Cross-country and historical variation in alcohol consumption among older men and women: Leveraging recently harmonized survey data in 21 countries[1]

Esteban Calvo[*],

Department of Epidemiology and Robert N. Butler Columbia Aging Center, Mailman School of Public Health, Columbia University, New York, NY, United States of America. Society and Health Research Center and Laboratory on Aging and Social Epidemiology, School of Public Health and Facultad de Humanidades, Universidad Mayor, Santiago, Chile

José T Medina,

Laboratory on Aging and Social Epidemiology, Universidad Mayor, Santiago, Chile

Katherine A Ornstein,

Geriatrics and Palliative Medicine and Institute for Translational Epidemiology, Icahn School of Medicine at Mount Sinai, New York, NY, United States of America

Ursula M Staudinger,

Robert N. Butler Columbia Aging Center and Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University, New York, NY, United States of America

Linda P Fried,

Department of Epidemiology and Robert N. Butler Columbia Aging Center, Mailman School of Public Health, Columbia University, New York, NY, United States of America

Katherine M Keyes

Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY, United States of America. Society and Health Research Center, Facultad de Humanidades, Universidad Mayor, Santiago, Chile

Abstract

Background: Alcohol consumption causes greater harm in older than younger adults. As the population ages, understanding cross-country and time-varying drinking patterns of older adults is of critical importance. Available evidence relies primarily on ecological data.

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Methods: We harmonized survey data for 179,881 adults age 50+ observed repeatedly between 1998 and 2016 in 21 countries. Next, we estimated historical variation in consumption across countries (overall and stratified by gender and age group 50-64/65+).

Results: On average, 51.95% of older adults consumed any alcohol over the observed period. For 13 countries, the proportion of older adults who drink increased (mean annual increase: 0.76 percent points). Heavy drinking (men drinks/day>3 or binge>5, women drinks/day>2 or binge>4) peaked at 23.54% for England in 2010 and lifetime abstainers at 69.65% for China in 2011. Across countries and among drinkers, consumption frequency was 2.57 days/week, the number of standard drink units when drinking was 2.57, and the average number of drinks/day over a week was 1.12. Consumption patterns varied substantially across countries and historical time. Overall probability and frequency of consumption were higher in men than women, with the largest gaps observed in 2011 for China, but gender gaps decreased (even reversed) in the young old and varied across country and time.

Conclusions: Wide variation in older adults' alcohol consumption across countries and time suggests that broad scale prevention and intervention efforts can be harnessed for potential population-level health benefits. Further variation by gender and age reflect physiological and social factors simultaneously shaping alcohol consumption.

1. INTRODUCTION

Alcohol consumption is a leading contributor to the global burden of disease (Centers for Disease Control and Prevention, 2016; Griswold et al., 2018) and has an estimated cost ranging between 1.3% and 12% of the gross domestic product (World Health Organization, 2014). Although alcohol consumption generally decreases with age, recent evidence suggests that older adults are drinking more than ever before in several countries (Breslow et al., 2017; Han et al., 2017; Kim et al., 2012; World Health Organization, 2014). Patterns of drinking are often established earlier in life (Merline et al., 2008), but drinking behavior in older age may change, can be effectively intervened (Kelly et al., 2018), and can cause greater harm than in younger ages, as alcohol is metabolized more slowly (Meier and Seitz, 2008), water as a percentage of body weight decreases (Cederbaum, 2012), medications contraindicated to alcohol become more prevalent (Han and Moore, 2018; Immonen et al., 2013), and falls and other alcohol-related injuries become more prevalent (Lehmann et al., 2018). Further, populations are aging and the majority of alcohol-related deaths occur among older adults (Rehm et al., 2006; Rehm et al., 2009; Samokhvalov et al., 2010). Therefore, understanding older adults' cross-national and historical drinking patterns is of critical importance.

