, the dichotomized time-variable was added. The time variable was significant ($\beta = -0.494$, $SE = 0.074$), indicating that **the downward trend which was observed in Belgium was also found in the international sample as well. This implies that up to this point we found no evidence for a specific effect of the Belgian minimum drinking age legislation.** The next models then added policy measures to inquire whether the observed time-trend is in fact partially or totally explained by other underlying variables. In model 3, the minimum legal drinking age was added to see if cross-national differences in the proportion of life-time drinkers can be explained by this measure. The variable was dichotomized to MLDA 18 versus MLDA under 18, with the lowest category serving as the reference. Different operationalization of MLDA was tested (inclusion of MLDA as continuous variable and as categorical variable with three categories), which provided similar results but worse model fit and as such, were not included. The estimate for the MLDA variable in model 3 was not significant, **indicating that the MLDA as such, was not related to life-time alcohol consumption.** Moreover, the model fit decreased compared to the previous model. A next step was to sequentially add the Availability Index, the Advertising Index and the Total Policy (the mean of the availability index, the affordability index and the marketing restrictions index). Index in models 4 a, b and c, to see if a wider array of policies aimed at restricting the availability of alcohol, the advertising exposure to alcohol and a combination of both were able to predict cross-national difference. None of the coefficients were significant however and model fit once again, was worse than the simple model with sociodemographic covariates and time, which indicates that **availability and advertising were not related to life-time alcohol consumption.** Model 5 added the affordability index to the regression. Note that, since this variable measures changes in the affordability of alcohol, observations from the 2002 survey round are omitted from the model, since the affordability in this survey round served as the baseline value. Two interesting findings emerge from this model. Firstly, changes in affordability are highly significant ($\beta = 0.889$, $SE = 0.218$) with **increased affordability being linked to higher alcohol consumption.** Interestingly enough however, the Total Policy Index was also found to be significant and negatively related to life-time alcohol consumption ($\beta = -0.023$, $SE = 0.011$) after controlling for affordability. **This suggest that the combination of policy measures which Total Policy Index represents can be effective independently from the affordability of alcohol.** In models 6a and 6b, FAS and PFW were

added to see if socioeconomic status is related to life-time alcohol consumption. FAS turned out to be highly significantly related to life-time alcohol consumption, with a higher score indicating a higher likelihood of having consumed alcohol ($\beta = 0.483$, $SE = 0.015$). The coefficient for PFW was not significant and the model also did not show a better model fit. Because of this, model 6c was irrelevant and not included in Table 16. Finally, model 7 a, b and c tested the interactions between time, total policy index and FAS. Model 7a found a significant interaction between FAS and total policy index, indicating that **the effect of socioeconomic status on life-time alcohol consumption is partially mitigated in countries with stricter alcohol policies** ($\beta = -0.015$, $SE = 0.002$). No statistically significant interaction was found between time and FAS (model 7b), nor was the three-way interaction between time, policy and FAS statistically significant (model 7c).

Weekly alcohol consumption

The results of the regression models for the international analysis of weekly alcohol consumption are represented in Table 17. At first an empty, intercept-only model was estimated to confirm the nested structure of the four-level model. The hierarchical model fit was higher than that of a similar single-level model, with a log likelihood of 630912. Moreover, all intercepts were statistically significant, with 16.60% of the total variation being at the school-level, 6.45% at the country-year level and 6.90% at the country level. In model 1, age and gender were added as sociodemographic covariates. The model showed an improved fit over the nullmodel and both age ($\beta = 0.538$, $SE = 0.004$) and gender ($\beta = -0.595$, $SE = 0.009$) were statistically significant. Once again, these covariates showed the expected results with older respondents having a higher chance of weekly alcohol consumption and girls having a lower chance than boys. Similar to life-time alcohol consumption, a downward time trend was found in model 2 ($\beta = -0.555$, $SE = 0.071$). The addition of the minimum legal drinking age in model 3 did not improve the model fit and did not result in a significant estimator, indicating that **the MLDA as such is not a significant predictor of weekly alcohol consumption**. The addition of the Availability Index in model 4a however, did provide a significant result ($\beta = -0.031$, $SE = 0.011$), indicating that **countries with stricter regulations concerning the availability of alcohol have a lower proportion of weekly drinkers**. The addition of marketing restrictions in model 4b did not result in a better model, nor was the estimator significant. The combination of both availability and advertising in model 4c however, provided a slightly better model compared to model 4a. Similar to the analysis on life-time consumption, alcohol affordability is significantly and positively related to weekly drinking ($\beta = 0.822$, $SE = 0.227$) showing that **increased affordability tends to lead to a higher proportion of weekly alcohol consumers**. Concerning the relation between socioeconomic status and weekly consumption, both FAS and PFW are significant and positively related to consumption (FAS: $\beta = 0.351$, $SE = 0.019$, PFW: $\beta = 0.027$, $SE = 0.006$), as is shown in models 6a and 6b. Combining both variables into model 6c however, showed that only higher FAS was related to higher weekly alcohol consumption, while PFW turned insignificant. Finally, models 7 a, b and c investigated the interactions between time, policy and FAS. Model 7a found a significant interaction between FAS and policy ($\beta = -0.011$, $SE = 0.003$), indicating that **more stringent policies partially mitigate the effect of socioeconomic status**. Model 7b found no significant interaction between time and FAS, nor did model 7c find a significant three-way interaction.

Life-time drunkenness

The results of the regression models for the international analysis of life-time drunkenness are represented in Table 18. In a first step, an intercept-only model was estimated to confirm the nested model structure. The hierarchical model fit was higher than that of a similar single-level model. Moreover, all intercepts were found to be significant with 14.72% of the total variance being at the school-level, 4.53% at the country-year level and 6.13% at the national level. Model 1 confirmed that age and gender are highly significant predictors of life-time drunkenness in adolescents (age: $\beta = 0.777$, $SE = 0.005$, gender: $\beta = -0.274$, $SE = 0.008$) with older adolescents having a higher chance of having been drunk more than twice in their life and girls having a lower chance than boys. **Similar to life-time and weekly alcohol consumption, a significant downward trend was observed** in model 2 ($\beta = -0.410$, $SE = 0.058$). Models 3, 4a, 4b and 4c provide information on the impact of policy on life-time drunkenness. Interestingly enough, model 3 shows that the proportion of life-time drunkenness is positively impacted by the MLDA, indicating that **countries with higher MLDA's typically have a higher proportion of life-time drunkenness** ($\beta = 0.287$, $SE = 0.114$). Note that reversed causality could play a role here (i.e. that countries which have a higher proportion of life-time drunkenness institute higher MLDA's). Moreover, **neither availability nor marketing policy restrictions were found to have a significant impact on life-time drunkenness**, as is shown in model 4. **Similar to life-time and weekly alcohol consumption, changes in the affordability of alcohol were positively related to life-time drunkenness** ($\beta = 0.688$, $SE = 0.191$), as was shown in model 5. Similar to the previous outcomes, the effect of FAS and PFW was tested in model 6. When added individually, both FAS ($\beta = 0.311$, $SE = 0.018$) and PFW ($\beta = -0.047$, $SE = 0.006$) were found to be significant predictors. Contrary to the previous outcome measures, both indicators remained significant when combined into a single model (FAS: $\beta = 0.387$, $SE = 0.019$, PFW: $\beta = -0.087$, $SE = 0.006$). **Interestingly, the effects of FAS and PFW are opposite, indicating that higher material wealth and lower perceived family wealth lead to higher life-time drunkenness.** Models 7a, 7b and 7c estimated the interactions between FAS/PFW, time and policy. Model 7a found a significant interaction between PFW and policy ($\beta = -0.009$, $SE = 0.001$), but not between FAS and policy ($\beta = -0.003$, $SE = 0.003$). Statistically significant interactions were found between both SES measures and time in model 7b (FAS: $\beta = 0.106$, $SE = 0.039$, PFW: $\beta = -0.039$, $SE = 0.013$), indicating that **the impact of both FAS and PFW has increased over time.**

Table 16 International regression results, life-time alcohol consumption

	Nullmodel		Model 1		Model 2		Model 3		Model 4						Model 5		Model 6				Model 7					
									a		b		c				a		b		a		b		c	
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Constant	-1.496***	0.086	-1.425***	0.076	-1.186***	0.084	-1.291***	0.108	-1.211***	0.083	-1.227***	0.083	-1.216***	0.083	-1.296***	0.097	-1.286***	0.098	-1.302***	0.098	-1.287***	0.098	-1.288***	0.098	-1.287***	0.098
Age			0.609***	0.003	0.611***	0.003	0.610***	0.003	0.611***	0.003	0.611***	0.003	0.611***	0.003	0.612***	0.003	0.615***	0.004	0.613***	0.004	0.615***	0.004	0.615***	0.004	0.615***	0.004
Gender			-0.392***	0.007	-0.394***	0.007	-0.393***	0.007	-0.394***	0.007	-0.394***	0.007	-0.394***	0.007	-0.331***	0.008	-0.332***	0.008	-0.328***	0.008	-0.330***	0.008	-0.330***	0.008	-0.330***	0.008
Time					-0.494***	0.074	-0.525***	0.076	-0.457***	0.077	-0.428***	0.082	-0.450***	0.078	-0.329***	0.101	-0.379***	0.104	-0.331***	0.103	-0.379***	0.104	-0.377***	0.104	-0.379***	0.104
MLDA (2cat)							0.203	0.127																		
Availability API									-0.018	0.011	-0.016	0.011														
Advertising API											-0.106	0.096														
Total API													-0.019	0.010	-0.023*	0.011	-0.024*	0.011	-0.024*	0.011	-0.023*	0.011	-0.024*	0.011	-0.023*	0.011
Affordability															0.889***	0.218	0.892***	0.222	0.907***	0.221	0.892***	0.222	0.893***	0.222	0.892***	0.222
FAS																	0.483***	0.015			0.487***	0.015	0.503***	0.023	0.488***	0.024
PFW																			-0.003	0.005						
Total API * FAS																					-0.015***	0.002			-0.016***	0.004
Time * FAS																							-0.031	0.030	-0.004	0.03
Time * FAS * Total API																									0.003	0.005
Random Effects																										
	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.
Country	0.178	0.061	0.127	0.048	0.145	0.047	0.154	0.049	0.132	0.044	0.122	0.042	0.129	0.043	0.111	0.042	0.108	0.042	0.108	0.042	0.107	0.042	0.107	0.042	0.107	0.042
Countryyear	0.227	0.037	0.241	0.036	0.164	0.025	0.159	0.025	0.165	0.026	0.168	0.026	0.165	0.026	0.149	0.028	0.157	0.030	0.155	0.029	0.158	0.030	0.158	0.030	0.158	0.030
School	0.753	0.015	0.186	0.006	0.192	0.006	0.191	0.006	0.192	0.006	0.192	0.006	0.192	0.006	0.172	0.007	0.171	0.007	0.172	0.007	0.170	0.007	0.171	0.007	0.170	0.007
Model Evaluation																										
-2 Loglikelihood	527332		396953		394898		395353		395015		394967		394938		300883		286273		286011		284634		284569		284620	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Table 17 International regression results, weekly alcohol consumption

	Nullmodel		Model 1		Model 2		Model 3		Model 4				Model 5		Model 6				Model 7										
									a		b		c		a		b		c		a		b		c				
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.			
Constant	-2.424***	0.096	-2.270***	0.089	-1.999***	0.095	-2.041***	0.120	-2.046***	0.088	-2.073***	0.085	-2.054***	0.087	-2.153***	0.104	-2.154***	0.106	-2.166***	0.105	-2.153***	0.106	-2.153***	0.105	-2.154***	0.106	-2.153***	0.105	
Age			0.538***	0.004	0.538***	0.004	0.539***	0.004	0.539***	0.004	0.539***	0.004	0.539***	0.004	0.527***	0.004	0.529***	0.004	0.530***	0.004	0.528***	0.004	0.529***	0.004	0.528***	0.004	0.529***	0.004	
Gender			-0.595***	0.009	-0.595***	0.009	-0.596***	0.009	-0.596***	0.009	-0.596***	0.009	-0.596***	0.009	-0.548***	0.01	-0.544***	0.011	-0.540***	0.011	-0.545***	0.011	-0.544***	0.011	-0.544***	0.011	-0.545***	0.011	
Time					-0.555***	0.071	-0.567***	0.074	-0.493***	0.075	-0.445***	0.080	-0.480***	0.076	-0.325***	0.103	-0.369***	0.106	-0.333***	0.105	-0.370***	0.106	-0.369	0.106	-0.369***	0.106	-0.370***	0.106	
MLDA (2cat)							0.079	0.135																					
Availability API									-0.031**	0.011	-0.028**	0.011																	
Advertising API											-0.168	0.096																	
Total API													-0.032**	0.011	-0.039***	0.012	-0.041***	0.013	-0.041***	0.012	-0.041***	0.013	-0.040***	0.012	-0.041***	0.013	-0.040***	0.012	
Affordability															0.822***	0.227	0.824***	0.232	0.834***	0.230	0.825***	0.232	0.823***	0.231	0.824***	0.232	0.823***	0.231	
FAS																0.351***	0.019			0.357***	0.020	0.346***	0.019	0.346***	0.020	0.346***	0.020	0.330***	0.030
PFW																		0.027***	0.006	-0.008	0.007								
Total API * FAS																													
Time * FAS																													
Time * FAS TotalAPI																													
Random Effects																													
	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	
Country	0.244	0.077	0.196	0.065	0.219	0.065	0.228	0.066	0.164	0.051	0.137	0.045	0.156	0.049	0.154	0.052	0.152	0.053	0.151	0.052	0.152	0.053	0.151	0.053	0.152	0.053	0.151	0.053	
Countryyear	0.227	0.038	0.249	0.038	0.149	0.024	0.149	0.024	0.152	0.024	0.156	0.025	0.152	0.024	0.149	0.029	0.158	0.03	0.156	0.03	0.158	0.03	0.157	0.03	0.158	0.03	0.157	0.03	
School	0.655	0.017	0.181	0.008	0.183	0.008	0.185	0.008	0.187	0.008	0.188	0.008	0.187	0.008	0.171	0.009	0.171	0.009	0.17	0.009	0.171	0.009	0.171	0.009	0.171	0.009	0.17	0.009	
Model Evaluation																													
-2 Loglikelihood	630912		626278		659.175		900.718		-40.2876		-266.009		-84.9433		-15165.7		-11325.7		-10589.3		-11352.3		-11455.2		-11318.2		-11407.6		

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Table 18 International regression results, life-time drunkenness

	Nullmodel		Model 1		Model 2		Model 3		Model 4						Model 5		Model 6						Model 7					
									a		b		c				a		b		c		a		b		c	
	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.	β	S.E.
Constant	-1.620***	0.089	-1.571***	0.085	-1.368***	0.089	-1.519***	0.104	-1.369***	0.091	-1.374***	0.092	-1.370***	0.091	-1.525***	0.095	-1.524***	0.096	-1.532***	0.095	-1.517***	0.095	-1.513***	0.095	-1.518***	0.095	-1.517***	0.095
Age			0.777***	0.005	0.777***	0.005	0.776***	0.005	0.776***	0.005	0.776***	0.005	0.776***	0.005	0.799***	0.006	0.801***	0.006	0.797***	0.006	0.797***	0.006	0.798***	0.006	0.797***	0.006	0.798***	0.006
Gender			-0.274***	0.008	-0.274***	0.008	-0.274***	0.008	-0.274***	0.008	-0.274***	0.008	-0.274***	0.008	-0.226***	0.01	-0.226***	0.01	-0.227***	0.01	-0.234***	0.01	-0.234***	0.01	-0.235***	0.01	-0.234***	0.01
Time					-0.410***	0.058	-0.455***	0.06	-0.407***	0.062	-0.397***	0.066	-0.406***	0.062	-0.231**	0.085	-0.262**	0.086	-0.233**	0.085	-0.273**	0.087	-0.274**	0.087	-0.275**	0.087	-0.271**	0.087
MLDA (2cat)							0.287**	0.114																				
Availability API									-0.002	0.010	-0.001	0.010																
Advertising API											-0.036	0.087																
Total API													-0.002	0.010	0.005	0.011	0.006	0.011	0.006	0.011	0.007	0.011	0.008	0.011	0.007	0.011	0.007	
Affordability														0.688***	0.191	0.687***	0.194	0.698***	0.192	0.690***	0.195	0.687***	0.194	0.690***	0.194	0.690***	0.194	
FAS															0.311***	0.018			0.387***	0.019	0.385***	0.019	0.321***	0.030	0.318***	0.030		
PFW																		-0.047***	0.006	-0.087***	0.006	-0.075***	0.006	-0.062***	0.011	-0.063***	0.011	
Total API * FAS																						-0.003	0.003			-0.006	0.005	
Total API * PFW																						-0.009***	0.001			-0.004*	0.002	
Time * FAS																								0.106**	0.039	0.108**	0.039	
Time * PFW																								-0.039**	0.013	-0.012	0.014	
Time * FAS TotalAPI																										0.003	0.007	
																											-0.008***	0.002
Random Effects																												
	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.	σ	S.E.
Country	0.215	0.065	0.201	0.060	0.212	0.059	0.190	0.053	0.216	0.060	0.217	0.060	0.217	0.060	0.166	0.050	0.165	0.050	0.163	0.049	0.159	0.049	0.159	0.049	0.158	0.049	0.158	0.048
Countryyear	0.156	0.027	0.148	0.023	0.094	0.016	0.092	0.015	0.095	0.016	0.095	0.016	0.094	0.016	0.092	0.018	0.096	0.019	0.094	0.019	0.098	0.019	0.097	0.019	0.097	0.019	0.097	0.019
School	0.568	0.015	0.161	0.007	0.162	0.007	0.162	0.007	0.162	0.007	0.161	0.007	0.161	0.007	0.145	0.007	0.143	0.007	0.141	0.007	0.141	0.007	0.140	0.007	0.141	0.007	0.140	0.007
Model Evaluation																												
-2 Loglikelihood	346191		275298		274873		274869		274932		274989		274963		198059		188604		187429		186257		186227		185807		185672	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05

Conclusion

The analyses carried out in this chapter were set out to investigate four research questions. Firstly, it was investigated whether or not the proportion of life-time abstainers, weekly drinkers and binge drinkers evolved differently between adolescents aged under 16 and those older, at the regional and national level. Secondly, the evolution of life-time and weekly consumption of distilled spirits among adolescents under the age of 18 and those older was investigated at the regional and national level. A third research question widened the perspective by investigating trends in life-time and weekly alcohol consumption as well as life-time drunkenness among adolescents aged 11-15 years old in 30 countries. This was done in order to analyze the impact of the minimum legal drinking age, as well as a wider array of policies and alcohol affordability, on the outcome measures. The fourth research question was investigated at the national and international level and concerned the role of socioeconomic status on the different outcome measures.

At the Flemish and Belgian level, statistically significant decreases were found for all outcome measures, indicating that overall alcohol consumption among Flemish and Belgian adolescents has decreased in the 2002-2014 period. Moreover, it was shown that, consistent with the existing literature, age and gender are highly significant predictors of the different outcomes with higher consumption being linked to higher age and being male. Concerning research questions 1 and 2, the analyses at the Flemish and Belgian level showed significant statistical interactions between age and time. This indicates that over the research period, alcohol consumption patterns in the different age groups (under 16 versus older for fermented drinks, under 18 versus older for distilled drinks) have evolved differently, in the sense that the odds of consuming alcohol decreased at a higher pace for those under the respective age limit. This could indicate towards an effect of the law on minimum legal drinking age, although it could also be due to other events (e.g. 2008 financial crisis) or due to differentiating trends that occur without policy intervention (e.g. increased alcohol prices).

At the international level, similar relations were found between alcohol consumption, age and gender in the group of 11-15 years old. Moreover, the significant time trend, which was observed in Belgium, was also found in the international sample, indicating that overall, alcohol consumption has decreased in the 2002-2014 period. Therefore, **no specific evidence was found that supports an impact of the Belgian drinking age legislation on adolescent alcohol consumption**. On the other hand, it remains **uncertain** what the Belgian trend would have looked like in the absence of the 2009 minimum legal drinking age legislation. Furthermore, we supplemented the Belgian minimum legal drinking age legislation analysis with an **additional international policy analysis on “what works”** to reduce alcohol consumption in adolescents younger than 16 years old. With regards to the effect of these alcohol-related policies, mixed results were found. The minimum legal drinking age was found to be non-significant in relation to life-time and weekly alcohol consumption and positively to life-time drunkenness indicating that countries with higher minimum legal drinking ages typically have a higher proportion of life-time drunkenness. Note that reversed causality could play a role here (i.e. that countries which have a higher proportion of life-time drunkenness institute higher minimum legal drinking ages). When evaluating a wider array of policies that restrict alcohol availability, a significant relation was found between stricter policies and lower odds of weekly alcohol consumption. An

important caveat in this research is the failure to incorporate enforcement of the above policies into the regression analysis. For example, the most spectacular decreases for all outcome measures are observed in Anglo-Saxon countries. These countries, especially the United Kingdom, have greatly increased their enforcement efforts during the research period. Unfortunately, such information was not systematically available for the complete international sample. Additional to the availability policies, the effect of marketing restrictions and affordability changes were also measured. Current marketing restrictions were not found to have a significant effect on alcohol outcome measures. Affordability changes on the other hand were highly significant with increased affordability being linked to higher odds of alcohol consumption: when alcohol is cheaper, adolescents tend to drink more. Moreover, the results also show that the combination of policy measures (which the Total Policy Index represents) can be effective in the reduction of both life time and weekly alcohol consumption.

The fourth research question addressed the role of socioeconomic status on adolescent alcohol consumption. At the Belgian level, three variables were tested (Family affluence, Perceived family wealth and Occupational social class). Adolescents reporting higher parental occupational social status showed higher life-time alcohol consumption and lower life-time drunkenness, while insignificant results were found for all other outcomes. Moreover, none of the interactions with time or age were statistically significant indicating that the impact of parental occupational social status did not change over time nor was it influenced by age patterns. Family affluence was found to be the most stable SES indicator in the sense that it was positively related to all outcome measures and its effect size was high. Higher family affluence was thus typically associated with higher adolescent alcohol consumption. Moreover, a significant time trend was found in weekly alcohol consumption showing that the impact of family affluence increased over time which indicates that socioeconomic differences in weekly drinking (i.e. the difference in weekly drinking between adolescents with low and high family affluence) increased over time. Perceived family wealth was found to be negatively related to life-time alcohol and spirits consumption and positively related to weekly alcohol and spirits consumption, while not being a significant predictor of life-time drunkenness. Moreover, no significant interactions were found between perceived family wealth and time/age indicating that subjective socioeconomic differences in life-time drunkenness remained stable over time and across age groups. At the international level two variables (Family affluence and Perceived family wealth) were tested to estimate the impact of socioeconomic status. No significant time trends were detected for socioeconomic differences in life-time and weekly alcohol consumption. However, statistically significant interactions were found between both SES measures and time in relation to life-time drunkenness, indicating that the impact of both family affluence and perceived family wealth has increased over time. Concerning alcohol policy, the interaction between Family affluence and policy was significant in relation to both life time and weekly alcohol consumption, in the sense that more stringent policies partially mitigated the effect of socioeconomic status. This finding shows that alcohol policies may contribute in reducing socioeconomic inequalities (i.e. reducing alcohol consumption relatively more in higher socioeconomic status groups characterized by relatively higher levels of alcohol consumption).

Chapter 4: Trends in alcohol-related health outcomes

By Thomas Buijs, dr. Bart De Clercq, dr. Joris Van Damme & Prof. dr. Bénédicte Deforche

In this chapter we only present the results of the analysis. More information on the used data sources, methodological considerations, indicators, statistical tests, dependent and independent variables, can be found back in the elaborative document.

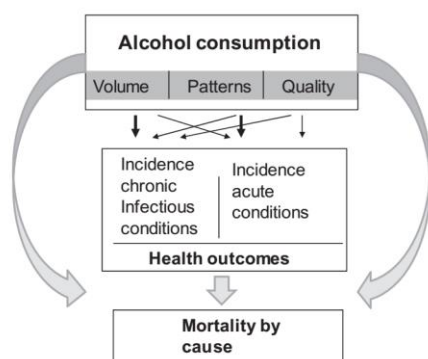
1.1 Alcohol-related health harm

1.1.1 Background

The impact of alcohol consumption on health-related and other social outcomes cannot be overstated. Alcohol consumption has long been identified as an important, global risk factor for chronic conditions and injury (WHO, 2014c). Belgium is no exception, with the most recent estimates showing that 5.8% of the population suffered from an alcohol use disorder in 2010 (WHO, 2014a). Consequently, a large number of studies have been attributed to the quantification of the economic burden of alcohol consumption (Rehm et al., 2009). In Belgium, a recent study has investigated the cost of legal and illegal drug use, including alcohol consumption in 2012 (Lievens et al., 2016). By measuring both direct (e.g. hospital visits) and indirect (e.g. productivity loss) costs of substance use, the authors calculated that the overall social cost of substance use accounted for 1.19% of Belgium's GDP. The results also showed that 45%, roughly 2.1 billion euro, of the overall economic burden of legal and illegal drug use was caused by the effects of alcohol consumption. Moreover, alcohol use is shown to be a determinant of health that contributes significantly to health inequalities (Casswell & Thamarangsi, 2009). Higher income levels have been associated with increased consumption levels, whereas heavy consumption and harm has been linked to low socioeconomic status (Casswell & Thamarangsi, 2009; Humensky, 2010; Mackenbach et al., 2008).

Throughout the last two decades, ample research has been carried out in the field of substance use, greatly contributing to our understanding of the ways alcohol consumption impacts health (Room et al., 2005; Shield, Parry, & Rehm, 2013; WHO, 2014c). So far, alcohol has been identified as a causal component for well over 60 different medical conditions (Rehm et al., 2010). Moreover, it is likely that alcohol-related harms are currently still underestimated while potential benefits are overestimated (Stockwell & Zhao, 2016). Alcohol is also no ordinary commodity in the sense that not just the dose-response relation is significant but also the pattern of consumption (Babor et al., 2010; Rehm et al., 2010), which is summarized in the general framework in figure 1, that is generally adopted and that has been used in chapter 3 of this report. Volume, pattern and quality of consumption can all impact acute and chronic conditions.

Figure 11 Causal model of the impact of alcohol consumption on health (Source: Rehm, Baliunas, et al. (2010))



Generally, conditions attributable to alcohol consumption are divided into six categories: cancers, cardiovascular diseases, gastrointestinal diseases, infectious diseases, neuropsychiatric conditions, injuries and other (for a full overview of conditions, see **Fout! Verwijzingsbron niet gevonden.** in appendix).

The goal of the current study is to investigate whether the legislative change of the minimum legal drinking age in Belgium, after 2009, has had an impact on health. Considering the fact that this change is fairly recent, it should be clear that the current research has to be restricted to the direct, short-term impact on adolescents, since any potential long-term changes in adult chronic conditions will only become tangible in the years to come. As such, this study focuses on the impact of the minimum age on adolescent injuries and neuropsychiatric conditions linked to alcohol. Injuries can be either intentional or unintentional. Suicide, homicide and violence have been causally linked to heavy consumption (Cherpitel et al., 2012; Cremonte & Cherpitel, 2014; Macdonald, Erickson, Wells, Hathaway, & Pakula, 2008). Almost all categories of unintentional injuries on the other hand are strongly linked to alcohol consumption due to the effect of the blood alcohol concentration on the psychomotor abilities of people (Taylor, Rehm, Patra, Popova, & Baliunas, 2007). Within the category of neuropsychiatric conditions, Alcohol Abuse Disorders are the main diagnosis of interest for this study. The Diagnostic and Statistical Manual of Mental Disorders distinguishes between alcohol abuse and dependence (American Psychiatric Association, 2013). Alcohol abuse is generally defined as a pattern of alcohol use that is causing damage to health, and the damage may be physical (as in cases of liver cirrhosis) or mental (as in cases of depressive episodes secondary to heavy consumption of alcohol). Alcohol dependence, also known as alcoholism, on the other hand refers to a cluster of behavioral, cognitive, and physiological phenomena that develop after repeated alcohol use and that typically include a strong desire to consume alcohol, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to alcohol use than to other activities and obligations, increased tolerance, and sometimes a physiological withdrawal state (WHO, 2014c). Other diseases include epilepsy, withdrawal-induced seizures, depression and anxiety disorders (Boden & Fergusson, 2011; Samokhvalov, Irving, & Rehm, 2010). The latter two are generally not yet included in analyses however because of the complexity of the pathways between alcohol and these conditions (Rehm et al., 2010).

1.1.2 Methodological considerations

While investigating population health, based on medical information is a rather straightforward concept, calculating the actual burden of alcohol-related health harm requires special, methodological attention. Several diseases and injuries, such as alcohol-use disorders or alcoholic liver disease, are by definition caused by alcohol consumption. The financial costs of these diseases are therefore wholly attributable to alcohol. For other diseases the relationship is less straightforward: some cancer cases are the result of alcohol consumption, others are not. Thus, the epidemiological concept of alcohol-attributable fractions (AAFs) was introduced to quantify the proportion of the total morbidity and premature mortality of diseases and conditions known to be causally related to alcohol consumption (Rehm et al., 2009; Walter, 1976). By calculating AAFs, it is possible to estimate the proportion of cases of each disease or condition that may be attributed to the consumption of alcohol.

Although the calculation of AAF's is extremely relevant for studies on the cost of alcohol consumption, it falls outside of the scope of the current study. Since the aim of this study is merely to evaluate whether the minimum legal drinking age impacted the health of Belgian adolescents, an alternative approach was selected. This chapter will look at the evolution of the incidence of those conditions and injuries that have been attributed to alcohol consumption by previous studies (Jarl et al., 2008; Konnopka & Konig, 2009; Rehm et al., 2009; Single et al., 2003). The rest of chapter 4 is organized as follows: Section 1 provided thorough background information on acute and chronic conditions linked

to alcohol consumption. Section 2 will then provide an overview of the statistical analyses carried out to evaluate the legislative change and discuss the results. The final section provides a conclusion.

1.2 Statistical analysis

1.2.1 Research questions

The link between alcohol consumption and negative health-related outcomes is clear and unequivocal (Rehm et al., 2010; Rehm et al., 2003; Room et al., 2005). Whether it concerns the average volume or the pattern of consumption, ample research shows a significant relationship between alcohol consumption and both acute and chronic conditions, with the prior being most relevant for the adolescent population, whereas the incidence of chronic conditions is of higher importance in older population groups (Gore et al., 2011). Statistical analysis of the impact of the minimum drinking age on the incidence of chronic diseases in older age groups is impossible at this point, for the obvious reason that the legislative change was carried out too recently to observe the effect on the adult population. As such, the current analyses aim to explore whether the changed minimum age had an impact on trends in the health of the Belgian, adolescent population, more specifically an effect on neuropsychiatric and acute conditions.

1.2.2 Data

In order to evaluate whether the health of Belgian adolescents was impacted by the legislative change, data was collected on the incidence of hospital-based health service use between 2002 and 2013, linked to the diagnostic codes presented in section 1 of this chapter. The Belgian Federal Public Service (FPS) Health currently has two main, administrative registration systems recording the incidence of hospital-based healthcare use. The first one is called 'Minimum Hospital Data' ('Minimale Ziekenhuisgegevens' [MZG]/ 'Résumé Hospitalier Minimal' [RHM]). The database contains hospital-based data, including medical, nursing-based and administrative data (FPS Health, 2016a). The second registration system is called 'Minimum Psychiatric Data' ('Minimale Psychiatrische Gegevens' [MPG]/ 'Résumé Psychiatrique Minimum' [RPM]) and contains data on healthcare use in psychiatric hospitals. This data includes alcohol-related mental disorders based on the 'Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), which is relevant for the current analyses (FPS Health, 2016b).

Data from both registration systems was collected, based on diagnostic codes, sex and age groups. Adolescents were grouped into three age categories (12-15-, 16-17- and 18-19 years) for two main reasons: firstly, dissemination in smaller age groups resulted in a substantial number of 'small cells' (defined as less than 5 cases) for several diagnostic codes, thus causing possible privacy issues. Moreover, the use of the above age groups fits best with the legislative change: adolescents under 16 are no longer allowed to drink whatsoever, those 16-17 years old are no longer allowed to drink high-alcoholic beverages and those 18-19 are unaffected by the legislation. As such, the explanatory power of the analyses can be maximized by using adolescents aged 18-19 (those unaffected by the legislation) as the reference group.

In terms of diagnostic codes, a selection was made as to which ones should be included in the analyses. After all, several chronic conditions as well as the incidence of some acute conditions (e.g. motor vehicle accidents and homicide) are less likely to be impacted by the legislation. Thus, the decision was made to use a conservative approach by only analyzing codes that are related to mental disorders

and acute conditions, such as accidents or suicide). Chronic conditions such as cancer, cardiovascular disease or diabetes were excluded from the analyses because their incidence in adolescence is likely to be unrelated to alcohol consumption but rather to different causes. The result section is grouped based on the type of codes, i.e. mental disorders and acute conditions.

1.2.3 Analyses

First, descriptive analyses are provided, using sex- and age-standardized incidence rates per 10,000 population. For this purpose, population totals were retrieved from Statistical Office of the European Union (Eurostat, 2016). Next, single-level, negative binomial models were applied in which the relationship between the independent covariates age group, time and gender and the dependent variable, incidence rate, was investigated. In a final step, an interaction term between age group and time was added to see whether certain age groups had a higher or lower incidence risk after the implementation of the legislation.

1.2.4 Results

Neuropsychiatric conditions

Psychiatric hospitals

In contrast to the data received from the MZG database, data regarding healthcare use in psychiatric hospitals was not specified by a unique diagnostic code, but rather by the label “alcohol-related” versus “not alcohol related”. Thus, the below data represents all diagnostic codes listed in table 21.

Three main observations can be made from the descriptive results in Table 19. Firstly, the incidence of neuropsychiatric cases in psychiatric hospital clearly increases with age (e.g. in 2013 the incidence is 0.08 for 12-15 year olds, 1.025 for 16-17 year olds and 2.63 for 18-19 year olds). Secondly, the incidence is higher on average for males than females, except in the youngest age group. Finally, although not very clear from the descriptive results, it appears that the incidence rates are lower after 2009.

Table 20 presents the results from the negative binomial regressions. Model 1 confirms the observations made from the descriptive results: females are at a lower risk than males ($\beta=-0.278$, S.E.=0.084), incidence increases with age and decreases after 2009 ($\beta=-0.252$, S.E.=0.091). In model 2, the interaction terms are added to see if the relative risk of specific age groups changes, compared to the others, but no statistically significant results were found indicating that the minimum drinking age legislation did not have an impact.

Table 19 Adolescents with alcohol-related diagnoses in psychiatric hospitals (incidence per 10,000)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
12-15j	m	0,24	0,16	0,23	0,46	0,42	0,12	0,12	0,24	0,24	0,00	0,16	0,08
	v	0,79	0,08	0,16	0,28	0,48	0,20	0,29	0,37	0,63	0,25	0,37	0,08
16-17j	m	1,73	3,41	2,31	1,73	2,00	3,41	2,82	1,93	1,66	2,30	1,32	1,40
	v	2,58	1,36	1,67	1,32	1,37	2,69	1,47	1,55	1,57	1,70	2,30	0,65
18-19j	m	6,80	6,32	4,74	6,51	6,14	8,15	5,55	6,64	5,84	4,54	4,61	3,60
	v	2,00	3,36	2,78	3,42	3,19	4,10	3,23	3,95	2,96	3,67	2,51	1,66

Figure 12 Incidence of alcohol-related diagnoses in psychiatric hospitals

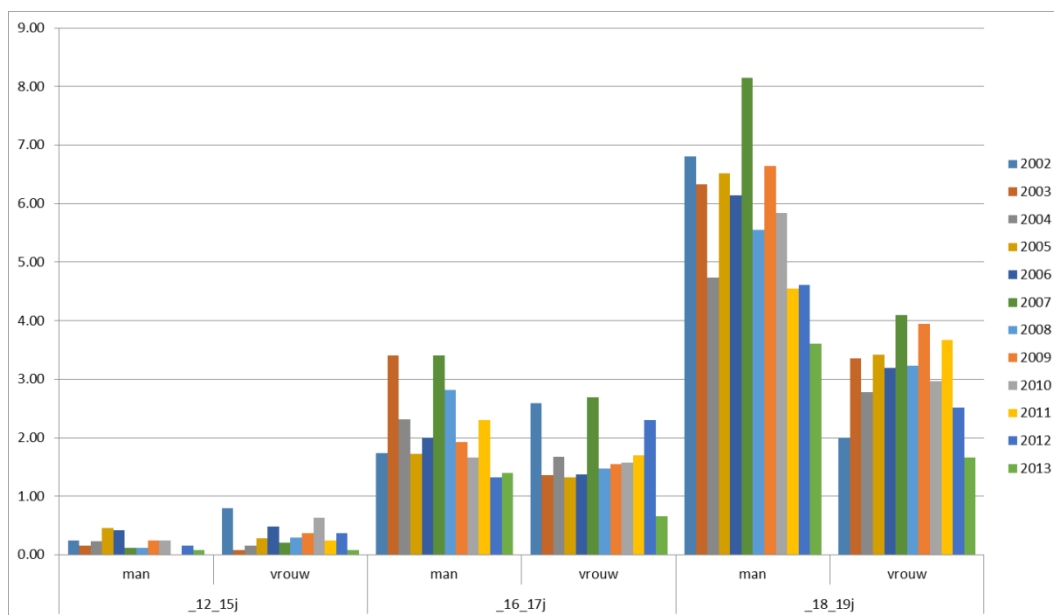


Table 20 Regression results psychiatric hospitals

	Model 1		Model 2	
	Estimate	S.E.	Estimate	S.E.
Intercept	-7.534***	0.081	-7.532***	0.087
Gender	-0.278**	0.084	-0.278**	0.084
12-15j	-2.775***	0.116	-2.781***	0.138
16-17j	-0.812***	0.094	-0.816***	0.114
Time	-0.252**	0.091	-0.260	0.134
12-15j * time			0.018	0.251
16-17j * time			0.014	0.202
Model Evaluation				
Log likelihood	-506.871		-506.864	
DLog likelihood (Chi sq)	151.041 (0)***		0.007 (0.997)	

Significance codes: *** < 0.001, ** < 0.01, * < 0.05

General hospitals

Alcohol abuse (ICD-9-code 305)

The incidence rate for alcohol abuse in general hospitals, according to age, gender and year is displayed in Table 21. Three main observations can be made: overall, the incidence is higher for males than females (except in the youngest age group), however the differences are not very large. Secondly, incidence increases greatly with age. Lastly, no clear time trend can be observed. These descriptive results are confirmed in the regression results in

Table 22. Model 1 shows that neither gender nor time are significant (gender: $\beta=-0.015$, S.E. =0.028, time: $\beta=-0.028$, S.E.=0.029) but that age is. Model 2 shows that the relative risk does not change in any age group compared to the others indicating that the minimum drinking age legislation did not have an impact.

Table 21 Incidence of alcohol abuse in general hospitals (incidence per 10,000)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
12-15j	m	5,60	7,15	6,29	6,77	5,59	7,63	6,48	6,93	7,31	7,58	6,96	6,63	6,77
	v	7,76	6,88	8,36	8,83	7,87	8,56	9,25	8,20	9,16	8,70	8,99	8,45	7,44
16-17j	m	35,21	41,18	39,34	43,79	41,10	44,59	40,73	43,32	41,15	44,93	45,37	37,61	42,99
	v	40,14	45,89	41,28	45,44	44,86	40,99	31,98	37,52	32,42	35,97	39,02	33,71	40,60
18-19j	m	63,29	69,65	69,84	85,88	80,12	86,18	69,89	77,59	77,32	75,87	80,92	79,88	79,79
	v	60,30	67,61	77,70	79,33	77,25	78,20	74,15	60,80	53,74	55,04	54,76	58,13	66,26

Figure 13 Incidence of alcohol abuse in general hospitals

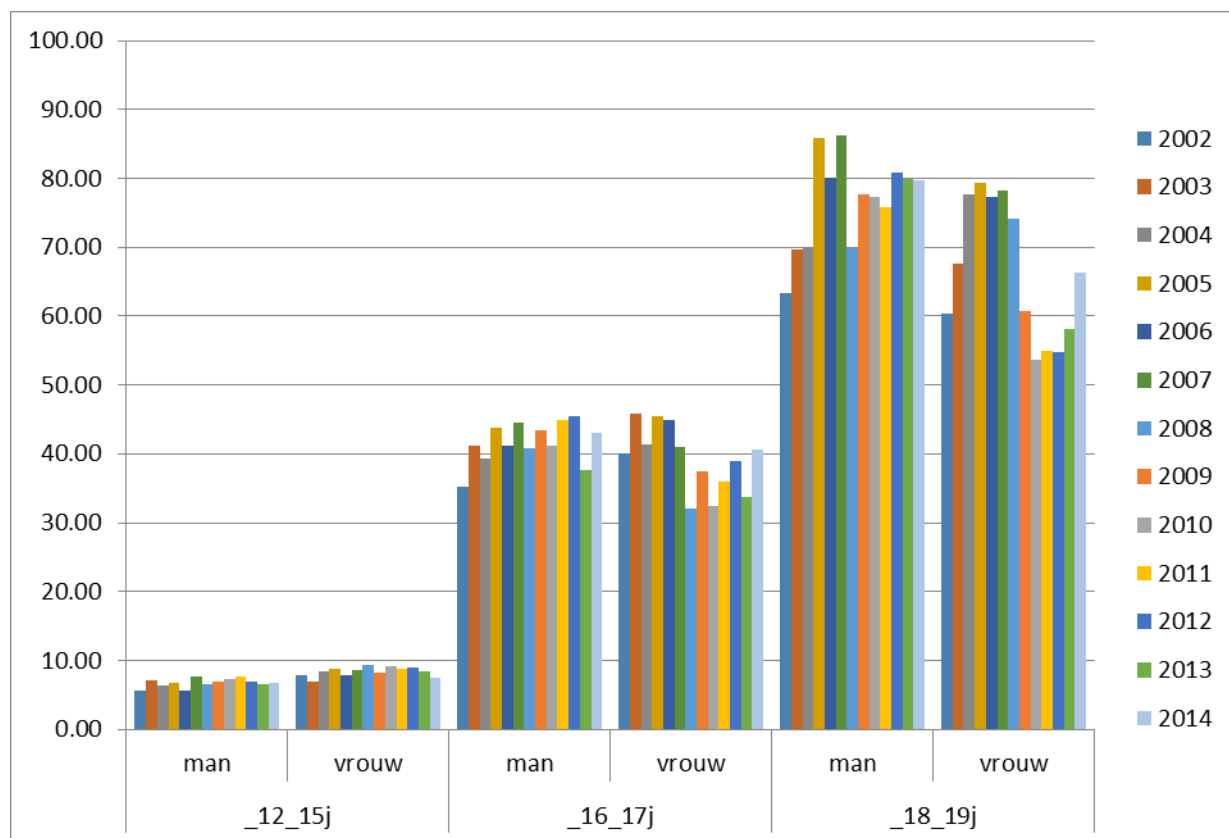


Table 22 Regression results alcohol abuse in general hospitals

	Model 1		Model 2	
	Estimate	S.E.	Estimate	S.E.
Intercept	-4.923***	0.029	-4.903***	0.032
Gender	-0.015	0.028	-0.016	0.028
12-15j	-2.248***	0.035	-2.299***	0.044
16-17j	-0.569***	0.033	-0.583***	0.042
Time	-0.028	0.029	-0.078	0.047
12-15j * time			0.132	0.071
16-17j * time			0.035	0.067
Model Evaluation				
Log likelihood	-848.061		-844.523	
DLog likelihood (chi sq)	306.848 (0)***		3.538 (0.171)	

Significance codes: *** < 0.001, ** <0.01, * <0.05

Alcohol dependence (ICD-9-code 303)

The incidence rate for alcohol dependence in general hospitals, according to age, gender and year is displayed in Table 23. Three main observations can be made: overall, the incidence is higher for males than females (except in the youngest age group), however the differences are not very large. Secondly, incidence increases greatly with age. Lastly, a clear, declining time trend can be observed. These descriptive results are confirmed in the regression results in Table 24. Model 1 shows that age, gender and time are statistically significant (S.E. =0.099, gender: β =-0.559, S.E. =0.099, time: β =-0.679, S.E.=0.105). Model 2 shows that the relative risk does not change in any age group compared to the others indicating that the minimum drinking age legislation did not have an impact.

Table 23 Incidence of alcohol dependence in general hospitals (incidence per 10,000)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
12-15j	m	0,79	0,55	0,54	0,46	0,76	0,27	0,12	0,40	0,44	0,36	0,28	0,12	0,28
	v	0,58	0,53	0,60	0,44	0,48	0,65	0,53	0,42	0,38	0,29	0,12	0,25	0,29
16-17j	m	3,46	3,09	3,74	2,28	1,93	2,27	2,00	0,89	1,06	1,38	1,01	1,17	0,62
	v	1,46	1,45	2,01	1,32	1,05	0,63	0,62	0,62	1,02	0,24	0,90	0,73	0,81
18-19j	m	5,27	5,23	4,82	3,23	3,03	2,13	2,24	2,19	1,88	1,76	1,05	0,61	5,27
	v	1,68	1,43	1,17	1,72	0,96	0,47	1,01	1,21	1,05	0,23	1,10	0,56	1,68

Figure 14 Incidence of alcohol dependence in general hospitals

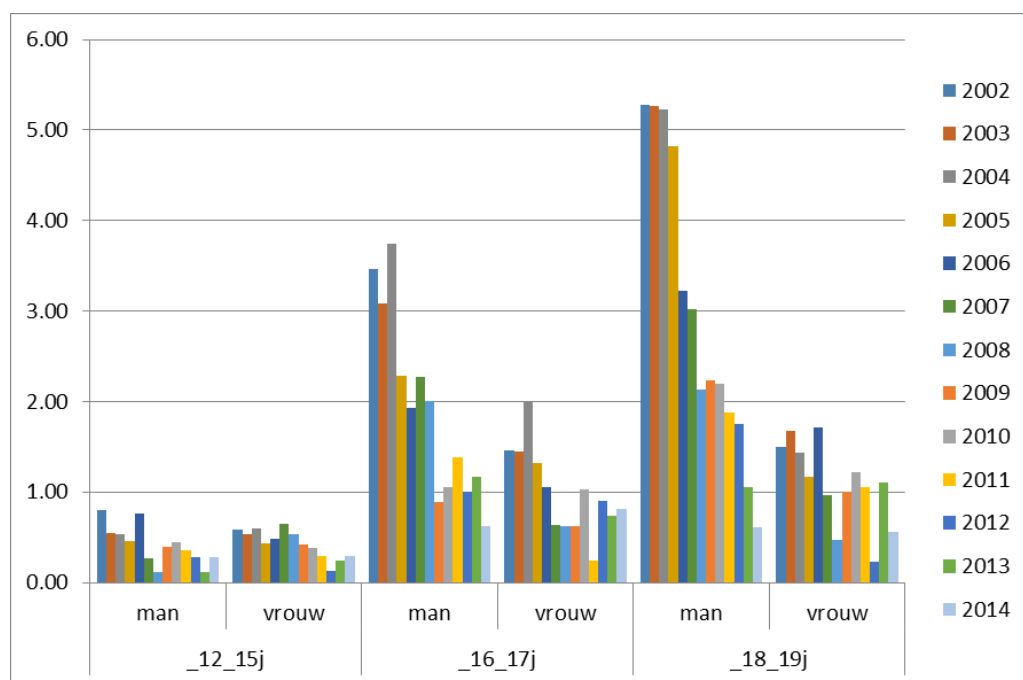


Table 24 Regression results alcohol dependence in general hospitals

	Model 1		Model 2	
	Estimate	S.E.	Estimate	S.E.
Intercept	-8.101***	0.100	-8.083***	0.109
Gender	-0.559***	0.099	-0.557***	0.099
12-15j	-1.477***	0.123	-1.515***	0.150
16-17j	-0.296*	0.117	-0.321*	0.144
Time	-0.679***	0.105	-0.735***	0.171
12-15j * time			0.114	0.262
16-17j * time			0.074	0.248
Model Evaluation				
Log likelihood	-514.702		-514.503	
DLog likelihood (chi sq)	110.235 (0)***		0.199 .905)	

Significance codes: *** < 0.001, ** < 0.01, * < 0.05

Alcohol-related, acute conditions

As was mentioned in the background section, one of the most important categories for the current project is acute conditions resulting from alcohol consumption. Acute conditions can occur intentionally or unintentionally. Suicide, homicide and violence have been causally linked to heavy consumption (Cherpitel et al., 2012; Cremonte & Cherpitel, 2014; Macdonald et al., 2008). Almost all categories of unintentional injuries on the other hand are strongly linked to alcohol consumption due to the effect of the blood alcohol concentration on the psychomotor abilities of people (Taylor et al., 2007). Since acute conditions are typically the largest cause of morbidity and death in the adolescent

population, it is this category which has received the most attention in the literature thus far (Callaghan, Sanches, & Gatley, 2013; Callaghan, Sanches, Gatley, Liu, et al., 2014).

Accidental injuries (ICD-9-codes: E880-E910)

The population-based incidence of accidental injuries is represented in Table 25. The descriptive statistics clearly show that males are at an increased risk compared to females. Moreover, age appears to be inversely related. In terms of time trend, no obvious changes are observed. The regression results in

Table 26 confirm the statistical significance of age and gender. However, it appears that there is a positive time trend after 2009 ($\beta=-0.141$, S.E. =0.039). Model 2 on the other hand shows that the relative risks of different age groups do not change significantly over time indicating that the minimum drinking age legislation did not have an impact.

Table 25 Incidence of accidental injuries (incidence per 10,000)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
12-15j	m	31,19	48,45	53,60	56,90	52,87	57,89	53,63	58,36	60,83	59,30	55,94	55,24	55,85
	v	11,85	19,25	22,03	21,29	23,17	24,26	24,58	26,32	26,34	25,59	25,17	27,01	25,05
16-17j	m	21,19	35,25	40,85	39,31	41,25	48,45	44,15	43,62	44,55	44,93	45,76	42,27	38,49
	v	9,99	14,93	15,24	15,48	16,30	15,59	18,47	15,94	18,10	17,06	17,82	18,40	17,14
18-19j	m	16,96	26,11	35,04	30,72	35,97	39,25	37,49	40,88	39,43	39,88	35,30	37,39	37,60
	v	7,24	10,83	15,00	15,53	15,38	13,90	13,81	15,16	16,70	14,32	14,70	17,90	16,18

Figure 15 Incidence of accidental injuries

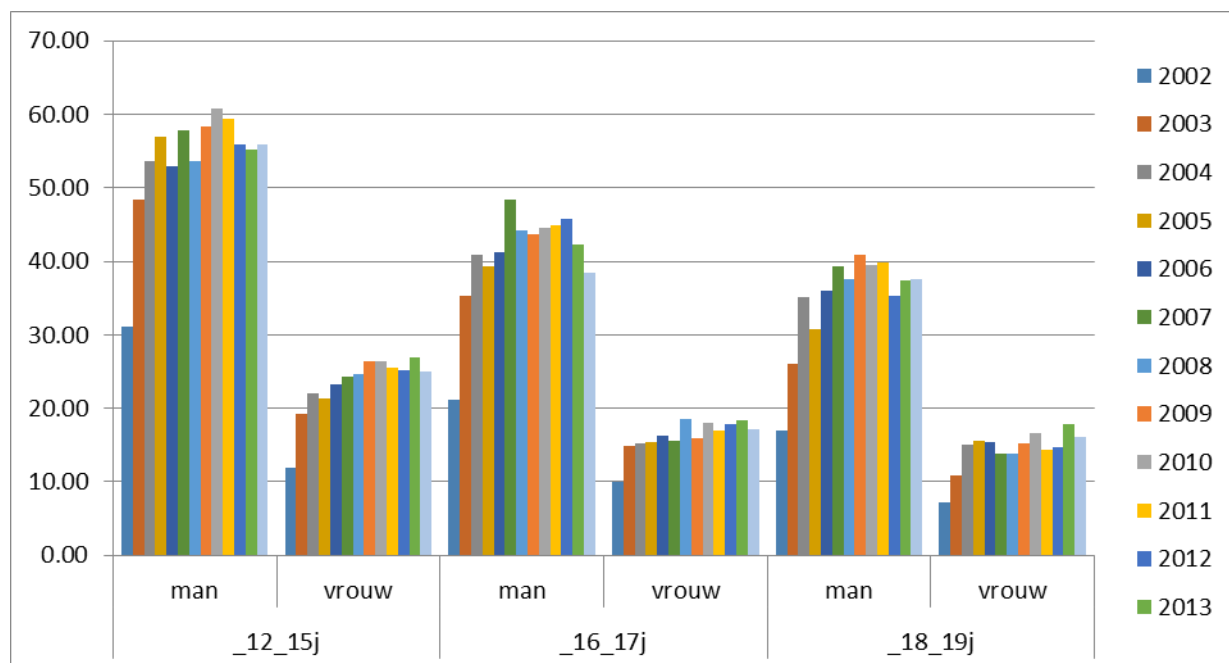


Table 26 Regression results accidental injuries

	Model 1		Model 2	
	Estimate	S.E.	Estimate	S.E.
Intercept	-5.719***	0.041	-5.726***	0.047
Gender	-0.884***	0.038	-0.884***	0.038
12-15j	0.459***	0.047	0.047***	0.059
16-17j	0.142**	0.047	0.158**	0.061
Time	0.141***	0.039	0.160*	0.069
12-15j * time			-0.016	0.096
16-17j * time			-0.039	0.098
Model Evaluation				
Log likelihood	-891.039		-890.87	
DLog likelihood (chi sq)	172.973 (0) ***		0.169 (0.919)	

Significance codes: *** < 0.001, ** <0.01, * <0.05

Alcohol Poisoning (ICD-9-codes: E850-E860, 980)

The descriptive results for the incidence of alcohol poisoning in Table 27 suggest that gender does not play a major role in explaining the incidence of alcohol poisoning. Age and time appear to be positively correlated. These findings are confirmed in the negative binomial regressions (see Table 28).

Table 27 Incidence of alcohol poisoning (incidence per 10,000)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
12-15j	m	1.47	1.84	2.26	2.93	2.70	2.70	2.95	1.67	3.36	4.13	2.29	3.24	2.65
	v	2.46	3.36	2.17	1.99	3.58	2.74	2.47	1.92	3.47	4.35	4.08	4.29	3.35
16-17j	m	2.56	4.30	3.34	4.09	3.62	4.09	4.45	5.48	3.71	4.22	5.51	4.27	5.28
	v	4.74	2.82	3.94	7.66	5.41	6.09	6.21	5.18	4.80	5.09	4.19	5.13	4.93
18-19j	m	3.76	3.97	5.96	6.03	5.59	6.90	5.32	4.85	6.86	8.15	6.81	6.76	6.89
	v	3.99	3.19	3.29	4.76	4.42	5.71	4.65	5.03	5.92	7.57	7.84	8.83	7.41

Figure 16 Incidence of alcohol poisoning

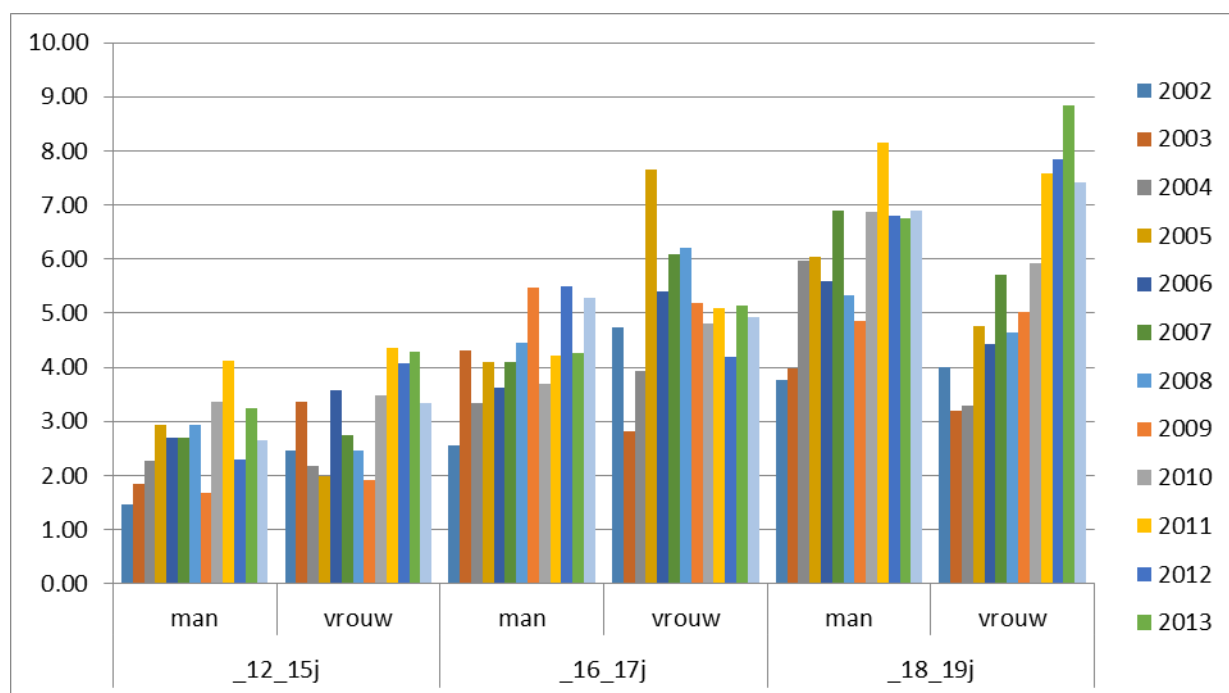


Table 28 Regression results alcohol poisoning

	Model 2		Model 3	
	Estimate	S.E.	Estimate	S.E.
Intercept	-7.615***	0.053	-7.671***	0.056
Gender	0.088	0.049	0.083	0.046
12-15j	-0.707***	0.060	-0.686***	0.073
16-17j	-0.204***	0.061	-0.052	0.073
Time	0.271***	0.051	0.407***	0.079
12-15j * time			-0.047	0.112
16-17j * time			-0.386***	0.115
Model Evaluation				
Log likelihood	-640.112		-628.008	
DLog likelihood (chi sq)	89.297 (0) ***		12.114 (0) ***	

Significance codes: *** < 0.001, ** < 0.01, * < 0.05

Suicide and intentional self-harm (ICD-9-codes: E950-E959)

The incidence of suicide and intentional self-harm at the population level is represented in Table 29. Three observations are made: firstly, the incidence among females is on average much higher than among males. Moreover, incidence increases with age. Finally, no obvious time trend is observed. These results are confirmed by the regression results in Table 30. Additionally, model 2 indicates that the relative risks of different age groups has not significantly changed after 2009 indicating that the minimum drinking age legislation did not have an impact..

Table 29 Incidence of suicide and intentional self-harm (incidence per 10,000)

		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
12-15j	m	2,74	2,89	3,41	2,59	3,04	3,89	3,14	2,59	4,00	4,13	3,16	2,96	3,84
	v	13,18	13,64	11,37	12,50	14,23	14,53	16,61	15,28	13,80	15,86	15,97	17,32	23,69
16-17j	m	10,06	9,58	6,77	8,88	8,17	10,60	8,46	11,40	8,40	9,06	9,85	7,54	10,71
	v	30,41	37,11	40,19	35,98	30,50	34,97	28,02	31,87	29,90	30,31	29,16	28,26	35,82
18-19j	m	11,20	11,68	11,93	13,43	11,81	13,03	14,22	14,47	13,94	13,77	13,40	12,84	12,64
	v	28,45	30,91	33,54	27,56	31,51	32,47	26,98	25,68	29,30	28,80	26,35	29,03	33,17

Figure 17 Incidence of suicide and intentional self-harm

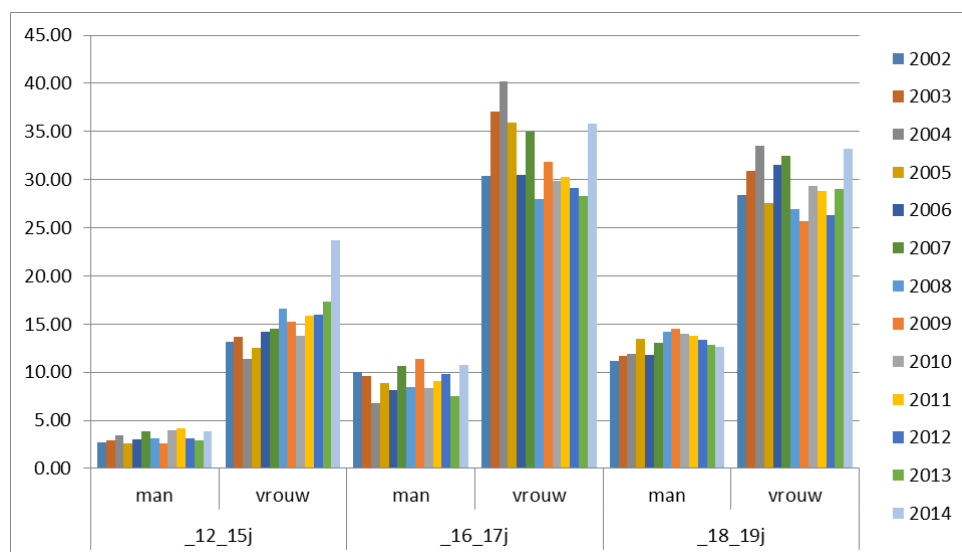


Table 30 Incidence of suicide and intentional self-harm (incidence per 10,000)

	Model 2		Model 3	
	Estimate	S.E.	Estimate	S.E.
Intercept	-6,854***	0,048	-6,841***	0,052
Gender	1,201***	0,044	1,199***	0,042
12-15j	-0,999***	0,054	-1,068***	0,066
16-17j	-0,125*	0,054	-0,095	0,066
Time	0,056	0,045	0,022	0,074
12-15j * time			0,178	0,106
16-17j * time			-0,079	0,106
Model Evaluation				
Log likelihood	-801.545		-795.651	
DLog likelihood (chi sq)	208.671 (0)***		5.894 (0.052)	

Significance codes: *** < 0.001, ** < 0.01, * < 0.05

Conclusion

The impact of alcohol consumption on health-related and other social outcomes cannot be overstated. Alcohol consumption has long been identified as an important, global risk factor for chronic conditions and injury (WHO, 2014b). Belgium is no exception, with the most recent estimates showing that 5.8% of the population suffered from an alcohol use disorder in 2010 (WHO, 2014a). By measuring both direct (e.g. hospital visits) and indirect (e.g. productivity loss) costs of substance use, a recent study calculated that the overall social cost of substance use accounted for 1.19% of Belgium's GDP (Lievens et al., 2016). The results also showed that 45%, roughly 2.1 billion euro, of the overall economic burden of legal and illegal drug use was caused by the effects of alcohol consumption. So far, alcohol has been identified as a causal component for well over 60 different medical conditions (Rehm et al., 2010). Moreover, it is likely that alcohol-related harms are currently still underestimated while potential benefits are overestimated (Stockwell & Zhao, 2016). Generally, conditions attributable to alcohol consumption are divided into six categories: cancers, cardiovascular diseases, gastrointestinal diseases, infectious diseases, neuropsychiatric conditions, injuries and other (for a full overview of conditions, **Fout! Verwijzingsbron niet gevonden.** in appendix).

The goal of the current study is to investigate whether the legislative change of the minimum legal drinking age in Belgium, after 2009, has had an impact on health. Considering the fact that this change is fairly recent, it should be clear that the current research has to be restricted to the direct, short-term impact on adolescents, since any potential long-term changes in adult chronic conditions will only become tangible in the years to come. As such, this study focuses on the impact of the minimum age on adolescent injuries and neuropsychiatric conditions linked to alcohol. Injuries can be either intentional or unintentional. Suicide, homicide and violence have been causally linked to heavy consumption (Cherpitel et al., 2012; Cremonte & Cherpitel, 2014; Macdonald et al., 2008). Almost all categories of unintentional injuries on the other hand are strongly linked to alcohol consumption due to the effect of the blood alcohol concentration on the psychomotor abilities of people (Taylor et al., 2007). Within the category of neuropsychiatric conditions, Alcohol Abuse Disorders are the main diagnosis of interest for this study.

Statistical analysis of the impact of the minimum drinking age on the incidence of chronic diseases in older age groups is impossible at this point, for the obvious reason that the legislative change was carried out too recently to observe the effect on the adult population. As such, the current analyses aim to explore whether the changed minimum age had an impact on trends in the health of the Belgian, adolescent population, more specifically an effect on neuropsychiatric and acute conditions. In order to evaluate whether the health of Belgian adolescents was impacted by the legislative change, data was collected on the incidence of hospital-based health service use between 2002 and 2013, linked to the diagnostic codes presented in section 1 of this chapter. The Belgian Federal Public Service (FPS) Health currently has two main, administrative registration systems recording the incidence of hospital-based healthcare use. The first one is called 'Minimum Hospital Data' ('Minimale Ziekenhuisgegevens' [MZG]/ 'Résumé Hospitalier Minimal' [RHM]). The database contains hospital-based data, including medical, nursing-based and administrative data (FPS Health, 2016a). The second registration system is called 'Minimum Psychiatric Data' ('Minimale Psychiatrische Gegevens'

[MPG]/'Résumé Psychiatrique Minimum' [RPM]) and contains data on healthcare use in psychiatric hospitals. This data includes alcohol-related mental disorders based on the 'Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), which is relevant for the current analyses (FPS Health, 2016b).

In general, **the results of the statistical analysis did not provide evidence that the legislative change of the minimum legal drinking age in Belgium, after 2009, has had an impact on health-related outcomes** (i.e. neuropsychiatric and acute conditions). The decreasing trend that was found in adolescent alcohol consumption, was not found in health-related outcomes. Instead, diverging time trends were found depending on the health-related outcome. The absence of time trends in problematic drinkers could be expected since this is another target group than the one on which the 2009 minimum legal drinking age is targeting on. As one might expect, neuropsychiatric and acute conditions showed different patterns for males and females, and for younger and older adolescents. More in detail: male show higher frequencies as do older respondents (except for accidental injuries). Also, these health-related outcomes showed increasing, decreasing or stable prevalences over time, but no significant trend reversal could be observed after 2009 indicating that the minimum legal drinking age in Belgium did not have an impact on health-related outcomes.

Evaluating MLDA legislation: data availability and recommendations

To establish the effects of the amended minimum legal drinking age on adolescent alcohol consumption, data was collected both from surveys and from policy sources. Within Belgium, three major surveys exist that incorporate questions on alcohol consumption and are specifically aimed at school-aged children: HBSC, VADLLB and Vlaspad/ESPAD. Although other sources do exist, such as the Belgian Health Survey and the International Self-Report and Delinquency study, differences in study objectives, methodologies and scope exist. Thus, combining the three previously mentioned studies is, in our opinion, the best approach, as all three of them have a similar scope, are representative and employ similar questionnaires. Despite our best efforts however, we have only been able to collect data from HBSC and VADLLB. As mentioned throughout the report, questionnaires of the different studies were significantly different in the past (most notably in 2001/2002, at the onset of the current study period) but have converged significantly over the years. At this point, all studies incorporate at least a question on age of drinking initiation, drinking frequency, drinking quantity and binge drinking/drunkenness, which are the minimal requirements to accurately investigate "drinking behavior". We advise that the PI's of all studies carry on their past efforts to insure the continued comparability of the studies, most notably in areas where there are currently still discrepancies (e.g. definition of binge drinking/drunkenness). Moreover, PI's should debate which external factors are key to adolescent drinking behavior (e.g. peer drinking, SES) and agree on a common approach, in order to facilitate future research.

The information necessary to include national policy measures in international alcohol research are all currently collected, either through GISAH, Eurostat or EUCAM. However, we found that the WHO is very reluctant to give up GISAH information beyond what is available on their website (the latest data collected). This made the current research significantly more difficult, as we had to resort to past

reports, which are often incomplete or have a lower level of detail than that required for the study. It is unclear to us if anything can be done about this for future research.

To establish the effects of the amended minimum legal drinking age on adolescent health consequences, data was collected through both at the Belgian level, through the Belgian Federal Public Service Health and at the European level through the EU Injury Database. The data at the Belgian level was found to be of high quality and sufficient to insure a basic level of statistical analysis. The addition of more detailed information on socio-economic status or other relevant external influences could be useful to provide a more in-depth analysis. The EU Injury Database also provided valuable data, however was rendered useless because Belgium does not provide data to Eurosafe, the network organizing the database. In order to perform an international analysis, similar to that of alcohol consumption in WP2, we recommend that the Belgian state participates in the EU Injury Database project.

Finally, we decided after thorough research with the Federal Police and the Department of Justice that the data on youth criminality collected by both authorities, does not have the level of detail required to analyze the impact of legislation on youth criminal offenses.

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Chapter 5: Study of the knowledge and application of the 2009 legislation by young people and sellers

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In this chapter we only present the results partially. More information on the used data sources, methodological considerations, indicators, statistical tests, used software, can be found back in the elaborative document.

Introduction

One major aim of WP3 is examining and testing the knowledge of the 2009 law by young people and different groups of sellers. Examining the knowledge and understanding of a law is a complex task. Moreover, it could be a sensitive topic for sellers (Deakin & Spencer, 2011). Since we want to obtain standardized data, it is worthwhile to evaluate the knowledge of the law in the same way for these two populations. Indeed, from an interactionist point of view, customers and sellers share the same environment. Up to now, studies on the knowledge of the law prohibiting alcohol sales to minors has been evaluated in the sense of sellers (Karsenty, Diaz Gomez, Lermenier, & Galissi, 2013; Kuendig et al., 2008) but not from the point of view of youths. Starting with the survey of the adolescents, this survey also serves to identify the specific locations where young people buy alcohol. Based on these last results by the survey interviews are conducted with different types of sellers that were identified.

The survey of the youngsters is operated through a quantitative methodology and also aims to evaluate the prevalence rates and the severity index of alcohol use by young people permitting to identify drinking profiles (by age, gender, cultural background, type of school, neighbourhood...). These profiles are confronted with knowledge of the law and parental attitudes in order to see if and how they influence the drinking habits. From a macro-societal level the law and its knowledge may be seen an external control on the alcohol consumption (Rotter, 1966). Therefore, parental attitudes might be considered as another form of external control, from a micro-social level in this case (Koning, Eijnden, Engels, Verdurmen, & A M Vollebergh, 2010).

The secondary goals are to evaluate the experience with selling alcohol to underage customers for sellers and their relationships with the enforcements actors as well as to identify the measures that sellers have already implemented to comply with the legal age limits on alcohol sales (tips and tricks to comply and difficulties to non-comply) (Gosselt, Van Hoof, & De Jong, 2012).

The information on the sellers, as opposed to the survey of the youngsters, favours a qualitative approach. The secondary goals benefit of this kind of approach that permits us to have much more open answers. It also allows us to measure the social representations (Jodelet, 1995) of the sellers on our topic. As a qualitative research is concentrated, it allows the observed person to develop and inject more of his own standpoints rather than to shortly answer on the hypothesis of the research. Due to diversification of the sample and reaching saturation a sound knowledge is composed that permits the researcher to understand the topic, from the interviewees' standpoint and discourse, although this knowledge is not representative of the whole in the same way than quantitative approach is (Silverman, 2011).

Part 1: Youths' survey

1.1 Results

In a first subsection, the data of the survey will be presented in a descriptive way, according to the different objectives of the survey: the alcohol consumption of youngsters, the access to alcohol, the parental attitudes as well as the knowledge and application of the law. This general presentation of all the data is followed, in a second subsection, by the presentation of more analytical results. This presentation is structured around profiles of alcohol consumption established by a Latent Class Analysis (LCA). After presenting the profiles, the relationship between those profiles and the demographic variables of the sample, the parental attitudes as well as the knowledge and application is analysed. The most significant and speaking results are discussed here.

1.1.1 Descriptive results of the survey

Alcohol consumption by youngsters

The .95 Cronbach' alphas' coefficient for the AAIS indicates the excellent internal consistency of the given answers.

Moderate rates of alcohol consumption (M=26, range from 0 (min.) to 63 (max.), SD=16,20) are observed in general in our sample (n=1154). Specifically, 22% (n=250) of respondents report to be Abstainers (don't drink any alcohol) (scoring 0)¹. This means that 78% (n=904) of interrogated youngsters between 14 and 18 years old responded consuming alcohol. 49% (n=571) are according to the AAIS moderate drinkers (range from 1 to 36). 29% (n=333) are more problematic drinkers (obtaining more than 37 on the AAIS).

Regarding the start-on age, 53,6 % declare to have drunk their first alcoholic beverage when they were under 15 years old. A large percentage (35,6%) started drinking at the age of 14 or 15. 15% were between 10 and 13, and 2,9% were younger than 10 when they had their first drink.

It is noticed that in our survey the answer "recently" is difficult to interpret. The reference of 15 years old is linked to the AAIS standardized questionnaire and not associated to our legislation. By using this international and tested instrument that takes 15 as a limit, we can't answer exactly on how many youngsters take their first drink under the legal age of 16 years old. But if more than half of the students are occasional drinkers, consuming not more than 1 to 2 times per month, when they drink 47% takes usually 3 glasses or more. Indeed, the incident rates of the usual quantity of alcohol per drinking occasion are one or two glasses for 30%; three to six glasses for 24,5%; six glasses or more or until to get drunk for 22,9%. 22,5% of respondents repeated they never drink alcoholic beverages.

The majority (55,9%) **drinks** beer, which mentioned also mixtures of soft drinks with beer. 49,9% of the students like to drink "mixed-drinks" as Bacardi Breezer, Smirnoff Ice or Whisky Coke. Wine (29,7%) and spirits (29,6%), as whisky, vodka or Gold Strike are also cited. As spirits are not to be sold nor offered to minors under 18 according to the 2009 law, more or less 79% at least of the sample

¹ When a subject from the abstinence profile didn't respond to the sub questions, the value of 0 has been attributed when an adequate answer was not available (insisting on a repetition of their non-drinking). Instead when a drinking subject didn't provide an answer on a sub question, the value « missing » has been encoded.

consume "illegal" drinks in regard to their age. Indeed, this percentage could be higher if some of the under 16 drink only beer, in which case they are also in a precarious situation according to the law.

When drinking, 88% of answers in our sample mention **drinking with friends**, 46% drink alcohol with family². In the same line, 32% have friends who buy drinks for them. 42,5 % of youngsters buy it themselves. And 3,8% buy without their parents knowing. 52% of youngsters responded they control their drinking, while only a small minority estimates having (had) a problem: 1% declared to feel often at unease, 0,4% believes to need help to control their consumption of alcohol, 0,2% receive(d) help in controlling their drinking behaviour.

We find similar answers when interrogating **consequences of drinking** where 74,9% of drinking youngsters doesn't report any consequences of their drinking at all. We define consequences as effects on actions done during or following drinking, like not being able to have discussion with someone or to have good time, interference with studies, accidents etc. 6,3% mentioned problems regarding their studies or at home due to drinking. Very small percentages lost friends (0,4%), were implicated in violence (4,2%), in vandalism (1,6%) or had an accident, were wounded, arrested or punished at school for drinking alcohol (2%). 2,3% had unsafe genderual relations following drinking.

We also measured the effects the youngsters **feel after drinking**, like pleasant feelings, of well-being and relaxation, being a bit tipsy or having a black-out. All together this makes rather a tie around 58% of the sample who have ever experienced bad effects after their alcohol consumption, like being completely drunk, being sick or having an ethylic coma, against 51% who have had what we can describe as a more pleasant effect. Bearing in mind the influence of pleasure and risk as motivations, especially in adolescence, this is an important element to keep in mind (Katz, 1988).

T-tests were conducted to compare regional differences in Belgium, gender and age (dichotomized into lower or higher than 16) **related to alcohol consumption**. Significant differences are observed between students from the Dutch speaking subsample (M=29,71; SD=13,52) and the French speaking one (M=22,80; SD=17,60) ($t(1152) = -7,39; p=0,00$). Indeed youths from the broader Ghent area are more incline to consume more alcohol than those from Liege and Brussels areas. This remark has to be nuanced as it could also be due to the Dutch speaking subsample presenting with more boys. The consumption of alcohol appears higher for boys (M=27; SD= 16,44) than for girls (M=25; SD= 15,99) but no statistical difference were observed among them ($t(1152) = -2,21; p=0,27$). Also, students over 16 years old consume significantly more alcohol (M=29,95; SD= 15,49) than those under 16 (M=20,41; SD= 15,53) ($t(1152) = -10,33; p=0,00$).

Access to alcohol by youngsters

From the 904 youths who consume alcohol, 491 youths have answered that they bought alcohol by themselves. From their 793 several open answers they have given, **14 different localisations were written down**. The remaining answers can be categorized into **three large categories** according to the type of seller.

² Some caution is needed with those percentages that add responses on several questions because of the possibility to indicate several answers the same youngsters could be counted in subanswers (f.e. youngsters answering with adult members and siblings -> counted as two answers but same youngster).

First, a majority of 50,7% of the youngsters answering they drink alcoholic beverages, buy them in **shops**. Three types of shops were mentioned: supermarkets (25%), night shops (24,7%) and small local shops (0,6%).

Secondly, in 35,4% of the youngsters who declared consuming alcohol, they do so in what we could regroup as **commercial leisure activities**, as “cafés”, all named as such, (18,3%), bars, sometimes they wrote down specific bars or neighbourhood known for its bars (15,6%), “clubs” or discotheques (1,1%), sport bars (0,4%) and one young person (0,1%) evoked drinking alcohol in a restaurant.

Finally, 13,6% of the questionnaires that reveal the consumption of alcohol up to some degree, do so in what we could resume as more **associative festivities**. Sellers are not consistently professional sellers, or not even adults. This category is composed by responses of “soirée”, and “thuis” (5,1%) that are quite vague, but might refer to informal evenings amongst friends, at one’s house or in the streets or at a party amongst friends; “feest(tje)” (0,4%); “fuij” 5,3%; youth clubs (2,5%); youth movements (0,6%); festivals (0,1%) mentioned to drink alcohol at festivals.

There is a significant age difference between youths that buy (or make other to buy) alcohol for them (n=491; M=16,91; SD=1,17) and the others (n=413; M=15,94; SD=1,19). Indeed, **T-test show oldest youths (around 17 years old) seem to buy alcohol by themselves more often** ($t(902) = -12,36; p=0,00$).

Parental attitudes

The Cronbach alphas’ coefficients are quite high and reach from .76 to .93 for the parental scales used in this study (.76 for parental supervision and parental solicitation, .82 for parental control, .93 for parental attitudes towards alcohol consumption which has only been administered for the Dutch subsample). Noticed that the scale related to child disclosure showed a weak Cronbach’s coefficient (.57). Due to the lack of internal consistency, this subscale was not included in the next analyses.

As showed in table 1, in our sample, we observe medium (parental solicitation) to high (parental control and supervision) scores. In the Dutch sample, low to medium absence of parental rules toward alcohol consumption at home may be demonstrated³.

Table 1: descriptive statistics for parental attitudes

	N	Min.	Max.	Mean	Standard deviation
Parental supervision	1154	1,0	5,0	3,870	0,676
Parental sollicitation	1154	1,0	5,0	3,041	0,860
Parental control	1154	1,0	5,0	3,916	0,892
Parental attitudes towards alcohol	517	1,0	5,0	2,668	1,106

T-tests were conducted to compare regional differences in Belgium, gender and age (dichotomized to lower or higher than 16) related to parental attitudes. Significant differences are observed: First, the analysis shows that **youths from the Ghent area perceive more parental supervision** (Dutch (M=4,11;

³ If for parental supervision, parental solicitation and parental control high scores indicate more supervision, sollicitation or control identified by the youngster, the instrument used for measuring parental attitudes towards alcohol consumption works in the other sense: higher scores indicate that youngsters perceive less parental attitudes and rules toward alcohol at home.

SD=0,59) and French (M=3,67; SE=0,68) ($t(1152) = -11,58$; $p=0,00$) **and solicitation** (Dutch (M=3,10; SD=0,80) and French (M=2,99; SD=0,90) ($t(1152) = -2,02$; $p=0,04$) through questions from parents about youths activities than those from Liege and Brussels areas. However, **youths from the French part perceive more control related to general behaviours from their parents than Dutch speaking youths** (Dutch (M=3,72; SD=0,90) and French (M=4,07; SD=0,85) ($t(1152) = 6,80$; $p=0,00$).

Second, **girls are more subjected to parental attitudes than boys**: they are more supervised (boys (M=3,77; SD=0,70) and girls (M=3,93; SD=0,65) ($t(1152) = 3,83$; $p=0,00$), more solicited by parents (boys (M=2,87; SD=0,79) and girls (M=3,15; SD=0,89) ($t(1035,38) = 5,61$; $p=0,04$) and more controlled about general attitudes (boys (M=3,71; SD=0,94) and girls (M=4,05; SD=0,84) ($t(875,95) = 6,22$; $p=0,00$). Moreover, girls perceive less an absence of parental attitudes toward alcohol use at home (boys (M=2,54; SD=1,09) and girls (M=2,76; SD=1,11) ($t(515) = 2,29$; $p=0,02$).

Third, significant differences are also observed between the parental attitudes between the under 16 and the parenting of adolescents of over 16 years old. Even if the relation with parental supervision and parental solicitation are non-significant, **the parental control decreases over age** (<16 (M=4,17; SD=0,73) and >16 (M=3,73; SD=0,95) ($t(1149,97) = -8,75$; $p=0,00$). **The parental attitudes towards alcohol consumption** also shows the **same pattern** (<16 (M=2,01; SD=1,00) and >16 (M=3,00; SD=1,00) ($t(515) = -10,65$; $p=0,00$).

Knowledge and application of the law

As seen in the methodology, the knowledge of the law (Mathys et al., 2013) is the second independent invariable.

Table 2: descriptive statistics for knowledge and application of the law

	Min.	Max.	Mode	Mean	Standard deviation
Vignette 1 knowledge	1	10	1	3,47	3,01
Vignette 1 application	1	10	1	5,36	3,01
Vignette 2 knowledge	1	10	1	2,71	2,61
Vignette 2 application	1	10	1	5,32	3,27
Vignette 3 knowledge	1	10	10	7,18	3,49
Vignette 3 application	1	10	10	7,23	3,32

As showed in table 2, youngsters perceive the two first situations (not legal, see methodology and measures part) as more authorized according to their own values than according to their knowledge of the legality of the presented situation by the law. The difference among each vignette (intra) is higher than the difference between them (inter). For the third vignette (legal situation: beer for 17 years old), youngsters perceive the alcohol situation in a similar way regarding knowledge and application. The difference among vignette (intra) is lower than the difference between the two other vignettes (inter).

T-tests were conducted to compare regional differences in Belgium, gender and age (dichotomized to lower or higher than 16) related to knowledge and application of the law variables. Significant differences are observed in the sense that Dutch speaking youngsters have a better knowledge of the

limitations introduced by the law, but this better knowledge does not translate in a difference in application of the legal norms. We discuss our observations per vignette.

Regarding **the first vignette** on the minimum age for spirits, the difference in *knowledge* was most significant (Dutch (M=2,77; SD=2,60) and French (M=4,04; SD=3,20) ($t(1152)= 7,48$; $p=0,00$). No significant differences were observed between girls' and boys' knowledge. Older youth knows this aspect of the law better than the under 16 year olds (<16 (M=4,24; SD=3,12) and >16 (M=2,90; SD=2,79) ($t(979,51)= 7,54$; $p=0,00$). The differences in the *application* of this knowledge were not significant for the three variables (regional differences, gender and age). Regarding **the second vignette**, on the minimum age for fermented alcohol, the Dutch speaking youngsters had better *knowledge* regarding the law's age for fermented drinks better than their French speaking counterparts, but the difference was less marked (Dutch (M=2,38; SD=2,30) and French (M=2,98; SD=2,82) ($t(1152)= 3,93$; $p=0,00$). No significant differences were observed between girls' and boys' knowledge. Age of the youngsters does make a difference in the knowledge: the youngsters under 16 turn out to know the norms regarding spirits less well than older youngsters (<16 (M=4,24; SD=3,12) and >16 (M=2,90; SD=2,79) ($t(979,51)= 7,54$; $p=0,00$). Again, we observe that age does make a difference: the youngsters under 16 turn out to know the norms regarding a minimum age for drinking less well than older youngsters (<16 (M=2,95; SD=2,70) and >16 (M=2,54; SD=2,53) ($t(1152)= 2,62$; $p=0,01$).

Regarding the *application* of this legal regulation into their own set of norms, those Dutch speaking youngsters, while knowing better the content of the law, apply it even less than the French speaking youngsters (Dutch (M=5,81; SD=3,03) and French (M=4,91; SD=3,41) ($t(1152)= -4,74$; $p=0,00$). Boys seem to have less integrated the law in their own internal norms (M=5,62; SD =3,31) than girls (M=5,12; SD=3,24) ($t(1152)= -2,52$; $p=0,01$). No difference was observed according to the age of youngsters.

Regarding **the third vignette** that presents a situation authorized by the law, the Dutch speaking youngsters had also better *knowledge* of the law than the French speaking (Dutch (M=8,481; SD=2,58) and French (M=6,12; SD=3,77) ($t(1118)= -12,55$; $p=0,00$). Boys had higher scores than girls for vignette 3 regarding the knowledge of the law, this vignette concerns "authorized" alcohol situation (boys (M=7,66; SD=3,39) and girls (M=6,88; SD=3,52) ($t(980)= -3,77$; $p=0,00$). As we saw, the under 16 years old evaluate the situations as more authorized by the law when according to that law they are not authorized at all, as presented in vignettes 1 and 2, but they saw it as less authorized as the older youngsters did when in fact the situation was authorized by the law (vignette 3) (<16 (M=6,53; SD=3,60) and >16 (M=7,66; SD=3,33) ($t(1000,16)=-5,44$; $p=0,00$). Congruent with previous observations the *application* scores followed the ones on the knowledge for this vignette Dutch (M=8,42; SD=2,43) and French (M=6,26; SD=3,62) ($t(1110)=-12,04$; $p=0,00$), but boys presented higher scores than girls for application: they considered more often the situations illustrated in the vignettes as authorized according to their own norms, regardless of if the law authorized the situation of the vignettes (boys (M=7,68; SD=3,13) and girls (M=6,95; SD=3,41) ($t(1013)= -3,76$; $p=0,00$). For the application of this vignette the age of the youngster did play a role: under 16 evaluated the situation as less authorized according to their own norms (<16 (M=6,62; SD=3,47) than over 16 year olds (M=7,69; SD=3,13) ($t(986,49)= -5,38$; $p=0,00$).

1.1.2 Main results: Drinking profiles and the influence of parenting and knowledge of the law on drinking

Description of the youths' alcohol profiles by a Latent Class Analysis (LCA)

If the population of the survey is N=1154, this LCA was performed on the alcohol users' subsample, n=904. This LCA is performed from the AAIS items examining the alcohol youths' consumption. This analysis constitutes another way to describe our sample regarding consumption of alcohol in a person-centred approach.

To determine how many profiles to retain from each LCA, we considered various coefficients. We examined iterations to ensure that there was as little variation as possible, as well as the Bayesian Information Criterion (BIC), which had to be as small as possible (Nylund, Asparouhov, & Muthén, 2007). To ensure acceptability for further statistical analysis, each class also had to comprise at least 30 participants. The bootstrap indicates if the model is statistically sounder than the precedent. The BIC needs to be under .05 to be significant. The entropy with values approaching 1 indicates a clear delineation of classes (Celeux & Soromenho, 1996). The use of "most likely class membership" as a variable for further analysis, however, is problematic when the entropy goes much lower than 0.8. So, the ideal class division show an entropy of over .8 and the closest to 1 as possible.

Table 3: LCA FIT for alcohol variable

FIT	1 classe	2 classes	3 classes	4 classes	5 classes	6 classes
AIC	28852	26688	25972	25569	25419	25326
BIC	28977	26943	26356	26084	26063	26100
AdBIC	28895	26774	26102	25744	25637	25588
Sizes	904	257; 647	447; 235; 223	215; 182; 290; 217	177; 169; 216; 211; 131	181; 168; 148; 131; 172; 104
Entropy	na	0,918	0,87	0,853	0,857	0,842
Bootstrap (pvalue)	na	0,0000	0,0598	0,0290	0,0465	0,2154
Bootstrap	na	0,0000	0,0605	0,0295	0,0476	0,2185

As table 3 showed, the model of 4 or 5 classes appears to be the most relevant models but the 5 classes model presents the smallest BIC, all other indices being equivalent. Thus, the model of 5 classes is selected for the next analyses. Table 4 presents the prevalence of these 5 profiles among our sample, plus the abstainer one (n=250). As we can see, two distinctive problematic profiles emerged from our analyses: the high explosive and the high stressed drinkers, including more than 38% of the drinkers' sample (n=904) instead of one general problematic one derived from original AAIS scale.

Table 4: Description of the youths' profiles on alcohol consumption

Low 'Family' drinkers	Moderate 'Mixed' drinkers	High 'Stressed' drinkers	Low 'Social late' drinkers	High 'Explosive' drinkers	Abstainers
177	169	216	211	131	250
19,8%	18,7%	23,9%	23,3%	14,5%	22%

Next, we present the profiles based on the most distinctive items related to alcohol consumption which could help to understand the clinical “label” of these profile⁴:

1. The **Low family drinkers** (n= 177) is a profile including youths who started to drink alcohol in a family setting (these youths are for example underrepresented in a social drinking profiles associating friends). These youngsters are underrepresented on items of beer, mixed drinks and spirits. They don't experience a problem regarding their drinking behaviour (underrepresented on feeling tipsy or drunk or sick as a consequence of drinking). They don't buy the alcohol themselves or through friends. Also they most often (96% of respondents) drink 1 or 2 glasses.

2. **Moderate mixed drinkers** (n=169) consume alcohol because they like the taste. They drink with family – where they also started drinking and procure the alcohol they drink- or with friends of the same age. The strongest effects felt are being tipsy, but they are under-represented on the items of being drunk or sick. These youngsters feel they control their consumption. When they drink, half of them (58%), take 3 to 6 drinks.

3. **High stressed drinkers** (n= 216) motivate their drinking by stress or solitude. They drink most often mixed drinks or spirits that they buy themselves and started to drink alcohol with friends in order to have a good time. They continue to drink with friends of their own age or older friend and have all kinds of effects when drinking: pleasantness or being tipsy to being completely drunk or sick. These respondents admit to experience some consequences of their drinking behaviour, even if they believe to be able to control their consumption, even if easily influenced by their friends. 65% drink 6 glasses or more when drinking.

4. **Low, late & social drinkers** (n= 211) get their drinks by their friends with whom they drink also. This group is underrepresented in the on-start under 15 years, in drinking wine, mixed drinks and spirits, in getting alcohol within the family or by older friends, as well as regarding the consequences of being drunk or sick following drinking. Half of these youngsters (56%) drink 1 or 2 glasses.

5. **High explosive drinkers** (n=131) drink most often mixed drinks or spirits they bought themselves (underrepresented in through family). They started drinking with friends in order to have a good time, continue to drink with older friends and are drunk or sick when drinking. The respondents of this group admit experiencing the consequences of their drinking behaviour, even though they believe to be able to control their consumption of alcohol albeit acknowledging to be able to be influenced by friends. 67+ drink 6 or more glasses.

Relationships between profiles and others main variables

Pearson's chi-squared were conducted among nominal demographic variables (gender, cultural background, type of schooling) to compare the 5 profiles from LCA, plus the abstainer one. The most significant results are presented here.

Pearson's chi-squared were conducted among **gender variable** ($X(5)= 35,99, p=0,00$) showing 76,9% of Moderate mixed drinkers were girls and 55,7% of individuals of the High explosive drinkers were boys.

⁴ Z-score performed in each item have been used to describe the 5 drinkers' profiles.