Cross-country comparisons of alcohol consumption largely rely on ecological sales and administrative data to estimate annual liters of pure alcohol consumed per capita in a country as a proxy for individual-level consumption (Poznyak et al., 2013; Rehm and Poznyak, 2015). Such data cannot disentangle frequency and quantity of drinking across individuals or

by group. Survey data, in contrast, allow for teasing out abstainers from individuals who drink more or less in frequency and quantity (Slade, Tim et al., 2016). However, survey data are typically not harmonized across countries, do not focus on older adults, and are seldom used to differentiate young-old from old-old to account for likely differences in physiology, metabolism, and medicine intake (Cederbaum, 2012; Griswold et al., 2018; Han and Moore, 2018; Immonen et al., 2013). Given the decline in alcohol consumption in later life, general population consumption patterns are not an appropriate indicator of older adults' consumption patterns and their potential harm (Lehmann et al., 2018; Rehm et al., 2006; Rehm et al., 2009; Samokhvalov et al., 2010).

Cross-national evidence on older adults' alcohol consumption by gender suggests that men are more likely to consume alcohol and—among consumers—drink more than women (Keyes et al., 2011; Nolen-Hoeksema and Hilt, 2006; Slade, T. et al., 2016). The extent of gender differences, however, varies across countries (Bratberg et al., 2016; Obot and Room, 2006; Seedat et al., 2009; Wilsnack et al., 2000). A recent analysis of 195 countries included in the 2016 Global Burden of Disease Study found that gender differences in alcohol consumption are smaller in countries with higher socio-demographic index (summary measure based on educational attainment, fertility, and income per capita; Griswold et al., 2018). However, this study was cross-sectional and focused on the general population. Gender gaps among older adults may differ between young- and old-old, possibly due to cohort variations in women's social status and other macro-social factors (Keyes et al., 2010; Seedat et al., 2009).

In this study, we combined and thoroughly harmonized alcohol consumption data from seven longitudinal surveys for 179,881 adults age 50 and over with repeated observations in 21 countries. After describing our harmonization approach, we present distributions of alcohol consumption across countries and over time, assessing gender differences and separating young- old (50-64) and old-old (65+) age groups.

2. METHODS

2.1. Data and Sample

Data from 21 countries collected between 1998 and 2016 were drawn from seven ongoing cohort studies including 179,881 individuals aged 50 and over. These countries were selected because they implemented comparable nation-wide longitudinal surveys including repeated observations for large samples of older adults. Table 1 lists countries, survey, years and span of data collection, and the sample size among those who provided alcohol information at least one time. The surveys included were: Survey of Health, Ageing and Retirement in Europe (SHARE; Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Israel, Italy, Netherlands, Poland, Slovenia, Spain, Sweden, Switzerland; Börsch-Supan et al., 2013), Social Protection Survey (EPS for its name in Spanish; Chile; Arenas de Mesa et al., 2008), China Health and Retirement Longitudinal Study (CHARLS; China; Zhao et al., 2012), English Longitudinal Study of Aging (ELSA; England; Steptoe et al., 2012), Korean Longitudinal Study of Aging (KLOSA; Korea; Jang, 2015), Mexican Health and Aging Study (MHAS; Mexico; Wong et al., 2015), and Health and Retirement

Study (HRS; United States; Sonnega et al., 2014). A description of these surveys is provided in Table S1.[2]

2.2. Alcohol Consumption Measurements

Although alcohol questions and responses varied across questionnaires, we systematically developed and tested a harmonization procedure, summarized in Table 2, resulting in a *drinking status* variable that is comparable across countries and time.

All surveys ask whether the respondents drink now, and if so, how often and how much. The assessment time frame varies across surveys, but is typically anchored in the last three months or past year. Most surveys (CHARLS, KLOSA, MHAS, SHARE, and HRS in recent waves) also ask if the respondents have ever consumed alcohol, which allows us to separate *current* from *lifetime* abstainers. In surveys that do not ask this question (ELSA and EPS), we separate *current* from *long-term* abstainers (see supplementary material).[3]