The **cultural background** (dichotomized to Belgian vs non-Belgian) variable was also significant among profiles ($\chi^2(5) = 99,22$, $p=0,00$). Youngsters of non-Belgian cultural background are over represented among the Abstainers. If 11,5% of our entire sample has a different background, it increases to 28,4% of the youngsters with an Abstainer profile.

Type of schooling was also observed to be different among profiles ($\chi^2(15) = 88,64$, $p=0,00$). Young people in vocational education are overrepresented in the High stressed drinkers (35.6%), while they are underrepresented in the abstinent profile. Youngsters following general education are overrepresented in the abstainer profile (80,8%), while they are underrepresented amongst the High stressed drinkers.

Regarding **age**, univariate ANOVA and Bonferroni posthocs were conducted to compare the 5 profiles from LCA, plus the abstainer one ($F(5, 1148) = 41,30$, $p=0,00$). These results are presented in table 3.1 in annex. Descriptives statistics presented in table 2.1 are also helping to understand the meaning of difference from bronferroni posthocs. These results showed that the two problematic drinkers profiles (explosive and stressed) are significantly older than the other profiles, presenting more youngsters between 17 and 18. Abstainers are also significantly younger than other profiles, except for the Low family drinkers one, no differences in terms of age were found between them ($M = <16$). Moderate mixed drinkers are significantly younger than the two problematic drinking profiles and older than abstainer and low "family" drinking ones. No difference in terms of age were found with the low "social late" drinking profile ($M = >16$ but <17).

Relationships between profiles and parental attitudes

Univariate ANOVAS and bronferroni posthocs were used to determine whether there are any statistically significant differences between the 6 profiles and the three parental attitudes subscales. These results are presented in tables 3.2 to 3.5 in annex. Descriptives statistics presented in table 2.2 are also helping to understand the meaning of difference from bronferroni posthocs.

Regarding **parental supervision** (the monitoring of activities of the youngsters making parents know about the activities of their children), the three low or moderate profiles (the Low family drinkers, the Low, late & social drinkers and the Moderate mixed drinkers), showed significantly higher levels of parental supervision than the two problematic drinkers profiles, but also as the abstainer one ($F(5, 1148) = 15,53$, $p=0,00$). The Abstainers did get more general supervision than the High stressed drinkers. The High explosive drinkers, who were the oldest adolescents of our sample, received the least parental supervision.

No differences in terms of **parental solicitation** were found between the 6 profiles ($F(5, 1148) = 0,60$, $p=0,70$ NS).

Related to **parental control** (the number of rules and supervision the parents use to manage the activities of their children), the results showed a clear distinction between the two groups of profiles ($F(5, 1148) = 21,07$, $p=0,00$). On the one hand the Abstainers, low and moderate drinkers declared to be subjected to equal levels of parental control. On the other hand the High stressed drinkers and High explosive drinkers showed significantly lower levels of parental control than the four other profiles. No differences were found between them.

As mentioned in the methodology, for the Dutch speaking schools we added questions on **specific parental attitudes towards alcohol consumption**. Some significant differences appears also between profiles ($F(5, 511) = 68,12, p=0,00$). Here Abstainers reported more specific parental attitudes towards alcohol at home than the others alcohol consuming profiles. Next, low family drinkers and Low social late drinkers declared significantly more parental attitudes towards alcohol at home than the moderate mixed drinking profiles and the two more high consuming profiles. No differences were found between them. Moderate mixed drinkers, High stressed drinkers and High explosive drinkers showed significantly less focus in the attitudes of parents towards alcohol. No differences were found between them.

Relationship between profiles and knowledge & application

On the knowledge and the integration of the law in personal norms, the analyses of vignettes per profile handed out some results that help to understand how the knowledge of the law influences behaviour and if those legal norms have been integrated in the more personal values and norms of the youngster. This individual normative framework is sounded through the analysis of the “application” of the vignettes, how strongly the youngsters evaluates the depicted situations as (not)authorized: do they (dis-)approve of them? Univariate ANOVA and bronferroni posthoc have been conducted for knowledge and application of the law among the 6 profiles in order to answer this question, showing significant differences. Annexe 2.3 presents descriptives statistics and annexes 3.6 to 3.11 show bronferroni postdoc results.

We first discuss the **knowledge** of the law though the vignettes, for each of the profiles.

The **first vignette** shows a scene where youngsters are too young to be sold spirits to ($F(5, 1148) = 6,47, p=0,00$). No differences were found between High explosive drinkers and the five other profiles. Still Abstainers perceived this vignette as more authorized by the law than the High stressed drinking profile. No differences were found between Abstainers and the four other profiles. Low family drinkers perceived this vignette as more authorized by the law than Moderate mixed drinkers and the High stressed drinkers profiles. No differences were found between Low family drinkers and the three other profiles. Moderate mixed drinkers perceived this vignette as less authorized by the law than Low family drinkers profile. No differences were found between Moderate mixed drinkers and the four other profiles. High stressed drinkers perceived this vignette as less authorized by the law than the two low drinkers profiles and the abstainer one. No differences were found between High stressed drinkers and High explosive drinkers, as well as between High stressed drinkers and Moderate mixed drinkers. Low social late drinkers perceived this vignette as more authorized by the law than the High stressed drinkers profile. No differences were found between Low social late drinkers and the four other profiles.

Regarding the knowledge on **the second vignette**, presenting a café selling beer to youngsters under 16 years, no differences were found between the 6 profiles. This vignette seems perceived as “not authorized” by the law among all the profiles (mean range is low), ($F(5, 1148) = 1,10$ NS).

The third vignette presents a situation authorized by the law. Here again differences are observed between the different profiles according to how well they know the law ($F(5, 1148) = 56,13, p=0,00$). Abstainers perceived this vignette as less authorized by the law than the five other profiles. Low family drinkers perceived this vignette as more authorized by the law than the Abstainers profile but less

“authorized but the law” than the four other profiles. Moderate mixed drinkers, High stressed drinkers, Low social late drinkers and High explosive drinkers perceived this vignette as more authorized by the law than the Abstainers and the Low family drinkers profiles. No differences were found between Moderate mixed drinkers and the three other profiles.

When looking at the **application** of this knowledge, what youngsters regard as authorized according to their own norms, a different picture emerges. About the **first vignette** ($F(5, 1148) = 38,61$ $p=0,00$), Abstainers perceived this vignette as less authorized by them than the five other profiles. High explosive drinkers perceive this vignette as more authorized by them than the four other drinking profiles, except for the high stressed profile where no difference were found.

The second vignette ($F(5, 1148) = 55,97$ $p=0,00$) shows again Abstainers perceiving this vignette as less authorized by them than the five other profiles. Low family drinkers perceived this vignette as more authorized by them than the Abstainers but less authorized by them than the four other profiles.

Regarding **the third vignette** ($F(5, 1148) = 103,33$ $p=0,00$), the most important result is that Abstainers perceived this vignette as less authorized by them than the five other profiles.

1.2 Discussion

Across these results, **age** comes forth as a critical variable: older youths, over 16 year olds, consume more alcohol and perceive less parental supervision (specifically control and attitudes towards alcohol at home). For example, Two (older) profiles are **high consumers** that attract our attention in this study. Could these youngsters be at risk of developing an alcoholic trajectory or could the High explosive drinkers correspond to practices of binge drinking? In that sense, this problematic consumption could be problematic but limited to adolescence (Moffit 1983).

Moreover, older youths seem to know the law about alcohol consumption (in authorized as well as non-authorized situations) better in comparison to younger (<16). However, age also seems significant only for application of the legal norms into their own norms for drinking regarding authorized situation. These results seem to highlight the **importance of personal values** in the application of the law: even if youths evaluated more or less correctly the legal aspects of the alcohol consumption (knowledge), we observe contrasts between the law’s perspective and their own perspective or values (application). When the perspective of the law met their own perspective, authorizing the consumption of alcohol, results are congruent: youths knew the law rather well and seemed to approve these norms through their own values and application in their daily life. But when the law did not authorize the situation presented in the vignettes, this prohibition doesn’t seem to be sufficient to make that legal norm translate or integrate into internal system of informal norms. Indeed, when a legal norm comes to confirm internal values for the youth, the application follows the legal norm. So, the **passive knowledge of the law doesn’t seem to play a major role** in the integration of the norms into an individual normative system. Application seems to be more associated to alcohol use than knowledge (passive comprehension) of the law, specifically among our problematic drinking profiles.

Also, the perception of youngsters is more important and differentiates more in terms of drinking profiles than (passive) knowledge of the law. In addition, the type of alcohol used in the vignettes seems important to study more closely. Indeed, the results show little differences concerning the perception of the youngsters when the vignettes stages buying beer for young people of 15 years (not

legal) or beers for young people of 17 years (legal) for profiles of 16 years and more. Regarding the second vignette, on buying vodka (not legal), the results are more distinct according to the profiles: the Higher consumers are the only group of young people stating that buying vodka is permissible". It thus appears that youths' **approval** of a situation is **following their reality, whether or not the situation at hand is legal or not**. For example if a youngster is 16 years old and can buy beer, he/she approves the vignettes staging other youngsters in situations with beer even if the age is below 16 years old. In the same reasoning, if a youngster consumes spirits as part of a High consumer profile and the vignette stages vodka, the youngster tends to approve of the situation even if the age indicated is below 18.

Throughout several results from our sample, **family environment** is revealed as an important environment for tasting and getting alcohol. This impact is particularly strong in the (young) category of Low family drinkers. We see also that parental control and supervision seem to be associated with less alcohol use but also that **parental control and supervision** tend to decrease with age. Moreover, specific attitudes and rules towards alcohol at home seem related to abstainer profiles. Finally, we observe that parents adopt more authoritarian styles for girls and more permissive parental style for boys.

Regarding the two profiles that drink more heavily, we identify fewer rules towards alcohol at home. These youths report also less parental control, rules and interdictions by parents, in general. We observed a distinction between the ones drinking because they experience stress: they report a higher parental supervision, making their parents more aware –according to the adolescents- of their activities in comparison with the explosive drinkers.

When combining this comparison of parental attitudes with the characteristics we discussed of the profiles, this analysis seems to indicate that rules towards alcohol are more present and acceptable when the children are younger, who are largely represented amongst the Abstainer profile. General parental control on the activities of children seems to protect young people from a more problematic drinking profile – for as much as the attempt to control the activities is perceived and reported as such by the youngsters.

In conclusion, the close analysis of the profiles crossed with the parental attitudes seems to indicate that parental rules regarding alcohol exert **more of influence on younger teens**, where many Abstainers have been identified, but are not sufficient when the youngsters get older. We do state this with caution as we didn't generate the longitudinal data that are needed to confirm this statement. Indeed, Van der Vorst et al. (2006) as well as Koning and colleagues (Koning et al., 2010) observed before that stricter parental attitudes do preserve youngsters from an early onset of drinking. For limiting the drinking pattern, parental control seems important, even for older youths. At the same time a tension seems to appear between this goal and the specific period of adolescence where the thrive for autonomy is an important element (Cuin, 2011). This search for autonomy can push the youngsters into taking distance from parental norms. In other research, it has also been attested that parents become less restrictive, allowing more autonomy as their children age (Zehe & Colder, 2014). Indeed, Handren and colleagues have showed that parents weight more on younger adolescents of 13 to 16 than on older youngsters of 17-18 who rely more on personal perceptions of harms (Handren, Donaldson, & Crano, 2016).

Part 2: Sellers' survey

1.3 Description of the sample

The final sample can be resumed as follows:

	Ghent	Liège	Brussels	
night shop	2	0	3	5
supermarket	2	2	1	5
Bar	14	5	6	25
snack/brasserie	0	2	2	4
Club	3	1	3	7
youth house	2	0	3	5
youth movement	2	1	1	4
festival/party	4	4	4	12
Total	29	15	23*	67*

Two interviews in Brussels took place with persons working in a bar as well as elsewhere.

For Brussels and Liège all categories have men and women, with or without children, between 17 and 53 years old. The sample covers very different realities regarding the kind of places interviewed. In Liège both the internationally renowned area of the Carré⁵ as events and bars outside the Carré have been integrated in the sample. In Brussels, the larger area has been covered: both the city centre, some decentred places as on the outskirts in Brussels. In Ghent both the city centre as the wider area (other, smaller, cities and villages) has been taken into this survey.

Different professional profiles were recruited. More specifically regarding **the bars and club**, we had owners, managers of the bar/club, a human resource manager of a site with different nightlife activities. Others were intermediate personal like bar managers. If all the interviewees also still worked in close contact with clientele, half of the interviewees in our sample of this type were basic personal like barmen/barmaid and waiters. One interviewee was a freelance DJ and barman (with large experience and investor in pubs and clubs too) who works weekly at one pub and one club more specifically. The managers often had very long experiences in the horeca. If the shortest length of service was of 2 years, the many of the others mentioned or shorter periods as a manager -3-4 years but with previous experiences of several years in the same branch. Others have long careers of 14 years or more. Five interviewees even mention a career of 25 years or more in pubs or the larger horeca sector, two of them women. One of them is running a pub, a party hall, a restaurant and a gas station with shop. While relating their professional trajectory, they mention having started early on – sometimes from 14 years old- as a barman/barmaid or waiter. Some worked as a teacher or in more administrative jobs before but quitted to take a full-time leap in nightlife economy. One owner combines this with another fulltime employment.

⁵ It is one of the oldest districts of Liège, on a very limited area of 0,0515 km², filled with bars, concert halls and clubs. Historically it is already a neighborhood of pubs, with narrow streets. Establishments are open all night, with no closing time. A specific regulation and a specific public policy exists for this district (cfr WP2).

In **the event sector**, which is even more so diversified, we interviewed different youth movements (masters of the unit and patrol leaders), coordinators and animators of youth centres (often managing also small concert venues), crew collaborator (responsible of bar and barmen/maiden) of large festivals but also of private events, managers of bars on events and a medium festival and occasional sellers on more once-a-year traditional markets. In this category only the youth centre personal and the managers of events are full time jobs, where people have careers of 1 (an animator) to 33 years (a coordinator) for the youth centres. The organizers of events have experiences of 4 to 13 years in the job, but with previous experiences in organising events on a non-professional basis. The barmen/barmaid all do this in complement of studies or other jobs (in finance, administration or more social services jobs), between 3 and 10 years. They are active once a year on a specific event for some, others several times a week (on private events). Indeed, through our snowball sampling no very debuting barmen/barmaid were found. In youth movements, patrol leaders had an experience of one year; the unit master had 2 years' experience (and former patrol leader experience).

Regarding **the shops**, as explained, we had more difficulties. Finally, the managers of three chains collaborated, one being a chain of what one usually calls night shops (like many night shops they are not administratively registered as such). We also interviewed one intermediate manager and some cashiers, of supermarkets and night shops. Managers were not longer than 6 months to 5 years in the job, most having evolved from more basic jobs. One cashier only worked his second year (having worked prior at a pub for 10 years), the other workers of supermarkets had been working as cashier of a couple of years.

1.4 Results

The results are only presented partially due to the limitations in this end report. The integral results part is available within the research network. The discussion part is related to all results.

1.4.1 Knowledge of the law

We discuss the knowledge by at first commenting the results on the scoring of the sellers, vignette per vignette and at last the listing of alcohol. In a second point, we discuss the understanding of the law as it appeared through remarks and comments during this phase of the interview.

The exercise was regarded as a strange exercise by our interviewees, but an excellent ice-breaker between the interviewer and the interviewee. The interviewees seemed very dedicated to answer correctly, even though for some, in Brussels bars and clubs mainly, they clearly stated from the beginning that they were about to reply to my questions without knowing the law.

I : chaque fois la question viendra de, selon la loi, est-ce que tu penses que c'est plutôt légal ou plutôt pas légal. - C : Sans savoir la loi (rire) (Brussels, bar & events, barmaid)⁶

This ignorance did not prevent the interviewees of identifying correctly authorized and unauthorized situations.

⁶ Throughout this report the interviewer will be referred to as "I".

Evaluating the vignettes and listing

The knowledge of sellers was measured in the same way as the youngsters (see procedures and measures). We regrouped the results for the two first vignettes regarding unauthorized situations of selling because the findings were similar. The third vignette, depicting an authorized scene gave slightly different results. The listing allows to test in a more detailed, applied, way the knowledge of the sellers. Given the instrument used, we start each point by presenting graphically the average and median scoring of the sellers in general, by city. We opted to keep this distinction by city because, as we will discuss further, especially Brussels' sellers in commercial leisure establishments, present themselves sometimes as not knowing the law.

A. Vignettes 1 & 2: scenes of unauthorized selling

For the two first vignettes, depicting situations where the sellers were supposed not to sell the alcohol to the youngsters due to the types of drinks and their age, almost every interviewee responded correctly. The first vignette creates a scene after school with 3 youngsters of 17 years old going to a night shop to buy some vodka and coke. The second vignette discusses a scene that's taking place on a Wednesday afternoon, when a guy and a girl, both 15 years old order two Jupiler following their outing to the movies and then to a bar. As the results go in the same sense for the first two vignettes, they are discussed together.

Regarding the **first and the second vignette, most sellers do know the law.**

Knowledge	vignette 1		vignette 2	
	average	median	average	median
Ghent	1,4	1	1,07	1
Liège	1	1	1,1	1
Brussels	1,7	1	1,04	1
Total	1,3	1	1,07	1

In Liège, no seller had the first vignette wrong. In Brussels one seller had both vignettes wrong. In Ghent 3 sellers pointed a "2" for the first vignette, 2 did the same for the second vignette. One Ghent seller marked the first vignette as completely authorized.

Some interviewees were very certain of their responses. As such a barman in a club states when hearing the first vignette:

Eén sowieso, niet legaal. (Ghent, club, barman)

The same goes for this barman regarding the second vignette:

Tout à fait illégal aussi... allez 15 ans c'est quand même jeune (Liège, event, barman)

Some sellers readily explain the law, showing they are not just guessing, but know the principles of the law. On the second vignette for example, two sellers answer by referring to aspects of the law:

Non. C'est 16 ans pour les alcools de fermentation. (Liège, bar, owner)

Het mag niet, he. (...) Ze zijn geen 16 jaar. (Ghent, Night shop, employee)

Others hesitate a bit more. They seem to be looking for confirmations of the interviewer. The coordinator of events in Brussels expresses more clearly his hesitation regarding the first vignette:

Hum... en fait, moi je pense... j'ai une grosse hésitation sur 18 et 16... - I : Hum hum. - M : ... c'est juste ça là... la... ma grosse hésitation quoi parce que euh... moi je dirai qu'ils ne peuvent pas parce qu'ils ont pas encore 18 ans mais euh voilà. (Brussels, event, coordinator)

If this coordinator hesitates clearly on the age, he will put "1" as score, being completely illegal, explaining that it's or authorized, or unauthorized, but it can't be anything else than 1 or 10. The following barman, also discussing the first vignette, seems to hesitate too, expressing his doubt more by the score.

Euh ja, drie, twee ongeveer. Eerder niet legaal. Heeft de verkoper het paspoort gevraagd? - I: Dat staat er niet in. - A: Dus dan is het niet legaal. Twee dan. (Ghent, bar, barman)

We find the same hesitations for the second vignette, for example expressed by this barmaid:

'fin de toute façon je pense que la loi c'est en dessous de 18 ou au-dessus de 18 je pense que... enfin je pense mais... je ne suis pas sûre non plus... je crois que c'est pas du tout légal non plus, enfin je pense que c'est pas du tout, du tout, du tout. (Brussels, bar & event, barmaid)

One seller wants to precise his answer by giving more detail on different legal frameworks, mixing other regulations, and a local decree on night shops in his answer:

S'ils ont 17ans ils n'ont pas le droit de consommer mais ils peuvent transporter l'alcool et le coca sur leur propre usage sauf si le night shop est situé dans le carré et qu'il est passé 1 heure. Autrement, ils peuvent transporter de l'alcool pour leur consommation personnelle chez eux, qui sera à leur domicile, non surveillée ou bien pour quelqu'un d'autre qui à l'âge de consommer cet alcool-là (Liège, bar, owner)

In final, only a few sellers do not answer the first vignette correctly, but none of them present their answer with as much assurance. One barman with a long career in the nightlife economy exercising different functions answers, hesitatingly:

Je pense qu'ils sont autorisés donc je dirais 7 (Brussels, bar & club, barman)

The same goes for this organizer of events:

Ze zijn zeventien hé, allemaal? - I: Ja. O: Ik denk volgens de wet dat dat legaal is zeker? (Ghent, events, organizer)

For the second vignette of youngsters of 15 who buy two beers, even less confusion persists. Only 3 interviewees answer "2" instead of 1, not explaining their quotation.

Managers and barmen/maids from Brussels bar show remarkably more hesitation and errors in their answers. We note that on a local public policy level there is less attention on age related selling or offering of alcohol, but also that in all interviewed bars minors are an exception. Indeed, we did not find Brussels bars or clubs where minors are still fully welcomed – we tried, but every trail or did not answer on our invitation for an interview, or recently changed their policy. Our interview with the manager of public tranquillity for WP2 confirmed that minors are not usual visitors of bars and pubs in the city. This knowledge of the manager was generated through a local research. Assisted by *le réseau jeunes-alcool-société*, the internal evaluator effected an analysis of alcohol-related problems on the territory of the city of Brussels. It appeared that only one bar did not fully respect the age limits before, but, within a collaboration, this situation was now regularized.

B. Vignette 3: a scene of authorized selling

The **third vignette showed much more divergences**. This vignette depicting a legally authorized scene, speaks of some students, all aged 16, who want to celebrate the end of exams by hosting a barbecue. They go to Colruyt to buy 2 packs of 24 beers and get one more pack for free. The interviewees expressed consistently doubts.

Knowledge	vignette 3	
	average	median
Ghent	9	10
Liège	9,8	10
Brussels	8,4	10
Total	8,9	10

Even if a very large majority knows it is allowed, there was more doubt expressed than with the two previous vignettes, especially on the question whether there are specific limitations on quantity or promotions.

In some cases, the answers sounded more like good guesses, because of the quantity or the promotion. The answers of a manager of a club in Brussels as well as of a barman of Ghent illustrate well this doubt:

Il y a une hésitation parce que je sais qu'ils peuvent boire de la bière mais je me demande si on peut faire des promotions pour des gens en dessous de 18 ans. Ça c'est... Mais je... Je dirais dans le 2, pas du tout... Euh... - I : Pas du tout légal ? - M : Ah euh... Attendez. Non je dirais légal. - I : Légal, 10. - M : Ils ont 16 ans c'est ça hein ? (Brussels, club, manager)

Ik denk volgens de wet dat het legaal is. Dat denk ik toch. - N: Dus tien? – G: Ik denk dat het legaal is, ja. Ik zou het niet weten... Is het niet? (Ghent, event, barman)

One bar owner is quite sure and explains that her observations in the supermarket reinforce her standpoint:

Pour moi elle est légale. Y'a pas de normes ou les grandes surfaces ne sont pas au courant (Liège, bar, owner)

Like we saw regarding the first and the second vignette this doubt rarely is reflected in the scoring. Most end up “guessing” the correct answer, some pick the wrong answer

Justement, c'est ça que j'ai une hésitation sur 18 ou 16 ans euh... à mon avis, non, ils ne peuvent pas. Je ne pense pas. - I : Donc, non ? – M : Oui. Non. (Brussels, event, coordinator)

Much more who give another number, then in the other two vignette. These intermediate marks also express their hesitations.

Aangezien ze zestien zijn, zou ik zeggen: legaal. Maar ik denk dat er ergens nog een addertje onder schuilt. Dus, ik ga zes zeggen. (Ghent, event, coordinator)

One completely misses at first this vignette, then comes somewhat later, during the scoring of the listing back on the issue:

Pareil, je pense que c'est pas du tout légal. Peut-être que je confonds avec la loi sur le tabac aussi hein, c'est possible. (...) [later on in the interview the interviewee comes back on this vignette] Du coup, mais du coup, du coup maintenant je suis en train de réfléchir à ce que j'ai dit avant... et je pense que la bière à 16 ans au Colruyt, je pense que c'était bon, mais bon voilà (Brussels, bar & event, barmaid)

We could conclude the law on itself does not seem to be mastered, but the vignette shows a situation that is not encountered in the commercial leisure sector nor at events. It is to be noted that the personal of shops, whether it be supermarkets of night shops did know the correct answer on the question. The only doubt we found was with the local manager of a night shop:

Ah bon. Donc, en principe, ils peuvent acheter de la bière. Après, je ne sais pas si dans la loi, y a euh... une notion de quantité. Ça je ne sais pas... j'en suis pas convaincu... je sais pas du tout en fait (Brussels, night shop, intermediate manager)

C. Listings of drinks: applied knowledge of the law

This point will end with the results of the **knowledge of authorised age for specific drinks by means of a listing of drinks**. Interviewees had to say, or mark, the legal age for buying or offering according to the law.

Interviewees know all but two that **beer** can be sold or offered from 16. The two (Brussels and Ghent) who responded incorrectly supposed the legal age for beer was 18. The same Brussels intermediate manager of a bar that aims to ban minors supposed also that 21 was the authorised age for spirits and mixers. Strong beer was also tricky for some sellers. A quarter of all respondents, from all regions, answered 18 years old. One seller, probably hesitating, put it on the limit between 16 and 18 year. A considerable portion of the sellers, a quarter from the total sample, supposed Desperados was more a liquor than a beer, putting it on 18 years old. These respondents came often from Ghent, sometimes from Brussels. One seller from Ghent did not answer the question, leaving it blank. No seller from Liège that we interviewed had Desperados wrong. Some did first discuss with the interviewer the exact nature of the drink.

Wine was also often mistaken, mostly in the Liège and Ghent area where almost one third thought youngsters had to be 18 to drink wine.

All sellers answered correctly that **spirits**, such as vodka, whisky or tequila can only be sold or offered to adults over 18 years old. It is to be noted that one seller from Ghent did put vodka and whisky from 18, but ticked the box of 16 for tequila. All but 1 respondents answered correctly that mixers, including “blanc-coca” and spirits can be sold or offered from 18 years on. Breezer had many, almost half of the sample misguided. One barmaid thought the legal age for Breezer had to be 14 years old. It confused indeed many sellers, even those putting it finally in the right box:

Ja. Van deze ben ik niet zeker. – I: Laat me raden, Breezer? - D: Ja. Ja, ik ben daar echt niet zeker van. (Ghent, supermarket, manager)

At last, but special mention is on Martini. Only 11 of the 65 respondents replied 16 years old, the correct answer, among them several guessing based on the place where one usually find the drink. Only three owners/managers of bars of the Carré in Liège clearly knew the answer without hesitating. One got it right by clever deduction:

I: Martini? – F: heu ils mettent dans les apéros donc 16 (Brussels, bar & club, barman)

According to the vignettes, sellers know the law rather well: few completely missed the evaluation of the scenes. Comments during this exercise show that sellers hesitate sometimes or even overtly guess the right answer. This has been quite clear for Brussels’ bars and clubs, and Liège’s events, and some of Ghent’s interviews. These observations were only possible when this part of the interview was asked orally. Large parts of interviews in Ghent, this part was handed out to the interviewee, to fill in him/herself. This may explain some of the higher knowledge numbers: instead of telling about their doubts, they might be more expressed in the scoring. Comments around the exercise and more fine testing through the listing moderate the impression of a solid knowledge of the law.

Understanding the logic of the law

During the testing of the knowledge during the interview, interviewees unveiled what they understood of the law, as well as, in some cases, where that knowledge came from.

First, **to what point did the sellers showed to understand the logic of the law?** As we already put forward, some sellers, when being very sure refer to the law when answering the vignettes. Indeed, a few sellers know the law perfectly, sharing willingly their knowledge with the interviewer:

Ah vanaf zestien mag je bier verkopen en andere dingen, maar vanaf dat er sterke alcohol in zit, is het vanaf achttien jaar. (Ghent, shop, cashier)

C'est facile c'est distillé ou fermenté. (Liège, bar, owner)

Other readily admit they know some basics, but don’t mention they have notion of the logic behind the distinction.

Het enige dat ik weet, is dat als je zestien jaar bent, je bier en wijnen en cava en champagne mag drinken dat weet ik. (...) En vanaf achttien jaar mag je alles drinken. (Ghent, bar, barman)

Throughout the exercise of testing their knowledge, many times we had indications of what the interviewees saw as the logic needed to answer the question. As such we identified several interviewees who think, or sometimes strongly believe, that the distinction between 16 and 18 is based on a degree of alcohol degree. A few sellers mentioned that rule rather clearly, as this barman at events in Liège:

Parce que moi je fais le calcul avec le taux d'alcool. Donc pour moi, c'est 5% donc même un enfant de 5 ans pourrait le boire sans rien avoir. C'est une blague évidemment (Liège, events, barman)

Yeah. Until sixteen they can't drink the beer. Less alcohol like five point and this (...) And till eighteen, when you are eighteen then you can get stronger drink. (Ghent, Night shop, employee)

In many interviews, it is the logic we can see implicitly. For example, the following citation by the owner of a club on the outskirts of Brussels seemed to refer to such a degree while reasoning out loud, especially around the question of who they can sell/offer Bacardi Breezer to:

I: Bacardi Breezer? – G: 16 ans. C'est 5 degrés ça je crois. (...) I: Martini ? G : (...) Ah. Martini c'est combien ça ? Ce n'est pas grave, 18. (Brussels, club, owner)

Other sellers seem to actively think during the interview, trying to figure out what the reasoning of the law could be. Testifying at the same time of their relative unfamiliarity with the law, they also seem to spontaneously think that if a difference is made, the percentage of alcohol will probably be the discriminatory factor:

En fait parce que je me pose maintenant la question s'ils font une distinction entre les degrés d'alcool (Brussels, bar & club, barman)

Volgens mij mag je onder de zestien jaar geen alcohol drinken en onder de achttien jaar geen sterke dranken? Ja, met sterke drank, vanaf hoeveel graden? Dat is waarschijnlijk met hoeveel graden gespecificeerd? Ik weet het niet eigenlijk. (Ghent, bar, manager)

Secondly, if the sellers had a solid notion of the law and specifically when they answered (almost) correctly on the listing of drinks (which was quite exceptional), the interviewer asked where they got hold of a solid notion of the logics of the law.

A few employees, of bars and shops, responded that they knew the law because their employer insisted on this knowledge. Their knowledge was flawless :

Nous on est briefé. Tous les alcools que vous m'avez dits là, on les a au [Night shop]. Donc on est briefé là-dessus. Donc on sait exactement ce qu'on vendre ou pas vendre donc moi je conseillais les jeunes quand ils venaient et qu'ils avaient 17 ans. Je disais ce qu'il ne pouvait pas boire ou ce qu'il pouvait boire. Donc du coup voilà. (Brussels, night shop, employee)

In Liège two of our respondents participated in an initiative of the strategic prevention plan. They organise events in secondary school where they animate an afternoon long pupils of the 5th year on the law of 2009, on safe behaviour while going out, on the fun of going to the Carré with friends. Thus, the one participating in the program do know the law:

Ecoutez, je donne des formations avec la ville de Liège et les plans de prévention avec les écoles. Donc on doit expliquer ça aux élèves. La différence avec les alcools distillées ou les alcools. (Liège, bar, owner)

For the younger ones, of 22 years or less, the knowledge the law is evident (up to a certain degree) at least the basic discrimination of the law

I : (Rires) J'ai l'impression que tu connais vraiment bien la loi. - G : Oui j'ai, je m'informe quand même pas mal et je sais ce qui est... Légal ou pas quoi. (Brussels, youth movement, patrol leader)

B: Je hoort dat eigenlijk constant. Je weet dat ook he. (...) Ik weet eigenlijk niet hoe ik dat weet. - I: Dus ik vraag mij dan af waar ben je dat dan te weten gekomen, die wet? - B: Eigenlijk via school was dat in die tijd. - I: Ja? - B: Ja, toch wel ja. Met mijn ouders ook. En op het nieuws. Eigenlijk van verschillende factoren. (Ghent, club, barman)

Others confessed they didn't consciously know the law, but presented it more as corresponding with own moral, which guided them through the questions:

Je l'ai lue sû... sûrement quelque part mais moi j'ai, j'ai une mémoire un peu pénible. Yeah en fait, je fais plutôt par la logique des choses pour ma logique, oui je pense à ça. Mais d'office je l'ai lue quelque part et après s'il y a eu des changements dans la loi, peut-être je ne suis pas au courant mais heu... voilà, moi j'ai, mes, voilà limite 16 et de 18 dans un bar (Brussels, bar, intermediate manager)

On another occasion, a seller unveiled the origin of her knowledge, even though the interviewer did not explicitly ask. This example is calling out because it's erroneous. An owner of a bar in Ghent explained to have been corrected in her understanding of the law by a controller of the FPS Health. Even though the source is presented to be a control agent, the retained information is not correct. Martini, which is vermouth, is still a fermented drink of less than 22° (the upper frontier for fermented drinks):

Het is vanaf dan dat ik weet dat het eigenlijk maar vanaf 15° is dat je maar mag. Ik had 22° alcohol gegeven. Ik weet niet waar dat vermeld werd dat het opeens veranderd is, want wij weten het niet. (Ghent, bar, owner)

We can conclude that the basic knowledge of the legal limits of 16 for beer and 18 for spirits is rather well known, even though some hesitate, certainly when confronted with an authorized situation. Many sellers also don't have a clear knowledge on more detailed questions on specific drinks. This lack of knowledge, especially for Bacardi Breezer, strong beers, wine and Martini indicates that sellers don't always get the reasoning behind the distinction made by the legislator. Those who know the law

better do because of formal learning occasions, by an employer or a specific program, or because these norms have been communicated and repeated through different channels and have been interiorised.

1.4.2 Discourse on selling practices

A large part of the interview turned around the practises of selling and the interactions around them. We aimed to understand through the discourse of the sellers how the implementation of the law into the selling practices takes place.

Selling alcohol to minors

In this point the impact of the law on the selling practise according to the seller is discussed. To what extent is the law considered in the daily practice, in what way it is applied and whether strategies have been developed to facilitate its integration in that practice are the issues that will be addressed in this point. A last point focusses on the viewpoints of the sellers on their responsibility regarding youthful drinking.

A. Integration of the law into selling practice

A first and most important distinction is the extent in which the sellers seek to identify minors and refuse to sell or to offer the alcoholic drinks.

Motivations to implement the law

We observed that to some sellers, of different hierarchic levels, applying the law is presented as very important and a constant occupation, as the principle have been **integrated into an internal policy**, that is regularly repeated and insisted upon.

In all kind of shops for starters the policy had been integrated into the internal guidelines given and repeated to the personnel. As a manager of a chain of supermarkets explained :

Vous savez vous êtes dans des gros pôles assez organisés, structurés donc on fait un minimum ce qui doit être fait. Bon le but c'est de faire du commerce aussi mais de ce côté-là mais de ce côté on est assez attentifs et on applique. (Brussels, supermarkets, managers)

The most speaking example in our sample, is a chain of night shops in Brussels that makes a point of honour to try to never make a mistake in applying the law. Different interviewees came from that chain and separately confirmed that objective, that is part, according to a manager of the chain, as an important part of their identity, namely to follow all rules and to have a spotless reputation in the eyes of the local authorities. They want, still according to the manager to detach themselves of the stigma of being a “night shop”. The interviewed cashier was also conscious of the importance of not letting anyone pass:

(...) de vérifier la carte ha non c'était tout le temps hein, c'était moi en tout cas, il n'y avait pas de stop. Même parfois j'allais chez les gens et ils avaient passé l'âge largement mais voilà quoi ... Non Non mais voilà on doute bien ce qu'on risque, on risque beaucoup d'amende donc voilà on ne rigole pas. (Brussels, night shop, cashier)

That reputation, made by avoiding sanctions, is an element other sellers also put forward and motivated them to integrate into their internal policy, as explains an organiser of private events:

Want uiteindelijk willen wij wel een goede naam. Als ze weten dat wij betrokken zijn bij een organisatie, en dat weten ze ondertussen wel, denk ik, wil ik dat daar geen vechtpartijen zijn, dat er geen ambulance moet komen om er tien af te voeren. (...) Dat is mijn streefdoel. En in dat opzicht hebben wij ook veel regels vooropgesteld. Zoals keuze van dranken, zoals het sluitingsuur. (Ghent, events, organiser)

For (larger) festivals, even if they want to comply with the law, realizing that aim is more difficult as they work a lot with students, temporary jobs or even volunteers. Many organisers of events explain that they brief the barmen about the law.

On se tient au courant de la législation, on a tout de suite formé le responsable des bars et chaque année il forme la centaine de bénévoles et leur rappelle les enjeux et on affiche aussi sur tous les bars l'interdiction. Ça ne veut pas dire que c'est impossible mais en plus on a déjà été contrôlé deux fois je crois et je sais plus si on a eu un rapport positif ou pas de rapport négatif mais y a rien eu de négatif. (Liège, event, organizer)

A unity master of a youth movement that exploits a kind of a weekly bar around Liège also integrated the law into internal rules, first by the national federation of the youth movement, then by the youth movement into their own, very readable 10-points internal guidelines.

At the youth movement alcohol is forbidden during camp, which has been integrated in the local camp rules. But more than an absolute defence, it is the management of attitude and consequences that is in line, as following citation illustrates. If you manage, as an older member, to get some drinks and to hide it completely, there will be some more tolerance. There is also a difference that's made between fermented drinks and distilled:

S'ils se font attraper, généralement c'est... Enfin... La dynamique du camp change complètement. On part sur la base que on vous fait confiance. Si on vous attrape avec de la Sangria, ce n'est pas bien, mais après enfin, on l'a tous fait. S'il y a 2-3 bouteilles de sangria dans le champ juste à côté, qu'ils boivent ça et qu'ils sont, allez 5 ou 6, ce n'est pas très très grave. - I : Mmh. - S : L'alcool fort par contre c'est une limite qui est vraiment dépassée quoi. - I : Ok. - S : Et donc là ça change vraiment totalement la dynamique du camp. Parfois, ils se font expulser. Parfois, les chefs sont plus cool mais alors ça veut dire que vraiment ils viennent checker pendant, enfin jusque minuit et demi, une heure ou deux du matin, si les scouts sont bien occupés à dormir quoi. (Brussels, youth movement, patrol leader)

Other than a motivation of reputation and avoiding sanctions, we sometimes heard of **personal values** that guided the seller. As such we had one brasserie in Liège that employs a bar manager who was formed in hotel management and did an internship in England. He makes it a point of honour to make sure the law is respected in the establishment. Waiters are very proud when they intercept minors ordering drinks. The manager presented the compliance to the law as an initiative of that intermediate manager for who it is a part of the ethics of his job. In the same sense, an organiser of events also mentions an intermediate responsible who insists on the rules, but more as a rules-obsessed person:

Maar onze veiligheidsverantwoordelijke houdt zich strict aan de regels. I: Ah, ja. Dus da heb je wel nodig misschien dan. B: Ja. I: Zeker als veiligheidsverantwoordelijke. B: Ja, ja. Dat wel. Dat wel. Hij pluist alles uit. Want die geeft ook die briefing. Ik ben daar wel bij, maar hij geeft die briefing. (Ghent, event, organiser)

As we already saw, in Brussels we also had barmen and barmaids that - although not really knowing of the law - for some of them the most basic set of rules of the law is evident, because it corresponds with their internal set of values:

Je pense plutôt parce que je ne pense pas spécialement à... ouais je sais qu'il y a une loi qui existe que je connais mal mais... c'est plutôt je me dis "Ouais s'ils ont l'air très jeunes, je me sentirai un peu mal de, de leur vendre des trucs", heu... Vodka, machin, 14, 15 ans, je me dis bon, c'est quand même un peu limite quoi (...) J'ai toujours fait pareil. Je, il n'y a pas eu un avant ou après la loi. (Brussels, bar & event, barmaid)

Different sellers at night shops comment also that they do comment on people, especially young people buying larger quantities of alcohol. Discussing on why they do so, one seller explains that for him alcohol bought in the night shop, contrary to alcohol bought in a supermarket, is for immediate consumption. Therefore, larger quantities means the buyer will drink a large quantity of alcohol.

I: Ik zie da je op de leeftijd let, maar zou je ook kijken op een limiet van het aantal drank of het aantal blikjes dat ze kopen, of zou je daar minder op letten? - B: Ik geef daar altijd commentaar op.- I: Ja. - B: Maar ik zal niet aan iemand zeggen: " ik verkoop dat niet aan u.". - I: Nee, nee. - B: Omdat je zoveel meeneemt. Ik geef daar altijd wel commentaar op. - I: Ja. B: Ik heb soms mensen die hierbuiten met hun auto stoppen. Dat zijn meestal volwassen mensen en die komen een biertje halen. Ik zeg drink niet achter het stuur. - I: Ja. B: Ik geef er altijd commentaar op. (Ghent, night shop, cashier)

Putting aside or downscaling the law

Indeed, on the one hand, we encountered some very promising contexts where sellers tried to apply the rules. Other places on the other hand, sometimes admit **willingly not to pay attention to the law, or little:**

I: Euhm, hoe ziet het management dus, euh ja, het bestuur eigenlijk erop toe dat de alcoholwetgeving wordt toegepast? B: Goh, ja. Niet zeker. (Ghent, bar, barman)

In one case of private parties the barmaid explained one event that when she wanted to refuse drinks to (very) young clients, they advised to serve whatever the client asked.

J'ai eu un souci à la dernière (évent) justement parce que y a un jeune homme qui s'est présenté au bar pour une vodka Red Bull je ne sais trop quoi... et qui de mon point de vue, n'avait pas encore 15 ans. Et hum... ça m'a posé un souci, donc, j'ai appelé mon responsable... (...) Si je devais être... si je devais m'en préoccuper, et il m'a dit très clairement : s'ils sont là, tu leur sers tout ce qu'ils veulent tant qu'ils paient. (Liège, event, barmaid)

The believe that **the law isn't generally respected** is a technique of neutralization that was encountered several times. That believe is inflated in a context of concurrence. Thus, especially at events with several bars, in areas with lots of bars and night shops, and at events aiming to generate financial gain for an association, they calculate profit vs objective: if they want they will get alcohol.

Mais bon là-dessus, ceux de 11, 12, 13 ans, là on donne rien, mais bon avec ceux de 17 ans qui iront de toute manière au night shop, qui iront de toute manière prendre une bouteille d'une manière ou d'une autre ou qui iront au stand d'à côté (Liège, event, barman)

Once an interviewee explained that because of **ethical principles** it can happen that he will sell spirits to underage youngsters: better a low alcoholic mixer than stronger beer or other drugs if the customer has almost the appropriated age:

On a demandé à quelqu'un qui a commandé 2 blanc coca. Il était très grand mais il avait un visage de bébé. Et en fait il avait 18 ans dans 2 semaines, donc la serveuse lui a quand même donné. Donc on met aussi les limites nous-mêmes. Je préfère qu'ils partent en buvant ses blanc-coca plutôt que de biberonner deux Duvel auxquelles il a droit ou qu'il prenne de la drogue. (Liège, bar, owner)

Still when sellers put the law aside, it's not always because the management isn't really in favour or because they don't think its enforced elsewhere. Some of the interviewed sellers simply state that if children are accompanied by parents, parents decide. The **parental responsibility** primes over the responsibility of the sellers according to them. On top, they don't see how to contradict a parent in her/his presence:

Eerlijk gezegd heb ik nog nooit aan iemand gevraagd ben je wel al zo oud? Dat gebeurt niet. (...) en de meeste kinderen zijn hier met hun ouders. Ze komen sporten en de ouders zijn erbij. (Ghent, bar, barman)

Onder de 16 wel, onder de 14 zie ik daar heel weinig jongeren. Het is te duur ook. Meestal in begeleiding van hun ouders of toch iemand die. Ja die ouders die kiezen er dan zelf voor om aan hun kind een pint te geven. We gaan er dan wel van uit dat die hun gezond verstand gebruiken. (Brussels, events, barman)

Les jeunes qui viennent accompagné de leur famille, c'est tout-à-fait autre chose. Ils commandent une bière en présence d'un parent qui le laisse faire. Ce sont des situations difficiles. Les serveurs font alors en commentaire quand ils sont de retour au bar en se disant que l'enfant est certainement trop jeune, que cela ne se fait pas etc., mais ils ne font pas de remarques lors de la commande. Dans ce cadre, la situation semble de la responsabilité du parent. C'est difficile de contredire un parent si celui-ci ne dit rien à son gamin. Souvent il s'agit d'un jeune dans un groupe familial ou d'adultes en tout cas. Du coup c'est aussi délicat à intervenir et de refuser la bière car il s'agit là vraiment du fonds de commerce de l'établissement. (notes of interview, Liège, brasserie, owner)

If for some sellers an internal policy or internal personal values play an important role in their motivation to enforce the law, for others it is just a law and they **apply or adapt the law in function of their work reality**. Indeed, they make adaptations of the rules to make them easier to apply. Typically, sellers at smaller, less crowded events or bars explain that they do control, or at least control those who seem very young:

En dan zeg je: "Ja, paspoort, controle" Ik doe dat dan, voor de kleine ventjes van veertien jaar. (Ghent, event, barman)

But less so at private parties and some clubs who still let minors in as far as our interviews go. One barman of a club in Ghent explains that it's not his job according to his manager to control ID's: at the entrance the bouncers ask systematically ID's and exclude under 17 years old. Once 17 they can enter the club and order all (including spirits and mixers). The objective is to make the (hard) work at the crowded bar manageable.

Indeed, others too insist that controlling clients during rush hour at a crowded bar or at a bar between concerts at a festival is almost impossible: one tries just to follow, get what's been ordered and take the money/tickets. Many sellers at different types of events as well as in bars and clubs, management as well as bartenders asserted, often in strong and clear answers, that if the place is crowded age checks are completely unrealistic. We'd like to abundantly illustrate this issue that was raised by many sellers, so we took 3 examples from the 3 different regions, presenting the issue from different hierarchic standpoints:

Ça on est dans l'impossibilité hein, claire, nette, précise. C'est impossible, demandez-nous ce que vous voulez mais pas l'impossible. - I : Mmh. - M : Nous le... Enfin tout ce que tu veux pour la loi, il faut faire des lois applicables les enfants hein. - I : Complètement. - M : Quand t'as 1.500 personnes devant toi, quel âge tu as toi ? Quel âge tu as toi ? Quel âge tu as toi ? Euh... Alors, vous prenez quoi ? Je prends 2 bières, un vin blanc, un whisky-coca et un autre whisky. - I : (Rires) - M : Dites, le whisky-coca, le truc... C'est pour qui ? Si c'est pour euh... Ils sont là-bas. Est-ce que je peux les voir et avoir leurs cartes d'identité ? Je change de job hein. - I : Oui. - M : Je change de métier hein. - I : Oui, c'est clair. - M : Ce n'est pas la peine. Faut, faut... - I : Mmh. - M : Faut être conscient de... Le législateur, il est très intelligent au départ, en théorie. Mais en pratique, il est con comme une mule. (Brussels, bar-club, owner)

Donc, c'est... c'est faire une loi pour dire de faire une loi et avoir bonne conscience et euh... elle n'est pas pragmatique cette loi. Ce n'est pas possible. Peut-être dans les petits bars ou dans les petits Pakis, oui. Mais, dans les grosses soirées comme je fais... - I : Hum hum. - C : ... où y a parfois 10.000 personnes non. - I : Hum hum. - C : Ce n'est pas possible au bar. Ça n'arrête jamais où on court partout... non, non, c'est... - I : Hum hum. - C : ... si, mais les clients attendent pendant plus d'une heure... et sont de fait, de plus en plus violents... - I : Oui, c'est ça... - C : ... un cercle aussi, plus ils vont attendre, plus ils vont être filtrés, plus, ils vont être violents, et là ça va être infernal... (Liège, event, barmaid)

En als je een volle toog hebt... Stel, je hebt dertig meter bar en er staat 500 man en er lopen daar 20 obers om te bestellen. Dan heb je daar geen tijd voor he. (Ghent, bar, barman)

If the downscaling of the limits of the law can go towards a simplification of detecting very young youngsters and refusing to sell them alcohol, two sellers simplified the law by refusing all alcohol to all minors. Thus, an intermediate manager who also works in his bar as barman explained that if ever he sees a young person, he asks the ID and if it's a minor he or she will not get any alcohol, neither beer. He defends this position only marginally on the law, but more based on his own principles and to avoid having drunk youngsters in his bar.

Young sellers, the weak link

Some of the sellers confessed not to control, knowing they were expected to do so or to control but while **not feeling comfortable**. Those sellers were considerably younger than the other sellers. One waitress who started working in a bar that attracts especially a young public (of students) a few months earlier had never even considered controlling anybody's age:

Heu, j'ai eu, non il n'y a jamais, on a jamais dû, fin j'ai jamais vraiment... vu quelqu'un du bar demander une carte d'identité. (...), ça me, en fait ça m'est pas du tout venu à l'idée heu... de demander la carte d'identité. (Brussels, bar, waitress)

I'k vind dat soms moeilijk, want als je in een café werkt en er bestelt iemand iets, dan geef je dat gewoon omdat dat gewoon makkelijker is. Omdat je de confrontatie niet wil aangaan, uit gemak geef je dan gewoon die alcohol. Maar eigenlijk mag je het niet doen. De wetgeving wordt echt niet toegepast momenteel. In ieder café kan je gewoon krijgen wat je wil. (Ghent, events, barman)

The following barmaid explicitly refers at her age in explaining her reservation to ask for ID's.

Maar ook het leeftijdsverschil is niet zo groot, dus ik heb nog niet zo een autoritaire rol van "toon mij u paspoort". Dus moest ik ouder zijn en moest het leeftijdsverschil minder groot zijn, zou het, denk ik, ook gemakkelijker zijn (Ghent, bar, barmaid)

Managers, also for example in youth movements, observe the same difficulty linked to the age of the seller:

Mais ça je ne sais pas si les vendeurs à leur âge vont faire la démarche de demander la carte d'identité, je ne pense pas qu'ils soient assez matures, ils n'osent pas. Comme pour mettre dehors les extérieurs, ils n'osent pas s'imposer pour rappeler les normes. C'est la pression sociale de groupe plutôt, comme je les vois ils ne veulent pas passer pour des chiants. (Liège, youth movement, unity leader)

Nonetheless an internal policy insisting on checking age, the national manager of a supermarket chain made similar observations at the supermarket: a need of some maturity and experience to be at least comfortable in controlling age.

Een jobstudent zie ik dat niet doen. Ik geef dat heel eerlijk toe. Wij briefen onze jobstudenten wel, maar ik geef eerlijk toe de vaste, de oudere en ervaren medewerkers die hebben daar geen problemen mee om dat te doen. (Ghent, supermarket, manager)

Age is pointed also by older sellers or managers as crucial in the element of daring to ask an ID, but also because younger sellers often are busy trying to cope all of the other aspects of the job, like holding the rhythm, not forgetting to cash the money, serve the drinks correctly. Still for one barman with more than 10 years of experience, the sense of responsibility and investment in the job comes with experience and (as he explains at another moment in the interview) entanglement in the branch:

Parfois il faut faire un peu attention. Après je crois que c'est au fur et à mesure des années que tu fais attention. Quand tu commences dans le métier, tu t'en fous un peu, tu fais juste ton boulot et... (Brussels, brasserie, barman)

Refusing drinks to drunk customers

More than to look to whom they sell, interviewees, especially the ground personnel – the barmen/maids and waitresses insist on not selling alcohol to already **drunk persons**, or to offer some coke or water, sometimes even for free. This first, and for most more often encountered situation than young youngsters ordering alcohol, was something that almost systematically came up during interviews with sellers. The drunk clients are most often not youngsters according to many sellers.

Quand les gens deviennent trop chiants parce qu'ils sont trop bourrés on ne les sert plus. Concrètement quand les gens sont bourrés ils deviennent désagréables et irrespectueux. C'est un peu ça le problème, parce que qu'ils soient trop saouls, bon... (...) D'ailleurs on voit que plus la population est âgée, au moins les gens savent se tenir. Ils sortent beaucoup moins souvent donc quand ils sortent, c'est l'abus. (Liège, event, intermediate manager).

We've seen some selling places have an internal policy integrating the law and heightening in that way conscience of their sellers to the law. In other places the law is somewhat adapted, sometimes even put aside because of the perceived impossible application in certain conditions of selling. On a more individual level younger sellers experience more difficulties to integrate the law in their practice. On another topic, sellers massively explain to not sell alcohol to drunk customers.

B. Deciding to verify age

If many seller try to enforce the law, effectively limiting of selling alcohol to minors depends on how seller identify minors. In this point, we will exactly discuss that topic: how do sellers decide to verify the age of customers?

Evaluating appearances

Confronted with that question, many sellers hesitated and often laughed somewhat. The first thing that mostly came up was **physiognomy** of people, external signs, mostly the face that led the seller to think the customer could well be under 16 or under 18, as illustrated by the following extract:

Le physique. Le physique oui. Ben le côté... sa manière de parler... - I : Hum hum. - C : ... le côté euh... quand même un peu timide au début, puis après... mais au début, quand il demande... quand il commande une boisson, un peu timide... la voix, chez les garçons, c'est quand même assez significatif... (...) la morphologie aussi. Quand on les voit vraiment tout frêles ou c'est comme les jeunes filles, quand on voit que, Il n'y a pas spécialement de formes, mais pas spécialement de hanches, un visage encore très poupon. On se dit... enfin... elle n'a pas tout à fait fini sa maturation quoi... (Rires)... c'est physique, c'est physique (Liège, event, barmaid)

Quand on est plus jeunes on a une sorte de, je ne sais pas, une sorte de naïveté sur le visage, un côté un peu... Je ne sais pas oui... Un peu euh... fraîchement débarqués, tombés de la dernière pluie donc... Je ne sais pas ça se repère un peu oui. (...) Le petit poussin qui sort oui : "Salut, je marche à peine, je viens commander un vodka-coca". Tu lui dis : "Tu es sûr de toi ? " (Rires) (Brussels, brasserie, barman)

Op hun uiterlijk. En over wat dat ze aan het babbelen zijn en van die dingen. (Ghent, bar, owner)

To avoid those useless controls, of customers that finally show to have the appropriated age, some explain to adapt the limits somewhat, to downscale the scope of the law. The following responsible of a bar at a festival, that does not sell spirits on the premises, told us to aim to extract especially those who are very young, to apply a minimum of the law regarding the circumstances:

Wat we wel doen, dat gebeurt: als we denken 'dat is nu echt maar een 12- of een 13-jarige', zeggen: "ik denk niet dat je 16 jaar bent". Ja en als ze dan, we mogen niet zeggen "toon uw identiteitskaart", als ze dan zeggen: "ik ben het wel", dan kunnen ze het tonen. Als ze dan 16 zijn is dat oké, er zijn er heel veel die zeggen van: "ja maar 't is voor mij niet, mijn papa staat daar." Dan zeggen wij "uw papa moet zelf komen." Dat doen we wel. Maar voor de rest, is dat zeer moeilijk om in te schatten, je hebt kloeke kerels van 13 en je hebt 17-jarigen die er jong uitzien ook. Dus waar trek je die lijn, dat is zeer moeilijk, omdat je dat individueel zegt, plus je moet ook eerlijk zijn. Het moment dat daar dus een rush komt, staan daar soms 10 rijen dik, dan is dat zeer moeilijk. (Brussels, event, intermediate manager)

Not only the physiognomy of the body make the question of the age of the client pop up, other external elements as make-up and clothing also came up a few times.

Several barmen/barmaids say because the physiognomy is so difficult to evaluate, they also watch the (more immature) **attitudes** or nervousness of clients when deciding to ask for an identification

Ce n'est pas évident mais c'est, enfin oui, c'est vraiment une question d'habitude. C'est vraiment une question d'habitude. La manière dont ils parlent, la manière dont ils se comportent. (...) Ils sont un peu plus gamins quoi, ils sont un peu plus jouettes. Ou sinon ils tremblent dans la voix quand ils demandent un verre d'alcool. (Brussels, bar, intermediate manager)

Ja, aan de grootte van de persoon, aan de baard, of al een zwaardere stem. Maar vooral aan de grootte van de persoon zelf, en of dat ze er nog kinds uitzien of niet. Het is vooral op hoe ze eruit zien, hun uiterlijk. – I: Ook aan hun gedrag iets dat? - H: Ja, ge merkt dat wel. Oudere mensen gaan zich zo volwassener gedragen en rustiger. En jongeren gaan uitbundiger zijn op een fuif. Denk ik. Dus daar zie je dat wel ook. (Ghent, events, patrol leader)

Girls, a specific problem

To identify the age of a customer is difficult and sellers evaluate above all external elements like the physiognomy or clothing, as well as the attitudes of youngsters to try to detect underage minors. In several interviews a specific problem was discussed, especially when the interviewee was male: guessing the age of girls is even more difficult. Indeed, with boys there is an element that can help if

some cases: normally there should be an appearance of some (beginnings of a) beard when the boy is 16, and certainly when he's 18.

Par exemple celui qui faisait le vestiaire [au club], elle paraissait jeune, elle avait 19 ans pourtant et puis après t'en a d'autre 16-18, c'est beaucoup plus compliqué de voir la limite parce que les filles ont l'art de pouvoir se mettre en avant de tout façon. - I : ok - M : heu non les mecs c'est plus délicat, t'as des imberbes quoi (rire tous les deux). Donc voilà, je le verrais plus facilement chez un garçon qui n'a pas 18 ans. (...) parfois les filles, parfois je tombe ... bon quand je mixe les filles dansent, même plus des autres clients hein là. On va dire parfois c'est limite. Je me souviens j'avais mixé à [un autre endroit] et des attitudes parfois c'est limite hein, c'est surtout dans les attitudes. (Brussels, bar & club, barman)

Ja, als we echt zien dat ze oud genoeg zijn, bijvoorbeeld een stoere gast met een baard, ja dan denk je ook niet dat die min zestien zijn. Maar als we twijfelen of als er echt gasten of meisjes zijn die er zeer jong uit zien, dan gaan we wel altijd gaan checken (Ghent, events, patrol leader)

On the other hand, and it is a recurring discussion: if some find that girls can conceal their age more easily, others find on the contrary that they control much more girls. If some say they find they must protect (young) girls, others think they might also just go out younger than boys (to clubs or bars with music). One barman of Ghent realized also that identifying the age of girls is harder, but he found an –easy- solution:

Ik sta hier al bijna 10 jaar. Ik denk dat ik ondertussen wel een vrij goed idee heb. Meisjes, ja, die kunnen er vaak ouder uitzien. Maar dat weet je ook, dus dan weet je dat je iets extra kritisch moet zijn. (Ghent, bar, barman)

Still, the question of detecting younger girls is in some places also a more delicate question, because for the image and the attractiveness of club-like bars the presents of girls who start to dance is an interesting feature, because they make the older (richer) clients stay. An intermediate manager of a very trendy bar noticed that younger girl amuses his targeted older public.

[Rires] Non, non, non mais d'office mais c'est encore un élément que ça aide à, à... et voilà même pour le, les autres clients, vraiment les habitués de la tranche horaire de 28 à 38 (ans), je pense qu'ils aiment bien oui, les petites gamines de 18 ans c'est très bien, c'est très délicieux mais bon, heu, ce n'est pas leur, heu, leur, heu... plat du petit-déjeuner j'espère. (Brussels, bar, intermediate manager)

We only found this issue in interviews in Brussels. Here the barman said he noticed, especially at 'Ladies' night' that bouncers tend to let younger girls in. As Ladies Night means all women in the club have access to free shots during a predetermined lap of time and bouncers, when barman only check whether those taking the shots are female. As explains this barman:

Oui oui oui oui, bien oui. Mais chez les filles, là ça devient vraiment plus compliqué. Ce ... (...) Un sorteur ne va pas toujours arrêté parce que s'il y a un public féminin c'est toujours bon pour un endroit. Il sera peut-être moins regardant (...) t'as des vieux qui sont là, ils savent que c'est la

ladies night que les filles seront un peu plus légères puis ça fait marché le business (Brussels, bar & club, barman)

A subjective evaluation

This **subjective evaluation** makes this law so difficult to apply, according to some sellers:

Dat is inderdaad de achillespees da je het niet, dat het subjectief is he. Je moet het inschatten en iedereen zijn inschatting is anders. (Ghent, event, organiser)

Managers, sometimes explaining to be rather keen on applying the law, can give indications, the application on day-to-day basis is for cashier who should interpret the age limits according to their best abilities:

Mijn dochter, dat is ook zo één. Die is nu wel 18, maar als je die ziet lopen. Pff, dan denk je van, die is maar 15 jaar. Dus dan moeten ze een identiteitskaart vragen. Maar omgekeerd ook he, dat ze 16 zijn en ze zien er 20 uit. Ik hoor dat toch van verkopers. Dat ze dat heel moeilijk vinden aan die wetgevingen dat ze dat niet kunnen inschatten. Ja, en het is geen ver, allez, hoe moet je dat zeggen. Wij verplichten onze kassamedewerkers om altijd een pas te vragen. (...) Dat is met de jaren gewoon gekomen dat wij vertrouwen hebben in onze kassiersters om, oké. Die weet wanneer dat ze een identiteitskaart vraagt en wanneer niet. (Ghent, Supermarket, manager)

But shops, having a scan at the counter did develop an aid to help the worker them remember to decide whether a client has the appropriated age: when they scan an alcoholic drink, the cash register machine asks the cashier to confirm that the seller has the appropriated age:

Bij ons komt dat dus bij elke verkoop, alé vanaf dat je sigaretten scant of iets van alcohol, zowel bij sterke drank als bij gewone drank, dan komt dat er op van "vraag klant zestien jaar leeftijd". Dat komt daarop. Dus dat is wel inderdaad handig. (Ghent, supermarket, cashier)

Some chains of supermarkets also have a self-scan counter where customers scan themselves the products they want to buy, or even scan them while doing their shopping in the shop. In that case, the customer is asked whether he/she has the appropriated age when checking out, which will soon mention the specific required age. One manager discussed the problem from the viewpoint of the cashiers supervising the self-scan zones that clients may lie about their age. On the request of the supervising cashiers they will soon be able to block payment if they have doubts on the age of a customer.

Wat doen we nu naar volgend jaar toe? Gaan we er specifiek de leeftijd bij plakken? Gaan we zeggen van oké, bent u 16 jaar oud of bent u ouder dan 18 jaar? Dus dat komt er nu bij, puur om een klant bewust te maken van: "ok, voor dat moet je 16 zijn en voor dat moet je 18 jaar zijn. En naar 2018, want die requirement wordt nu pas geschreven, gaan we vragen van telkens als er een leeftijdsgebonden artikel een pay tower, zoals wij dat noemen, passeert en een klant bevestigt dat eigenlijk een oranje lampje boven die kassa gaat beginnen te knipperen, zodat een kassierster zich bewust wordt van een leeftijdsgebonden artikel dat passeert. Zegt een klant van ok, ik heb die leeftijd niet en die drukt op 'nee', dan moet er, is er altijd een interventie van de kassierster nodig, dat wel. Maar dat, dat is ook een beetje een vraag van de mensen die in die

zone staan, want die zeggen ook: “wiens verantwoordelijkheid is het?” Op het moment dat een klant op ja duwt, is het eigenlijk de klant die zegt van: “ok, ik heb de juiste leeftijd en ik vertrek.” (...) Dus die klant is bezig met zijn handelingen. En voordat die klant afsluit, kan zij forceren dat er een controle komt. Die klant wil betalen en die kassa blokkeert. (Ghent, supermarket, manager)

Groups

If checking the age is a subjective act where the seller estimates the age of the customer based on physical indications or attitudes, an additional complication are **groups**. Some bars attract groups of youngsters, posing the problem of selling or not. They hesitate to control the age of every member of the group, knowing it's probably a member having the appropriated who comes to order:

Als ze zo met een bendetje komen, echt zo een stuk of 5 à 6 16-jarigen en ze bestellen 5 pintjes dan zeg je rap: “Ah ja, ok. Ik tap 5 pintjes.” Als het één persoon is, dan denk je zo van: “Oei, ja, mag ik uw paspoort eens zien?” Maar als ze zo met een bende zijn en 1 iemand bestelt, is dat soms ook gemakkelijk om dan de oudste te laten bestellen (Ghent, club, barmaid)

Pour nous elle est médiocre, parce que par exemple avec la bouteille, on vérifie qui l'achète mais impossible de vérifier qui la boit (Liège, event, barman)

On top one cannot underestimate the economic power of a group. Indeed, sellers, even the associations, sell alcoholic drinks to gain some profit. For bars, shops and clubs this is evident, but also more social organisations who don't aim profit as a result need the money made by a bar to have funds to realise their other activities. This situation makes refusing drinks to a group an ambiguous decision, as clearly explained by the patrol leader of a youth movement:

Een grote groep van vijftienjarigen van de scouts die hier waren aangekomen en ze wilden allemaal drinken. En toen was het van: “Ja sorry gasten maar ik mag aan niemand van jullie alcohol verkopen.”. Maar in mijn achterhoofd was het wel zo “Verdorie, ik mag ze geen alcohol verkopen.”. Snap je? - I: Voor de winst dan? - M: Ja. En ook die gasten komen hier om te feesten en gezellig samen te zitten. In hun hoofd moet dat met alcohol zijn hé. Zo zit dat in hun hoofd. En dat was zeker bij hen het geval, want die waren ook allemaal zo van “Kom. We willen drinken, en we willen feesten en we willen dansen.”. En ik zei van “Goh ja, sorry maar hier zal het alleszins niet het geval zijn. Aangezien niemand van jullie zestien is.”. En als er één van zestien jaar tussen zit, dan is het ook heel ambetant want dan. - I: Die mag dan wel drinken. - M: Ja, die mag dan wel. En die bestelt er dan drie, en geeft ze door. Dat is dan ook niet oké. (Ghent, youth movement, patrol leader)

Other sellers, from a personal experience as this owner regarding her daughters, are empathic to the situation of younger members of a group, especially when all born in the same year:

Elles sont de fin d'année. C'est bête à dire mais quelque part tous leurs potes ont 16 ans. Elles viennent de fêter leur 15. Donc là aussi ça joue (Liège, bar, owner)

In some interviews sellers adopted an intermediate solution when confronted to groups: they did sell, but limited the amount of alcoholic drinks they allowed:

Maintenant euh... Tu as les 16 ans aussi, enfin les groupes de filles qui viennent fêter un anniversaire... - I : Mmh. - A : ... On sert, enfin, ils demandent une Kriek, on va leur servir une Kriek mais on va servir une Kriek. Pas deux, pas trois. - I : Mmh. - A : Parce qu'on n'est pas là non plus pour faire du chiffre, il faut que tout se passe bien et que les parents continuent à nous faire confiance. (Brussels, bar, owner)

En vaak ook proberen ze het dan voor 17 – jarigen en af en toe zal het ook wel zijn dat iemand van 18 jaar om drank komt en dan kan ik ze ook niet weigeren. En als die dan daarmee naar een tafel gaat en het zitten daar 17–jarigen, tja. (...) Sowieso, als ze dat een keer doen in het begin van de avond, maar wanneer ik zie van ze willen er 3 na elkaar, dan ga ik ook wel zeggen van sla maar een keer eentje over of drink nog een keer een colaatje (Ghent, bar, barman)

Appearances, as physiognomy and attitudes, available at sight are the first reason why sellers decide to verify the age of a customer. This subjective evaluation is difficult, especially with girls according to many sellers. When confronted to a group, sellers explain hesitating before starting to verify the age of every member.

C. Managing the age verification

The next point of this analysis of the impact of the law on selling alcohol focusses on the creation of aids by the sellers to facilitate the enforcement of the law. As we've seen a delicate focal point of the enforcement once the seller decided to check for the age of a customer. Sellers mentioned different strategies to manage the control of the age of customers.

Sensitization of customers

First many have **stickers or posters** at the bar or in the shop pointing the customers' attention to the law, for example promotional material made by VAD⁷:

Maar wij verdelen ook samen met VAD de stickers van de leeftijdsgrenzen. (Ghent, bar, manager)

Some also integrated the message in their own material, as this organiser of private events around Ghent:

Wij hebben ook een projectie waar er ook op staat van: "wij schenken geen alcohol aan min zestien, dat staat er ook nog eens op." (Ghent, events, organizer)

Supermarkets worked with their representational association Comeos, to make clear messages to workers as well as to the public on the limits imposed by the law. The federation for wine and spirits,

⁷ VAD is the Flemish Expertise Center for Alcohol, Illicit Drugs, Psychoactive Medication, Gaming and Gaming and the Flemish organizations that work around alcohol and other drugs.

Vinum et Spiritus, also intervened by offering expertise on posters and enlarging the message not only to the law but included also posters with guidelines on drinking behaviour, f.e. when being pregnant.

On a en magasin, un affichage moins 16, moins 18, de toute façon. Qui lui évidemment est plus succinct (...) Donc ça on a en magasin, pouvez aller voir en bas normalement, si ça n'a pas été arraché et des petites étiquettes noires avec le dosage en alcool avec les bouteilles marquées alcool et voilà. Et c'est souvent ce qui nous est fourni. On travaille en collaboration avec l'association Vinum et Spiritus à ce niveau-là, sur tout ce qui consommation responsable et information au client. (...) Donc nous on développe notre propre affichage (Brussels, supermarket, national manager)

A chain of night shops in Brussels, with an active internal policy to implement the law, created in collaboration with the same federation Vinum et Spiritus, also posters, bags, stickers and a campaign on social network sites around "Do as Bill". The ID is to point out the limit of the law, but goes far beyond that limit, extending to the management of excesses of drinking, the awareness to consequences of drinking and taking care of drunk friends. This campaign took place during the autumn of 2016. The cashier explained:

On est en train de faire une campagne de sensibilisation. (...) je ne sais pas si c'était que les jeunes, je sais pas si vous avez vu cela c'était une histoire avec " Bill" (...) Je suis "Bill" alors du coup ... je pense que c'est tous les jeunes. Parce que ils disent je suis Bill, je ne bois pas trop. En tout cas cela il y en a partout dans les [magasins de nuit de la chaine], on avait des t-shirts à distribuer, des flyers. Je trouve quand même que ce n'est pas mal quoi. (...) C'est... c'est vraiment une... une campagne et qui... de fond et qui est... que moi je rappelle souvent à nos vendeurs : "Attention, n'oubliez pas Bill". - I: Hum hum. - S: On a des sacs aussi qu'on distribue... - I: Hum hum. - S: ... distribue quand y a un jeune qui vient acheter. Donc, ça cible les... les 16-25 ans, en fait, chez nous hein. Donc, la campagne avait deux... euh... deux cibles : les moins de 16 ans, évidemment, euh... pour l'interdiction de la vente, et les..., les jeunes entre 18 et 25, chez nous euh... pour ceux qui... pour éviter qu'ils sur alcoolisent leurs soirées en fait. C'était plus... Bill, c'est un peu le "grand-frère". L'idée n'était pas de faire la morale, et donc ça permettait nous, à nos vendeurs de se dire : "tiens, un petit clin d'œil, tu viens acheter trois bouteilles d'alcool, on te fait un petit clin d'œil. Suis les petits conseils de Bill quoi". Voilà. (Brussels, night shop, cashier)

During some interviews with bars managers mentioned also to be aware of an upcoming campaign of the Belgian Beer Brewers Association, inviting customers to show their ID when purchasing alcohol, no matter their age. The campaign was kicked off in December 2016. One seller already refers to that campaign:

We zouden het willen omdraaien. Toon uw ID. Naar Nederlands voorbeeld Dus als je op café gaat, dat je spontaan je identiteitskaart toont. (Ghent, bar, manager)

Controlling the age of customers

When sellers act after deciding to control a specific customer, different strategies come forward in the interviews.

Some sellers know who comes around and rely on **informal control** to refuse drinks. This strategy was found in specific settings where youngsters returned regularly to the same places. This was the case in youth movements and youth houses, where the coordinators and patrol leaders often also know the siblings of their clientele. As such a barman at the tradition 15th of August market who tends to a stand of one of the youth movements explains:

Souvent les mineurs qui se pointent aussi sont des scouts qu'on connaît, des petits scouts qu'on connaît donc fatalement qu'on a une rôle pédagogique vis-à-vis d'eux donc on dit non, mais maintenant il y a des bières qui passent mais on va pas commencer à leur donner 25 Péquets ou quoi, on va pas commencer à se, à sa bourrer la gueule avec eux, ceux qui sont étrangers à tout ça, on est pas là à demander la carte d'identité et ça c'est au bon bouloir de la personne qui est là, mais je pense pas qu'on qu'aucun de nous soit au courant des lois et n'est informé de ce qu'il doit faire ou pas, en général quand c'est trop jeune on dit non. (Liège, event, barman)

In a Flemish youth centre where the coordinator walks around during evenings, as youngsters serve at the bar, he intervenes when he sees under-age drinking:

En als ze geen zestien zijn en ze zijn bier aan het drinken, dan neem ik het af. (...) Of ik zeg van: "Laat uw vrienden het opdrinken en zie dat ik u geen bier meer zie drinken." (...) En ook 95% van het volk dat hier komt, ken ik ondertussen ook al redelijk goed. Want ik sta niet alleen achter de toog. Ik sta ook gewoon tussen het volk en ik leer ze kennen, want ik leer mijn volk graag kennen. En ja, de meesten ken ik en de meeste weet ik dat ze zestien plus zijn. (Ghent, youth house, coordinator)

But this informal control was also put forward by cashiers at some local supermarkets:

Je hebt hier ook wel een school in de buurt. Maar ik ken die, dus die weten al dat dat niet gaat pakken, dat dat niet gaat lukken. Want ik weet welke school en, hoe oud dat ze zijn. (Ghent, supermarket, cashier)

And in some of the bars of the Carré where the owners spoke of a very loyal public that they knew quite well. Informal control works also in several of the bars of the Carré. As one owner puts it:

Puis dans le carré c'est des cafés d'habités souvent, donc ce sont les mêmes serveurs, beaucoup les mêmes clients, donc on sait qui ils sont. J'ai la chance d'avoir beaucoup de gens qui viennent ici après telle ou telle soirée, même à 4h du matin, parce que ici c'est la maison (Liège, bar, owner)

Another owner explains that he often knows when is young clientele turns 16 and that at the next visit he offers them beer to celebrate the "coming of age".

Still other interviewees also point out that sometimes, when young sellers know the young customers, that social link can be counterproductive, and result in sellers selling alcohol while knowing very well that the customer didn't reach the appropriated age. This counterproductive effect was noted in contexts of youth movements and youth houses:

Maar moest ik nu iemand kennen die vijftien of veertien is en die vraagt een pintje, dan ga ik die een pintje geven, maar hem niet dronken voeren bijvoorbeeld. Maar als ze dat vragen, allé zo één pintje of zo. Dan zou ik dat wel doen. (Ghent, youth movement, patrol leader)

One intermediate manager of a bar at a festival explained that selling drinks to (very) young acquaintances, even offering the drinks for free, was one of the reasons he didn't accept minor volunteers since several years.

One seller at a night shop didn't know his customers, but explained he first always looks for **indicators** of age in the context before to decide to ask the ID, trying to navigate around the delicate question to show one's ID:

Ben d'ailleurs, plus le groupe est grand, plus c'est délicat parce que quand on a une personne qui se pose la question de pourquoi vous me demandez mon âge, y a moyen de discuter. Quand c'est un groupe, ça devient compliqué. Euh... faut justifier, c'est vraiment... ça peut être embarrassant vraiment. Mais, après, y a toute... y a toute une série de détails qui aide quand on a un doute avant de poser la question euh... par exemple, la personne ouvre son portefeuille et, a un permis de conduire check. - I : Check. - G : Voilà. Y a... y a les choses comme ça qui nous permettent de... - I : Oui, oui. - G : ... de pas poser la question. Euh... mais alors, ou une carte de crédit. En principe, un enfant... enfin... je veux dire... - I : Un moins de 18 ans... - G : ... un adolescent de moins de 18 n'a pas de carte de crédit. Ouais, y a les petits détails qui permettent... ou la personne est arrivée en voiture... ça arrive aussi... y a les petits... - I : Sauf s'il l'a pas conduite lui-même ? Ah s'il sort... ah ok. - G : Non mais, je veux dire s'il sort de sa voiture... (Brussels, night shop, intermediate manager)

In most cases though when sellers decide to control the age of a customer, they ask the ID of the person to calculate his or her age. Some presented this operation as one they got used to:

Carte d'identité. Enfin par rapport à... On a l'habitude aussi hein. On travaille avec des 16 ans depuis euh... (...) Depuis 20 ans, que même avant, les boîtes étaient ouvertes pour les 16 ans le vendredi. On a l'habitude, on sait, voilà. Dès qu'il y a un doute, on demande la carte d'identité. (Brussels, bar, intermediate manager)

La dernière soirée, je n'y étais pas mais mon serveur a écrit sur Facebook, "sur les 40 cartes d'identités demandées j'ai enfin un qui peut boire de l'alcool. Ils ont tous 16 ans et essaient quand même" (...) Ils essaient parce qu'ils ont envie de ça. (Liège, bar, owner)

When customers don't have their ID with them, or say they haven't, they are not allowed to purchase the alcohol. So, explain for example the following sellers:

If they, if I see even he is eighteen and I think he is younger and he buy even Jupiler. I say, I, show me your ID card please. - I: Yeah, yeah. - B: And I see ID card. And if they say if they buy Jupiler and they look eighteen, they look eighteen/nineteen. - I: Yeah. - B: And they don't have ID card. - I: Yeah. - B: I don't give them. (Ghent, night shop, cashier)

Maar het is redelijk eenvoudig he. Dus als je twijfelt, vraag je de identiteitskaart. Willen ze het niet geven, dan is het simpel. Dan geef je geen alcohol. (...) Als er twijfel is, dan vraag je het en geven ze het niet, dan krijgen ze het niet. (Ghent, event, organisier)

Still, for some sellers the matter is quite straightforward, other sellers do confess asking a customer to prove he is 16/18 is a not all to evident to them. They explain demanding it as polite as possible the ID because of the delicacy of the question:

C'est toujours un petit peu délicat, c'est toujours un peu délicat. Donc heu... ouais faut essayer de l'amener un peu... un peu cool heu "Ouais, bon excuse-moi mais je voudrais bien te demander quelque chose heu... peut-être que je me trompe mais bon heu... tu as l'air un peu jeune, est-ce que je peux quand même voir ta carte d'identité heu" voilà. (Brussels, bar & event, barmaid)

ID controls are presented as particularly difficult for younger sellers. We saw already that they tend to control less, struggling just to keep up the rhythm of a demanding job. But they also point a problem of authority in asking for an ID. A younger barman of not yet 20 years old declares

Maar ook het leeftijdsverschil is niet zo groot, dus ja, ik heb nog niet zo een autoritaire rol van: "toon mij u paspoort". (Ghent, bar, barman)

A last element sellers discussed regarding ID controls in interviews in Ghent and Liège was the grey zone of the law. They are expected to implement the law by not selling alcohol to minors under 16 and no distilled drinks to minors, but at the same time customers are legally not obliged to show their ID to them as they are not legal enforcement actors. A few interviewees are hesitant to ask for an ID because of this framework:

I : tu ne demandes jamais une carte d'identité ou quoique ce soit - X : jamais, jamais, je ne savais pas que tu pouvais, je sais pas si je peux, je pensais que la police qui peut faire ça (Liège, event, barman)

More experienced sellers, all with a higher position in the work hierarchy know more precisely the leeway of the framework and explain that they should ask to prove their age, not ask directly for an ID:

En fait notre problème, c'est qu'on est obligé mais qu'on ne peut pas le faire. On peut leur demander de montrer leur carte, mais on ne peut pas leur exiger. Mais par contre, on peut refuser de les servir s'ils refusent de montrer (Liège, bar, owner)

One other owner however took this interdiction in another way, as the strongest norm. She justified not to ask for ID's, but to adopt as a rule to believe the answer of her customers and transfer responsibility:

Zestien en achttien, dat verschil zie je toch een beetje. Natuurlijk als er twijfel is vragen wij van: "Hoe oud ben je?". Er is hier zo een mannetje die er heel jong uitziet. En in het begin ook: "En hoe oud ben je?" "Ja, ik ben zestien." (...) Een identiteitskaart vragen, ja allez, we mogen niet hé. Dus ja. (...) Ik zeg altijd: "Ik hou mij aan mijn woord". Als ze binnenkomen, is het uw probleem

*hé. We mogen de identiteitskaart niet vragen hé. We hebben er de bevoegdheid niet voor.
(Ghent, bar, owner)*

Bracelets to facilitate control

Faced with the difficulty of controlling the ID's of customers, certainly in crowded places, some events introduced a system of differently coloured bracelets given at the entry of the event. The colour of the bracelet determines to what type of drinks the customer can access. The bartenders can just check the bracelet to know if they can follow the order of the customer.

*Rode en groene bandjes. Aan de kassa worden alle paspoorten gecontroleerd. Als je geen paspoort bij je hebt, kom je er niet in. Soms tonen ze hem via een foto op de gsm. Dan proberen we dat in der minne te regelen, maar ze zijn allemaal gekenmerkt. "Heb je geen bandje aan? Jammer maar dan krijg je weer een rood bandje terug, tenzij je je kan identificeren. Maar normaal maken we zo het onderscheid: rood krijgt geen alcohol, en groen, zestien plus, wel.
(Ghent, events, organizer)*

In the interviews the system was encountered for festivals, clubs and other events in enclosed locations in all 3 cities, but especially in Ghent where it also seemed to be much more established and promoted by the local authority:

Dat is zo een fuifkoffer die we kunnen huren van de gemeente. Dan heb je de oranje bandjes, dat zijn van die standaard bandjes met het logo van de gemeente op. Bij de oranje bandjes ben je dan plus zestien en bij de groene bandjes ben je plus achttien. Dat is dan gewoon bij het binnenkomen dat degene die aan de kassa zit die bandjes doet. (Ghent, youth movement, patrol leader)

In Liège and Brussels, we only found a few references to those bracelets and always about a more recent, new aid. One event said they first had different bracelets for children until 13, who had a ticket at a reduced price, extending it more recently to serve also the goal of applying the law.

C'est venu plus tard en se disant "ha ça sera pratique" mais à la base on l'a fait parce que on considérait que l'âge adulte était à partir de 13 ans (Liège, event, organiser)

If the system seems interesting, some notes should be made according to the sellers. It's a system that can't be generalized very largely. For example, if bracelets, given at the entrance, may be an option for events where everybody passes an entry, it's more difficult for bars or "open" events. The following excerpt is from a bar that organizes special 100-days celebrations for students of the last year of secondary school:

Begin dat eens. Ik ken er zo nog die dat deden, zo met de 100-dagen. En dat zou eventueel een alternatief zijn, maar dat kost dan weer geld. En dan bandjes maken, zo bandjes groen is plus achttien, een tweede kleur min zestien. Begin maar hé. Dan moet je weer iemand gaan inschrijven. Het alternatief zou zijn dat ze dat bijvoorbeeld uitdelen op school. Maar begint dan eens aan de deur zelf. Als van tien uur de deuren opengaan 's nachts of 's avonds en er komt hier 150 leerlingen en 30 leraars binnen. Dan kan je niet beginnen. (...) En dan 150 man voor de

deur blokkeren. Toon eens uw identiteitskaart? (...) Dat is niet praktisch mogelijk hé. (Ghent, bar, manager)

The application of the bracelet isn't always very systematic. As such one organizer plainly explains that he uses the bracelets only when he has been briefed that a control planned by the FPS Health:

Afhankelijk of we weten van de zaaleigenaar of er controle gaat zijn van Volksgezondheid of niet. Schakelen we extra bandjes in om de leeftijden te controleren aan de bar (...) – I: Dus, als je niet weet dat die controles gaan komen, hoe gaat dat dan? Dan let je daar niet zo fel op? - P: Dan kan iedereen dat kopen. Maar wij maken op voorhand onze cocktail. Dus wij hebben een Passoa en een rode Wodka. En die is gemaakt, ik denk misschien met verhouding één op vier. En zelfs misschien bij rode Wodka misschien één op vijf. Dus qua alcoholpercentage, door de mix die overblijft, moet je echt al serieus goed drinken (Ghent, event, organiser)

Also, the results of the application of the bracelets isn't waterproof explained other sellers. Even if in theory it is easier to check a bracelet than a ID, during rush hour, following the orders takes all concentration:

We weten het ook, maar ik betrap er mezelf soms ook op als je aan het werken bent en je staat aan de bar en het is twee à drie uur 's nachts en iedereen komt drank halen, dat je zodanig... Ja... Dat je vergeet te kijken naar de bandjes en dat je denkt van oei, ik heb al tien minuten niet naar de bandjes gekeken! Het is wel vervelend, soms in de drukte ben je het zodanig vergeten... (Ghent, youth movement, patrol leader)

On top, the bracelets don't prevent youngsters to ask persons with the right bracelets to get their favourite drinks for them at the bar. One bartender of 17 admitted by taking a more personal example:

Snap je, ik ben zeventien, dus ik heb vrienden die achttien zijn, die hebben dan een bandje. - I: Ja, en dan gaan zij dan altijd alcohol halen voor u? - G: Ja. (Ghent, bar, barman)

Still, in the end a bartender at events in Liège where they started also to use bracelets is more optimistic. For him the effect is supposed to be at least partly psychological, in the head of the customer who will have a constant reminder not to buy spirits:

On le voit direct mais on ne vérifie pas, parce que quand t'as un mauvais bracelet tu vas pas essayer de commander un whisky (Liège, event, barman)

Auto restricting drinks or public

Bracelets are presented to avoid ID control at the bar, by moving that control to the entrance where the age of the person determines the colour of his or her bracelet, but the system is not waterproof and can't be generalized to any type of venue. An even more practical system found in all types of selling places is to auto-restrict the drinks offered or to restrict the public.

First, events managed by youth movements and youth houses, that aim at a younger public, explain **not to sell spirits**. In doing so the controls get easier, or even disappear as the youth movements' bar

is open only for members from 16 years on. Some of the youth houses suppose that the youngsters of under 16 don't go out:

On est là pour tous les débuts et toutes les fins de réunions chaque week-ends quasiment. Dès que le bar est ouvert, on passe au milieu ou à la fin, si à Noël ils font un [événement], en camp on passe. (...) Pour des soirées par exemple ils veulent mettre un alcool spécial, on dit non c'est bière, Kriek et c'est tout. (Liège, event, unit master)

Ze gaan er van uit: die jongeren gaan op café, dus die zijn sowieso zestien. Want de meesten bij ons zijn brave mensen die pas op café zijn beginnen gaan als ze zelf pas zestien waren. (...) En sterke drank verkopen wij hier toch niet, dus. (Ghent, youth house, coordinator)

But the choice to auto-restrict the choice of drinks to beer isn't always only motivated by the law. One youth movement removed Bacardi Breezer of the menu because youngsters got too drunk too soon. The same argument we found in the interview with the organizer of events in Ghent:

En wij mogen zelf onze dranken kiezen. Ik heb altijd een heel beperkt gamma. Ik ga nooit heel zware, extreme dranken aanbieden. (...) Het enige dat we al gedaan hebben op de carnavalsfeesten, omdat dat zo een koude periode is, is jenever verkopen. (...) Daar zijn we ook mee gestopt. Nee. Ze zijn er te rap dronken van en dan heb je ook ruzie. (Ghent, events, organizer)

Other places only let over 16-year-old enter in their club, and only on specific occasions on which the then limit the menu:

Et quand on fait des soirées en vacances pour les 16 ans... (...) Donc là à ce moment-là, on ne vend que de la bière. (Brussels, club, manager)

On all other evenings, **minors are banned by bouncers** in his club, as in several commercial places. Or organizers withhold from organising events that aim at minors:

I: En heb je dan ook feestjes van sweet 16? – D: Nee, dat wil ik niet. (...) Dat is te jong, dat geeft miserie. (...) Ja ja dan heb ik die miserie met heel die regelingen, dat wil ik niet. Met sterke drank en heel die bazaar die ze willen drinken en dat geeft gewoon een hele avond discussie. (Ghent, bar, owner)

Youngsters insist on trying to buy distilled drinks, drinking a lot. Their behaviour, as we found on multiple occasion in the interviews, has become troublesome because youngsters drink before going out (we'll come back at those adaptive strategies in the next point). This changing behaviour discourages clubs and bars, especially in Brussels where banning minors has become the rule regarding clubs, also motivates owner to ban minors on top of the risk of breaking the law:

Moi quand je vois des gens aller chez moi qui me disent : ah, putain, à mon époque on s'amuseait mieux. Ok, j'ai fait mon job. - I: Mmh. - M: Parce que non tu ne t'amusais pas mieux connard. Tu avais juste 20 ans et aujourd'hui tu en as 40, c'est tout. (...) C'est ça le truc. Je préfère qu'ils se rendent compte. - I: Mmh. - M: Qu'est-ce que c'est comme souvenir d'avoir tiré dans le parking ?

Très bien ça ! C'est très, très bien (...) Le nombre d'enfants qui sont venus me dire : nos parents se sont rencontrés chez vous. Putain j'ai fait mon job, c'est parfait. Mais c'est vrai que... - I: Mmh. - M: Aujourd'hui on n'est plus dans le même registre. Donc c'est pour ça que, on a toujours les boîtes ça a toujours été pour les jeunes. (...) Sauf que maintenant avec, depuis pas mal de temps, avec cette deuxième génération qui arrive, de personnes divorcées, donc qui ressortent à 40-50 ans. Ils ressortent. (Brussels, club, owner)

As youngsters' drink alcohol outside the venue, it isn't worthwhile the investment from an economic standpoint to let them in the venue. Indeed, serving youngsters isn't economically interesting anymore. The same reasoning (restrictions by the law, in combination with financial crisis of 2008 making that youngsters have less money to spent) pushed more than one manager to concentrate on another market: midlife divorcees for the first, gays for another:

On travaille beaucoup avec les touristes ici parce qu'on est en plein centre-ville. (...) Donc tous les dimanches on fait une soirée gay et c'est eux qui ont le plus grand pouvoir d'achat, aussi. (Brussels, club, manager)

It is notably that one club in the Ghent area excluded the entry for minors under 17, by systematic ID controls at the entry, performed by bouncers. Once in, they can order all drinks, also spirits.

The interviews showed many different strategies developed by the sellers to manage age verification imposed by the law. Some strategies aim to inform customers of the law. Others aim to control by informal knowledge on the customers, to look for objective indicators or to demand an ID. This control is not evident, as is the decision to verify age, motivating the sellers to adopt alternative strategies, as bracelets given at the entry or to ban some drinks of youngsters.

1.5 Discussion

Je suis content que ça bouge un petit peu, qu'il y ait des enquêtes qui se font. (Brussels, club, owner)

Knowledge of the law entails more than just answering questions (correctly). The logic of the law is rarely mastered - even if the basics are well known- as sellers most often don't fully grasp the logic. Close readings of the interviews clearly show that an overwhelming majority of the sellers do have **internal values** that urge them to condemn some youthful drinking, but not always according to the same modalities as the law. This set of internal values, that seemed to be broadly shared, see drinking beer (and, in Liège, *blanc cerise/ blanc coca/ blanc passion*, as well as *péket* sometimes) as a cultural and social practice surrounded by norms.

According to some of the interviewees, adolescents should learn how to drink, learn their limits, learn how much to drink and in what social settings to drink. This means, according to the interviews, they should start with less heavy alcoholic drinks, typically pilsner beer – if needed something sweeter as youngsters seem to have sweet tooth. Accompanying this process by adults is presented as indispensable to manage the consequences and risks of drinking. Hence especially drinking spirits amongst youngsters is strongly condemned. From their set of values, which sellers present as largely supported, they are often in favour of a prohibiting law, even if they warn for the risk of creating a forbidden fruit effect, based on the percentage of alcohol. Although the current law is not based on

percentages, most sellers think the current legislation could be maintained. They value the gradual access, which corresponds to the moral values we discussed.