To classify moderate, occasional, and heavy drinkers (NIAAA, 2005), we relied on harmonized measures on frequency, quantity, drinks per day, and binge drinking. Questions about how often and how much respondents drink were harmonized transforming raw values into standard frequency and quantity units. *Frequency* of drinking was transformed into days per week units, ranging from 0 to 7. *Quantity* measures for different types of beverages (beer, wine, spirits) were first transformed into standard drink units and then added into a single measure ranging from 0 to 70. One standard drink unit is equivalent to the following: a bottle or 33 cl can of beer, 12 cl glass of table wine, 8 cl glass of fortified wine, or 4 cl glass of spirits, each containing between 10 and 14 grams of ethanol (Kelly and Mozayani, 2012; NIAAA, 2015), Because quantity was assessed when last drunk or as an average over different time-frames, we multiplied these harmonized frequency and quantity measures and divided the product by seven to obtain a harmonized measure of average number of standard *drinks per day* that individuals drink over a week, ranging from 0 to 70. We used information on drinks per day to classify *moderate, occasional, and heavy drinking status,* as defined in Table 2 (NIAAA, 2005). This classification was supplemented by a question on *binge drinking* asked in HRS, MHAS, and SHARE. Our definition of heavy drinking combines regular heavy drinking and single episodes of binge drinking following well-validated clinical cut-points (NIAAA, 2005).

Because self-reports are subject to measurement error, we compared country prevalence of abstainers and heavy drinkers in our sample with World Health Organization (WHO) estimates in the general population (World Health Organization, 2014). The inter-source correlation coefficients for prevalence estimates were high for abstainers ($r=.86$) and moderate for heavy and episode drinkers ($r=.40$; WHO heavy episode drinkers consume >60 grams of pure alcohol on at least one occasion), but in both cases country rank was consistent between the WHO and our own data (which is more valuable than comparison of estimates given that older adults have lower prevalence of consumption and binge drinking

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than the general population), indicating that the self-reported data are cross-nationally consistent and supporting the validity of our measures. We also compared the gender-specific prevalence of any drinkers in our sample with Global Burden of Disease (GBD) 2010 data and found even higher correlation coefficients (men r=0.80; women r=0.79; Institute for Health Metrics and Evaluation 2019). Other studies have validated self-reported consumption data, including among older adults (O'Connell et al., 2004), through breathalyzer, blood, and other objective indicators of alcohol use (Del Boca and Darkes, 2003; Miller and Anton, 2004; Mundle et al., 1999; Whitford et al., 2009), suggesting imperfect but adequate ranges for sensitivity (~75%-89%) and specificity (~65-78%).

All data management and analyses were carried in Stata 15 MP. For more detailed information on the harmonization procedure, see the supplementary material.[4]

2.3.   Statistical Analysis

We first calculated point estimates and 95% confidence intervals for consumption indicators for all countries and across all waves for the whole sample and stratified by gender and age group (50-64 and 65+). We fitted violin plots showing density distributions to further differentiate alcohol consumption outcomes among drinkers. Next, we plotted historical variation across countries. Due to the inclusion of refreshment birth cohorts, these plots reflect historical time more than aging of the samples (on average we observe 6 years of historical time and 1.72 years of aging; see Table 1 and Figure S1).[5] Baseline year varied from 1998 (United States) through 2011 (China, Estonia, and Slovenia). Of the 21 countries included, 14 began follow-up between 2006 and 2009. All results show year of baseline assessment on the X-axis. To further characterize alcohol consumption outcomes among drinkers, we used violin plots.

3.   RESULTS

Descriptive statistics for all waves are presented in Table 3, for the whole sample and by gender and age group. On average, 51.95% (95% CI = 51.80, 52.09) of older adults aged 50 and over drink and 6.02% (95% CI = 5.95, 6.09) are heavy drinkers. Among individuals who drink, 11.59% (95% CI = 11.47, 11.73) are heavy drinkers, the frequency of drinking is 2.57 (95% CI = 2.56, 2.58) days per week, the number of standard drink units that they drink when drinking is 2.57 (95% CI = 2.56, 2.59), and the average number of drinks per day that they have over a week is 1.12 (95% CI = 1.10, 1.13). Gender differences were apparent for all consumption indicators (see Table 3). Age-group differences are more complex, as the old-old drink more frequently but less quantity relative to those 50-64 years old.