However, regarding the law and its' provisions, sellers massively don't understand the reason behind the distinction based on the fabrication process. The most cited example is that strong special beers can be sold or offered, while lighter dosed shots or mixers can't. This lack of understanding the motives of the legislator provokes cynical remarks and renders the applicability for the sellers very difficult. According to the respondents, not only the adherence to the law could be improved by switching to a percentage as discrimination element, it is also presented as a means of facilitating the application of the law.

Another problematic element, which is understood through the controls, concerns the liability of the sellers. In some settings, specifically crowded places and when customers are in a group, sellers don't find it questionable to put full liability on the sellers themselves, as even when they try to be thorough, problems can arise. Sellers question their ability to enforce the law. Younger sellers have more difficulties to enforce the law, e.g. asking to verify the age. They don't feel comfortable to verify and they seem to be more subjected to negotiations and insisting behaviour of youngsters. Both the discourse on the ability of sellers to master compliance to the law as well as the specific difficulties experienced by younger sellers, corroborate with the findings of Gosselt, Van Hoof & De Jong (2012).

Some initiatives have been taken by the sellers to respect the law. First, some places integrate the law of 2009 in their internal rules and internal policy. According to sellers, the encouragement to respect the law, by repetitions, personal encouragements, and communication on the subject makes that sellers are more aware of the norms and more confident when verifying the age. Some sellers make indeed many efforts, even if certain contexts make the control more difficult, like the presence of a self-scan. Second, bracelets are used sometimes to move the verification from the bar to the entrance, but is not a waterproof technique according to the sellers, nor is it applicable for locations where there is no 'closed' entrance. A third strategy, that is presented as much more effective, is to ban (distilled) alcohol or to ban youngsters all together. As youngsters are presented as not being able to buy many expensive drinks and therefore drinking before going out, or on the parking lot, many sellers are not happy with having a lot of youngsters in their establishment.

The question remains if selling alcohol to under age persons can be regarded as "deviant practices" or rather as cultural practices. In that sense, the study on "obedient behaviour" completes the understanding of the interactions between internal values that weight on the application of the law. Levin-Rozalis (2007) remarks that obedience or disobedience are both social acts, influenced by social representations of the social group the sellers belongs to. Gosselt, Van Hoof and De Jong (2012), more specifically analysing the practice of legal age limits in the Netherlands, demonstrate that compliance with age limits on selling alcohol depends on the knowledge of the law, but also on the ability and motivation to comply. Like we also observed, other literature also point to elements of the context of selling that influence the ability and motivation to comply, like the affluence in the shop/bar and the characteristics of the seller as well as the buyer (Britt, Toomey, Dunsmuir, & Wagenaar, 2006; Gosselt et al., 2012). These elements, like we saw are being put forward by the sellers as neutralization techniques explaining their inability to comply with the law. Although the knowledge of the law is all in all satisfactory, as Gosselt, Van Hoof & De Jong (2012) already observed, this knowledge is not sufficient: being willing and motivated to comply is also crucial. The researchers identified three

factors that can also be found in this research: first, individual norms and values on the matter affect the initiative an individual seller will take to increase compliance. To Gosselt, Van Hoof & De Jong (Gosselt et al., 2012) the individual motivation is more important than that on the level of the store. Second, the awareness of a legal basis of the law is important too. Third, the perception of surveillance of application of the law, internal as well as external, influences the compliance. In our results, we observe a link between the first and the second factor. **Indeed, many sellers present individual motivations and an awareness of the law. However, it appears that their personal motivations (for example how to limit excessive alcohol consumption in order to decrease trouble in their bars) make them to question the law more rather than fully comply to it.**

This discourse can of course be read as a series of neutralisation techniques (Sykes & Matza, 1957) on why sellers don't or shouldn't apply the law. Neutralisation techniques are anchored in the 'system of beliefs and attitudes' (Sykes & Matza, 1957) and are internal processes by which someone posing deviant behaviour manages his/her guilt. There is discussion to whether these neutralisations techniques are present before or after the perpetration of deviant behaviour and therefore can explain the deviancy (Maruna & Copes, 2005).

Even if the issue is complex and the realities observed very diverse in our study, the five basic techniques of neutralization can be observed. First and primarily, we observe a system of denial of responsibility (Maruna & Copes, 2005; Sykes & Matza, 1957). For many sellers, the application of the law is beyond their control. The circumstances, certainly in crowded bars or clubs, or at festivals, makes it impossible according to their discourse to verify who will drink the beverage, or even who will drink. For younger sellers, the small age gap between them and young costumers as well as the impression of lacking authority diminishes their responsibility. Also, sellers point to the environment, their own education, the education of their children and observations regarding a 'going out and beer culture' in Belgium to put forward different norms axed on learning to drink and to avoid excesses. As the literature on corporate crime shows (Benson, 1985a; Lascoumes & Nagels, 2015), the place in hierarchy is sometimes used to deny (part of the) responsibility: owners or managers are said to insist more on making profit, than on abiding this law on legal drinking age. On the other hand, sellers where management is said to insist heavily and repeatedly on respecting the law, do say to be more inclined to control age of buyers.

The denial of injury refers to the discourse arguing that the (long term) injury of youthful drinking is not their fault or doesn't cause much harm (Maruna & Copes, 2005; Sykes & Matza, 1957). Indeed, especially as most sellers explain to try to contain drinking within certain limits, for everybody, making sure everyone can get home safely or doesn't get sick (in order also to avoid cleaning up vomit), sellers create a discourse on actively preventing harm. They also often explain not to sell to very young youngsters, though as we saw that what is perceived as 'very young' varies, sometimes referring to consequences on the cerebral development.

As youngsters order the drinks, or make up schemes and strategies to obtain their beer of their shot, the denial of the victim (Maruna & Copes, 2005; Sykes & Matza, 1957) by stating they participate in the offense is easily sustainable. Still, surprisingly few sellers do put the liability on the youngsters (if they do mostly they also refer to the parents). The discourse follows more a logic of seeing injury mainly because of excesses, and, above all, to insist on the positive sides of drinking reasonably in a social context.

The technique of condemnation of the condemners (Maruna & Copes, 2005; Sykes & Matza, 1957) can also be observed. Reciting literally Sykes and Matza (Sykes & Matza, 1957), we observe a discourse that the legislator is hypocrite, in the sense that sellers often don't understand the motivation to discriminate beer from mixed drinks, even if they do approve of introducing drinks gradually. Suspicions of heavy lobby by the beer industry, and formulating a law that is judged by some as impossible to apply in practice, make that they distance themselves from the law. Other norms have, according to them, more priority (namely to limit excesses). Just as observed by other scholars regarding organizational deviancy (Benson, 1985b; Lascoumes, 1985; Willott, Griffin, & Torrance, 2001), controllers of the law are presented as problematic. Stories arise on enforcement that is not correct or just, on controllers hesitating on the interpretation of the law and of using off limit proceedings.

The last technique of neutralisation is putting forward higher loyalties overpowering the norm of the law. Maintaining work and employment as in organisational deviancy (Lascoumes & Nagels, 2015; Willott et al., 2001) plays a certain role, but more than a reference to employment, we observed a reference to Belgian culture and integration of youngsters in the social norms of going out, having a good time with friends and family.

But even more than those two elements, it's the **enforcement of the law**, or the perceived lack of enforcement that sellers put forward as problematic. On the one hand, some sellers have the impression controls don't exist on this law, or, at least that some types of sellers are not (sufficiently) controlled. They often refer to the lack of application by the competition to argue why they feel the actual context of enforcement of the law is problematic, especially in a context where alcohol is very accessible, both in price and in direct availability, at all hours of the day. Mystery shopping, largely unknown except for shops, could help to raise awareness and, if results are made public, could target the impression that some types of sellers continuously break the law. This perception is put forward as a main reason for the lack of motivation to apply the law in a strict way – and limit the discourse on 'otherness' whereby night shops and some local franchises of supermarkets are systematically presented as not respecting the law. Sellers are largely in favour of a **more integrated approach** of the public policy on alcohol. One that starts very broadly informing and convincing society on the risks of alcohol (ab)use, and explaining a law, insisting on its provisions. Prevention and sensitization are considered crucial to a more generalized respect of the law. The restrictions could also be broadened to a price policy, the limitations of promotions and the accessibility of alcohol.

As Gosselt, Van Hoof and De Jong (2012) insist on the importance to raise the awareness of the importance of age limits to motivate sellers to comply. To maintain compliance, negative consequences of the violation of the law is important too.

Conclusions and recommendations WP3

Alcohol consumption by youngsters decomposes in five drinking profiles and an abstainer profile where internal values and parental attitudes play a larger role than the passive knowledge of the law. As such this seems to indicate that three social levels impact the drinking behaviour.

At first there is of course the micro level of the youngster. His/her reality seems more important than knowing something is authorized by law. Indeed, if the law is well known, this passive knowledge doesn't seem to suffice to alter the behaviour. Also, we should bear in mind the attraction for the forbidden fruit, especially with adolescents. The question is how to influence the internal values.

Secondly, there is the meso level of the family. This study shows links between parental control, supervision and regulations on alcohol and alcohol youths' profiles, specifically the problematic ones. In those problematic profiles, we find older youth. These older adolescents perceive less parental attitudes, in general and specifically on alcohol exerted by their parents. Sensitization of parents to the consequences of drinking alcohol might strengthen their attitudes (to continue) towards (older) adolescents.

Thirdly, there is the level of society, containing the image of alcohol, its accessibility and the festive and fun status of alcohol. This third level has been further investigated in the second part of this survey on the sellers we identified through the youths' data.

We find the same levels playing a role in the discourse of the sellers on the application of the law on the minimal drinking age of youngsters.

At first there is the micro level of the seller. Again, his or her internal norms are presented as playing a more influential role in whether he or she will control the age of a buyer and refuse to sell or to offer alcohol to a younger person. The question is again how to influence the internal values that are presented as a mix of adaptation to a work environment and social and cultural norms. Again, knowing the law does not automatically assure its abiding. Although this might be a good starting point, we can conclude that the details and application in a wider range of drinks is not that evident. An interesting working point for the policy is on how to deepen the knowledge of the law, make it more practical and how to make this knowledge integrate the practice of selling.

On this point the meso level of the workplace offers some interesting ideas. Those attesting of a higher will to identify youngsters trying to buy alcohol do so because they are committed to the cause on an individual level or because inside the workplace workers are informed and sensitised. Socialization plays a role, both as a member of society, but also between peers, amongst youngsters or sellers on the workplace. As a social mechanism (Macionis, 2014), socialization refers to processes throughout life influencing behaviour, beliefs and actions, not only of children but also of adults. Organisational socialization or 'on boarding' refers more specifically to the mechanism through which new workers acquire knowledge, skills and behaviour necessary to be integrated effectively on a workplace (Bauer & Erdogan, 2011). By trying to influence this socialization, certainly on the level of the sellers, the view of the sellers on the law versus their internal/ social norms could be altered.

Thirdly, there is the level of society but also of the government(s). Regarding the division of political competences in Belgium, several levels are concerned, pointing inevitably to the necessity of a global plan on alcohol. This work package points out that the law as it is, is not understood in the sense that

sellers don't understand the reasons of the distinction between fermented and distilled alcohol. As it is, the law is seen by many as not favouring the ability of sellers to comply with its provisions because they can't see the difference in the fabrication process.

As for the youngsters, sellers identify a social status of alcohol, linked to Belgian culture, going out, meeting friends, having a good time. There is a socialization of youngsters that they present as needed for the integration of youngsters and that needs to be "supervised", or rather framed by adults: themselves as sellers, but also parents and other clients. Those norms, presented as social and cultural include elements of context and drinking practice itself.

But, seeing the strong internal values, the practical, but also the moral reasoning behind them, it could be of some use to communicate on the reasons for the distinction based on age and fabrication process, in large and repeated ways. Preferably playing on the socialization process, bearing in mind the influence it has on beliefs and actions, the law could integrate more deeply in the social norms vehiculated in society.

The BOB campaign of the Belgian Beer Brewers could be an interesting example in this matter, as in an example of the translation of a legal norm into a language and concrete attitudes to adopt to comply with the law, while insisting on the reasons of the norms.

FPS could take the initiative to coordinate with groups of sellers, like supermarkets, chains, and local horeca associations to give more precise directives on how to interpret and understand the law. This way not only sellers' understanding could be enhanced, having regular contacts with sellers could help to dissolute the recurring reproach of a legislator too far from the work ground and its ability to comply.

Work places could then organise to form and integrate more this law in the in boarding of their workers. This coordination between the FPS and the managers would probably need to be regularly repeated, not only to discuss new fashions in drinking or adaptations of the law, but also because of the volatile nature of part of the employers in the sector. There is a part of the employees that work in unstable contracts, e.g. student work. Hence the turnover can be important in some work places, although others have a long career in this sector.

On the level of control of the law, controllers could first invest in informing sellers on the law, its objective, reasoning and concrete application at the work floor. Promoting practical strategies on how to augment the sellers' ability to comply the law in different context's, including terraces, different rooms and very crowded places ran by young, fresh, employees. After a large round of accompanying sellers in the application of the law, a more repressive control would probably be experienced in a different way by the interviewed sellers.

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Annexes

1.6 Tables of descriptive tests of ANOVA analysis per LCA

Age per profile

	N	Mean	SD
Abstainers	250	15,892	1,430
Low 'family' drinkers	177	15,585	1,128
Moderate 'mixed' drinkers	169	16,515	1,240
High 'stressed' drinkers	216	16,959	0,985
Low, late and social drinkers	211	16,293	1,183
High 'explosive' drinkers	131	17,088	1,369

SD= standard deviation

Parental attitudes per profile

		N	Mean	SD
Parental supervision	Abstainers	250	3,763	,792
	Low 'family' drinkers	177	4,059	,567
	Moderate 'mixed' drinkers	169	4,069	,575
	High 'stressed' drinkers	216	3,797	,644
	Low, late and social drinkers	211	3,961	,576
	High 'explosive' drinkers	131	3,536	,711
Parental solicitation	Abstainers	250	3,066	,935
	Low 'family' drinkers	177	3,095	,892
	Moderate 'mixed' drinkers	169	3,077	,907
	High 'stressed' drinkers	216	3,039	,786
	Low, late and social drinkers	211	2,984	,796
	High 'explosive' drinkers	131	2,971	,823
Parental control	Abstainers	250	4,155	,816
	Low 'family' drinkers	177	4,199	,701
	Moderate 'mixed' drinkers	169	3,963	,822
	High 'stressed' drinkers	216	3,534	,956
	Low, late and social drinkers	211	3,965	,782
	High 'explosive' drinkers	131	3,564	1,074
Rules toward alcohol	Abstainers	55	1,324	,652
	Low 'family' drinkers	69	2,033	,896
	Moderate 'mixed' drinkers	97	3,273	,801
	High 'stressed' drinkers	133	3,300	,904
	Low, late and social drinkers	124	2,265	,897
	High 'explosive' drinkers	39	3,316	,927

SD= standard deviation

Knowledge of the law and application of vignettes per profile

	Knowledge		N	Mean	SD
		VIGNETTE 1	Abstainers	250	3,828
	Low 'family' drinkers	177	4,130	3,166	
	Moderate 'mixed' drinkers	169	3,142	2,806	
	High 'stressed' drinkers	216	2,681	2,686	
	Low, late and social drinkers	211	3,730	3,109	
	High 'explosive' drinkers	131	3,191	2,623	
	Application	Abstainers	250	3,488	3,045
	Low 'family' drinkers	177	4,887	2,938	
	Moderate 'mixed' drinkers	169	5,707	2,436	
	High 'stressed' drinkers	216	6,481	2,552	
	Low, late and social drinkers	211	5,645	2,865	
	High 'explosive' drinkers	131	6,824	2,780	

SD= standard deviation

VIGNETTE 2	Knowledge		N	Mean	SD
		Abstainers	250	2,992	2,897
		Low 'family' drinkers	177	2,554	2,390
		Moderate 'mixed' drinkers	169	2,686	2,423
		High 'stressed' drinkers	216	2,523	2,539
		Low, late and social drinkers	211	2,611	2,496
		High 'explosive' drinkers	131	2,878	2,845
	Application	Abstainers	250	3,048	2,930
		Low 'family' drinkers	177	4,294	2,813
		Moderate 'mixed' drinkers	169	5,959	2,875
		High 'stressed' drinkers	216	6,986	2,951
		Low, late and social drinkers	211	5,829	2,986
		High 'explosive' drinkers	131	6,626	3,136

SD= standard deviation

VIGNETTE 3	Knowledge		N	Mean	SD
		Abstainers	250	4,564	3,701
		Low 'family' drinkers	177	6,429	3,529
		Moderate 'mixed' drinkers	169	8,124	2,684
		High 'stressed' drinkers	216	8,694	2,673
		Low, late and social drinkers	211	7,825	3,128
		High 'explosive' drinkers	131	8,458	2,600
	Application	Abstainers	250	4,192	3,579
		Low 'family' drinkers	177	6,073	3,216
		Moderate 'mixed' drinkers	169	8,414	2,167
		High 'stressed' drinkers	216	9,046	2,077
		Low, late and social drinkers	211	8,090	2,537
		High 'explosive' drinkers	131	8,725	2,294

SD= standard deviation

1.7 Bonferroni testing

Age per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	,307	,121	,167
	Moderate 'mixed' drinkers	-,623	,122	,000
	High 'stressed' drinkers	-1,067	,114	,000
	Low, late and social drinkers	-,401	,115	,008
	High 'explosive' drinkers	-1,196	,133	,000
Low 'family' drinkers vs	Abstainers	-,307	,121	,167
	Moderate 'mixed' drinkers	-,930	,132	,000
	High 'stressed' drinkers	-1,374	,125	,000
	Low, late and social drinkers	-,708	,125	,000
	High 'explosive' drinkers	-1,503	,142	,000
Moderate 'mixed' drinkers vs	Abstainers	,623	,122	,000
	Low 'family' drinkers	,930	,132	,000
	High 'stressed' drinkers	-,443	,126	,007
	Low, late and social drinkers	,222	,127	1,000
	High 'explosive' drinkers	-,572	,143	,001
High 'stressed' drinkers vs	Abstainers	1,067	,114	,000
	Low 'family' drinkers	1,374	,125	,000
	Moderate 'mixed' drinkers	,443	,126	,007
	Low, late and social drinkers	,666	,119	,000
	High 'explosive' drinkers	-,129	,136	1,000
Low, late and social drinkers vs	Abstainers	,401	,115	,008
	Low 'family' drinkers	,708	,125	,000
	Moderate 'mixed' drinkers	-,222	,127	1,000
	High 'stressed' drinkers	-,666	,119	,000
	High 'explosive' drinkers	-,795	,137	,000
High 'explosive' drinkers vs	Abstainers	1,196	,133	,000
	Low 'family' drinkers	1,503	,142	,000
	Moderate 'mixed' drinkers	,572	,143	,001
	High 'stressed' drinkers	,129	,136	1,000
	Low, late and social drinkers	,795	,137	,000

SE= error standard

Parental supervision per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-,295	,064	,000
	Moderate 'mixed' drinkers	-,305	,065	,000
	High 'stressed' drinkers	-,034	,061	1,000
	Low, late and social drinkers	-,197	,061	,020
	High 'explosive' drinkers	,228	,071	,020
Low 'family' drinkers vs	Abstainers	,295	,064	,000
	Moderate 'mixed' drinkers	-,010	,070	1,000
	High 'stressed' drinkers	,261	,066	,001
	Low, late and social drinkers	,098	,067	1,000
	High 'explosive' drinkers	,523	,075	,000
Moderate 'mixed' drinkers vs	Abstainers	,305	,065	,000
	Low 'family' drinkers	,010	,070	1,000
	High 'stressed' drinkers	,271	,067	,001
	Low, late and social drinkers	,108	,068	1,000
	High 'explosive' drinkers	,533	,076	,000
High 'stressed' drinkers vs	Abstainers	,034	,061	1,000
	Low 'family' drinkers	-,261	,066	,001
	Moderate 'mixed' drinkers	-,271	,067	,001
	Low, late and social drinkers	-,163	,063	,153
	High 'explosive' drinkers	,262	,073	,005
Low, late and social drinkers vs	Abstainers	,197	,061	,020
	Low 'family' drinkers	-,098	,067	1,000
	Moderate 'mixed' drinkers	-,108	,068	1,000
	High 'stressed' drinkers	,163	,063	,153
	High 'explosive' drinkers	,425	,071	,000
High 'explosive' drinkers vs	Abstainers	-,228	,071	,020
	Low 'family' drinkers	-,523	,075	,000
	Moderate 'mixed' drinkers	-,533	,076	,000
	High 'stressed' drinkers	-,262	,073	,005
	Low, late and social drinkers	-,425	,072	,000

SE= error standard

Parental solicitation per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-,029	,084	1,000
	Moderate 'mixed' drinkers	-,011	,086	1,000
	High 'stressed' drinkers	,027	,080	1,000
	Low, late and social drinkers	,082	,080	1,000
	High 'explosive' drinkers	,094	,093	1,000
Low 'family' drinkers vs	Abstainers	,029	,084	1,000
	Moderate 'mixed' drinkers	,018	,092	1,000
	High 'stressed' drinkers	,056	,087	1,000
	Low, late and social drinkers	,111	,088	1,000
	High 'explosive' drinkers	,123	,099	1,000
Moderate 'mixed' drinkers vs	Abstainers	,011	,086	1,000
	Low 'family' drinkers	-,018	,092	1,000
	High 'stressed' drinkers	,038	,088	1,000
	Low, late and social drinkers	,093	,089	1,000
	High 'explosive' drinkers	,105	,100	1,000
High 'stressed' drinkers vs	Abstainers	-,027	,080	1,000
	Low 'family' drinkers	-,056	,087	1,000
	Moderate 'mixed' drinkers	-,038	,088	1,000
	Low, late and social drinkers	,055	,083	1,000
	High 'explosive' drinkers	,067	,095	1,000
Low, late and social drinkers vs	Abstainers	-,082	,080	1,000
	Low 'family' drinkers	-,111	,088	1,000
	Moderate 'mixed' drinkers	-,093	,089	1,000
	High 'stressed' drinkers	-,055	,083	1,000
	High 'explosive' drinkers	,012	,096	1,000
High 'explosive' drinkers vs	Abstainers	-,094	,093	1,000
	Low 'family' drinkers	-,123	,099	1,000
	Moderate 'mixed' drinkers	-,105	,100	1,000
	High 'stressed' drinkers	-,067	,095	1,000
	Low, late and social drinkers	-,012	,096	1,000

SE= error standard

Parental control per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-,044	,084	1,000
	Moderate 'mixed' drinkers	,192	,085	,361
	High 'stressed' drinkers	,621	,079	,000
	Low, late and social drinkers	,190	,080	,262
	High 'explosive' drinkers	,591	,092	,000
Low 'family' drinkers vs	Abstainers	,044	,084	1,000
	Moderate 'mixed' drinkers	,237	,092	,153
	High 'stressed' drinkers	,665	,087	,000
	Low, late and social drinkers	,235	,087	,108
	High 'explosive' drinkers	,635	,099	,000
Moderate 'mixed' drinkers vs	Abstainers	-,192	,085	,361
	Low 'family' drinkers	-,237	,092	,153
	High 'stressed' drinkers	,429	,088	,000
	Low, late and social drinkers	-,002	,088	1,000
	High 'explosive' drinkers	,398	,10	,001
High 'stressed' drinkers vs	Abstainers	-,621	,080	,000
	Low 'family' drinkers	-,665	,087	,000
	Moderate 'mixed' drinkers	-,429	,088	,000
	Low, late and social drinkers	-,431	,083	,000
	High 'explosive' drinkers	-,030	,095	1,000
Low, late and social drinkers vs	Abstainers	-,190	,080	,262
	Low 'family' drinkers	-,235	,087	,108
	Moderate 'mixed' drinkers	,002	,088	1,000
	High 'stressed' drinkers	,430	,083	,000
	High 'explosive' drinkers	,400	,095	,000
High 'explosive' drinkers vs	Abstainers	-,591	,092	,000
	Low 'family' drinkers	-,635	,099	,000
	Moderate 'mixed' drinkers	-,398	,010	,001
	High 'stressed' drinkers	,030	,095	1,000
	Low, late and social drinkers	-,400	,095	,000

SE= error standard

Rules towards alcohol per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-,709	,156	,000
	Moderate 'mixed' drinkers	-1,949	,145	,000
	High 'stressed' drinkers	-1,977	,138	,000
	Low, late and social drinkers	-,941	,139	,000
	High 'explosive' drinkers	-1,992	,180	,000
Low 'family' drinkers vs	Abstainers	,709	,156	,000
	Moderate 'mixed' drinkers	-1,240	,136	,000
	High 'stressed' drinkers	-1,268	,128	,000
	Low, late and social drinkers	-,232	,129	1,000
	High 'explosive' drinkers	-1,283	,172	,000
Moderate 'mixed' drinkers vs	Abstainers	1,949	,145	,000
	Low 'family' drinkers	1,240	,136	,000
	High 'stressed' drinkers	-,027	,115	1,000
	Low, late and social drinkers	1,008	,117	,000
	High 'explosive' drinkers	-,042	,163	1,000
High 'stressed' drinkers vs	Abstainers	1,977	,138	,000
	Low 'family' drinkers	1,268	,128	,000
	Moderate 'mixed' drinkers	,027	,115	1,000
	Low, late and social drinkers	1,035	,107	,000
	High 'explosive' drinkers	-,015	,157	1,000
Low, late and social drinkers vs	Abstainers	,941	,139	,000
	Low 'family' drinkers	,232	,129	1,000
	Moderate 'mixed' drinkers	-1,008	,117	,000
	High 'stressed' drinkers	-1,035	,107	,000
	High 'explosive' drinkers	-1,051	,158	,000
High 'explosive' drinkers vs	Abstainers	1,992	,180	,000
	Low 'family' drinkers	1,283	,172	,000
	Moderate 'mixed' drinkers	,043	,163	1,000
	High 'stressed' drinkers	,015	,157	1,000
	Low, late and social drinkers	1,051	,158	,000

SE= error standard

Vignette 1 Knowledge per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-,302	,292	1,000
	Moderate 'mixed' drinkers	,686	,296	,312
	High 'stressed' drinkers	1,147	,276	,001
	Low, late and social drinkers	,098	,278	1,000
	High 'explosive' drinkers	,637	,321	,710
Low 'family' drinkers vs	Abstainers	,302	,292	1,000
	Moderate 'mixed' drinkers	,988	,320	,031
	High 'stressed' drinkers	1,450	,302	,000
	Low, late and social drinkers	,400	,303	1,000
	High 'explosive' drinkers	,939	,343	,094
Moderate 'mixed' drinkers vs	Abstainers	-,686	,296	,312
	Low 'family' drinkers	-,988	,320	,031
	High 'stressed' drinkers	,461	,305	1,000
	Low, late and social drinkers	-,588	,307	,838
	High 'explosive' drinkers	-,049	,346	1,000
High 'stressed' drinkers vs	Abstainers	-1,147	,276	,001
	Low 'family' drinkers	-1,449	,302	,000
	Moderate 'mixed' drinkers	-,461	,305	1,000
	Low, late and social drinkers	-1,049	,288	,004
	High 'explosive' drinkers	-,510	,329	1,000
Low, late and social drinkers vs	Abstainers	-,098	,278	1,000
	Low 'family' drinkers	-,400	,303	1,000
	Moderate 'mixed' drinkers	,588	,307	,838
	High 'stressed' drinkers	1,049	,288	,004
	High 'explosive' drinkers	,539	,331	1,000
High 'explosive' drinkers vs	Abstainers	-,637	,321	,710
	Low 'family' drinkers	-,939	,343	,094
	Moderate 'mixed' drinkers	,049	,346	1,000
	High 'stressed' drinkers	,510	,329	1,000
	Low, late and social drinkers	-,539	,331	1,000

SE= error standard

Vignette 1 Application per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-1,399	,274	,000
	Moderate 'mixed' drinkers	-2,219	,278	,000
	High 'stressed' drinkers	-2,993	,259	,000
	Low, late and social drinkers	-2,156	,261	,000
	High 'explosive' drinkers	-3,336	,301	,000
Low 'family' drinkers vs	Abstainers	1,399	,274	,000
	Moderate 'mixed' drinkers	-,820	,300	,096
	High 'stressed' drinkers	-1,594	,283	,000
	Low, late and social drinkers	-,757	,285	,118
	High 'explosive' drinkers	-1,937	,322	,000
Moderate 'mixed' drinkers vs	Abstainers	2,219	,278	,000
	Low 'family' drinkers	,820	,300	,096
	High 'stressed' drinkers	-,774	,287	,106
	Low, late and social drinkers	,063	,288	1,000
	High 'explosive' drinkers	-1,117	,325	,009
High 'stressed' drinkers vs	Abstainers	2,993	,259	,000
	Low 'family' drinkers	1,594	,283	,000
	Moderate 'mixed' drinkers	,774	,287	,106
	Low, late and social drinkers	,837	,270	,030
	High 'explosive' drinkers	-,343	,309	1,000
Low, late and social drinkers vs	Abstainers	2,156	,261	,000
	Low 'family' drinkers	,757	,285	,118
	Moderate 'mixed' drinkers	-,063	,288	1,000
	High 'stressed' drinkers	-,837	,270	,030
	High 'explosive' drinkers	-1,180	,311	,002
High 'explosive' drinkers vs	Abstainers	3,336	,301	,000
	Low 'family' drinkers	1,937	,322	,000
	Moderate 'mixed' drinkers	1,117	,325	,009
	High 'stressed' drinkers	,343	,309	1,000
	Low, late and social drinkers	1,180	,311	,002

SE= error standard

Vignette 2 Knowledge per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	,438	,256	1,000
	Moderate 'mixed' drinkers	,306	,260	1,000
	High 'stressed' drinkers	,469	,243	,803
	Low, late and social drinkers	,381	,244	1,000
	High 'explosive' drinkers	,114	,282	1,000
Low 'family' drinkers vs	Abstainers	-,438	,256	1,000
	Moderate 'mixed' drinkers	-,133	,281	1,000
	High 'stressed' drinkers	,030	,265	1,000
	Low, late and social drinkers	-,058	,266	1,000
	High 'explosive' drinkers	-,324	,301	1,000
Moderate 'mixed' drinkers vs	Abstainers	-,306	,260	1,000
	Low 'family' drinkers	,133	,281	1,000
	High 'stressed' drinkers	,163	,268	1,000
	Low, late and social drinkers	,075	,270	1,000
	High 'explosive' drinkers	-,191	,304	1,000
High 'stressed' drinkers vs	Abstainers	-,469	,243	,803
	Low 'family' drinkers	-,030	,265	1,000
	Moderate 'mixed' drinkers	-,163	,268	1,000
	Low, late and social drinkers	-,088	,253	1,000
	High 'explosive' drinkers	-,355	,289	1,000
Low, late and social drinkers vs	Abstainers	-,381	,244	1,000
	Low 'family' drinkers	,058	,266	1,000
	Moderate 'mixed' drinkers	-,075	,270	1,000
	High 'stressed' drinkers	,088	,253	1,000
	High 'explosive' drinkers	-,266	,290	1,000
High 'explosive' drinkers vs	Abstainers	-,114	,282	1,000
	Low 'family' drinkers	,324	,301	1,000
	Moderate 'mixed' drinkers	,191	,304	1,000
	High 'stressed' drinkers	,355	,289	1,000
	Low, late and social drinkers	,266	,290	1,000

SE= error standard

Vignette 2 Application per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-1,246	,289	,000
	Moderate 'mixed' drinkers	-2,911	,293	,000
	High 'stressed' drinkers	-3,938	,273	,000
	Low, late and social drinkers	-2,781	,275	,000
	High 'explosive' drinkers	-3,578	,317	,000
Low 'family' drinkers vs	Abstainers	1,246	,289	,000
	Moderate 'mixed' drinkers	-1,665	,316	,000
	High 'stressed' drinkers	-2,692	,298	,000
	Low, late and social drinkers	-1,536	,300	,000
	High 'explosive' drinkers	-2,332	,339	,000
Moderate 'mixed' drinkers vs	Abstainers	2,911	,293	,000
	Low 'family' drinkers	1,665	,317	,000
	High 'stressed' drinkers	-1,027	,302	,010
	Low, late and social drinkers	,1292	,304	1,000
	High 'explosive' drinkers	-,6674	,343	,775
High 'stressed' drinkers vs	Abstainers	3,938	,273	,000
	Low 'family' drinkers	2,692	,298	,000
	Moderate 'mixed' drinkers	1,027	,302	,010
	Low, late and social drinkers	1,157	,285	,001
	High 'explosive' drinkers	,360	,326	1,000
Low, late and social drinkers vs	Abstainers	2,781	,275	,000
	Low 'family' drinkers	1,536	,300	,000
	Moderate 'mixed' drinkers	-,129	,304	1,000
	High 'stressed' drinkers	-1,157	,285	,001
	High 'explosive' drinkers	-,797	,327	,227
High 'explosive' drinkers vs	Abstainers	3,578	,317	,000
	Low 'family' drinkers	2,332	,339	,000
	Moderate 'mixed' drinkers	,667	,343	,775
	High 'stressed' drinkers	-,360	,326	1,000
	Low, late and social drinkers	,797	,327	,227

SE= error standard

Vignette 3 Knowledge per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-1,865	,308	,000
	Moderate 'mixed' drinkers	-3,560	,312	,000
	High 'stressed' drinkers	-4,130	,291	,000
	Low, late and social drinkers	-3,261	,293	,000
	High 'explosive' drinkers	-3,894	,338	,000
Low 'family' drinkers vs	Abstainers	1,865	,308	,000
	Moderate 'mixed' drinkers	-1,695	,337	,000
	High 'stressed' drinkers	-2,265	,319	,000
	Low, late and social drinkers	-1,395	,319	,000
	High 'explosive' drinkers	-2,029	,361	,000
Moderate 'mixed' drinkers vs	Abstainers	3,560	,312	,000
	Low 'family' drinkers	1,695	,337	,000
	High 'stressed' drinkers	-,570	,322	1,000
	Low, late and social drinkers	,300	,324	1,000
	High 'explosive' drinkers	-,334	,365	1,000
High 'stressed' drinkers vs	Abstainers	4,130	,291	,000
	Low 'family' drinkers	2,265	,318	,000
	Moderate 'mixed' drinkers	,570	,322	1,000
	Low, late and social drinkers	,870	,303	,063
	High 'explosive' drinkers	,236	,347	1,000
Low, late and social drinkers vs	Abstainers	3,261	,293	,000
	Low 'family' drinkers	1,395	,319	,000
	Moderate 'mixed' drinkers	-,300	,324	1,000
	High 'stressed' drinkers	-,870	,303	,063
	High 'explosive' drinkers	-,633	,349	1,000
High 'explosive' drinkers vs	Abstainers	3,894	,338	,000
	Low 'family' drinkers	2,029	,361	,000
	Moderate 'mixed' drinkers	,334	,365	1,000
	High 'stressed' drinkers	-,236	,347	1,000
	Low, late and social drinkers	,633	,349	1,000

SE= error standard

Vignette 3 Application per LCA profile

		Mean difference	SE	Pvalue
Abstainers vs	Low 'family' drinkers	-1,881	,271	,000
	Moderate 'mixed' drinkers	-4,222	,275	,000
	High 'stressed' drinkers	-4,854	,257	,000
	Low, late and social drinkers	-3,898	,258	,000
	High 'explosive' drinkers	-4,533	,298	,000
Low 'family' drinkers vs	Abstainers	1,881	,271	,000
	Moderate 'mixed' drinkers	-2,341	,297	,000
	High 'stressed' drinkers	-2,973	,280	,000
	Low, late and social drinkers	-2,017	,282	,000
	High 'explosive' drinkers	-2,652	,318	,000
Moderate 'mixed' drinkers vs	Abstainers	4,222	,275	,000
	Low 'family' drinkers	2,341	,297	,000
	High 'stressed' drinkers	-,632	,284	,391
	Low, late and social drinkers	,324	,285	1,000
	High 'explosive' drinkers	-,311	,322	1,000
High 'stressed' drinkers vs	Abstainers	4,854	,257	,000
	Low 'family' drinkers	2,973	,280	,000
	Moderate 'mixed' drinkers	,632	,284	,391
	Low, late and social drinkers	,956	,267	,005
	High 'explosive' drinkers	,321	,306	1,000
Low, late and social drinkers vs	Abstainers	3,898	,258	,000
	Low 'family' drinkers	2,017	,282	,000
	Moderate 'mixed' drinkers	-,324	,285	1,000
	High 'stressed' drinkers	-,956	,267	,005
	High 'explosive' drinkers	-,635	,307	,584
High 'explosive' drinkers vs	Abstainers	4,533	,298	,000
	Low 'family' drinkers	2,652	,318	,000
	Moderate 'mixed' drinkers	,311	,322	1,000
	High 'stressed' drinkers	-,321	,306	1,000
	Low, late and social drinkers	,635	,307	,584

SE= error standard

Chapter 6: Feasibility study on test purchasing research (“mystery shopping”)

By Nicky Dirkx & dr. Tina Van Havere

In this chapter the methodology is left out.

compliance checks through test purchasing, in addition to setting up and mobilizing community coalitions through parental education and media advocacy, much like the STAD project.

In countries, like Portugal and Hungary, the national authorities are mandated for law enforcement. In other countries, however, such as the Netherlands and the United Kingdom (UK), local authorities are in charge for this. In countries where there is more local control, we see more effective cooperation with local and national media, private research organisations and other for-profit stakeholders, which have been yielding positive results. Premises that are visited most often by test purchasers are supermarkets, but also bars, (night)clubs, taverns, parties and events.

1.3 Protocols: an overview

In Europe, 17 out of 29 countries which were included in the Eyes on Ages study, have conducted test purchasing research to study compliance with the legal age limits for selling alcohol. Seven of these seventeen countries have developed a national protocol to standardize the procedure in order to monitor compliance rates. The rest uses a regional protocol for test purchasing. In countries where there is a national protocol available, this is mostly applied on a local level (Mulder & Greeff, 2013). These different protocols provide guidelines concerning age, dress code, the entering of the premise, how to react when age is being asked, the fulfilment of a checklist when leaving the premise (Gosselt, 2010, 2012). A strict observance of the protocol is indispensable to guarantee standardization of different attempts.

Test purchasing can be applied in several different ways, depending on what the specific protocol prescribes. The first differences are found in the two methods of test buyer ages. Some countries use real underage buyers and others pseudo-patrons, who are 18 year olds that appear younger. The literature review revealed that thirteen out of seventeen countries have a protocol with underage buyer purchasers. Only four European countries out of seventeen use pseudo-patrons (Mulder & de Greeff, 2013).

Besides the age of the test purchasers, protocols can also differ in other important aspects. Different protocols may lack conformity in accompanying communication with the premises, such as notification or feedback letters (van Hoof et al., 2011) or enforcement communication (Hughes et al., 2010). Furthermore, the required fairness of the test purchasers, for example whether they have to lie about their age or not, is prescribed by the protocol and can also be different (Gosselt, Van Hoof, Baas, & De Jong, 2011; Gosselt et al., 2007; Willner, Hart, Binmore, Cavendish, & Dunphy, 2000). In a few countries like Sweden and the UK, test buyers only visit targeted premises (Mulder & de Greeff, 2013b; Willner et al., 2000), whereas in other countries, like in Belgium, random checks are carried out.

A similarity between countries is the fulfilment of a checklist by the test purchaser after the visit. This checklist contains different aspects that could be observed during the purchasing attempt. Besides the outcome of the test purchasing, the important parameters in the checklists are the number of customers in the row (ahead and behind), the estimated age of the cashier and the amount of age notifications in the premise (Mulder & de Greeff, 2013b).

1.4 Three different purposes

Test purchasing can be used for three different purposes. Generally, it is applied for research purposes, as an instrument to determine the compliance with the legal age limits for alcohol among sellers. Occasionally it is used for evaluating and optimizing local prevention strategies. However, in six European countries test purchasing is used as an enforcement strategy, which is a crucial factor for age limit policies. The compliance in countries that use it as an enforcement strategy seem to increase, resulting in a decrease of age limit violations of the sellers (Mulder & de Greeff, 2013b).

In Austria, Croatia, Germany, Slovakia, Switzerland and the UK, test purchasing is applied in enforcement strategies. In the UK this method is part of a routine enforcement activity by local authorities and regularly implemented on targeted premises that have a high risk profile on selling alcohol to underage customers. Most of the time financial fines are given. In Austria educational measures for owner or staff can also be imposed and in Switzerland the withdrawal of the license is a possible penalty (Mulder & de Greeff, 2013b).

As already pointed out, this seems to be a promising method to increase compliance with age limits by sellers. Wagenaar et al. (2005) showed a 17% decrease in the likelihood of selling alcohol to underage buyers immediately after a test purchasing visit, both in off-premise outlets, for example supermarkets or grocery shops, as well as in on-premise outlets, like bars and pubs (Wagenaar et al., 2005c). However, regularity is of great importance in order to achieve long term results, as the study of Wagenaar (2005) showed a decline of age checks three months after the test purchasing visits. This decline was particularly notable in off-premise outlets, and the effect drops to zero three months after the compliance check. In on-premise establishments, the effect drops to under 10%. This implies that, in order to ensure long term effects of mystery shopping for enforcement purposes, a regularity of at least four visits a year is necessary (Mulder & de Greeff, 2013b).

1.5 Test purchasing in Belgium

1.5.1 Flanders

In Belgium VAD uses a test purchasing protocol as an instrument to evaluate and optimize local prevention strategies. The protocol exists only in the Flemish part of the country and is only used for preventive purposes (VAD, 2015).

Local policy makers can apply for a Local Alcohol Monitor. After an engagement statement is signed, information sessions about the modus operandi and the protocol are held by VAD. Sellers receive a maximum of six month advance announcement. Horeca Flanders¹⁰ is an important stakeholder with regard to the Local Alcohol Monitor.

To prevent drop out of potential test purchase candidates, prevention workers recruit underage test purchasers from a network developed through cooperation with local schools or youth groups. Test purchasers receive incentives, such as monetary compensation. Parents' informed consent is a prerequisite for participation. Test purchasers are trained during information sessions.

¹⁰ Horeca Flanders is a professional association for hotel, restaurant or café staff.

The Local Alcohol Monitor can be done in both off-premise, as well as in on-premise outlets. Belgian law states that test purchase attempts have to be done along a pre-arranged route which includes at least five premises to be visited.

VAD provides two different protocols for on-premise outlets and for off-premise outlets. These contain two different scenarios which slightly vary according to the age of the test purchaser because those under 16 years old can test for purchasing beer or wine and those or under 18 years old can test for liquor purchases.

The scenario for off-premise visits is as follows (VAD, 2015) :

The volunteer is driven to the premises by the prevention worker. He leaves the car where he can't be spotted by the seller and is handed 1 euro. While the youngster enters the shop, the prevention worker stays at a small distance.

Inside the premise he looks for a bottle or can of beer (15 year old test purchasers) or bottle of vodka or rum (17 year old test purchasers) and some candy or crisps. During his visit, the presence of age specification signs have to be checked several times. In case of several cash registers or in case he's familiar with the cashier, the volunteer chooses the register on the most left hand side.

The test purchaser is demanded to be honest at any time, for example when his age is being asked or when he's asked to show his ID.

If the purchase is rejected, the test purchaser only buys the candy and leaves the premise. If the purchase is accepted, the test purchaser acts as if he hasn't brought enough money and only buys the candy before leaving the shop.

After this test purchasing attempt, a checklist is filled in by both prevention worker and test purchaser.

For the test purchasing visits of on premise outlets, the test purchasers work in pairs.

The volunteers are driven to the premises by the prevention worker. They leave the car where they can't be spotted by the seller and receive 5 euro. While the youngsters enter the premise or take place at the terrace, the prevention worker stays at a small distance.

The volunteers are seated at the bar or at the terrace and one of them orders two pints of beer (15 year old test purchasers) or a glass of liquor for less than 5 euro, e.g. whisky, tequila, rum, vodka,... The other 17 year old volunteer orders a glass of coke. During their visit, the presence of age specification signs, the bustle and the number of employees behind the bar is checked. The test purchasers are demanded to be honest at any time, for example when their age is being asked or when they're asked to show their ID.

If the purchase is rejected, the test purchasers don't insist, hand over the letter with all the information about the test purchasing procedure and leave the premise quietly.

If the purchase succeeds, the volunteers pay for their drinks and hand over the letter with all the information about the test purchasing procedure. The youngsters leave the premise without

consuming the alcoholic beverages. After this test purchasing attempt, a checklist is filled in by the prevention worker and both test purchasers.

The results of the test purchasing attempts are always sent to local policy makers. The results will provide a starting point for developing prevention strategies within the local community. There are no penalties attached for on or off-premise sellers, and the only goal is the development of a constructive policy on alcohol (VAD, 2015). During two interviews with staff members, VAD argued that the emphasis must lay in prevention. Local policy makers should always be a partner in strategy development with regard to test purchasing. Changing the mentality of young persons about consuming alcohol is the main goal of most prevention strategies. In this perspective, positive numbers are of less importance. Nevertheless, enforcement is important too, since both prevention and enforcement are two sides of the same coin. Prevention will have less impact without the possibility of imposing sanctions when violating the law.

1.5.2 Brussels and Wallonia

In Brussels and Wallonia, the *FEDITO Bxl*¹¹ and the *FEDITO Wallonne*¹², the French speaking organisations comparable to VAD, do not organise similar kinds of test purchasing. Currently, these federations are focused on a dialogue between their members, promoting a scientific understanding of drug addictions and discussing the common standpoints of the members, notably on prevention, assistance, care and harm reduction.

During interviews for the research projects' first work package, the local public authorities of Brussels and Liège did not express interest in organizing test purchasing attempts. They prefer working in an open partnership with the local horeca, insisting on using information, prevention and open dialogue to promote the legal framework. This relationship between the authorities and horeca is based on open communication and mutual trust. Both Brussels and Wallonia chose not to perform test purchasing attempts in order not to harm these kind of relationship. Instead they thought it would be a useful tool to explore the necessity of further federal control agent campaigns. However, the interviewees considered the use of test purchasing for enforcement purposes as a useful potential strategy.

1.5.3 On a federal level

There are some federal initiatives undertaken by the Belgian Research and Information Center (CRIOC/OIVO)¹³. This center did not include local authorities, which is in contrast with the VAD protocols. In 2006 the organization attempting to understand the effectiveness of Article 13 of the Alcohol and Drug law (1983) which states that "selling or offering spirits (defined as alcoholic drinks of over 22°) to minors under 18 years old is prohibited". The organization used a test buyer method in 153 Belgian on premise establishments which sold both beer and alcohol to investigate compliance

¹¹ The FEDITO Bxl is the Brussels Federation of French speaking Institutions for Drug Addicts, including 26 institutions working for awareness, prevention, harm reduction, care and support relative to the consumptions of psychoactive substances and addictions". (see <https://feditobxl.be/en/>).

¹² The FEDITO Wallonne federation includes 54 members: encompassing institutions for drug addicts, services and networks of aid and specialized care in addictions, (<https://www.feditowallonne.be/>).

¹³ The Belgian Research and information Center of Customer Organisations is a public benefit foundation created in 1975. In 2015 it went broke.

with this legislation. Further details of the applied protocol are unavailable due to the bankruptcy of the organization.

1.6 Feasibility study with three parameters

The literature review provided an overview of strengths and weaknesses of test purchasing, as well as potential threats and several opportunities to solve these weaknesses and threats. The application of test purchasing as a prevention strategy as well as for enforcement purposes, should be considered thoughtfully in advance. Furthermore, it is of great importance to reflect on the protocol on a regular basis, since drinking patterns and habits, as well as alcohol norms change continuously.

The first section of this feasibility study outlines the ethical arguments, followed by the operational considerations and thirdly the legal concerns are detailed. Finally, all the considerations are summarized in a schedule.

1.6.1 Ethical considerations

Although the method of test purchasing seems to be very effective, we should take into account several ethical considerations.

Provocation to purchase alcohol

In test purchasing underage buyers are provoked to purchase alcohol, which is not allowed according to the law. The buying attempt could trigger a repeat of this behaviour after the initial instance (Gosselt et al., 2007; Willner et al., 2000). Indeed, from the interviews with a stakeholder it was made clear that youngsters themselves were surprised they could purchase alcohol so easily. This argument was also stated in one of the interviews whereas the seller points out:

‘They actually push a young person of 15 years old into a café, while it’s not allowed. Should I grumble at him? No, I don’t think so.’ (woman)

To overcome this, the test purchasers were trained and debriefed about (the dangers of) alcohol.

Taking advantage of youngsters

Youngsters could be or feel as though they were being misused by the researcher or authorities for compliance checks. The local policy makers who were interviewed, reported colleague policy makers arguing about taking advantage of the youngsters for compliance checks. However, an interview with a prevention policy maker revealed that in his experience the test purchasers felt an increased responsibility for the operation if they participated several times. The young people who participated, were well informed and committed, which is a counterargument for this. The participation provoked a discussion and raised awareness amongst the test purchasers. Some talked about it in their classroom, supported by their teacher, as the following citation from an interview with a local policy maker illustrates:

‘Ja zeker want ze praten er ook thuis over. Dat merk je ook. Dus die ouders hebben dan toestemming moeten geven. Je vraagt dan of het oké is, omdat ze bijvoorbeeld later thuis komen op vrijdag. Het is voor een goed doel. Het brengt ook een dialoog teweeg. Ze komen dan woensdagmiddag schoolgenootjes tegen en geven dan aan: ‘ik mag het niet zeggen’. Dus het gaat er wel over. Sommigen lichten het voor de

klas toe.' (interview local policy maker who applied the Local Alcohol Monitor, woman)

Provocation and deception of sellers

Another potential ethical pitfall is that alcohol sellers are provoked, unaware into committing a crime (Gosselt et al., 2007). Also during the interviews, this was argued by the sellers. Sellers regard this provocation as an injustice because they believe the legislation is difficult to comply with, partially due to the complicated distinctions in age limits and types of alcoholic beverages. Additionally, underage buyers are very creative in finding ways to sidestep the law.

However, counterarguments are the fact that the topic of age limits for buying alcohol is socially very relevant, this is the most effective enforcement method, that test purchasing is performed publically and the purchasers are honest about their age. A possible solution is that pseudo-patrons are engaged for test purchasing (Gosselt et al., 2007). Pseudo-patrons are youth who look underage, but are old enough. However, these purchasers can't be used when test purchasing is used for enforcement reasons, since a pseudo-patron is legally permitted to buy alcohol.

For some interviewees an opportunity is seen in raising awareness for vendors when confronted with test purchasing attempts. They argue that such visits could incite them to be better informed and to comply with the legislation in a more conscientious way.

Negative reactions of other customers or the sellers

One possible threat underage test purchasers might face, is the confrontation with unpleasant situations or negative reactions from other customers or the seller himself. Therefore, measurements are in place: In the UK an underage buyer always has to be accompanied by a mentor or researcher (Gosselt et al., 2007); in the Netherlands the test buyer carries an explanatory letter (Willner et al., 2000).

The policy makers in Flanders who have experience with the Local Alcohol Monitor, do not report any uncomfortable situations or negative reactions from sellers or other customers. Explanatory letters were not used when test purchasing is applied for prevention purposes, like in the Local Alcohol Monitor. This may be different when test purchasing is implemented for enforcement strategies instead of prevention.

To prevent disrespect or even aggression towards the young person, at least two anonymous supervisors can accompany the underage test purchasers, as it is foreseen in the UK. To overcome a substantial investment in time and staff engaging this extra supervisor, Willner et al. (2000) recruited parents to act as an extra adult on test purchasing attempts. This can result in even more benefits: researchers were ensured that the adolescents were not driven to participate by financial hardship or antisocial tendencies, the adolescent's well-being during test purchasing was monitored and assured, and an additional source of longer-term monitoring and support was provided (Willner et al., 2000).

Another possibility to safeguard the security of the young person, is to leave open the possibility that the procedure can be aborted at any time. Even more, they are advised not to bring any ID to prevent them from showing their identity to the sellers (Scottish Government, 2007).

Stigmatisation of the sellers

The vendors can be confronted with negative consequences as a result of the mystery shopping attempt, which is not always desirable e.g. in a research or in a prevention context. Therefore, during and after the research, anonymity is safeguarded for the store and for the seller (Gosselt et al., 2007). This anonymity could hinder an open dialogue between prevention worker and seller on the difficulties they experience in complying with the law. In the Local Alcohol Monitor the results are discussed with the local policy makers, but only figures are presented.

Related to this, policy makers state that some on premise sellers felt stigmatised. Until now, there is no platform to openly discuss the sellers' complaints and difficulties about the application of the alcohol legislation. They feel that they are accused of encouraging the alcohol consumption among adolescents. Test purchasing attempts, even not to enforce or to sanction, probably may not be the right remedy for this. This could also be the explanation of a low attendance rate when results are presented to the local community (in the experience of one of the stakeholders). Possibly the sellers wanted to avoid being pilloried. The interviewed policy makers point out that stigmatisation can never be the goal of the Local Alcohol Monitor and therefore, in order to prevent on premise sellers to feel pointed at, they consider it preferable to visit both on and off premises, as the following citation illustrates:

'Het is ook op de (lokale) TV geweest. En dan hebben sommigen horecabazen daar wel wat op gereageerd dat ze zich toch wel wat gevisieerd voelden. Daarom dat we altijd zijn blijven inzetten op zowel detailhandel als op horeca.' (interview local policy maker who applied the Local Alcohol Monitor, woman)

1.6.2 Operational considerations

Based on the literature review we could identify some possible weakness and threats which were affirmed by the different stakeholders.

Recruitment of underage buyers

One of the operational weaknesses of test purchasing contains the difficulty of recruitment. When employing real underage buyers, recruitment can be hard, since underage buyers grow older. Furthermore, the parents' informed consent is indispensable. Therefore, an extensive recruitment network seems to be effective. Most of the time there is a cooperation with teachers who can additionally assess the maturity of the youngsters and whether they're qualified for mystery shopping (Gosselt et al., 2007).

To keep the mystery shoppers motivated and engaged, a reward may be foreseen. The interviewed stakeholders rewarded the mystery shoppers with a financial compensation and an official contract for volunteers was provided (e.g. for insurance).

When applying test purchasing for enforcement purposes, recruitment could become even a bigger problem than when the procedure is used for prevention. Some difficulties can arise when young volunteers are demanded to be engaged in a procedure to help prosecute sellers. Ways to motivate them should be considered thoughtfully.

Regularity

As discussed earlier, test purchasing requires to be done on a regular basis in order to be effective (Wagenaar et al., 2005c), which was also an argument of some of the interviewed sellers. Ensuring proper follow up is needed, but this requires detailed planning and a substantial investment in time and staff, according to the policy makers. The Local Alcohol Monitor is now performed two to three times with pauses of one or two years in between. Four times a year is not feasible.

Mystery shopping can be seen as operant conditioning for the sellers. Regardless the strategy (prevention or enforcement), a positive reaction, for example by means of a feedback letter, can be considered as a reinforcer (Van Hoof, Gosselt, Baas, & De Jong, 2012), while a negative reaction, for example a sanction, can be regarded as a punisher. This is why any regularity is crucial to prevent to extinguish the positive effect of mystery shopping.

Targeted test purchasing

Test purchasing only by high risk targeted premises could be cost- and time-effective for the local policy makers. However, due to the guaranteed anonymity of the visited sellers when applying test purchasing for prevention purposes, this is not an option. Only in the case of applying test purchasing exclusively for enforcement purposes, it could be a preferable procedure. Although, ethical considerations should include not to stigmatise premises (see above). However, when test purchasing is applied for evaluating and optimizing local prevention strategies, confidence is of great importance. When specific premises are targeted, this crucial trust can be violated.

Tailor made attempts

A proper insight in drinking patterns is needed, for example depending on market trends, context and time of the year. In order to buy alcohol, premises are visited more often during certain periods, like for example after exams or at the beginning of a vacation. Furthermore, it's very important to be acquainted with the drinking habits of young people. For example, don't let them buy a very expensive bottle of wine, because this is not realistic. And boys seem to prefer beer, while girls like mixed drinks more.

Protocols for test purchasing have to be evaluated on a regularly basis, to adapt changes in these kinds of patterns. For example in the protocol of VAD clothing is being adjusted: the instruction 'take the cash register situated at the most left hand side' is now 'chose a cash register where there is no one you know'.

Learning effect

Another reason for the regular evaluation of the protocol, is the threat that the vendors experience increased familiarity with the protocols of test purchasing. This acquaintance can allow sellers to differentiate between real underage buyers and test purchasers (Forsyth, Davidson, & Ellaway, 2013), which diminishes the effect of mystery shopping considerably.

In their study, Forsyth et al. (2014) investigated whether community shop keepers, familiar with alcohol test purchasing protocols, were able to distinguish between volunteers and genuine underage buyers. Their results show that experienced shop keepers were able to identify test purchasers in four ways. First, volunteers were sourced from another neighbourhood, whereas in the study of MacGregor (MacGregor, Sharp, Mabelis, & Corbett, 2013) illustrates that shop owners only sell alcohol to under agers they know in personal, which is called 'trusty sales'. Secondly, test purchasers were too

Partnerships between stakeholders

The development of partnerships with stakeholders is also an inspiring practice. Hereby, it is even more effective to enter into partnerships with commercial stakeholders, e.g. umbrella organisations for supermarkets or for small retail shops (Mulder & de Greeff, 2013b). In Flanders they had some experience with Horeca Flanders. This could increase the involvement of the individual premises and counter some ethical considerations, e.g. the danger of stigmatisation.

1.6.3 Legal concerns

Up till now, there is no legal ground to use test purchasing for enforcement strategies and the legal competences are unclear. E.g. the sellers of alcohol are often not the managers of the premises. As a result, it's not always clear who's responsible for the offense. Therefore, the clarification of the legal conditions, sanctions and responsibilities is crucial (Mulder & de Greeff, 2013b; Willner et al., 2000).

Real underage buyers or pseudo-patrons

Mystery shopping can be used within the enforcement framework. Moreover, it seems to be the most efficient enforcement strategy. Therefore, a legal basis has to be elaborated and the protocol is preferably coordinated centrally. When choosing for the pathway of enforcement, real underage buyers have to be engaged, because under that condition the violation of the law can be proven easily. Then the police or other competent authorities have to be responsible for the controls, since a third party, for example a researcher, is not legitimated to report an offense.

Nevertheless, underage buyers can also be appointed for test purchasing from a preventive perspective. The buying attempt is then aborted because the intention to sell is proven. For this strategy, the employment of pseudo-patrons seems also appropriate.

Age identification

An important minus point of the current situation, is that sellers aren't legally obliged to ask for any age identification. Although the legislation prohibits to sell or serve alcoholic beverages to underage buyers, there are no clear guidelines on how to make this operational. When they are in doubt about the age, sellers are permitted to ask for the identification proof. This doubt is very subjective. In the Netherlands, vendors are obliged to ask any identification proof to monitor the age of the purchaser. In order to facilitate the compliance to the legislation, a reference age of 25 is applied. For example, in Germany, sellers are obliged to ask everyone who looks younger than 25 for an ID (Mulder & de Greeff, 2013b). In Scotland sellers are required to follow a procedure, called "Challenge 25", obliging them to ask for age verification for anyone who looks younger than 25 years old. Even more, by implementing this reference age, the ethical and juridical concern of provoking a crime can be avoided (Forsyth et al., 2013).

Furthermore, the Scottish law indicates that the test purchaser may not insist or coerce to make a sale, for example by letting the seller keep the change. This, on its turn, is an operational threat, as Forsyth states, because this makes test purchasers recognisable for sellers, since regular underage buyers do insist or lie about their age. Forsyth et al. stated that this is commonly the distinguishable characteristic of test purchasers, considered by sellers (Forsyth et al., 2013). It is also advisable to include in the legislation that test purchasers shouldn't look older than they are by wearing make-up or certain clothes.

Conclusions and policy recommendations

The feasibility study indicates that test purchasing is a method of great value, applicable for different purposes. The procedure is widely used for research ends to investigate the outcomes of interventions. Test purchasing research is helpful to check the needs for supporting sellers in order to increase the compliance with the law.

The method can also be employed for prevention strategies. Hereby test purchasing visits can raise awareness in a community regarding the serving and selling of alcohol to underage buyers. Recent studies show that test purchasing employed to check the compliance with the legal age limits, combined with a multicomponent prevention strategy is the most effective method to decrease underage buying attempts (Mulder & de Greeff, 2013b).

Moreover, it can initiate an open dialogue or serve as a starting point to outline new prevention campaigns or strategies or the development of a constructive alcohol policy. Stakeholders point out that, by employing mystery shopping, the emphasis must lie on raising awareness and sensitising young people to handle their alcohol consumption in a responsible way. To wag the finger at young people can never be the intention of test purchasing, rather than keeping the finger on the pulse about alcohol consumption in a local community.

Finally, test purchasing is until now regarded as the most effective enforcement strategy. If applied on a regular basis, it can reduce non-compliance considerably. Furthermore, it is a time-saving method for enforcement actors.

However, as the literature review reveals, the application of test purchasing has to be considered very thoughtfully. At all times, the detailed and conscientious observance of a well-developed standard protocol is of great importance, taking into account all the different aspects it brings along.

Recommendations

When test purchasing applied as an enforcement strategy, some aspects have to be taken into account:

Enforcement goals

Test purchasing practices from a prevention point of view have to be strictly delineated from mystery shopping applied for enforcement purposes. Both methods have to be coordinated by another authority. The enforcement procedure can be organised by FOD, while VAD and the Fédito's can expand the Local Alcohol Monitor from a local and preventive point of view. To prevent sellers to become suspicious regarding the intention of prevention workers, it is very important to communicate clearly about these intentions. All stakeholders must be aware of the two different goals.

Legal clarification

Legal clarification is essential. The actual legislation points out that *it is forbidden to sell, serve or offer alcohol to people younger than 16 years old. Liquor cannot be sold, served or offered to people younger than 18 years old. Age identification may be requested from anyone who wants to purchase alcohol or liquor.* However, what the legislation doesn't clarify is who can be penalised. For example, when test purchasing visits are performed in a supermarket to observe non-compliance, it is not clear whether the shop manager or the cashier is being prosecuted when there is a successful purchase attempt.

Moreover, the law states that sellers are legalised to ask an age identification to their customers. What the law doesn't point out, is whether this is obligatory or not. In other countries, like the UK or the Netherlands, sellers are obliged to do so. This simplifies the mystery shopping attempts, as only the demand for an ID has to be checked. If the legislation isn't specified on this point, a real purchase has to take place in order to observe an offence.

Furthermore, we recommend the creation of a legal basis for criminal proceedings after successful test purchasing. Questions like putting the test purchaser as a witness in a court trial, have to be considered thoughtfully. In order to impose a sanction, there must be strong evidence that the seller made a mistake. After each test purchase which is followed by a sale, it is preferable that a witness statement is taken from the volunteer. The anonymous supervisors who accompany the test purchaser in the premise, can also provide the evidence of a sale.

The concrete operationalisation of the legal consequences isn't made clear, which complicates the application of the law. We strongly recommend to clarify the legal specifications of the 2009 legislation, for example on who is responsible, what are the obligations for the sellers, which mandates does every stakeholder have, what kind of penalties can be given...

A checklist per attempt

In order to gain supplementary information, a checklist has to be filled in directly after the test purchase attempt outside the premise. This checklist maintains gender and (estimated) age of the test purchaser and the seller, presence of other customers, day of the week, the presence of sign warnings against sales to underage buyers, the type of neighbourhood, the maintenance and kind of (on- or off-premise) establishment (Gosselt et al., 2007).

When a purchaser is not unmistakably under the age limit, gathering evidence becomes difficult. Therefore, enforcement officers have to describe the appearance of the test purchaser in detail before or right after the test purchase takes place. Inspectors have to be able to observe the actual violation of the law. Under no circumstances the test purchasers may wear clothing or make-up which makes them look older. Above this, the vendor may not be provoked to sell, for instance by insisting.

Recruiting buyers for enforcement

When test purchasing is applied for enforcement purposes, the protocol which is developed for the Local Alcohol Monitor can be maintained, although it is important to keep in mind a number of crucial aspects, as the literature reveals. It could be difficult to engage and motivate potential test purchasers. Instead of being engaged in a noble prevention strategy, they are now asked to help enforcement actors to prosecute alcohol sellers, which can bring about uneasiness, leading to drop out. Incentives have to be more substantial than a voucher to prevent this. These rewards can include travel expenses, vouchers or cash payments. However, any restrictions on working hours or other conditions which are imposed by any legislation on child labour, has to be taken into account while planning the mystery shopping procedure.

Accompanying the young person

Before sending a test purchaser to the premise, it could be recommendable to perform a risk assessment of the premises that have to be visited. Related to this, the literature points out that test purchasers should be accompanied by two supervisors in the premises to prevent the situation getting

out of hand. This supervision can also be performed by the parents of the test purchasers. Related to this cautious measure, test purchasers have to be impressed on their mind that the test purchasing procedure can be aborted at any time.

Reference age

To enhance compliance with the law and to simplify the age identification, we recommend the use of a reference age which is approximately five years above the legal age limits. Sellers are obliged to ask for an ID to anyone who's looking younger than this reference age, which broadens the margin for sellers to estimate the legal age of their customers. As seen before implementing this strategy has a lot of benefits.

An inspiring case

In Belgium there already exists a legal background for test purchasing methods, as for the National Lottery which has a management agreement with the Belgian State. An independent agency is authorized to perform test purchasing attempts in order to check compliance with the law on selling lottery tickets to youngsters. Vendors can lose their license when they sell lottery tickets to underage buyers. In this legislation, the demand for any proof of age identification isn't obligatory either, parallel to the current alcohol legislation. The seller is however obliged to ask for an ID when there is any doubt. The National Lottery has a contract with each selling point. In this contract, the prohibition of the selling of lottery tickets is included, as well as a test purchasing regulation and contractual sanctions. In this way, sellers of lottery tickets are well informed that test purchasing can be implemented. Moreover, by signing this contract, they give their permission for test purchasing visits. There is a protocol on mystery shopping which is performed by this independent agency. The case of the National Lottery can be an inspiring good practice to explore, as the legislation is similar to the 2009 alcohol legislation.

Integrated in an multicomponent strategy

Literature shows that the embeddedness of mystery shopping in a broader multicomponent strategy seems to be more effective to enhance compliance to the alcohol legislation. This multicomponent strategy may contain training of staff members, feedback letters, enforcement communication and stakeholder partnerships.

Annex

	Weaknesses and threats	Strengths	Opportunities
Ethical arguments: the vendors (weaknesses)	<ul style="list-style-type: none"> - Cashiers and staff is provoked to commit a crime - Cashiers are unaware and misled - Test purchasing influences the extrinsic motivation of sellers, not their knowledge, ability and/or attitude to comply with the law 	<ul style="list-style-type: none"> - The topic of age limits for buying alcohol is socially relevant - Other enforcement methods are inadequate - Test purchasing is performed publicly and the purchasers are honest about their age - The compliance with the law is remarkably higher 	<ul style="list-style-type: none"> - The test purchasing can be performed by pseudo-patrons - Test purchasing procedures are announced six months in advance - A feedback letter in combination with raising awareness through training and feedback may be effective to sensitize staff. Hereby a positive feedback letter is more often copied and shared with personnel than a negative one (Van Hoof et al., 2012). - Embeddedness in a broader (multicomponent) strategy seems more effective - Ensure follow up, 4 times a year - The consequences are more effective when test purchasing is announced in advance - A comprehensive study on the influence of social or community norms or of drinking beliefs of sellers on non-compliance is indicated - Obligation of training or sensitization program as a reactive sanction

<p>Ethical arguments: the vendors (threats)</p>	<ul style="list-style-type: none"> - There can be negative consequences for the vendors - On-premise vendors feel stigmatised 	<ul style="list-style-type: none"> - The anonymity of stores and vendors is safeguarded 	<ul style="list-style-type: none"> - Test purchasing is one of the most effective enforcement strategies - Safeguard the provision of information on the test purchasing visits - Open communication with sellers - Engage commercial stakeholders
<p>Ethical arguments: the test purchasers (weaknesses)</p>	<ul style="list-style-type: none"> - Underage buyers are provoked to purchase alcohol 	<ul style="list-style-type: none"> - Test purchasers are trained, informed and debriefed systematically about the risks 	<ul style="list-style-type: none"> - The protocol can prescribe that pseudo-patrons perform the test purchasing - Participation initiates discussion among peers or in class rooms - Participation can lead to an increased awareness towards alcohol consumption
<p>Ethical arguments: the test purchasers (threats)</p>	<ul style="list-style-type: none"> - Underage buyers can be confronted with aggression of staff - Underage buyers are abused by researchers or authorities for compliance checks 	<ul style="list-style-type: none"> - The presence of a mentor or researcher is of primary importance - Underage test purchasers are accompanied by two anonymous supervisors when the procedure is employed for enforcement purposes 	<ul style="list-style-type: none"> - The test purchaser can have an explanatory letter in his pocket - The test purchasing procedure can be aborted at any time - Test purchasers are advised not to bring any ID to guarantee anonymity - Test purchasers are always well informed - Test purchasing is a starting point for more and extensive preventive actions

<p>Operational considerations: coordination and contextual factors (weaknesses)</p>	<ul style="list-style-type: none"> - Test purchasers are growing older and informed consent of the parents is obligatory, which turns recruitment into a remaining difficulty - Test purchasing requires the regularity of being conducted several times to be effective - Test purchasing requires investment in time and financial means - A proper insight in drinking patterns is needed for example depending on market trends, context and time of the year 	<ul style="list-style-type: none"> - Test purchasing by high risk targeted premises seems cost-effective 	<ul style="list-style-type: none"> - An extensive recruitment network is required - Incentives can motivate potential test purchaser to engage - The use of a reference age can cope with recruitment difficulties - Ensure follow up - Embeddedness in a broader long-term (multicomponent) strategy is more effective - Protocols for test purchasing have to be evaluated regularly - Training should pay attention to the behavioural norms of the community in which the test purchase takes place
<p>Operational considerations: coordination and contextual factors (threats)</p>	<ul style="list-style-type: none"> - Increased familiarity with the protocols of test purchasing can allow sellers to differentiate between real underage buyers and test purchasers 		

<p>Legal concerns: general considerations</p>	<ul style="list-style-type: none"> - The sellers of alcohol are often not the manager of the premise. As a result it's not clear who is responsible - The sellers are provoked to commit a crime - There is no legal ground to use test purchasing for enforcement strategies - Vendors are not legally obliged to ask for any age identification, which complicates gaining evidence after the test purchasing procedure 		<ul style="list-style-type: none"> - Clarify who is responsible for the offense - Evidence of any offense have to be unmistakably clear - Clarify all the legal conditions, dependent on the purpose of test purchasing: as a prevention or as an enforcement strategy - The demand for age identification has to be a legal obligation - A reference age has to be implemented
<p>Legal concerns: real underage test purchasers</p>	<ul style="list-style-type: none"> - Selling alcohol to underage buyers is prosecutable 	<ul style="list-style-type: none"> - The buying attempt is aborted in protocols using test purchase as a prevention strategy. The intention to sell is proven. 	<ul style="list-style-type: none"> - The offense is proven in case of test purchasing as an enforcement strategy
<p>Legal concerns: pseudo-patrons</p>	<ul style="list-style-type: none"> - Pseudo-patrons aren't violating the law 	<ul style="list-style-type: none"> - Pseudo-patrons are easier to recruit - For prevention purposes the violation in <i>stricto senso</i> isn't of great importance 	

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Chapter 7: A practice-based perspective on the 2009 legislation by prevention workers and health promoters

By Nicky Dirkx, Sarah Van Praet, prof. Dr. Freya Van der Laenen, dr. Tina Van Havere

Introduction

How do professional actors working with the changed law on alcohol consider the influence of this framework on their work? In this WP, a qualitative method was used to take into consideration the views and opinions of prevention and health promotion professionals and key persons concerning the 2009 law. We used the Nominal Group Technique to generate ideas, to identify and to rank problems or issues of importance (Vander Laenen, 2009).

Methodology

Eight Nominal Groups were organized according to the Nominal Group Technique (NGT). This technique consists of five phases (Vander Laenen, 2015). During phase one, the researcher states an open-ended question, without allowing discussion. Each participant spends several minutes in silence individually brainstorming all the possible ideas and writing them down using a brief sentence or some words. During phase two, the ideas are collected by sharing them round-robin fashion (one response per person each time), while all ideas/items are recorded in key term, on a flipchart. No criticism is allowed, but clarification in response to questions is encouraged. A round-robin technique is used to limit the ownership of the ideas. The items written on the flip chart use the wording of the participants. During this phase, participants are allowed to write down new ideas, and present them when his/her turn occurs in the round-robin (Gallagher et al., 1993). The third phase is aimed at discussing each recorded idea for clarification in the group. Similar ideas are joined and identical ideas are erased. During phase four, each participant evaluates the ideas and individually and anonymously votes for the best ideas (Vander Laenen, 2009). Finally, in phase 5, all votes are counted and rankings are made according to priority.

The central question in these NGT's was: **In your profession, which advantages and disadvantages of the current Belgian alcohol legislation do you consider?**

Four NGT's were carried out in Flanders and four in French Community (regrouping French speaking actors from Brussels and Wallonia) between November 2016 and March 2017. To recruit participants, we used the existing networks by our two subcontracting partners: VAD and the network "Jeunes, alcool & société"¹⁴. In every region NGT's were organised in homogenous groups per professional sector: In the Dutch speaking community the NGT's consisted of street corner workers (1), school actors – school doctors as well as teachers (2), specialised prevention and early intervention professionals¹⁵ (3) and General Practitioners (GP's) (4).

In the French community a group of drug prevention workers (5), school actors (6), low threshold services specialised in youth (7) and a group of General Practitioners was recruited (8).

Six of the eight NGT's were carried out in an analogue way, the two NGT's with the GP's were executed through an asynchronous online NGT. The latter increases the flexibility and convenience of logging in and is particularly advantageous for reaching people with a busy schedule (Vander Laenen, 2015). Since there was little response on the demand for participation at the traditional NGT procedure, the

¹⁴ The "Youth, alcohol & society" group unites 12 French speaking associations from different perspectives: education, health and youth sectors, with the aim of promoting responsible and less risky consumption of alcohol.

¹⁵ We will use the prevention workers in this document to make it more readable.

General Practitioners group was asked to react on the central question by email. In this manner, they were able to participate at a time that was convenient for them.

Participants provided informed consent and were guaranteed anonymity. All the participants agreed with recording the NGT. The majority received a gift voucher of 30 euro. The Flemish group of the specialised prevention and early intervention professionals took part in the NGT in the scope of an interchange moment which is organised six times a year. As the NGT was part of this program, this group didn't receive a gift voucher. The French speaking GP's were not offered a gift voucher, as the amount would have been too low to be perceived a credible motivator.

The NGT combined quantitative and qualitative data collection methods and also yields data that can be analysed quantitatively and qualitatively. Qualitatively, a content analysis of the individual items was carried out. This enables themes to be constructed out of the individual items. Moreover, the 'discussion' sections of the procedure were analysed with a focus on statements regarding policy recommendations. Quantitatively, we compared results across individuals belonging to the different stakeholders (Ginsburg et al., 2002 in Vander Laenen, 2009). This quantitative analysis provides priority to the opinions on the new legislation.

Furthermore, comparisons between the different NGT's of different professional groups and of different language communities were made. Therefore, all the advantages and disadvantages of each of the four clarified lists were encoded, using NVIVO.

The Flemish NGT's provided 43 advantages and 54 disadvantages. The French NGT's resulted in 35 advantages and 51 disadvantages. Due to the encoding process, the codenames weren't exactly the same as the pronounced advantages and disadvantages. Some advantages or disadvantages were encoded in a communal node.

For the advantages, 18 nodes from the Flemish, and 22 nodes from the French NGT's were the result of the encoding. After axial coding, whereby nodes were compared and merged, respectively 14 nodes remained from the Flemish NGT's and 18 from the French part.

The list of disadvantages was resumed to 32 nodes from the Flemish and 23 from the French NGT's after encoding. The result of the axial encoding was respectively 26 and 20 disadvantages.

Moreover, the encoding gave an overview of the frequency of the sources (NGT) in which the statement was added to the list.

1.1 Results

1.1.1 Flanders

Street corner workers

Recruitment

For this NGT participants were recruited from the Youth Advisory Centres (JAC), Youth Information Points (JIP) and outreach services. The group consisted of 10 participants, 3 men and 7 women. The NGT lasted 1'10".

From individual arguments to group consensus

As the result of phase 1 (individual phase), 8 advantages and 12 disadvantages were written down.

In this NGT phase 2 and phase 3 was indistinguishable because of the detailed and nuanced arguments written down in phase 1 of the NGT.¹⁶ After this group part of the NGT, (phase 2 and 3), two numbered and purified lists of advantages and disadvantages were the result: these tables are not included in this end report due to limited space. However, these tables are present in the internal document of the research group.

When we look at the arguments of this group concerning the advantages of the 2009 legislation, the opportunity to engage in a dialogue about alcohol legislation seems to be very important. **Participants indicate that the law allows them to discuss alcohol consumption, in group or with individuals, and acts as a frame of reference.** Because alcohol use is not illegal at the age of 16, young people talk about it easily. The distinction between 16 and 18 years old provides a reference point to discuss the reasoning behind the law. Furthermore, and related to this, participants indicate that the legislation functions as a starting point for reflection for young people. Another argument in favour of the legislation, is about the enforcement. The participants consider it an advantage that the law is enforced by actors who are in charge of this, like the police or control agents of FPS Health, Food Chain Safety and Environment. Besides this, the fact that there is clarity about the legislation **within a delineated setting**, like a pub or a youth house, is evaluated positively. This clarity makes it more convenient to enforce and control, because rules are easier to follow.

When we look at the stated disadvantages, participants argue that for street corner workers, the application of the law isn't always simple and clear. They sometimes feel to be in a field of tension between the expectations of society and the limited mandate they have. If young people consume liquor in the presence of the street corner worker, he feels the pressure of societal standards which

¹⁶ In spite of the instructions given by the researcher at the beginning of the second phase, the advantages and disadvantages that are written down on the index cards in phase 1 of the NGT (individual) are often very nuanced and sometimes very detailed. Usually these details are being discussed during the group stage of phase 3, when the participants are asked to refine and purify orally. The written ideas were described too detailed to brief note on flipcharts in phase 2. The consequence was that in phase 2 of the NGT, when normally the researcher just registers the different ideas, a group discussion already had to be held, which is another procedure than the methodology generally prescribes.

prescribe him to act and to protect the youngster. He then considers it to be his responsibility to deal with this and to talk to the youngster about this alcohol consumption. In contrast with these expectations, the street corner workers indicate that this would be experienced as being too interfering by the young people they are in contact with. This disadvantage is related to what the group stated when discussing the advantages of a delineated context, like a youth club or café. Rules are clear and easier to follow when the context is clear. In line with this, **participants state that the law is easy not to comply with on the street and in premises, since in their opinion it is a “pro forma” law, meaning that hardly anyone complies with it.**

The participants within this NGT think the law gives the impression that society doesn't approve alcohol consumption. However, **the legislation seems to be more strict than the social standards or attitudes.** In our society, alcohol is omnipresent and common sense. The legislation prescribes a limited age of onset, but daily practice considerably differs from this rule, as the following quote illustrates:

“The law is pro forma and isn't complied with: young people under the age of 16 can easily obtain alcohol, e.g. at a night shop. Before going to parties, they “pre-load” = drinking together (at home or in a public area) in order to appear tipsy at a party (= cheap). The parents are often blind eyed to this.”(woman)

Participants question the point of the law since prevention is no part of the law as it stands. In fact, they feel that rules, controls and legislation may not cause any long-term effect, but rather short-term benefits. In this group, **participants wonder whether forbidding young people to consume alcohol in a stringent way, will not cause an iatrogenic effect: that is makes alcohol consumption more attractive.** Moreover, participants think that this distinction between two different age limits gives the wrong impression that there are no longer risks involved in the consumption of alcohol at the age of 17, 18 or over.

In this NGT group there was a striking argument about the implementation of the **law as a pretext to take punitive measures**, for example against young people who don't fit in or who show a problematic drinking pattern. When youngsters show behavioural problems, even if these problems are not related to alcohol consumption, the fact that they don't comply with the alcohol legislation can either way serve as an argument or pretext to place them on a “time out”, for example by residential care workers or a juvenile court judge. There was no agreement within the group whether or not this is always negative. Some participants feel this can be advantageous providing that taking measures is associated with reflection, for example if combined with a therapeutic programme.

Scoring and top 10

Participants were asked to score the different statements. Scores were counted and ranked according to priority.¹⁷

¹⁷ In phase 4, in which scores have to be given to the different ideas, there were participants who didn't use the number of the list, gave three times the same score or handed in a limited top 5, with only four topics.

Table 1: ranking of the advantages and disadvantages: street corner workers

Ranking advantages	Ranking disadvantages
1. Makes age limits 16 – 18 discussable	1. Law gives the impression that society doesn't approve alcohol consumption
2. Encourages reflection	2. Law is more stringent than society's vision
3. Provides a reference framework	3. Effects of controls don't lead to change in behaviour
4. Clear within a well-defined context	4. Difficult to apply on the street
5. Offers the possibility to inform and raise awareness within a group (prevention)	5. Law = pro forma, easy not to comply with
6. Strict delineation is clear	6. Serves as a pretext to take measures against someone
7. Offers the possibility to enter in an individual conversation when concerned	7. Makes alcohol more attractive because it's forbidden
8. Can be the subject of a group discussion	8. Effects of controls are only short-term
9. Postpones age of onset	9. Age limits of 16 – 18 years give the impression that there are no risks
	10. Law is not known

School actors

Recruitment

For this NGT participants were recruited from 79 Pupil Guidance Centres (CLB) from the four umbrella organizations GO!, VCLB, OVSG and POV¹⁸.

Seven participants, one man and six women took part, all of them were employed at a Pupil Guidance Centre. Two of them were doctors and one was a trainee doctor. The NGT lasted 1'19"¹⁹.

From individual arguments to group consensus

When we consider the advantages discussed in this group, the clarity of the 2009 legislation turns out to be very important. Several participants note that the law provides clarity for themselves as well as for the youngsters. The law on selling alcohol to young people under the age of 16, which is based on scientific research according to the participants, **provides a neutral guideline to start a dialogue about alcohol consumption and the risks involved**. Participants remark that conversations with young people can be broadened, as the law incites them to think about their own conduct and the potential risks this brings along. The participants state that the law can be used **for prevention purposes, both on an individual level and a school level**. The protection of young people by the 2009 law is valued positively, as the group states that the law can lead to health benefits, simply by its presence which serves as a societal standard. Furthermore, participants think society gives a **clear and caring signal**

¹⁸ GO!, VCLB, OVSG and POV are the four Flemish umbrella organisations of the educational sector. GO! is the organisation of public education. VCLB is the organisation of the subsidised secular and denominational schools. OVSG and POV are the organisations of subsidised public education, organised by municipalities, respectively on provincial level.

¹⁹ Three months prior to the NGT took place, the new alcohol norms for men and women were presented by VAD (November 2016). Furthermore Tournée Minerale, the campaign of VAD to sensitise people to abstain from drinking alcohol during the month of February 2017, kicked off.

by legislating alcohol consumption of minors. The 2009 legislation indicates that society takes a clear stand against alcohol misuse, including the use of alcohol by very young children.

When we look at the disadvantages, participants state that the legal age limit of 16 isn't always implemented appropriately. There was no agreement within the group whether the current age limits are adequate or not. Some participants think that at the age of 16, youngsters are too young to be authorised to drink alcohol. They are convinced that the age limit of 18 is more appropriate. Moreover, participants believe that **the distinction between two age limits and different types of alcohol, makes it more attractive to violate the law because by making a distinction, some types gain a higher status.** One has to be of a certain age to be authorised to consume liquor, which provides spirits an adult status. Some of the group's participants therefore plead for the neutralization of this difference in age limits. Other participants consider this an adequate distinction; be it that the application leaves a lot to be desired. Therefore, they mean that it is preferable to learn young people how to deal with alcohol in a responsible way. Furthermore, the law is now the responsibility of adults. Capabilities to learn how to handle it aren't taken into account in the legislative implementation. **The legislation has to support people in making healthy choices, for example by demanding an identification.** Although participants state that parents are often ignorant about the alcohol legislation, adolescents have to be educated in how to manage the supply of alcohol. From this point of view, participants find it **striking that quantity isn't mentioned in the 2009 legislation.** The law permits to drink a bottle of wine, but the consumption of one alcohol pop is not allowed. One participant states that therefore it should be mentioned more explicitly that drinking too much alcohol causes damage, similar to the explicit references to the negative health impact of smoking on cigarette packages.

Furthermore, alcohol is still **easily available**, e.g. in gas stations and night shops. Next, participants state that this availability isn't controlled sufficiently.

The participants of this NGT state that **there is a gap between the alcohol legislation for youngsters and the societal attitudes.** Adults often show a different modelling behaviour than the legislation prescribes. Adults often act as if drinking alcohol from the age of 18 is harmless in the presence of young people. On the one hand, the argument of alcohol being harmful is stated to young people, but on the other hand, pubs and bars are "full of adults drinking alcohol all night long". At every party or festivity, alcohol is assumed to be a normal part of it. Participants argue that in this way, the wrong message is sent to young people, namely that alcohol is considered to be a normal part of life, as the following quote illustrates:

"Very young children are often familiar with alcohol. They want to drink champagne like the adults and are offered drinks that look like adult Champaign. This is a wrong message to give."(woman)

Finally, the participants point out that **prevention specifically has to focus on vulnerable groups of young people, as they feel that the vulnerability often determines the extent of risk behaviour.**

Scoring and top ten

Table 2: ranking of the advantages and disadvantages: pupil guidance centres (CLB)

Ranking advantages	Ranking disadvantages
1. Offers support to clarify and to broaden conversations about alcohol	1. Distinction between liquor and beer/wine isn't useful
2. Supports important health advice	2. The law is limited: does not include everything (where? how much?)
3. Protects young people from negative health effects of alcohol	3. Is not consistent with the societal attitudes towards alcohol
4. Protects youth: raises awareness of the risks (initiates a process)	4. Alcohol stays easily available
5. Offers clarification to young people: the directives are based on research	5. Probably the age limit is too low
6. Caring and clear position from society (signal)	6. Parents are ignorant about the law
7. Can lead to prevention in schools (reference or starting point)	7. There is a law, but adults show a different, more tolerant modelling behaviour towards alcohol consumption
8. Starting point for projects	8. Gets little attention
9. May result in health benefits	9. Easy not to comply with
10. Can lead to prevention (individual) if well applied	10. Doesn't appeal to the responsibility of young people
	11. The application of the law is the responsibility of an adult

Specialised prevention and early intervention professionals

Recruitment

This NGT was linked to the VAD-prevention team, an exchange moment for VAD and the Alcohol & Drugs prevention network. For this NGT, different CGG regions were represented. An employee of the 'Druglijn' participated as well.

Since the NGT was directly linked to an existing network, 15 participants took part in the NGT, whereas Delbecq et al. (1975) point out that a number of five to nine participants is preferable²⁰ (Delbecq, 1975 in Vander Laenen, 2015). The group consisted of three men and twelve women and lasted 1'23"²¹.

²⁰ One of the consequences of the large group size, is that people sometimes had to wait until everything was written down on the flipchart. We noticed that this resulted in mutual talks or people leaving their chair to have a conversation with another participant, which slowed down the process.

²¹ When the NGT was enrolled, the Tournée Minerale campaign was introduced with a lot of media attention. At the same time, VAD announced new guidelines concerning alcohol consumption.

From individual arguments to group consensus

In this group a clear delineation of age and different kinds of alcohol, is considered to be an important advantage of the 2009 legislation. Correspondingly, different participants mention the advantage of a clear guideline, which is provided by this legislation. **The fact that there is a law to which sellers or parents can refer to, is considered of great importance.** The law makes it relatively easy to follow up for sellers and to set limits for educators. Similar to these advantages, the group states that the legislation provides an argument for youth workers to develop an alcohol and drug policy for their organisation. The participants think the law could serve as a pretext to hold youth workers responsible for the alcohol policy in their organisation.

Several participants state that the law **supports and strengthens the prevention message** pointing out that consuming alcohol at a young age is not without risk.

A remarkable argument, that was not discussed in the other NGT's, is that **the alcohol law impacted on the social tolerance for alcohol.** The legislation has a sensitizing effect. There is a growing consciousness that consuming alcohol is not a good idea for children.

According to the NGT participants, contrary to ten years ago, alcohol consumption is being looked at in a different way, as a result of the legislation, as following citation clarifies:

“There is more reflection on the alcohol consumption at that age (-16). That's remarkable. There was a period of Bacardi Breezers on birthday parties. These kind of stories belong to the past now.” (man)

When we look at the disadvantages, we notice that **participants think the legislation is too ambiguous.** On the one hand, participants think it's an advantage that there is a directive or a framework, but on the other hand, the participants state that the subtleties of the legislative guidelines aren't clear enough yet. Not only the unclear definition of liquor causes confusion and misconceptions, the double age limits are also difficult to monitor and to communicate. Moreover, participants think that this distinction in two different age limits gives the wrong impression that there are no risks involved in alcohol consumption at the age of 17 or 18.

Besides this, the new VAD guidelines concerning alcohol consumption are more stringent and more clear than the law. Participants state that this lack of clarity makes the legislation difficult to control and enforce. Sellers experience an uncertainty in applying the legislation to daily practice. As a result, alcohol stays easily available for youngsters. Moreover, the consumption is often moved to private occasions.

According to the participants, the law as such doesn't lead to behavioural modification amongst young people. As already discussed, alcohol is still easily available, especially in night shops and gas stations, as the participants remark. Age identification is rarely demanded. Furthermore, participants state that the probability of being sued is small. The sellers have to bear the consequences, but probably they aren't the only party to take the blame, participants state, f.i. parents have a responsibility as well. The legislation doesn't have any adverse effect on youngsters either. The outcome is that it doesn't prevent them from drinking alcohol, as the next citation exemplifies:

“Young people, even if they are 16 years old simply drink cocktails or jenever. It’s not that they are punished if they don’t comply with the law. They don’t pay the penalty of it.” (woman)

Finally, this NGT group criticises the 2009 legislation since **it strengthens the idea that alcohol is a juvenile problem**. It is convenient to focus on young people and impose the law on them, while the adults who consume alcohol are out of reach. In the meantime, the adult alcohol consumption isn’t questioned.

Scoring and top ten

Table 3: ranking of the advantages and disadvantages: prevention workers

Ranking advantages	Ranking disadvantages
1. The consumption below 16 years decreases	1. Unclear definition of liquor causes confusion and misunderstanding
2. Supports parents to set limits	2. Limited controls and monitoring
3. Alcohol is being considered from a societal critical point of view	3. Differs from the new alcohol guidelines (these are more stringent)
4. The law reinforces the message of risks at an early stage	4. Double age limits are unclear and difficult to monitor
5. Provides an argument to work out an alcohol and drug policy, f.i. in youth organisations	5. Is applied too little
6. Supports the prevention message of delaying the age of onset	6. Strengthens the idea that alcohol is a juvenile problem
7. There is a legal framework (unlike earlier)	7. Few consequences
8. Clear: <16 years, no alcohol	8. Only refers to selling and offering for sale, not to the consumption
9. Gains benefits concerning health risks	9. Because it’s legal, it causes limited risk insight
10. Clear age limits	10. Doesn’t prevent young people from drinking alcohol

General Practitioners

Recruitment

This NGT was conducted online in an asynchronous form.²²

A targeted sample of ten general practitioners was drawn, using Mediwatch, a public online platform for primary care users. Region, gender and degree of urbanization were taken into account. This resulted in the recruitment of one male and one female doctor per Flemish province, either working in an urban area or in a more rural setting.

²² For more information about the different NGT procedures, we refer to Vander Laenen et al. (2015).

This NGT group consisted of 10 participants, five women and five men²³. Although all participants gave assistance to the NGT, there was a drop out of four during the initial phase.