A more nuanced differentiation of alcohol consumption outcomes among drinkers is presented in Figure 1. The violin plots show, for example, that heavy drinkers tend to consume alcohol either daily or less than three days per week, possibly on weekends.

Types of Drinkers and Abstainers

While overall a slight majority of older adults consume alcohol (51.95%, 95% CI = 51.80, 52.09), there is considerable variation in alcohol consumption patterns across countries and time. Types of drinkers and abstainers across country and time are plotted in Figure 2. The highest proportion of heavy drinkers was observed for England in 2010 (23.54%, 95% CI = 22.53, 24.58), followed by Czech Republic in 2013 (13.37%, 95% CI = 12.46, 14.32), Korea in 2010 (13.26%, 95% CI = 12.49, 14.06), and Belgium in 2007 (11.15%, 95% CI = 10.06, 12.31). In contrast, the highest proportion of lifetime abstainers was observed for China in 2011 (69.65%, 95% CI = 68.83, 70.45), followed by Israel in 2010 (59.77%, 95% CI = 57.78, 61.75) and Korea in 2006 (59.15%, 95% CI = 58.07, 60.22). Prevalence of abstainers and heavy drinkers are only moderately associated (see Figure S2).[6]

Variation over historical time is also noteworthy. We observed increases in the prevalence of any consumption among older adults in 13 countries (Austria, Belgium, Chile, China, Czech Republic, France, Germany, Israel, Netherlands, Slovenia, Spain, Sweden, and the United States) and decreases in eight countries (Denmark, England, Estonia, Italy, Korea, Mexico, Poland, and Switzerland). Confidence intervals suggest percent point increases in any alcohol consumption from the first to the last wave in Austria (4.69, 95% CI = 1.70, 7.65), Chile (1.98, 95% CI = 0.40, 3.57), China (6.18, 95% CI = 5.20, 7.16), Czech Republic (5.44, 95% CI = 3.18, 7.71), France (5.88, 95% CI = 3.87, 7.89), Slovenia (4.67, 95% CI = 2.05, 7.26), and the United States (6.43, 95% CI = 5.43, 7.42). In contrast, confidence intervals suggest percent point decreases in any consumption from the first to the last wave in England (−1.76, 95% CI = −3.04, −0.47), Estonia (−5.24, 95% CI = −7.00, −3.48), Italy (−8.77, 95% CI = −11.07, −6.46), Mexico (−11.85, 95% CI = −12.95, −10.75), and Poland (−6.26, 95% CI = −9.40, −3.16).

Among heavy drinkers, the changes were of smaller magnitude, but confidence intervals suggested increases in six countries (Austria, China, Czech Republic, Denmark, Germany, and Unites States) and decreases in seven countries (Belgium, France, Italy, Mexico, Netherlands, Poland, and Spain). The largest percent point increases in heavy drinkers were observed for Czech Republic (5.38, 95% CI = 4.11, 6.65), Austria (2.39, 95% CI = 1.26, 3.52), and Denmark (1.65, 95% CI = 1.12, 2.17), while the largest percent point decreases were observed for Italy (−4.23, 95% CI = −5.39, −3.07), Spain (−3.18, 95% CI = −4.38, −1.98), and France (−2.93, 95% CI = −4.19, −1.67).

Frequency and Quantity of Alcohol Consumption

Historical variation in frequency and quantity of alcohol consumption among drinkers and by age group is plotted in Figure 3. Frequency indicates the average number of days per week that older adults drank. Quantity indicates the number of standard drink units that older adults drank on average when drinking or when last drank. Overall, there is more cross-country variation in frequency than quantity of alcohol consumption. Two very distinct types of countries emerge from this visualization: a group—including Austria, Belgium,

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China, Denmark, England, France, Germany, Israel, Italy, Netherlands, Slovenia, Spain, Sweden, Switzerland, and United States—in which frequency is higher than quantity of drinking, and another group—including Chile, Czech Republic, Estonia, Korea, Mexico, and Poland—in which quantity is higher than frequency of drinking. Another pattern in Figure 3 is that the 50-64 age group tends to drink more quantity but less often, while the 65+ age group tends to drink less quantity but more frequently.