The different arguments from the individual phase were listed and provided with four additional questions from the researcher. This was sent to all the initial NGT participants, including the non-responders. As no reactions were given during the group phase, the researcher contacted every GP by telephone in order to complete and clarify the list. The completed purified list was sent to the six remaining respondents. Every GP evaluated the ideas and made a ranking according to priority. Similar to the analogue NGT's, individual votes were counted and one general ranking was made, both for the stated advantages and disadvantages.

From individual arguments to a clarified list of advantages and disadvantages²⁴

This NGT group thinks that **the 2009 legislation protects young people from the health risks of consuming alcohol**. The fact that there is a law, indicates that alcohol cannot be consumed without risks. Participants state that postponing the age of onset, preserves young people from developing an alcohol dependency later on in life.

Furthermore, a positive aspect of the law is the **argumentative strength for sellers, parents as well as young people**. Sellers can easily refuse to sell alcohol to young people. Parents can set educational limits regarding the consumption of alcohol and youngsters can use it as a pretext to stand up to peer pressure.

Regarding the disadvantages, GP's argue that controls are exceptional and that it's easy not to comply with the law. Sellers are seldom supported to observe the law. **The legislation doesn't bring about behavioural change, participants state. On the contrary, the prohibition sometimes has the ambiguous effect of making alcohol more attractive**. Besides, according to the participants of this group, the law has the effect of **more private alcohol consumption**, linked to preloading and binge-drinking. Besides this, the group participants state that the law lacks clarity about the quantity of alcohol that can be consumed.

The NGT group thinks the age limits are too low and **the distinction between liquor and beer/wine should better be neutralised and the age limit should be set at 18 years**. They argue that alcohol is alcohol, which can be harmful regardless of the type or quantity.

The GP's state that **more attention should be payed to the impact of alcohol consumption**. A conversation about alcohol consumption is still very rare during consultation. At most, the combination of consuming alcohol and taking medication is discussed. The public support for speaking openly about alcohol is still very small. Moreover, in their experience, a lot of people are ignorant about the law. In their opinion, the risks factors should be communicated more clearly in order to

²³ After contacting the respondents by phone, an individual email was sent, mentioning the same central question. The digital NGT took a period of 3 months, from December 2016 till March 2017. During the period in which the digital NGT took place, there was a Flu Epidemic. This was very demanding for the group participants, which could be the reason of the NGT to be of long standing.

²⁴ All the individual arguments were sent to the group of the initial ten participants in order to clarify, differentiate, qualify and discuss similarities by email. Since the researchers didn't receive any reactions during this group phase, every GP was contacted separately. Therefore, a group consensus couldn't be reached.

sensitise people, e.g. by the means of testimonials. It should be pointed out to young people that drinking alcohol is not an imperative to have fun or to be cool, as the following citation illustrates:

“We should see through the image of ‘look how tough I am, since I can drink such an amount of alcohol.’ But we won’t manage this by a more stringent legislation.”
(man)

Another disadvantage of the law is that it **doesn’t protect young people from peer pressure, which specifically occurs in particular groups**, like members of youth movements. Moreover, participants state that children with a lower socio-economic background or who have been acquainted with alcohol consumption frequently in childhood, are specifically vulnerable.

Scoring and top ten

The respondents received an email with the clarified and numbered list of the advantages and disadvantages. They were asked to make a ranking with the top 5 of the most important advantages of the legislation and the most prominent disadvantages. This process resulted in two rankings:

Table 4: ranking of the advantages and disadvantages: general practitioners

Ranking advantages	Ranking disadvantages
1. Tries to avoid the medical consequences of early alcohol use	1. There is more drinking in private, more spirits, but also binge drinking and preloading
2. Setting a limit is a signal for young people that alcohol isn’t harmless	2. The minimum age is too low and should be better at 18
3. Provides a way to resist social (peer) pressure to consume alcohol.	3. There is a lack of clear communication about the reasons of the law. The risks should be more referred to, f.i. through an awareness campaign
4. Restricts the access to alcohol for minors	4. A ban can sometimes have the opposite effect. It can make young people want to try alcohol
5. Provides an argument for sellers to refuse to sell alcohol to underage buyers	5. There are different ways not to comply with the law
6. Helps young people to assess the consequences or what they can handle	6. Horeca staff isn’t supported enough to comply with the law
7. The age limit on alcohol sales and consumption postpones the age onset so that there is a less detrimental effect on development	7. Provides no clear limits. Young people are allowed to drink alcohol when they are 16, but quantities
8. Young people are protected for an early start of alcohol consumption	8. For specific groups of young people, the age of 16 is too low to deal with alcohol in a responsible way
9. Less dependency problems amongst young people	9. Doesn’t contribute to a change in mentality
	10. Doesn’t contribute to more openness regarding to alcohol consumption

Flemish NGT's: conclusion

All the advantages and disadvantages of the four Flemish purified lists were encoded, using NVIVO. As a result, a comparison between the different Flemish NGT's could be made.

Table 5 and 6 provide an overview of the different nodes and the frequency in which they were found in the different sources, and give an overview of the advantages and the disadvantages of the 2009 law respectively.

Due to the purification process during the group stage of the NGT's, some of the ideas on the final lists were very specific for every single NGT. For the comparison of the different NGT groups, we focus on the commonalities, because these can provide policy recommendations that are overall supported by professionals.

Table 5: axial encoded advantages

CODE	Frequency of the sources*	Sources ²⁵
Protects youth from the risks of early alcohol consumption	4	SW, SA (2), GP (3), PW
Helps to create awareness	4	SW (2), SA, GP, PW
Provides a basis or framework for a dialogue about alcohol consumption	3	SW (4), SA (2), PW (2)
Provides clarity and delineation	3	SW (2), SA, PW (3)
May result in health benefits	3	SA (3), GP (2), PW
Provides a signal to youngsters	2	SA, GP
Provides a framework	2	SW, PW
Easy to follow up and to enforce	2	SW, PW (2)
Starting point or reference point for prevention	2	SA, PW
Possible to control	1	SW
Supports young people to set limits for peer pressure	1	GP
Supports sellers to set limits for young people who want to buy alcohol	1	GP
Supports parents to set limits from an educational point of view	1	PW
Provides an argument to work out an alcohol and drug policy	1	PW

* The codes which were found in only one source, are specifically stated by one group.

As for the Flemish NGT groups, we can summarize that there is a consensus among the different NGT's that the health benefits, raising awareness and initiating a dialogue and finally creating clarity and delineation to be important advantages of the 2009 alcohol legislation. All the NGT groups consider the protection of young people from the risks of early alcohol consumption as an advantage of this legislation. As an important result of this, the legislation may lead to considerable health benefits.

Furthermore, another important advantage consists of helping to create awareness about the harmful effect of alcohol on young people's development. This sensitization is considered to be important, not only for the youngsters, but for the whole society. To attain this awareness, the law provides support

²⁵ The abbreviations mean street corner workers (SW), school actors (SA), general practitioners (GP) and specialised prevention and early intervention professionals (PW)

to initiate a reflective process on the risks as well as a dialogue on alcohol consumption, both individual and in group discussions. The legislation gives field workers a frame to hold on to.

Finally, the law helps to set clear limits for underage buyers as well as for sellers: the purchase of alcohol under the age of 16 is not allowed. The legislation provides a neutral and objective guideline.

Table 6: axial encoded disadvantages

CODE	Frequency of the sources	Sources
The distinction between the different types of alcohol is confusing and doesn't make sense	4	SW, SA, GP, PW
A prohibition increases the appeal of alcohol	3	SW, SA, GP
The law isn't always applied. The availability and accessibility of alcohol remains	3	PW, SA, GP
Easy to not comply	3	SW, SA, GP
Not acquainted with	3	SW, SA, GP
Is not consistent with the societal attitudes	3	SW, SA, PW
Because it's legal, it causes a limited risk insight	2	SW, PW
The law is limited, doesn't include everything	2	SA, GP
Doesn't contribute to changes in attitude towards alcohol	2	SW (2), GP (1)
Age limit of 16 years is too low	2	SA,, GP
Gets little attention	2	SA, GP
Horeca staff isn't supported well in complying with the law	1	GP (2)
Controls are privacy violation	1	SW
Doesn't appeal to the responsibility of young people	1	SA (2)
Doesn't contribute to more transparency about alcohol consumption	1	GP
Double age limit is difficult to control and unclear	1	PW
Elder people force young people to buy	1	SW
Only refers to selling and offering for sale, not to the consumption	1	PW
Little control and monitoring	1	PW
Loyalty conflicts between law and parents' demand to buy alcohol	1	SW
More private alcohol consumption, more liquor, bingedrinking, preloading	1	GP
Difficult to apply on the street	1	SW
Serves as a pretext to take measures against someone	1	SW
Differs from the new alcohol guidelines	1	PW
For specific groups of young people, the age of 16 is too low to deal with alcohol in a responsible way	1	GP
Few consequences to infringements	1	PW

Concerning the disadvantages, there is a consensus among the different Flemish NGT groups about the distinction between the different types of alcohol, the increased attractiveness of alcohol and the limited application of the law in practice.

All the groups consider the distinction in different types of alcohol to be poorly specified and state this doesn't make sense. 'Alcohol is alcohol' they state and every type can cause harmful effects when it is not consumed in a responsible way.

Furthermore, the participants of all the NGT groups state that by forbidding alcohol it can bring about an increase in attractiveness, as violating the law is thrilling in adolescence. Moreover, and related to the previously discussed disadvantage, the distinction between beer or wine and liquor increases the attraction of liquor.

Finally, the different groups criticize the poor application, control and enforcement of the law. Several reasons are provided for this. It is difficult to apply, due to the complexity of the terms of the law. A lot of people still are not acquainted with the law. Participants think there is an inconsistency between the alcohol legislation for youngsters and overall societal attitudes towards alcohol consumption. They state that the law is pro forma, giving the impression that starting from 18 years old, there are no more limits or harmful effects. The fact that alcohol is omnipresent in society, underlines this argument.

Moreover, the control is limited, both by sellers who are obliged to identify the age of the buyer, as well as by official actors in charge of the enforcement of the law in practice. The consequence is that alcohol is still easily available for youngsters and that it is easy not to comply with the law.

When we consider the arguments which were specifically stated by one group, there are some trends to be observed.

The street corner workers take a critical stance. Although the law can function as a catalyst, the street corner workers think the law is hypocrite as there is a considerable gap between the legal terms and the societal attitude towards alcohol. The law prescribes several rules to be followed, as such it is more stringent than the society's vision which is influenced by the omnipresence of alcohol. Because the law is pro forma, there is no real change in behaviour to be observed. On the contrary, the law can be abused as a pretext to impose corrective measures for youngsters who are difficult to handle. This group nevertheless puts an emphasis on initiating a constructive and open dialogue and generating a reflection process by field workers. The surplus value of the legislation lies in raising an awareness process by discussing the rationale of the legislation. This group thinks it would be better to learn to use alcohol in a responsible way.

The arguments of the school actors are comparable to the considerations of the street corner workers, although more emphasis is put on the protection of youngsters. Similar to the street corner workers, the initiation of a constructive dialogue is important. This dialogue however, in contrast to the street corner workers, is more specifically aimed at providing important health advice and reducing health risks. The law functions as an important framework for this advice, giving a clear and caring signal to take a stand against the free and harmful consumption of alcohol. Similar to the street corner workers, the school sector thinks there is a gap between the alcohol legislation and the social attitudes towards alcohol. Adults show another modelling behaviour than the law prescribes. Moreover the law has to be applied by adults and there is less appeal to the individual responsibility of young people.

The prevention workers take a more restrictive and one might say even a paternalistic position. Some of these participants would consider to penalise youngsters for underage consumption. They argue

that the law supports parents in setting educational limits with regard to their children's alcohol consumption. Another advantage is that the law can be a foundation to develop an alcohol and drug policy, for example in youth movements. As to the disadvantages, the prevention workers argue that there is little attention to controlling and monitoring the compliance with the legislation. The fact that only the selling and offering of alcoholic beverages is forbidden, and not the consumption, is also stated as a disadvantage. Moreover little consequences are imposed to infringements. This group states that the legislation gives the false impression that alcohol consumption is a juvenile problem, which is stigmatising this group of consumers, while the adult consumption is kept out of the picture.

Finally, the general practitioners consider the alcohol legislation as an important behavioural and health promoting guideline for consumers and sellers. Sellers can refer to the law when underage buyers try to purchase alcohol, while youngsters can say no to peers when experiencing peer pressure. The legislation can be helpful when lacking assertiveness. These participants, however, think there is not enough attention for specific target groups, like children who are growing up in families at risk, f.i. children of parents with alcohol problems. Next, there's not enough support for horeca staff to apply the legislation correctly. Furthermore, there is more drinking in private contexts, like preloading and binge drinking since the law came into effect. Finally, GP's argue that there is still a lack of openness with regard to alcohol consumption, in their office, as well as by society. Moreover, the GP's state that they themselves still lack confidence to have these kind of conversations with young patients. Talking about the harmful aspects of consumption is mostly restricted to the combination of alcohol and medical treatment.

1.1.2 French Community

Specialized services in Drug Addictions (Prevention and treatment)

Recruitment

For this NGT participants were recruited from services working specifically on the prevention and/or treatment of drug addiction. Some participants are active on a local level, in schools or in health services. Others are prevention workers more specialised in harm reduction, or working in a drug treatment service of a hospital.

The meeting took place in Namur in the office of the Fédito Wallonne, on the 28th of November 2016. The group consisted of 9 participants, 3 men and 6 women and lasted 2h10.

From individual arguments to group consensus

As the result of the individual phase, 12 advantages and 28 disadvantages were written down on Post-its .

In this NGT phase 2 and phase 3 were indistinguishable because participants spontaneously explained proposals, discussed and questioned proposals, as well as regrouped them.

When we consider the advantages in this group, the participants approve that **all types of sellers are aimed at**. Also the point that sellers are aimed at, instead of underage consumers is regarded as an important plus-point.

The progressive thresholds of 16 and 18 are simple and clear. Moreover, the **progressiveness of the thresholds are seen as interesting as the different types of alcohol don't have the same effects**. Spirits are often mixed with sugared drinks, making a quick absorption of large quantities of alcohol

easier. Symbolically there is a difference in drinking beer or drinking whisky. At the same time, the effects of the products are very individual and context bound. Still, participants state, the interdiction of alcohol under the age of 16 perhaps is more in accordance to the hepatic and cerebral development. **From an educational point of view it is interesting to get acquainted to the different products progressively and to associate them each to a series of traditions, habits etc.**

The law and the discussions it brings about, point out the danger of alcohol consumption. Participants think the legislation makes clear that alcohol is not an innocent product. The legislation could even help on a larger scale to interrogate and understand the differences between products and the prohibition of specific types at a certain age. **Thus, it could provoke a reflexion on drinking and its consequences as well as why society only took these protective measures in 2009.**

The 2009 alcohol legislation can be an interesting tool for parents and schools to set limits regarding the alcohol consumption of their youngsters. Many parents mention being lost in what norms to impose, participants say. Parents, schools, local authorities now have a **framework to refer to**.

The earlier stated disadvantage of lack of transparency, is considered to be an advantage at the same time, according to the French speaking drug prevention workers. The vagueness of the law allows the legislation to be a reference that can be adapted in different contexts. There are ways to bend the law somewhat and to make the relational aspects more important.

The participants question whether the law has an effect on young people. They're convinced that the law doesn't concern them. For school children for example, mainly the internal regulations of the school with very concrete sanctions, are effective. The legislation isn't made concrete enough.

Regarding to the disadvantages, one of the participant's main remarks is **the absence of transparency on the rationale of the law**, notably the reason behind the distinction in age limits, as well as the distinction between the different types of alcohol. This makes the law difficult to understand and to apply. The participants think that the lack of information on the consequences of an excessive alcohol consumption on adolescent's brain development, makes an application of the legislation less plausible.

Therefore, the educational approach seems much more fruitful to the participants in order to reduce (the risks of) consuming alcohol. This educational approach could help to understand the age limits, as well as to emphasise on prevention, harm reduction and responsible consumption. Still the **culture of drinking** in bars and especially sport clubs and student events continues to be valorised. In a social context it is often regarded weird when one doesn't drink, provoking for women f.e. the "are you pregnant"- question. The participants wonder whether the federal law is the right normative framework to tackle in this matter. Alcohol is omnipresent in our society, even in family affairs. The NGT participants question the power of the legislation to cause change in this matter. And if so, if the law can intervene within the family, with which sanctions? Related to this, the NGT participants didn't come to terms about the specification of the educational approach, f.e. does this educational approach include an occasional drink or not?

These NGT participants think that, through a prohibition of alcohol consumption under the age of 16, the legislation **draws the attention on the product of alcohol, instead of permitting young people to the context of consumption: the quantity, the regularity, the context.** In addition, several

participants state that it does not make much sense to fix that kind of age unless to emphasise on reducing alcohol related problems. At the health level, the distinction based on different age levels does not hold. It is more important to understand what is behind consumption: people, regardless of age, consume as a (reasonable) self-medication or in a social, friendly way. On top, a strict application of the law by headmasters of schools would contain, according to some participants, a risk of treating youthful drinking as a deviance and to exclude them from school.

There is room for an improvement of the legislation according to the participants. One participant wonders if it wouldn't be more interesting to **make a distinction based on the alcohol percentage, rather than on the production.**

The lack of a strong stance against publicity for alcohol shows an incoherence in the alcohol policy. **Publicity should be prohibited**, comparable to tobacco.

According to the participants **the law is very difficult to apply**, especially in some contexts, f.e. school parties, youth movements,... There is no habit of showing nor asking an ID in our country. One participant stated that youngsters perceive the law as ridicule if not applied or enforced. Participants are convinced that, if the law is applied but not understood, it is perceived as bullying young people.

Finally, participants add that these disadvantages contribute to **the discretization of the whole political enterprise.** With these kind of laws, like with the one on cannabis, so far away from reality, with an almost impossible application and no control on top, every law becomes less and less credible.

Scoring and top 10

Table 7: ranking of the advantages and disadvantages (drug prevention workers)

Ranking advantages	Ranking disadvantages
1. The progressive age thresholds are interesting	1. No transparency on the rationale of the law
2. Points out the dangers of alcohol	2. The educational approach is more fruitful
3. Provides a framework for parents and schools	3. Ridicule if not applied/ if applied but not understood
4. All sellers and all manufacturers are aimed at	4. The lack of a strong stance against alcohol publicity
5. The vagueness permits adaptation to any context	5. Makes alcohol more attractive The distinction should be based on the alcohol percentage The governmental level (federal) possibly isn't adequate There is no application, nor control
6. There is a progressive introduction of products	6. The dispositions of the law are not transparent
7. Provokes reflexion	7. Causes damage to the political system
8. Provides simple thresholds	

School actors

Recruitment

For this NGT mainly school doctors and one teacher were recruited.

The group consisted of 11 participants, all women. The NGT lasted 2h. Participants were met in the offices of *Univers Santé* on the 7th of December.

From individual arguments to group consensus

Considering the advantages, the NGT participants do find that the alcohol legislation of 2009 poses some interesting limits, **especially for youngsters below the age of 16 and older than 18**. For these two ages the law is very clear.

Moreover, this NGT group considers the fact that it **addresses the limits to the sellers** as an advantage.

These participants appreciate that these norms **demonstrate a certain interest of the legislator in the wellbeing of young people**. The possible effects of the law are seen as advantages. On the one hand it might, for some minors, limit access to alcohol. On the other hand it might lead to adults taking more responsibility regarding their own alcohol consumption.

The existence of a law may offer support to clarify and to broaden conversations and discussions within the family on the topic of alcohol consumption and its related risks and harm. Within such a discussion minimal legal norms are a support for parents, but also for schools when elaborating school norms. Participants express the hope that if the law would be broader known, it might encourage parents, professionals and other adults, to question youngsters who are drinking, thus permitting a social control of alcohol consumption.

Regarding the disadvantages, this NGT groups thinks that **the law is confusing and lacks sense, specifically for the 16-18 group**. If some do find the progressive threshold interesting, the criterion to make the distinction (fermented vs. distilled) doesn't make any sense for this group, which is mainly composed by medically trained professionals. It's not clear, certainly not for youngsters, beer can have a rather strong percentage of alcohol. **Whether alcohol is obtained through fermentation or distillation, it's the same alcohol, eliciting the same state of addiction**. Some participants add that discriminating on the percentage of alcohol would make more sense.

This confusing regulation doesn't make it easier to inform youngsters of the limits of the law. The effect is that some **are (partly) ignorant of the law**. Some participants state that, nevertheless, youngsters are still able to purchase alcohol without any problem. Related to this, **the perceived lack of enforcement of the law is seen as a huge disadvantage**.

The NGT group states that beyond the age of 18, the law doesn't set any limits to alcohol consumption, even though many are not mature at that age. Some participants think that, considering the risks of alcohol-related harm, **the law is too permissive**, proposing to change the progressive thresholds to 18 and 20 years old. These participants fear the opposite effect of authorizing alcohol consumption at the respective age of 16 and 18 years old, making it seem harmless to drink. Under the authorized age, **the effect of the forbidden fruit** makes drinking of the forbidden type of alcohol even more attractive for adolescents. **The law provides no means to deal with**

excesses in alcohol consumption. The NGT group considers prevention and increased financial resources a matter of major concern to tackle issues of the same kind.

The legislation extends the prohibition to offer alcohol within the family context. According to several participants, this part of the law renders the **role of parents even more complicated**. The participants of this NGT consider parents to have an important role and the right to educate their children to become responsible alcohol consumers. If children are interested in alcohol, participants wonder whether parents can initiate a dialogue, f.e. by letting them taste, which can be an excellent starting-point for a conversation on the effects of drinking and to discuss limits and occasions with regard to alcohol consumption. However, the participants are convinced that parents and youngsters need to have these sort of conversations before the age of onset. At the same time, some participants admit that many adults don't apply any limits to their own consumption, certainly not on festive moments or when inviting people at home.

If the law is not sufficient to change the social practices of drinking alcohol at a young age, **the lack of any strict regulations for alcohol marketing plays an important role** according to some participants. To others more than general marketing, the acceptance of alcohol publicity is worrisome, certainly in areas which are frequented by many youngsters, for example cinemas.

The **“adult hypocrisy”** is another disadvantage stated by these NGT participants. They are convinced that youngsters most certainly also perceive this to be unjust: beer and wine are only accepted from the age of 16 because of a powerful lobby behind these products on the one hand, and these appear to be the favourite drugs of adults on the other hand.

One participant considers **the sixth reform of the state** to have a considerable influence on this matter. The parcelling out of competences in Belgium, dividing norms, prevention, treatment, education makes a coherent policy difficult, if not impossible.

Scoring and top 10

Table 8: ranking of the advantages and disadvantages (school actors)

Ranking advantages	Ranking disadvantages
1. Addresses the limits to the sellers	1. The law is vague and confusing
2. Demonstrates an interest in youngsters' wellbeing.	2. Alcohol publicity should be banned
3. Leads to discussion on alcohol consumption	3. There is a lack of information about the legislation
4. Puts some limits, provides guidelines	4. The law is not enforced
5. Provides a support to fix limits	

Youth Prevention workers

Recruitment

For this NGT participants were recruited from “Aid in open environment” (AMO), which are open support services, scouting coordination, coordination of Youth Centres,

The group met in the offices of *Univers Santé* in Louvain-la-Neuve on the 10th of November and consisted of 7 participants, 3 men and 4 women. The NGT lasted 1h57.

From individual arguments to group consensus

Considering the advantages of the alcohol legislation, these NGT participants think the law provides them with **some interesting guidelines on the (progressive) age limits**. Participants state that it is not the first nor the most useful, but a framework to use nonetheless, besides other references, f.e. those transmitted by media or cultural images. Nevertheless, for school children principally the internal regulations of the school are the most relevant ones.

The law **permits a debate** on alcohol consumption, which is regarded as another advantage according to these participants.

The **progressive age threshold** of 16–18 is considered useful by a part of the participants as it permits to gradually experiment with alcohol. However, to some participants, the thresholds seem to be set on a rather arbitrary basis.

Nevertheless, participants think the **law seems simple**: beer at 16 and spirits at 18. For a broader understanding, however, the rationale becomes confusing.

Finally, these NGT group thinks another important advantage is that the **legislator considers the sellers responsible and not the youngsters**.

When we consider the disadvantages, the participants of this group think that, within the group of adults, there is **a lack of knowledge of the law**. In fact, even if they are aware of its existence, there is a lot of uncertainty due to the complexity of the terms of the law and their application. They think the law is not concrete enough, difficult to comprehend and even harder to apply. The terms aren't clear enough, specifically the distinction between fermented and distilled drinks is confusing according to the youth prevention workers. Several participants propose to **rather make a distinction based on the percentage of alcohol in the end product**. Hereby the quantity of alcohol combined with the percentage should also be taken into account.

The application and its modalities refer for several participants to **a default of sense and meaning of the law**. It's utility is not commonly known or shared. As a consequence, the law will hardly be applied. Within many contexts like informal family or friend gatherings or in bars held by scouting, people don't feel concerned by the law. In more classical venues bartenders don't bother to ask for ID's, because they know underage customers will simply ask older friends, siblings or unknown adults to purchase alcoholic drinks for them. Besides this, many young students are employed in the night life economy, making it even more difficult to push for ID checking, as they lack assertivity.

Participants state that **a more strict application of the law, without more adherence to its motivation is not advisable**. This would lead to alcohol consumption in more hazardous conditions outside the public sphere, with less help available in case of problems.

The group of prevention workers **refers to the need of a global plan on alcohol policy**. This integrated plan has to focus on prevention, broadening the knowledge of the law and on providing tools.

According to these participants, this global plan also **needs to tackle issues of alcohol promotion and marketing**. Alcohol marketers continue to create a “youthful” image, f.e. by developing sweet products. This NGT group thinks the law specifically tackles small sellers, bartenders, (social) events, festivities, shops... but not at all the economic interests of the large enterprises, who promote alcohol consumption, for example by providing sellers with products with their logo.

Besides this, **alcohol consumption is culturally rooted in Belgium**. Therefore, the participants wonder whether it would be better to aim at developing a responsible view at all ages, rather than to postpone the age of onset. The long term consequences are not known and youngsters don’t appreciate the age limits anyhow. The limits are not understood by youngsters, nor by the adults. Faced with this lack of understanding of the law, the effect is **to create a “grown-up status” of alcohol, rendering it even more attractive**.

This **law however, does not cultivate sensitization on responsible consumption**. Instead of prohibition, transferring limits of consumption, harm reduction, or norms on how to “use” seem so much more useful to many of the participants. By prohibition, dialogue, communication and education are rendered more complicated. Youth animators usually don’t engage in a dialogue on alcohol consumption with youngsters, nor consume together, which complicates an open, relaxed discussion on habits, conditions and risks of alcohol consumption.

Scoring and top 10

Table 9: ranking of the advantages and disadvantages (youth prevention workers)

Ranking advantages	Ranking disadvantages
1. The law can provoke a debate on alcohol consumption	1. The law lacks clarity
2. The law provides a useful framework	2. A global plan of integrated policy is necessary
3. The progressive threshold permits to gradually experiment with alcohol	3. The legislation needs to tackle issues of alcohol promotion and marketing
4. The law limits selling	4. The distinction should be based on the alcohol percentage
5. The law aims at the responsibility of the sellers	5. The law is difficult to apply.
	6. The law tackles small sellers, not the economic interests of the large enterprises

General Practitioners (GP’s)

Recruitment

This NGT was conducted online in an asynchronous form.²⁶

A targeted sample of ten general practitioners was drawn in cooperation with SSMG, *Société scientifique de médecine généraliste*, regrouping over 3000 french speaking GP’s in Belgium²⁷. Participants were recruited amongst all the members of this association and came from different

²⁶ For more information about the different NGT procedures, we refer to Vander Laenen et al. (2015).

²⁷ It is to be noted that this association offers guidelines to its members on how to deal with alcohol addiction amongst patients (<http://www.ssmg.be/prevention/alcool>).

provinces: all but Luxembourg are represented. Some have a very long experience while others are young doctors.

The group consisted of 16 participants, 10 men and 6 women²⁸.

From individual arguments to group consensus

As a result of the individual phase of the digital NGT, 30 advantages and 48 disadvantages were gathered.

After the individual clarification phase, we obtained a purified list of 12 advantages and 17 disadvantages.

When we consider the arguments of this NGT group the participants think that it's a great **advantage of the legislation to hold the sellers responsible**. Moreover, these participants state that providing alcohol to underage customers by friends and family is rightly punishable.

The law **makes it possible to limit underage consumption and to reduce the minors' access to alcohol**. The age of 16 years for a **rather moderate consumption** of alcoholic beverages seems, from a medical point of view, suitable for some GP's. The age of 18 years for spirits seems well adapted as well, though less known by the general public, if known at all. The harmful effects of alcohol on a growing brain are well proven, so the progressive threshold is well chosen. Under the age of 16, adolescent's usually aren't mature enough for responsible alcohol consumption. Another participant states that the quantity is a very important parameter to take into account.

For this group, the legal framework intends to limit the alcohol-related risks, such as intoxication when driving. It seems to the participants that the awareness of the driver's responsibility is rising. Moreover, in case of repeated transgression justice can oblige the transgressor to go into treatment.

The participants state that the law serves as a reference framework for the abstinence advice, which is given to youngsters and parents. As such the law is a **pretext to enter into a discussion with patients and to pass on information**. This legislation facilitates to discuss this subject more easily and to explain the motivation of the legislation. In this way, youngsters can be well informed about the harmful effects of alcohol in the short or the long term.

The NGT participants state that beyond the medical cabinet, the law can **serve to raise awareness** amongst young people, parents, distributors and sellers. Moreover, the law can initiate a debate on the culturally rootedness of adult drinking. Over time, the **high social status of alcohol can be changed by this legislation**. The emergence of new ideas for "hip, fashionable" soft drinks could mean an interesting change according to participants: inciting young customers to order a non-alcoholic beverage.

Some participants state that a moderate consumption of alcohol is good in terms of cardiovascular prevention. Two GP's, however, react that this reading is scientifically false because of the biases in the scientific studies. They are only oriented to specific aspects. These studies should be redone

²⁸ After contacting the respondents by phone, an individual email was sent, mentioning the same central question. We launched the initial invitation at the end of December 2016. Two doctors replied within a few days. Our mailing was endorsed by a mailing of the SSMG at the beginning of January. This led to more responses. The NGT started in the second half of January 2017 and was closed at the beginning of March 2017.

because it is not really known whether it is the molecule of alcohol itself that is beneficial or the fact that regular moderate consumers have more social ties.

The participants do find that the law of 2009 has some disadvantages.

The GP's identify **some gaps in the legal framework**. The sale of licensed liquor in places like cinemas, petrol stations is an example of this gap's consequence. Furthermore, the law targets the selling of alcohol instead of the consumption by minors.

The law is not very clear or easy to understand in the opinion of the NGT participants. **The distinction between spirits and fermented alcohol complicates the application**. The legal framework is not adequate. The distinction between spirits and beer makes no sense for the participants. As alcohol is alcohol, according to one doctor the sale should be banned before the age of 18, regardless of the type of alcohol. This would be clearer and more accurate from any health perspective. One GP gave a clear explanation:

'Even a unit of alcohol is deleterious on brain development in adolescence. Below 18 (or even 25) years, the brain has not finished developing. Legalizing alcohol below this age is therefore not logical' (woman)

According to the NGT participants, **there is a limited knowledge of the law**. In other words, the age limits for sale and distribution are unknown, thus often not applied. Some aspects are even less well-known, such as the incrimination of serving alcohol by parents, family and friends. This specific aspect is seen as another disadvantage. Every parent is liable to a fine when serving a glass of alcohol to his 12-year-old child. This measure seems completely aberrant for the participants, as the law is lax and little applied. It should not interfere with family education. According to the GP's it is better to share a drink during certain family occasions than to do it in secret.

Youngsters use bypassing strategies asking older friends to buy them drinks. In this way, enforcement is undermined. The **legislation does not prohibit the supply of alcohol to a whole group of younger people**. In practice, it is always possible for underage customers to be served alcohol, especially when they are in group. In addition to the circumvention of the law through group purchases, another disadvantage of this legislation is the frequency of preloading and/or binge drinking at home (or at friends' place).

The forbidden fruit mechanism, created by the law, has not been sufficiently taken into account. **The more we forbid alcohol consumption without any information campaign, the more we take the risk of provoking young people to transgress the law**. Social accessibility, combined with the attraction of the forbidden, makes a bad combination. Rather than banned, drinking should be framed. A prohibition as set out in the law is not applicable, and making non-applicable laws does not make much sense for the GP's. It pushes youngsters to hide and consume in secret. A law that does not restrict but is accompanied by genuine measures of health education, health promotion and harm reduction would perhaps be more effective, parallel to the policy on other drugs.

The participants of this NGT think there is a lack of information and awareness regarding underage alcohol consumption. This is a public health topic, which is not easy to implement. Therefore **awareness campaigns are needed**. Young people are not sufficiently sensitized. Although the issue of drinking can be addressed during consultation, general awareness needs to be increased (through

information campaigns in schools, every year or every two years to reach as many young people as possible). Accordingly, the law should stipulate that every minor arriving in an emergency department in ethyl impregnation must be the object of a specific care.

The law is ineffective: as things stand, **it is simply not enforced**. According to the NGT group, very often, the first contact with alcoholic beverages occurs earlier than the age of 16. A bottle of spirits can easily be purchased by underage customers, without any consequence. The law is not well-known, unclear and complicated and therefore difficult to apply and to enforce, the participants state. Controls are rare, especially during large events. The lack of a systematic control of the identity card limits the effect of the law. One GP proposes to oblige to show ID's when purchasing alcohol.

The omnipresence of alcohol in society makes enforcement complicated. Alcohol is available at all hours of the day and night, f.e. at petrol stations, which also raises a concern for road safety. The group of GP's consider the alcohol consumption as a social problem. The following citations of a GP can illustrate the stated problem:

‘To summarize, in a country like ours where alcohol is culturally, traditionally and economically predominant, it is also deliberately inapplicable or circumvented’ (man).

Alcohol is trivialized in our society, which encourages consumption and makes abstinence difficult since people are always incited to consume. It is in that same sense that the participants view advertising as a problem.

Although one participant is convinced the prohibition of alcohol marketing is included in the legislation, some participants state that **there should be a stricter prohibition of alcohol advertising**.

Advertising and sponsoring are not covered by the legal framework. Due to alcohol advertising youngsters think it is "normal" to drink. Likewise to tobacco, advertising on alcohol should simply be prohibited in any form. The participants state that some advertising is disguised as sponsoring. Sport events are often sponsored by brands of alcoholic beverages, f.e. the Jupiler Pro League. Alcohol is culturally too much linked to festivities and to relaxation. Advertising, even if it doesn't target young people is far too present everywhere, for example on television, in cinemas, bus shelters,... Often, distributors provide other promotions to increase the purchase and consumption in the period of large sport events. Besides this, participants think the authorization to taste alcohol in in supermarkets without any supervision or control is also shocking. The fact that it is the responsibility of brewers and other producers of alcohol is nonsense to the GP's.

The NGT group of GP's think there is an **insufficiency of the wider societal framework when it comes to alcohol consumption**. Society provides itself with a good conscious by the legislation. However, this is not enough from a moral and ethical point of view. There is a lack of supervision of the first consumptions. Contrary to this, insurance companies won't easily cover alcoholism related health issues.

The participants state that the legislation should increase the cost of alcohol per unit of alcohol.

According to this group, there are more adequate ways to alter consumption of alcohol. Thus the current initiative "Tournée Minerale" is more attractive than a legal ban as it is a deliberate choice not to consume for one month, which is presented as a challenge.

Scoring and top 10

Table 10: ranking of the advantages and disadvantages (GP's)

Ranking advantages	Ranking disadvantages
1. The law limits the consumption of underage customers	1. The law is ineffective and shows a problem of application and control.
2. The law aids to obtain change in the social status of alcohol	2. Advertising and sponsoring are not covered by the legal framework
3. The law tries to limit the consequences	3. The law shouldn't interfere with family education.
4. The law is a reference, a framework	4. The forbidden fruit mechanism has insufficiently been taken into account & selling is targeted but not consumption
5. The law facilitates a wider discussion and provides information	5. There is a lack of information and awareness

French NGT's: conclusion

Parallel to the Flemish NGT's, all the advantages and disadvantages of the four French purified lists were encoded, using NVIVO. As a result, a comparison between the different French NGT's could be made.

Table 11 and 12 provide an overview of the different nodes and the frequency in which they were found in the different sources, and give an overview of the advantages and the disadvantages of the 2009 law respectively.

Table 11: axial encoded advantages

CODE	Frequency of the source	Sources ²⁹
The law aims at the sellers' responsibility	4	DP (2), SA, YP, GP
The law provides a framework for parents and schools	4	DP, SA, YP, GP
The law facilitates discussion and provides information	3	SA, YP, GP (2)
The progressive age thresholds are interesting and simple	2	DP (3), YP
The law limits consumption of underage customers	2	SA (3), GP
The law provokes reflection	2	DP, SA
The legislation regulates publicity	1	GP

²⁹ The abbreviations mean specialised services in drug addictions (DP), school actors (SA), youth prevention workers (YP) and general practitioners (GP)

The vagueness of the law permits adaptation to any context	1	DP
The law tries to limit the consequences	1	GP
The law points out the dangers of alcohol consumption	1	DP
The law permits the control of alcohol quality	1	GP
The law limits selling	1	YP
The law is simple	1	YP
The law demonstrates an interest in youngsters' wellbeing	1	SA
The law can provoke social control of underage alcohol consumption	1	SA
The age limits are adequate	1	GP
Serves as a screening tool for the need of treatment	1	GP
Aids to obtain change in the social status of alcohol	1	GP

Based on this overview, we can conclude, as for the French speaking participants of the NGT's, there is a consensus that the law aiming at the sellers' responsibility and providing a framework for parents and schools, to be important advantages of the 2009 alcohol legislation. The participants of the different NGT groups agree that, instead of pointing at underage alcohol consumers, the law takes sellers responsible for underage alcohol purchase. Hereby, the legislation can restrict the selling of alcohol to youngsters and thus limit the consumption of underage customers.

Furthermore, the French participants think the law providing a framework is beneficial to facilitate discussion, to provide information and to provoke reflection. The legislation gives a reference frame with guidelines to hold on to.

Finally, the French participants are in favour of the simple and progressive thresholds which allow young people to gradually get acquainted with alcoholic products. Young people have the opportunity to associate them each to a series of traditions or habits, they conclude.

Table 12: axial encoded disadvantages

CODE	Frequency of the sources	Sources
The law is inconsistent with cultural attitudes or insufficiency of the wider societal framework	4	DP, SA, YP, GP (6)
Shows a lack of strong stance against alcohol publicity	4	DP, SA (2), YP, GP
Alcohol consumption is more attractive because it is forbidden	4	DP, SA, YP, GP
The law is not enforced, nor applied or controlled	4	DP, SA, YP, GP
The knowledge of the law is problematic	3	SA, YP, GP (2)
There is a lack of transparency	3	DP (2), YP, GP

The educational approach is more fruitful	2	DP (2), YP
The legal framework is inadequate	2	SA, GP (3)
The law is not understood, vague and confusing	2	DP, SA
The legislation should not interfere with family education	2	SA, GP
The distinction is inadequate	2	DP, YP
A global plan is necessary	1	YP
The legislation should increase the prices	1	GP
The law tackles small sellers instead of economic interests of large enterprises	1	YP
There is no coherence in policy	1	SA
The law is too permissive	1	SA
There is an absence of limits for over the age of 18	1	SA
The lack of credibility causes damage to political system	1	DP
Underage alcohol consumption is not targeted	1	GP
The law is ridicule if not applied	1	DP

Considering the disadvantages of the alcohol legislation, the four different French NGT's agree that there is an inconsistency between the law and societal standards, the lack of a strong prohibition of alcohol publicity, the limited application of the law in practice and the increased attraction of alcohol to youngsters because of the regulation.

All the groups think that there is an inconsistency between the 2009 alcohol legislation and societal standards. Alcohol consumption is culturally rooted and omnipresent in our society and therefore considered to be part of every social occasion. The participants think that, by prohibiting alcohol consumption until a certain age, a grown-up status of alcohol is created, rendering it even more attractive for youngsters. The poor application, control and enforcement makes it even more complicated, according to the participants. The four NGT groups argue that there is a significant role of the private family to acquaint young people with alcohol consumption in a responsible way.

Finally, the regulation of alcohol marketing and publicity plays an important role in changing the social practices of drinking consumption, according to all the four NGT groups. The lack of a strict regulation on alcohol marketing shows an important incoherence in the alcohol policy according to the participants.

When we consider the specific arguments stated by one group, some specific tendencies can be observed.

The specialised drug prevention workers and the youth prevention workers are particularly in favour of the educational approach in managing youth alcohol consumption, instead of nearly regulating and prohibiting. Therefore, the specialised drug prevention workers adhere to the vagueness of the law. This gives the opportunity to adapt rules to the context. As such, this group prefers to rather respect the spirit of the law. Setting rules which aren't properly understood, without solid application or control, causes damage to the political system, they argue.

This macro-level reflection on the legislation could also be observed within the group of the French youth prevention workers. They state that there is a need for a global plan on alcohol policy, which has to focus on prevention, broadening the knowledge of alcohol and its harmful effects as well as on issues of alcohol promotion and marketing. This NGT group thinks the law specifically tackles small sellers, but not at all the economic interests of the large enterprises, who promote alcohol consumption.

The general practitioners and the school actors generally are in favour of more restriction. The school actors think the law is too permissive, proposing to postpone the age limits to 18 and 20 years old. They argue that many youngsters still are not mature enough at the age of 18 to consume in a responsible way. Therefore, limits should be set for adolescents above the age of 18, according to these participants. Finally, the French general practitioners take the health benefits of the legislation into account, arguing that the law serves as a screening tool to determine whether a patient needs treatment. Nevertheless, they state that there are some gaps in the alcohol legislation. They would prefer to heighten the alcohol prices and to target underage alcohol consumption as well.

Discussion

Europe is the heaviest drinking region in the world, as 11 litres of pure alcohol per adult are consumed each year (Agabio et al., 2015). Figures from the European School Survey Project on Alcohol and other Drugs (ESPAD) among 100000 students from 36 European countries, showed that approximately 90% of 15 to 16 year old students have drunk alcohol at least once in their life. Within this group, 50% was already intoxicated at least once (Hibell et al., 2012).

We wanted to examine how professional actors working with the changed law on alcohol consider the influence of this framework on their work. In this WP, the qualitative method of the Nominal Group Technique was used to take into consideration the views and opinions of prevention and health promotion professionals and key actors concerning the 2009 law. We used this technique to generate ideas, to identify and to rank problems or issues of importance (Vander Laenen, 2009). The central question in these NGT's was: **In your profession, which advantages and disadvantages of the current Belgian alcohol legislation do you consider?**

Four NGT's were carried out in Flanders and four in French Community (regrouping French speaking actors from Brussels and Wallonia) between November 2016 and March 2017. In the Dutch speaking community the NGT's consisted of street corner workers, school actors, specialised prevention and early intervention professionals and General Practitioners (GP's). In the French community a group of drug prevention workers, school actors, low threshold services specialised in youth and a group of General Practitioners was recruited.

1.1 Societal standards

In general the different NGT groups think that the legal framework is insufficient to change moral standards towards alcohol. In our society, pubs and beer are part of everyday life and consuming alcohol is presumed to be inextricably bound with any special occasion. The majority of the participants think that alcohol consumption is a societal problem, rather than a typical juvenile topic, as the legislation insinuates. Tackling this problem requires more than a legislation.

Social norms reflect how members of a community consider particular beliefs and behaviours as normal and appropriate. These norms often create a social pressure to conform and behave in a similar way (Aas & Klepp, 1992). Social norms are learned through observation and experiences. Teenagers who see other teenagers drink, may come to the belief that all teenagers drink. Aas and Klepp found that teenagers tend to overestimate the frequency of drinking by other teenagers. In this way, beliefs which are inconsistent with reality are created (Aas & Klepp, 1992). The observance of drinking by parents, peers and role models in the mass media, creates normative assumptions and positive drinking expectancies in children and adolescents (Anderson & Baumberg, 2006).

As the prevalence data show, the consumption of alcohol is part of everyday life in our region. Still, the 2009 alcohol legislation is limited to regulating the alcohol consumption of adolescents. The Flemish specialised prevention and early intervention professionals state that this strengthens the idea that alcohol is a juvenile problem. This is what the Flemish street corner workers called the “hypocrisy of the legislation”. The French speaking participants are more vehement in their criticism, as they argue that alcohol consumption is trivialised in our society and that the wider societal framework doesn’t manage to guide youngsters into a responsible alcohol consumption so far. The law, though providing us with a clear consciousness, is more stringent than the societal attitudes. Most of the participants find it striking that the law prohibits young people to consume alcohol until a certain age in the context of a society where alcohol is omnipresent and consuming is common sense. In his study on the social determinants of adolescent alcohol use, Schor points out that by treating alcohol as a problem of individuals, this lends itself to medicalizing the behaviour, which can inappropriately focus on the symptom of the behaviour, rather than on the circumstances surrounding and promoting the drinking itself (Schor, 1996).

1.2 Distinction in type of alcohol and age limits: the forbidden fruit theory

Most of the French speaking and Flemish participants, with the exception of the Flemish prevention workers, argue that by prohibiting the consumption of alcohol until a certain age, increases the attractiveness of alcoholic beverages. This is what the French speaking participants call the mechanism of the “forbidden fruit”, pointing at the increased appeal of alcohol by forbidding it. The forbidden fruit theory refers to the psychological reactance theory, described by Brehm in 1966 and commodity theory, described by Brock in 1968. The reactance theory postulates that if a person’s behavioural freedom is reduced, a motivational arousal occurs. This arousal is an unpleasant emotional state which motivates people to restore the threatened or lost freedom (Brehm, 1966). The commodity theory deals with the psychological effects of scarcity which enhances the value or desirability because it is unavailable (Brock, 1968).