Any Alcohol Consumption

Historical variation in the percentage of older adults who drink, stratified by gender, is plotted in Figure 4. In Chile, China, Czech Republic, Israel, Italy, Korea, Mexico, Poland, Slovenia, and Spain, men were more likely to consume any alcohol than women. This gender gap slightly widened over historical time for Italy, Mexico, and Poland, while it became narrower for Chile, China, Korea, Slovenia, and Spain, and completely disappeared for Czech Republic. The gender gap was greatest for China in 2011, with 87.98% (95% CI = 86.61, 89.25) of men reporting current alcohol use compared with 12.02% (95% CI = 10.75, 13.38) of women (gender ratio 7.32:1.00). In contrast, a similar percentage of males and females consume any alcohol in Australia, Belgium, Denmark, England, Estonia, France, Germany, Netherlands, Sweden, Switzerland, and the United States. Overall, the percentage of drinkers is always higher for males than females, but among individuals age 50-64 (see Figure S3),[7] the prevalence of drinking can be higher among women than men (in Sweden and for the most recent years in Austria, Belgium, Denmark, England, France, Germany, Netherlands, Poland, Switzerland, and the United States).

Drinks per Day

Historical variation in drinks per day among drinkers, stratified by gender, is plotted in Figure 5. Regardless of age, men consumed more average drinks per day than women in all countries, yet there was substantial cross-country variation. Gender differences in average drinks per day ranged from the largest for Czech Republic in 2013 (average among men: 3.39 [95% CI = 2.91, 3.87], average among women: 1.10, 95% CI = 0.83, 1.37) to the smallest for Israel in 2013 (average among men: 0.47, 95% CI = 0.34, 0.60; average among women: 0.26, 95% CI = 0.16, 0.36).

4.   DISCUSSION

The present study documents both cross-country and historical variation in alcohol consumption among older adults, emphasizing differences by gender and age group. Given that alcohol consumption causes greater morbidity and mortality at older than younger ages (Lehmann et al., 2018; Rehm et al., 2006; Rehm et al., 2009; Samokhvalov et al., 2010), the combination, harmonization, and analysis of older adult samples across seven longitudinal surveys advances the field of alcohol epidemiology by providing a rigorous dataset documenting that a slight majority of older adults consumes alcohol and that the proportion of older adults who drink increased in 13 of the 21 countries analyzed. These data are

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[7]Supplementary material can be found by accessing the online version of this paper at http://dx.doi.org and by entering doi: https://doi.org/10.1016/j.drugalcdep.2020.108219.

congruent with multiple sources showing historical increases in heavy drinking (Breslow et al., 2017; Han et al., 2017; Kim et al., 2012; World Health Organization, 2014) and alcohol disorders among older adults (Grant et al., 2017) across many countries.

We find, however, interesting differences between countries: both moderate and heavy drinking in later life are increasing in Austria, China, Czech Republic, and Unites States, but decreasing in Italy, Mexico, and Poland. Identifying countries in which older adults are drinking in more or less harmful ways is a first step towards promoting healthy aging in a context of rapid demographic change (Fried, 2016; Staudinger, 2015). Further research should consider the interplay of potential drivers of changing alcohol consumption patterns among older adults, including health (Han et al., 2017), loneliness (Canham et al., 2016), unemployment and economic downturns (Kalousova and Burgard, 2014), and a variety of alcohol-related policies (Anderson et al., 2009; Hahn et al., 2010; Middleton et al., 2010; Popova et al., 2009; Wagenaar et al., 2009).

Consistent with previous studies (Bloomfield et al., 2003), we find evidence for two types of drinking cultures across countries: one in which individuals drink frequently but in small quantities, and another in which they drink large quantities but not very often. Our results, however, also show that individuals age 50-64 consume higher quantities of alcohol but less often, while individuals age 65+ consume lower amounts but more frequently. This pattern requires further research to comprehensively understand underlying drivers of differences across older age, and may be due to young-old adults having healthier physiologic, metabolic, and medication profiles that allow them to drink higher quantities (Cederbaum, 2012; Han and Moore, 2018; Immonen et al., 2013), whereas old-old adults may have more available time to drink frequently, especially on weekdays after retiring (Gauthier and Smeeding, 2003). Further study of patterns and timing of alcohol consumption by age group and across countries are needed to disentangle these relationships.