All the NGT participants think the distinction in the law to purchase different types of alcohol according to two different ages of onset, also causes this increase in appeal. There is empirical evidence to support this forbidden fruit theory. Allen et al. (1994) investigated the impact of the in the United States in 1987 adopted law making it illegal for individuals to consume alcoholic beverage under the age of 21. Therefore, the alcohol consumption and illicit drug use of underage drinkers were compared to that of their legal-age peers. This research showed the influence of the forbidden fruit effect, as the alcohol consumption of underage consumers were higher than their legal-age counterparts. No difference was found in the illicit drug usage, as there were no law changes on that consumption behaviour. These findings contrasted with the consumption patterns shown in the decades before the change in legislation (Allen, Sprenkel, & Vitale, 1994).

Apart from the possible forbidden fruit mechanism, the distinction in age and alcohol types is unclear and confusing for both seller and purchaser, NGT participants say. Furthermore, discerning the different types on the one hand gives the false impression that beer or wine are innocent types of alcohol and that there are no harms related to those kinds of beverages from a certain age. On the other hand, by distinguishing beer or wine and liquor, whereas liquor can be purchased from the age of 18, heightens the status of the latter to be the beverage of “grown-ups”. The distinction is absurd and complicates the application of the law, according to the French speaking GP’s. Both the Flemish and the French speaking groups consider this an important drawback of the legislation. The opinions about how to resolve this disadvantage differ however, as we will discuss below.

1.3 Parents: crucial partners in managing youngster’s alcohol consumption

All the participants of the eight NGT’s think it is necessary to start an open and constructive dialogue about alcohol consumption with on the one hand underage buyers and adolescents and on the other hand the parents. Young people aren’t always aware of the risks and harmful effects of alcohol consumption. The legislation provides a limited risk insight, because the impression arises that consumption at the age of 16 and 18 is harmless, due to the legality of alcohol consumption from that age of onset. Besides this, there is still a lack of knowledge of the law, especially with parents who often experience unsteadiness to act or to make well-grounded decisions, as participants report during NGT’s. However, the study of Jackson (2002) strongly suggested that there is a potential of parents to improve the capacity of substance use prevention, presumably linked to parenting practice and parenting style (Jackson, 2002).

Parenting practice is strongly influenced by norms, beliefs and values and parents play an important role in the development of the reference frame of their children (Bronfenbrenner, 1999). Adolescents tend to meet these norms, beliefs and values when it comes to substance use and risk taking behaviour (Whiteman & Buchanan, 2002). Van der Vorst et al. (van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005) investigated the alcohol-specific socialisation of parents towards their children and the relation with adolescent alcohol use. The concept of alcohol-specific socialisation refers to the way parents deal with their children’s alcohol consumption, for example, by imposing rules about alcohol, expressing disapproval and giving punishment. Having strict rules on alcohol consumption within the family, seems to be an important alcohol-specific socialisation practice. Moreover, research found that imposing strict rules can prevent youngsters to start heavy and frequent alcohol consumption. According to these findings, parents should be strict about alcohol consumption as early as possible and should continue to be strict, because youngsters who drink less at the age of onset, will be less involved in drinking later on (Van Der Vorst, Engels, Meeus, & Deković, 2006). Moreover, Song et al. (2012) found that, once adolescents start consuming alcohol, their perceptions of parent’s responses to unapproved consumption change. Their expectancy that they would be yelled at or punished, no longer prevents them from consuming alcohol. In other words, parental reactions that are more punitive, may lose their ability to keep adolescents from drinking once they have chosen to start drinking. In other words, adolescents may be willing to take the costs against the benefits of drinking, once they have started consuming. However, the adolescents’ expectation of being talked to, continued to be an effective predictor of less alcohol-related behaviour (Song, Smiler, Wagoner, & Wolfson, 2012). This is in line with the findings of Calafat et al. (2014) who examined whether authoritative parenting style (characterized by warmth and strictness) is more protective against adolescent substances use than authoritarian (strictness but not warmth), indulgent (warmth but not

strictness) and neglectful (neither warmth nor strictness) parenting styles. Their findings suggested that both indulgent and authoritative parenting styles were associated with better outcomes than authoritarian and neglectful parenting. Overall and unexpectedly, the results showed that the indulgent parenting style performs as well as the authoritative one, since the scores in the youth outcomes were equal on substance use and personal disturbances, or even better on self-esteem and school performance, than for the authoritative parenting style. These results were found in different European countries (Spain, Portugal, Sweden, United Kingdom, Slovenia, and the Czech Republic). The neglectful parenting style and the authoritarian parenting style were associated to the highest level of tobacco and illegal drug use, being alcohol use even higher for neglectful than authoritarian parenting style (Calafat, García, Juan, Becoña, & Fernández-Hermida, 2014). The study of Piko and Balázs (2012) confirms the importance of responsiveness and positive identification with parents may serve as a protection, whereas negative interactions may be a risk factor (Piko & Balázs, 2012).

Furthermore, the findings of van der Vorst et al. (Van Der Vorst, Engels, Meeus, & Deković, 2006) pointed out that having confidence in the own alcohol-specific socialisation practices, seemed to have a preventive impact on drinking behaviour of adolescents. However, both parents seem to have more confidence in the effectiveness of their parenting behaviour concerning their younger adolescent than their older adolescent. Although research showed that parents treat their adolescents differently concerning rules setting (stricter rules in younger adolescents), the magnitude of the association between rules and onset of drinking alcohol, was similar for both younger and older siblings. However, the findings of Jackson (2002) show that the adolescent's acknowledgement of parental legitimacy is an important condition to resort this effect. In this study the majority of young adolescents perceived legitimate parental authority regarding alcohol consumption, hereby discrediting the myth that adolescents disregard parental values and norms regarding alcohol. Moreover, adolescents were significantly more likely to legitimise parental authority regarding alcohol than parental authority regarding more conventional issues. Failure to legitimise parental authority was associated with significantly greater odds of consuming alcohol (Jackson, 2002). This is also confirmed by the study of Piko and Balázs (2012), who conclude that although parental control tends to decrease among high school students, it even serves as a greater protection for those whose parents continue providing parental monitoring (Piko & Balázs, 2012).

Both the French speaking and the Flemish NGT groups highly consider the educational approach. The NGT group of both parts of the country think paying attention to attitude modification towards alcohol has to be the main goal of the legislation. A change in mentality is necessary, a participant says, but it requires the involvement of all the different stakeholders, like parents, sellers, fabricants, distributors, marketers and policy makers. It is preferable to invest in a responsible reference framework, instead of problematizing the behaviour towards alcohol. Parents play an important role in this matter. Simply focussing on the application of the law, without more adherence to motivation leads to private drinking, which, without any adult monitoring, can lead to problematic alcohol use.

1.4 Responsible alcohol consumption through parental monitoring

The French speaking participants think there are educational opportunities within the private context of the family to learn to deal with alcohol progressively. The subsequence of integrating beer and wine and then spirits according to specific traditions or habits, may be an alternative for the societal attitude of considering the omnipresence of alcoholic beverages at any occasion to be normal. Some of the French speaking participants argue that the legislation doesn't permit parents to guide their

children to a responsible consumption before the official age of onset, as the serving of alcohol to underage is forbidden and can be penalised. The French speaking school counsellors and general practitioners think this is a considerable disadvantage of the current law. Within the French speaking group of general practitioners and drug prevention workers, the participants state that the law should not intervene in family matters, as the legislation itself doesn't provide supervision of the first consumptions.

Donovan (2007) points out that, based on different studies (Ellickson, Tucker, & Klein, 2003; Gruber, DiClemente, Anderson, & Lodico, 1996; Stueve & O'Donnell, 2005) there is evidence linking early alcohol use initiation to negative long-term outcomes like alcohol problems, later delinquency, drug abuse, etc. As the family is the primary context for children's introduction to alcohol use by parents or other relatives, prevention programmes should involve parents too, he states. Parallel to the NGT participants, some parents believe that introducing children to alcohol use as part of family dinners or events, serves to inoculate them from involvement in problematic drinking later in life.

As the effect of the belief that sipping in the family context whether has protective, harmful or no consequences at all, has been rarely investigated, Jackson (2012) studied these pro-sipping beliefs about alcohol among parents and the relations between these beliefs and parents' alcohol-specific attitudes and practices on the one hand, and children's reports of initiation of alcohol use on the other. The findings of this study show that 1 in 4 mothers believe that sipping is deterrent, because children don't like the taste of alcohol and because sipping removes the earlier described forbidden fruit effect. 20% of the parents believed that children who sip will be better to resist peer pressure and less likely to experiment with problematic alcohol consumption later on. The finding indicates that parents are convinced that their children will replicate parental drinking norms when they are with peers. This expectation is refuted by recent studies that link adolescent brain development with their propensity to disregard parental drinking norms when they are with peers (Reyna & Farley, 2006). Another finding in this study showed that pro-sipping beliefs were more strongly held among white women and with highly educated women. The likelihood of children sipping alcohol was also higher in these sociodemographic subgroups. Parallel to some French speaking NGT participants, the notion that an early exposure to alcohol has a beneficial effect, has a strong foothold among some parents. These beliefs are related to parental attitudes and practices about letting their children sip and to children's reports of sipping alcoholic drinks (Jackson, Ennett, Dickinson, & Bowling, 2012).

Besides offering a single sip, parents can allow underage drinking in their own home. The underlying belief is the same as explained earlier, socializing their children by providing them with alcohol and a safe place to drink. Kaynak et al. (2017) conducted a literature review on the associations between parental alcohol provision and their underage child's alcohol use and alcohol-related problems. They found that parental provision of alcohol and a place to consume (besides offering sips, allowing and supervision of adolescent's use, hosting an event, or furnishing alcohol), increased the alcohol use and sometimes alcohol-related problems. They concluded that parental provision leads to behavioural (i.e. the practice of drinking) as well as normative (the behaviour is approved by his parents (Jackson, 2002)) experiences, leading to the opposite effect as the intended belief, namely towards unsupervised drinking, more rapidly than it would have been without parental provision. However, parents believe that they are socializing their children in responsible alcohol consumption, they might reinforce their children's drinking behaviour and give the impression that it is acceptable. The socialization process might have the opposite effect of bringing about a sense of comfort in alcohol

consumption, which might increase the tendency to drink (Kaynak, Winters, Cacciola, Kirby, & Arria, 2014b).

1.5 Minimum legal age on drinking alcohol

Literature reveals that, although there are overall consequences of alcohol use, both for adults and for young people, adolescents are at risk in a specific way when it comes to alcohol consumption. Youngsters are more vulnerable than adults (Anderson & Baumberg, 2006). Apart from the fact that they are physically seemingly smaller, which resorts a higher alcohol percentage and turns them more susceptible for short-term risks like intoxication and blackouts, unprotected sexual behaviour, suicide, depression, skip class, fighting, vandalism and problematic friendships, they aren't experienced in drinking and often lack a point of reference with regard to the amount of alcohol consumption (Anderson & Baumberg, 2006). Moreover, their brains aren't fully developed yet, which makes them vulnerable for brain damage like learning disorders and memory problems.

The French speaking participants are in favour of a distinction in quantity and context (festivities, special occasions,...) or a difference in legislation according to alcohol percentage in the end product. In general, French speaking NGT participants, and the specialised services in drug addictions and youth prevention workers in particular, are advocates of the progressiveness of the age thresholds, providing youngsters the opportunity to experiment gradually with alcohol consumption. Instead of lifting the age of onset, these participants would leave the progressiveness thresholds, be it on another basis.

The Flemish school actors, prevention workers and general practitioners state therefore that no distinction should be made between different types of alcohol, as alcohol is harmful, even in small amounts. These groups support the idea of raising the legal age limits to 18 for all types of alcohol. Different Flemish NGT groups moreover draw a parallel with smoking. The prohibition of smoking in public areas caused a mentality shift in society, which is considered to be an inspiring case for alcohol when it comes to behavioural modification.

The French speaking GP's state that a law that does not restrict but is accompanied by genuine measures of health education, health promotion and risk reduction would perhaps be more effective, parallel to the policy on other drugs. Marmot (2004) states that in democratic communities, there is always a tension between governmental interference and the responsibility of individual members of such communities. Parallel to smoking, whereas this is an individual responsibility, governments have taken action by raising the prices, restricting advertising and promotion and restricting smoking in public areas, a government has the responsibility alongside of its individual citizens. Policies which are the most effective, are those that foster a supportive environment in which people are able to make healthy choices (Marmot, 2004).

1.6 Compliance and enforcement

The full benefits of a legal drinking age are only realized if the law is enforced. The impact of different strategies will resort little effect if there is no consequence to breaching the law (Anderson & Baumberg, 2006).

As discussed earlier, all the NGT groups generally argue that the legislation is stricter than the societal standards in Belgium. The law is considered to be "pro forma", because there nearly is no enforcement. Participants state that compliance with the law is hard because of the earlier discussed

distinction or due to a lack of assertiveness with the sellers. In general, the lack of clarity was considered to be a meaningful disadvantage of the 2009 legislation. Participants state that this makes the legislation difficult to comply with and that sellers aren't well supported to enhance compliance. Nevertheless, apart from the Flemish prevention workers and the French speaking GP's, the majority thinks that it is an advantage that sellers are responsible instead of consumers. Flemish prevention workers and the French speaking GP's would consider to penalise the consumption as well as the selling. So far, no studies on the influence of penalising the underage alcohol consumption on underage drinking have been carried out. However, there are a few empirical studies relating laws that penalise tobacco possession use and purchase in youth smoking (Jason, Pokorny, & Schoeny, 2003; Kelder, 1997; Langer & Warheit, 2000; Livingood, Woodhouse, Sayre, & Wludyka, 2001). Although both topics are not completely the same, a parallel between youth smoking and underage alcohol consumption can be drawn. Based on these aforementioned studies, it's difficult to conclude there are strong positive effects from these laws (Wakefield & Giovino, 2003). To the contrary, there are theoretical, practical and strategic reasons why these laws which penalises tobacco possession, may be unlikely to significantly reduce youth smoking. First of all, the effectiveness of these laws is uncertain, as they lack some specific features required to change individual behaviour through punishment, f.i. offences are difficult to detect and the time gap between the offence and punishment is too large. Furthermore, younger and more conventional youth could be more responsive than older youngsters. Above this, a substantial amount of manpower resources is needed to be able to enforce these laws. Another counterargument is the risk of these laws undermining conventional ways to maintain discipline, f.i. school environments and parent-child relationships, which clearly appear to be valuable in managing underage alcohol consumption, as we stated before. Finally, Wakefield and Giovino (2003) state that these laws could divert policy attention from effective tobacco control strategies, relieve the tobacco industry of responsibility for its marketing practices and put an emphasis on the adult position of smoking, which the tobacco industry prefers (Wakefield & Giovino, 2003). Roche et al. (2013) who investigated the rationale and potential overall impact of Australia's legislative changes regulating underage alcohol possession and consumption in private or unregulated premises, state that this regulation assigns control and responsibility to parents to socialise teenage drinking to community values. The authors consider these kind of laws to be ineffective because youngsters consume alcohol in a cultural context, constructing their social and drinking identities with only limited regard for the externalised setting of the law. Compliance with the law within peer groups can be limited by the use of alcohol as a vehicle for transgressing social norms and by the potential to demonstrate their own autonomy despite this law. According to the authors, this may lead to harmful alcohol consumption in high-risk circumstances without adult supervision (Roche, Steenson, & Andrew, 2013).

The NGT participants state that adolescents are creative in finding ways to avoid the law without impediments. As a consequence of these aspects, alcohol is still easily available. Although they are in favour of early consumption within the family for educational purposes, the French speaking GP group states that it should be obligatory to systematically carry out identification checks. There is a consensus in all NGT on the necessity of more systematic controls by enforcement actors, which is supported by the literature. Wagenaar (2005) investigated the effect of police enforcement checks on the compliance rate in both on-premise and off-premise alcohol establishments. The specific establishment-level effect was assessed (immediate and long-term), as well as the general community-effect. Furthermore, the length of time before the immediate effect decayed to the long-

term effect was examined. The findings showed a clear deterrent effect of enforcement checks, but only in the establishments that were visited by the police. In other words, there was no diffusion of the effect to the wider community. In general, the observed reduction in likelihood of underage alcohol sales decayed entirely within 3 months in off-premise and from 17% to 8,2% in on-premise establishments. The findings suggest that the common practice of one enforcement check per year is not sufficient to create substantial decreases in alcohol sales to youth (Wagenaar et al., 2005c).

1.7 Availability

The French speaking GP group thinks that raising the prices of alcoholic beverages, could also provide a part of the solution. Indeed, research shows that raising the prices has a clear effect on the alcohol consumption and the detrimental effects of it. The consumption decreases, specifically in the group of young adolescents and heavily drinkers and reduces alcohol-related harm. Moreover, higher prices reduces heavy drinking, f.i. binge-drinking (WHO, 2014d).

The free availability can be observed at numerous places, but specifically in gas stations and night shops. Among the NGT groups of the Flemish school actors and specialised prevention workers and the French GP's, there is a consensus on limiting the alcoholic beverages supply in these premises, since participants find it too easy for underage buyers to purchase a bottle of liquor. The participants think this unlimited offer is a real problem, which brings us back to the earlier discussion on the risks of private drinking which isn't mentored by any adult. These arguments of NGT participants are indirectly confirmed by a literature review of Campbell et al. (2009) on the effectiveness of limiting outlet density on the reduction of excessive alcohol consumption and alcohol-related harms. This review revealed that more permissive licensing procedures bring about an increase in the number of on- and off-premises, which on its turn leads to an increase in alcohol consumption and related harm. Campbell et al. concluded that the regulation of alcohol outlet density may therefore be a useful public health tool for the reduction of harmful consumption (Campbell, Hahn, Elder, Brewer, Chattopadhyay, Fielding, Naimi, Toomey, Lawrence, Middleton, et al., 2009).

1.8 Raising awareness

There is a consensus among the different NGT participants that raising awareness with youngsters, as well as parents and the rest of society, next to interventions for behaviour modification are indicated. A higher awareness and consciousness about the harmful aspects of alcohol consumption can be obtained by informing youngsters about health-related themes, for example through a media campaign (De Ruyver et al., 2009). This informing doesn't automatically imply a behavioural change among youngsters. The change in behaviour is based on being well-informed, but this is not sufficient, the literature shows. Other interventions, like developing personal and communicative competencies are important, for example assertiveness, conflict and stress management, problem solving capacities and a positive self-esteem (VAD, 2009). In general, there is a consensus among the NGT participants about the need for raising awareness, but the way to handle this varies between different NGT groups.

Whereas both French speaking and Flemish general practitioners state that testimonials or awareness campaigns should be used in schools in order to sensitise youngsters or to create a shock effect, alike the case of antibiotics, the street corner workers think that a general awareness, not only with the group of youngsters, is of vital importance. Instead of zero tolerance, which has a contradictory effect most of the time, it's preferable to handle alcohol consumption in a responsible way. The prevention literature points out that, especially for young people who already used alcohol, a moralistic approach

of discussing the advantages and disadvantages of alcohol consumption in a terrifying way, has little effect or can even be counterproductive (Vander Laenen, 2008; Werch & Owen, 2002). Listeners will broaden their knowledge, but can be provoked to experiment with alcoholic beverages out of curiosity. In conclusion, this kind of preventive actions aren't effective (De Ruyver et al., 2009).

1.9 Communication

Participants are convinced of the important aspect of communication in order to raise awareness. In this respect, the alcohol legislation nowadays has a twofold contradictory effect. On the one hand, the law, and more specific the distinction in age and types of alcoholic beverages, is confusing. On the other hand, the law provides a reference framework to cope with this confusion. This framework can clarify the communication while initiating a dialogue with youngsters and parents. The law is a framework to refer to. It provides a guideline to have open and comfortable discussions on the topic of alcohol consumption. The law initiates a wider discussion on the casualness of adult drinking. In doing so, the societal attitudes come to be an issue of argumentation, gaining more consciousness on this in the meantime.

In general, public education and information campaigns aren't sufficient in reducing alcohol-related problems. Media advocacy approaches however, can be helpful to gain public support for policy changes (Anderson & Baumberg, 2006). Van Havere systematically reviewed 14 peer-reviewed articles on prevention and harm reduction interventions in the broader nightlife. It seemed that, when implemented isolated, few effects are seen, while a combination of law enforcement with media advocacy, more positive effects are seen (Van Havere, 2012).

Flemish participants recommend not to communicate in a paternalistic manner, but rather interactive, both for parents and youngsters. According to several participants however, this moralistic communication strategy is often used when it comes to alcohol consumption. As a consequence, paternalistic messages are being mocked by youngsters. Prevention literature shows that the most effective prevention programs focus on interaction and active participation. These programs are far more effective in reducing substance use than more didactically oriented programmes consisting of lectures or documentaries (Botvin & Griffin, 2003; Kumpfer & Alder, 2003 in De Ruyver et al., 2009). When it comes to risk communication, it is better to give a neutral message, based on scientific research, the most Flemish participants state.

The French speaking prevention workers argue that, when it comes to the content of communication, the alcohol legislation focuses all of its attention on the product instead of underlining the quantity and the regularity within a certain context. As a consequence, the strict application of the law, without taking the other parameters into account, doesn't lead to any insight in responsible alcohol consumption. Instead of leading to behavioural change, this causes an indifference or aversion towards the law. This, on its turn, brings about a greater appeal of alcoholic beverages on the one hand and an increase in private drinking on the other hand, which is even more risky, as it isn't controlled, nor monitored, as discussed earlier.

Besides this, most of the participants state that the law lacks transparency about the rationale the law is based on. Most of the people are ignorant about the reasons behind the law, it is stated.

Furthermore, in contrast of the Flemish general practitioners, the French speaking GP's state that the law serves as a pretext to enter into a discussion with patients and parents and to pass information

about alcohol and its risks. The Flemish GP's however, state that there is little openness to discuss the topic of alcohol consumption with their young patients, apart from pointing out that the combination of alcohol consumption and taking medication is to be avoided. According to them, there is little public support to discuss alcohol consumption and its related problems. Moreover they themselves lack the confidence to enter in a dialogue with young people on this topic. Vanmeerbeek et al. interviewed twenty Belgian GP's on their role to detect and manage alcohol and other substance abuse (Vanmeerbeek et al., 2015). The results showed that the personal attitudes and motivation, available resources and their training level were crucial in deciding whether to manage their patients with substance abuse or not. GP's perceptions of their role and their opinions and (lack of) theoretical knowledge of substance abuse seemed to be important behaviours.

1.10 Prevention

In the Flemish NGT's special attention went to prevention in a school context. Nowadays primary schools are paying much more attention to prevention messages than they used to, which has a positive effect on the more realistic perception of alcohol according to the participants. School based programmes, which can be delivered as school lessons, are the most common used prevention programmes in Europe. Unplugged (Kreeft et al., 2009) is the program which is most currently used and it appears to be most the effective up till now (Agabio et al., 2015). The participants think it's a good start that prevention related to alcohol is part of the curricula nowadays. However, literature illustrates that although school prevention programmes can reach a wide range of children, the impact can be disappointing when this is not combined with other interventions on personal competencies, as discussed earlier (De Ruyver et al., 2009; Vander Laenen, 2008). School-based education programmes often show positive effects on alcohol knowledge, but few effects on drinking behaviour (Shope, Copeland, Maharg, & Dielman, 1996; Shope, Dielman, Butchart, Campanelli, & Kloska, 1992). Although there are some examples of the beneficial impact of school-based education, systematic reviews find that the majority of studies show no impact even in the short-term. Anderson and Baumberg (2006) point out that disappointing effects of school-based programmes shouldn't imply that these programmes should not be delivered, since everyone needs to be informed about the risks of alcohol consumption. Nevertheless, school-based programmes shouldn't be seen as the only alternative to reduce alcohol-related harm (Anderson & Baumberg, 2006).

Foxcroft and Tsertsvadze (2012) reviewed a total of 53 school programmes, 12 family programmes and 20 multicomponent programmes. The school reviews revealed studies that showed no effects, as well as studies that demonstrated statistically significant effects, whereas the review of family-based programmes showed significant short- and long-term effects in reducing alcohol misuse among young people in 9 out of 12 included studies. The effects are small, but consistent and persistent. Moreover, one study found that the family-based intervention was effective when combined with a school-based programme. In spite of this finding, the results of the multi-component reviews showed insufficient evidence that interventions with multiple components are more effective than interventions with single components (Foxcroft & Tsertsvadze, 2012).

Across the different programmes, the most common effects were on binge-drinking and drunkenness. Moreover, the impact of the interventions was proven to be longer lasting with generic programmes, which don't focus on the prevention of only one behaviour, for example alcohol misuse. These interventions seem to be effective only in certain contexts or under certain circumstances (Foxcroft & Tsertsvadze, 2012). This hypothesis is confirmed by different studies (Reboussin, Song, & Wolfson,

2012; Song et al., 2012). Reboussin et al. found that there are differential effects of the social context in which drinking alcohol occurs. Moreover, there are different patterns of influence of both friends (an increased risk in getting drunk, heavy episodic drinking and experiencing nonviolent consequences) and parents (a decreased risk in the aforementioned factors). Getting drunk occurs in communities where there is a higher concentration of youth reporting drinking with friends. In contrast, there is a higher concentration of drinkers reporting not getting drunk within a context where there is a higher concentration of youth reporting drinking with their parents. The findings of Song et al. (2012) illustrated the different properties of norms, all resorting a different impact. Adolescents demonstrated to recognize different alcohol norms within different sources (parents, community and peers). These norms function simultaneously and have related and distinct impacts on adolescents. Moreover, different groups of adolescents have different norms regarding alcohol, which have on their turn a different relation with alcohol-related behaviours. Moreover, each source seems to have several relevant norms. As a result, there are multiple pathways to influence adolescents, which has a great influence on prevention strategies and interventions (Song et al., 2012).

Among the different NGT groups, there is a consensus on the necessity of funding and resources for prevention initiatives. There is a need for structural resources, rather than ad hoc projects. If you want to avoid that people need treatment or care, the focus must be on prevention (Vander Laenen, 2012).

Until now, little is known about the differential effects of the social context in which drinking occurs. Therefore, a better understanding of the advisable ingredients of interventions delivered as different components in different settings, would be useful (Foxcroft & Tsertsvadze, 2012).

1.11 Marketing and promotion

Several participants find it rather remarkable that alcohol promotion, marketing and the publicity of alcohol is still allowed. Where it would be unthinkable to advertise for heroin or cocaine, for example, it is authorized for alcohol fabricants to sponsor sport events and to explicitly link alcoholic beverages to fun, relaxation and a pleasant environment. A recent study showed that young children form memory associations between alcohol and parties before they ever drink alcohol themselves (Van Der Vorst et al., 2013). Marketing and alcohol advertising and sponsoring currently are not covered by the legislation. This lack of regulation gives marketers the chance to develop up to date marketing strategies specifically aimed at young people. As it comes to changing societal attitudes and behaviour towards alcohol consumption, this is like swimming against the tide.

New product development is indeed prominent since the early nineties and started with designer drinks, specifically developed for young adolescents, resulting in a whole new range of alcoholic drinks, from the so called alcopops to pre-mix cocktails, mixing high energy soft drinks with spirits and eventually the 'shots'. The attraction lies in the combination of packaging, taste and alcoholic content. Studies of young people's behaviour have illustrated that such drinks can contribute to heavier drinking and lowering the age of onset (Anderson & Baumberg, 2006).

In mass media, alcohol consumption is omnipresent. Alcohol consumption is frequently portrayed on television, as well as it is referred to in lyrics of all kinds of music genres video clips, films, subject in sophisticated websites and sport sponsorships in which alcohol consumption is clearly glamorized (Anderson & Baumberg, 2006). Hereby continuously exposure to alcohol marketing through different

media channels, especially social media, contributes to the socialization process of considering alcohol consumption common sense. The alcohol marketing to young people uses a diversity of channels and modalities and is at the forefront of what is termed post-modern marketing (Jernigan & O'Hara, 2004; Jernigan, Ostroff, & Ross, 2005).

Different studies suggest that the alcohol consumption is influenced by the specific content as well as by the magnitude of the exposure to alcohol marketing. The more frequent the exposure, and the more the consumer likes the (underlying) message, the greater the impact of the advertisement (Anderson, Chisholm, & Fuhr, 2009b; Austin, Chen, & Grube, 2006; Collins et al., 2007; Jernigan & WHO, 2001). Exposure to alcohol advertisements increases initiation of alcohol use amongst adolescents (Anderson & Baumberg, 2006).

Different marketing regulations have been implemented in many countries to restrict this alcohol marketing exposure, to control content and to monitor compliance with advertising standards. The alcohol marketing regulation in the EU countries shows a wide range of diversity, from content, time or volume restrictions to a total ban (Anderson, Chisholm, et al., 2009b; van den Broeck & de Bruijn, 2010). In Belgium alcohol advertising is prohibited just before or after programmes for children. Moreover, sponsoring of children's programmes is forbidden for companies whose principal activity is the manufacturing or sale of alcoholic beverages. Alcohol advertising is checked on the basis of complaints submitted by the public and thus far from systematic. There is no prior alcohol advertising screening before it is released. In the Netherlands, there is a ban on advertising and teleshopping messages for alcoholic beverages between 6 am and 9 pm. In France the 'Loi Evin' imposes strict limitations in alcohol marketing for beverages with an alcohol percentage of more than 1,2% and in contexts where alcohol marketing is allowed (Regaud & Caplet, 2004). Therefore, in France, alcohol marketing is prohibited when it is aimed at youngsters and on television and cinema. Sport sponsorships are also not allowed. Publicity has to be limited to the qualities of the product and every publicity message contains the phrase: 'misuse of alcohol is dangerous.' In Norway, the Alcohol Act imposes a total ban on advertising for all alcoholic beverages on television, radio, outdoor marketing, sponsorships, cinema's and in the Internet for sites that are open to the public. Only if the website is restricted with a password for licensees or other employees in the industry, the product information and other alcohol marketing can be published (De Bruijn, 2008; Jernigan, 2001; WHO, 2014d).

In addition to statutory regulation, alcohol industry self-regulation is a common way to protect adolescents from alcohol marketing exposures. In a recent study, Noel and Babor (2016) critically reviewed research designed to evaluate the effectiveness of the alcohol industry's compliance procedures to manage complaints when alcohol marketing is considered to have violated a self-regulatory code. The results show that violations of the content guidelines within self-regulated alcohol marketing codes are highly prevalent in certain media. Furthermore, the current self-regulatory systems that govern alcohol marketing practices are not meeting their intended goal of protecting vulnerable populations (Noel & Babor, 2017).

Conclusion

Taking into account the arguments that were expressed in the various NGT's, we can distinguish some overall patterns. In general, the stated advantages and disadvantages between the different NGT groups are more or less alike. However, the normative reference frame differs between the Flemish and the French speaking groups, which can explain the different solutions and policy recommendations that were stated.

The Flemish participants seem to preferably reflect on a micro- and meso-level when it comes to the disadvantages and the advantages of the alcohol legislation. They focus on the individual, rather than on the societal perspectives. The advantages and drawbacks which mainly influence the daily life of early consumers within the context of peers, family and school are considered. The focus is on the employability of the law as such. Their reflections illustrate the wish to act according to the letter of the law, which is the centre of interest. For example, raising awareness is regarded as a very important aspect, but rather in order to prevent early overconsumption as a consequence of risk consciousness. The Flemish participants are therefore in favour of heightening the age limits. Their reflections have a pragmatic and protective foundation and the expectations towards the legislation are high as to altering the societal mentality towards alcohol.

The French speaking groups prefer to rather respect the spirit of the law. The considerations of these groups illustrate a reflection on the macro-level of the alcohol legislation. Hereby, the social mechanisms that come along, have an influence on or are caused by the legislation, are taken into account. In this group for example, raising awareness is about acquiring to consume in a responsible way in order to resist societal standards based on the highly valued omnipresence of alcohol. They presume the primal function of the legislation is to serve society. The law is not seen as a hierarchical concept which simply has to be obeyed, but rather a product of society which in its turn functions as an important guideline. This is why some French speaking participants argue that the vagueness of the law allows adaptation according to the context. The priority of the French speaking NGT groups doesn't lie in postponing the age of onset nor in changing the societal norms, but rather in supporting youngsters in behavioural modification through an educational approach. In this way, youngsters can become responsible consumers in a society where consuming alcohol is standard.

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Chapter 8: Focus on enforcement

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Acknowledgements to Bart De Clercq

Introduction

Legal age restrictions without enforcement at different levels (federal, regional and local) are not sufficient (Gosselt et al., 2007) and so different levels (federal, regional and local) should pay attention to enforcement. The effect of enforcement can be considered as twofold: it influences the direct availability of alcohol and it influences the societal norms, attitudes and beliefs in society (Wagenaar, 2011 in (Mulder & De Greeff, 2013a)).

The aim is to collect new data from stakeholders involved in enforcement at different levels: federal, regional and local. From document analysis and personal contacts, we will list possible groups of stakeholders and conduct interviews.

1.2 Methodology

1.2.1 Sample

As proposed in the project, a snowball strategy has been followed, starting from information from the literature as well as during different interviews (for WP 3 and WP 5). We aimed to make an inventory of the enforcement initiatives on three levels: the local level, the regions/communities, the federal level. For the local level, we focussed on the areas where we conducted in the same period interviews with the sellers: Brussels, Ghent and Liège.

In final, the sample is composed by 16 interviews. 7 interviews were conducted on a local level. In Brussels, the manager of public tranquillity as well as the coordinator of the youth section of the prevention department of the local authority were interviewed. In Zottegem, the consultant in youth affaires of the local authority was interviewed as well as the local police. In Ghent a local initiative of the local authority, the Horecacoach (Coach of the hotel and catering sector) was interviewed. In Liège, the local authorities were interviewed through the drugs section of the local prevention department. The police manager in charge of a specific neighbourhood comprising many bars, pubs and clubs (Le Carré) was interviewed.

We decided to interview 4 persons of umbrella organizations of services, institutions and associations that focus on alcohol and other drugs. Their member organizations are active on the community level and the regional level, the umbrella organizations try also to weight on the federal level. We interviewed VAD, the Flemish Expertise Center for Alcohol, Illicit Drugs, Psychoactive Medication and Gaming, which is also the Flemish umbrella organization on alcohol and drug issues. In Brussels Fédito BXL (Brussels Federation of Institutions for Drug Addicts) was interviewed. They bring together 26 institutions active in Brussels in the fields of information, prevention, risk reduction, care, support and epidemiology relating to psychoactive substance use and addictions, active in prevention, ambulant and residential treatment. The Network "alcohol, youth and society" also participated. This informal group regroups 12 associations from the education, health and youth sectors in order to promote responsible and less risky drinking. The Walloon Fédito did not participate, due to prolonged illness. They did participate in the NGT for WP5. One consultant of Flemish youth houses (Formaat) was also interviewed.

On the federal level the head of enforcement control of the Federal Public Service of Health, Food Chain Safety and Environment was interviewed, as well as two control agents.

Finally, in the economic sector, we interviewed the Belgian Beer Brewers, the Federation of Belgian Brewers as well as Vinum et Spiritus, who brings together producers and distributors of wines and spirits, small-scale wholesalers, wholesalers, multinationals (Bacardi and others) and supermarkets.

1.2.2 Procedures and measures

Data are obtained using individual semi-structured interviews (Beaud & Weber, 1997; Poupart, 1997). The participation was voluntary and an informed consent was obtained. Almost all interviews were recorded entirely. The interviews were conducted by two researchers from HoGent and the ULg. All researchers followed the same guidelines.

To put the interviewee at ease and to slide more fluently over from the structured questions to the more open ones, we started by asking some general information of the service or association. As many authors (Beaud & Weber, 1997; Albarello, Digneffe, Hiernaux & Maroy, 1995; Silverman, 2011) recommend, this gives the interviewee the time to get used to speaking to us and responding to more open questions. We then start the core questions of the semi-directive part. Specifically, we asked questions on their view on the law, the specific initiatives or policy of the service or organisation, their views on the enforcement of the law, specifically on prevention, controls and sanctions. The interviews took between 45 minutes and 2h.

1.2.3 Analytic strategy

The analysis aimed at making an inventory of the different enforcement initiatives and to understand why and how these were developed. We also looked at any documentation given during the interviews regarding the enforcement action.

1.3 Results

Due to personnel changes the results of Brussels and Walloon interviews are not included in the end report.

1.3.1 Prevention and enforcement

It is argued by most interviewees that prevention and enforcement should go hand in hand. Preventive measures are important to raise awareness of alcohol-related risks, enforcement activities can be a strong motivation to comply with the legislation, although this is a rather extrinsic motivation. However, VAD argues that the emphasis should lay on prevention and they think repression is a bridge too far. In contradictory, the police agents think the emphasis should be on repression and enforcement instead of on prevention. According to them, only considerable fines can be effective in motivating sellers to comply with the law.

An example of a good collaboration can be found in the interview of the youth consultant of Zottegem who indicates that on a regular basis there is a collaboration between police, neighborhood representatives, the youth alderman, the mayor and the caretaker of the party location. Initially, this association was set up to draw an overall picture of the common problems during the weekends. Therefore, all the incidents can be reported on a common digital platform, in order to inform all the stakeholders and to have a clear view of the possible nightlife related problems the city is confronted with.

1.3.2 Difficulties to comply with the law

All stakeholders agree that it is hard to comply with the law. The following difficulties are described by different actors:

Asking for age identification is hardly done in Belgium and is therefore difficult for young sellers to implement. The age of youngsters can hardly be estimated sometimes. Especially girls often look older than they are. Besides this, youngsters often pretend not to have their identity card with them. Therefore, young customers should be put under an obligation to show their ID, in order to demonstrate that they are old enough to purchase alcoholic beverages. If they show their ID, sellers still have to calculate the age, which is sometimes time consuming.

Youngsters often hide alcohol in their backpacks or at the parking lot. As a consequence, they drink alcohol in informal places where controls are not possible are carried out.

Adults buy alcohol for their underage friends, which is referred to as the strategy of “shoulder tapping” (letting older friends buy alcoholic drinks)

Although the bracelets used at parties are not always distributed based on the ID (but for example only by asking the young people in what year they were born), are insufficiently checked, or hidden under the sleeves, this system can be efficient, but has to be put into practice in a responsible way.

Parents do not always check up on the alcohol consumption habits of their children and do not always know how to react on their children’s alcohol consumption.

Furthermore, it is not always clear for sellers, or other stakeholders, for instance the police, which alcoholic drinks are allowed to sell to 16 year-olds.

Finally, the control agents face other issues:

- control agents are not allowed to take possession of young people’s glasses or bottles, so they cannot be sure what type of alcohol is inside. The alcohol of underage buyers should better be confiscated, but this isn’t the case now.
- in hectic surroundings it is difficult to perform inspections.

1.3.3 Proactive initiatives on a local level

Some interviewees state that it depends on the local legislation and the police responsible whether the alcohol legislation is a top priority and as a result which measures are being taken to prevent underage selling. For instance, the licensing of alcohol purchase lays with the local authorities now. Some stakeholders would like to see more conformity and more reluctance of the local authority to give licenses. Some local authorities are very permissive, others state that, when a youth house wants to serve spirits, an official recognition with accompanying financial incentives can’t be obtained.

Currently, some local initiatives arise, for instance in Zottegem, the police visits schools to inform school staff and school party organisers about the current legislation and regulations on the one hand and to enter into commitments on the other hand. Before major events take place, members of the organising committee are invited at the police office in order to review the important rules. The mayor

of the village is also present at these meetings. Furthermore, different actors like VAD, the FOD etc. disseminate information on the current legislation.

1.3.4 Controls and inspections

All interviewees agree that more controls, inspections or test purchasing should be in place. However, certain conditions are necessary according to the respondents. Controls should not target certain profiles of sellers, but include all sorts of sellers like local night shops, bars, pubs, and cafés. Controls should also target all age groups of buyers and not only focus on the young people. A few stakeholders think that the controls should not emphasize too much on young people, as there are also problems in other age categories.

Currently, the method of mystery shopping is included in the Local Alcohol Monitor provided by VAD. It is an instrument to evaluate and optimize local prevention strategies. The protocol exists only in the Flemish part of the country and is only used for preventive purposes (VAD, 2015). The results of the test purchasing attempt are always sent to local policy makers. As a consequence, preventive strategies can be worked out in order to support local catering staff to comply with the alcohol legislation. In general, the Local Alcohol Monitor results in more openness and dialogue between sellers and local policy makers.

With regard to mystery shopping and the Local Alcohol Monitor, VAD prefers a strict and clear separation between the two different pathways (enforcement or prevention). VAD is pleading for the improvement of the control system like it is now organized, but to extend the local alcohol monitor from a local and preventive point of view. According to the police, mystery shopping might work, but it should be used in combination between preventative as well as in enforcement strategies, as they believe that a merely preventative application would have no effect.

The FOD performs its inspections in collaboration with police officers and specifically recruits young inspectors as not to stand out among youngsters, for example on music festivals. Older control agents keep a distance and are in charge of the safety. When a violation of the legislation is observed, the second control agent assists in approaching the violator. The interviewed police agents feel the inspections of FOD as being very effective. When they do enforcement controls themselves, it's difficult to take note of any violation, because they are well known in a small city.

However, with the controls some difficulties arise: it's not always easy to assess the age of the youngster. Or when you check the age of the assumed underage buyer, you can only do this once. After doing this once, all customers will know that you are a control service member. The control agents indicate that it is difficult to control the alcohol selling in supermarkets, as they are not allowed to instigate, and consequently they sometimes have to wait a long time before violations can be observed. Moreover, it is impossible to perform controls when self-scans are used.

1.3.5 Fines and sanctions

The inspections start with choosing the venues which have to be controlled. The agents use social media platforms to identify the hot spots. Controls and observations are performed at the entry, as well as inside the party venue. The control agents report the offence which regularly leads to a fine, determined by the juridical service. If the fine is not paid, then it will be sent to the Public Prosecution

Service. Fines are rated at 156 euro till 18000 euro. Most of the time, a fine of 300 till 400 euros is given.

If fines are not proven to be effective, like this was the case for certain local night shops, than closing the premise can be a possible sanction. The mayor can decide to impose this penalty. The police agents argue that fining night store owners is the only way to discourage them from selling alcohol to youngsters. According to some respondents, the fines should be increased and followed up.

Some stakeholders would like to see the youngsters being sanctioned for their illegal purchase. Some propose to give alternative sanctions, like a community training. This could increase awareness. However, other respondents argue to leave sanctions for the more serious violations or even not targeting the underage buyers at all. According to the police agents minors will be taken to the police station when caught drinking alcohol. Parents will be informed and if no further research has to be done, the police issues a warning before applying sanctions.

A critical point in the enforcement and control of selling alcohol to underage purchasers, is that the organizer is being fined, not the organizer of the event. In the UK the sellers are always responsible for selling alcohol to underage buyers, instead of the owners or event managers. The consequence is that almost every seller asks for ID's.

1.3.6 Other enforcement measurements

Some other measurements were introduced by the respondents:

- During large manifestations the selling of glass bottles and cups is prohibited.
- A few think that raising the alcohol prices would be an important preventative measure. Hereby it's crucial this increase concerns all types of alcoholic beverages. If not, people will just shift to drinking other types of alcoholic drinks.
- Half of the respondents also argues that the marketing of alcohol is too liberal in Belgium. They recommend more restrictions. The French legislation on alcohol marketing and publicity is an inspiring case. Commercials can only show the bottle and the content. Furthermore, the label has to be simple and sober.
- Limiting the availability like in gas stations and night shops. And the selling of alcohol after 9 or 10 p.m. should be prohibited, in order to prevent preloading.

Conclusion

All stakeholders indicate that the law is insufficiently clear for sellers and other stakeholders. Even more, existing barriers make it difficult to comply with the alcohol law. Almost all respondents emphasize that when showing the identity card would become a habit in Belgium, this would make the application of the law much easier.

We can conclude from this small group of respondents that more controls or test purchasing (mystery shopping) should be carried out. Although they are already performed and difficulties do sometimes arise, the majority argues that this is the most important measure to enforce the application of the law.

On a local level, this enforcement should go hand in hand with prevention. Already some good practices are being implemented in local communities where different stakeholders work together on this issue. Some respondents would like to see more conformity and reluctance from the local authority to give licenses to sell alcohol.

Some discussion was found on the topic of sanctions and fines. Some respondents argue that the fines should also be targeting the underage buyers. Others think it is more efficient and ethical to address the sellers.

Parents do not always check up on the alcohol consumption habits of their children and are sometimes ignorant about how to react on their children's alcohol consumption.

Furthermore, some stakeholders believe that the marketing and availability of alcohol should be restricted and the prices of alcohol should increase.

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Annex: Interview topic guide enforcement actors

Alcohol policy

- How is the local policy monitored? How is the alcohol policy integrated in the regulations?
- How is enforcement defined (p.e. in the local policy)

Organisation of controls

- How is the cooperation with the local administration? And with the local police?
- Do you think controls must be communicated in advance?
- How is decided where checks have to be done?
- How big is the chance for the seller to be checked?

Interactions during control

- Which problems do you face regularly?
- Do you have bad experiences with the enforcement of the law?

Prevention

- could you think of a positive way to motivate the sellers not to sell alcohol to underage buyers?
- The emphasis should be on what: prevention or enforcement?
- What are the biggest threats nowadays concerning the underage drinking habits? What are the weaknesses? Strengths? Opportunities?

Perception of law

- what do you think of the legal age 16/18? Do you think this works?

Evaluation & improvements law

- What do you think are the advantages of the 2009 Law?
- What do you think are the disadvantages of the 2009 Law?

Sanctions

- Which sanctions do you think are effective for sellers to prevent them for selling alcohol to underage buyers?
- Do you think we can sanction youths or parents?
- Which measures can be taken to prevent sellers to sell alcohol to underage buyers?
- what factors are important to control the sellers (p.e. legal basis, regularity,...)

Test purchasing

- what do you know about mystery shopping?
- what do you think about mystery shopping? Do you think this could be an effective enforcement strategy? Why? Why not?
- Suppose we use test purchasing as an enforcement strategy, what factors do we have to take into account? (p.e. legal basis,...)