Our findings document wide variation across countries and over historical time and underscore the need to investigate the macro-social causes of alcohol use around the world. For example, alcohol policies such as taxes and minimum prices may contribute to reduce harmful patterns of consumption (Anderson et al., 2009; Wagenaar et al., 2009). Restrictions on access and opportunities for consumption, including opening and closing times as well as hours and days of sale for alcohol (Hahn et al., 2010; Middleton et al., 2010; Popova et al., 2009), are also associated with changes in consumption. Examining cross-country and historical variation in consumption using high-quality survey data is a first step in a long-term research agenda aiming to identify population-level strategies to control harmful drinking, which may operate differently depending on the context of alcohol consumption. Indeed, countries such as Korea, which exhibited among the highest levels of alcohol abstention in 2006 (and has historically had high levels of abstention; Edenberg, 2007) but among the highest levels of heavy drinking in 2010 provide a foundation to example contextual factors that drive change. Alcohol abstention in China is also declining substantially, with a growing gender differences between men and women. Given that mobility patterns as well as global economic position and policy have been rapidly shifting in recent decades, further research into how these macro trends funnel to population health behavior such as alcohol consumption and gender differences is warranted for public health.

Across numerous countries, gender differences in alcohol consumption and alcohol-related problems have been converging in recently born cohorts (Keyes et al., 2011; Slade, T. et al., 2016). Our results suggest that among older adults, gender differences are also highly variable across countries and time. We further find that among adults aged 50-64 years, the percentage of women that consumes any alcohol can even be higher relative to men. While gender differences in alcohol consumption are partly due to physiologic differences (Nolen-Hoeksema and Hilt, 2006), they also respond to women's social status and equality (Keyes et al., 2010; Seedat et al., 2009). Because heavy alcohol consumption has more detrimental health consequences for women than men (Hanna et al., 1997; Schweinsburg et al., 2003), the convergences and cross-overs in gender differences portend a greater risk for chronic disease and medical care among older-adult female drinkers, which may be clinically underdiagnosed and undertreated.

Cross-nationally harmonized observational data are subject to limitations, including varying baseline years, misclassification, and missing data. Self-reports are also subject to error and recall bias. However, we note that: current clinical standards are to query patients directly about current drinking practices (deriving clinical applications and successful interventions) (Kelly et al., 2018), the surveys we used minimized recall bias by focusing on current consumption among drinkers, the harmonized dataset had only 2.31% of data points missing, and many studies have validated self-reported consumption data, including among older adults (O'Connell et al., 2004), through objective indicators of alcohol use such as breathalyzer and blood data (Del Boca and Darkes, 2003; Miller and Anton, 2004; Mundle et al., 1999; Whitford et al., 2009). These studies have provided bounds around the minimum and maximum expected sensitivity (~75%-89%) and specificity (~65-78%) of self-reported drinking, suggesting that self-reports are a valid, if imperfect indicator of alcohol consumption; further, while prevalence estimates may include some error, the historical variation we document is likely reliable.

Large scale survey studies with cross-national and longitudinal information on alcohol consumption are a major advance in the field of alcohol epidemiology, despite their limitations. Wide variation in alcohol consumption across countries and historical time suggests that prevention and intervention efforts on a broad scale can be harnessed for potential population-level health benefits, and variation across gender and age groups reflect both the physiological and social factors that contribute to alcohol-related health. Internationally harmonized longitudinal survey data provide a remarkable opportunity to deepen our understanding of alcohol consumption among older adults, calling for further investigation of what drives observed patterns and providing the basis for studying individual age-trajectories in alcohol consumption and its health implications.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

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HIGHLIGHTS

- Alcohol-related morbidity and mortality is greater at older than younger age

- Older adults' alcohol consumption data were harmonized across countries and time

- Alcohol consumption patterns vary widely across countries and historical time

- Later life alcohol consumption is increasing in most but not all countries

- Variation across gender and age reflects both physiological and social determinants
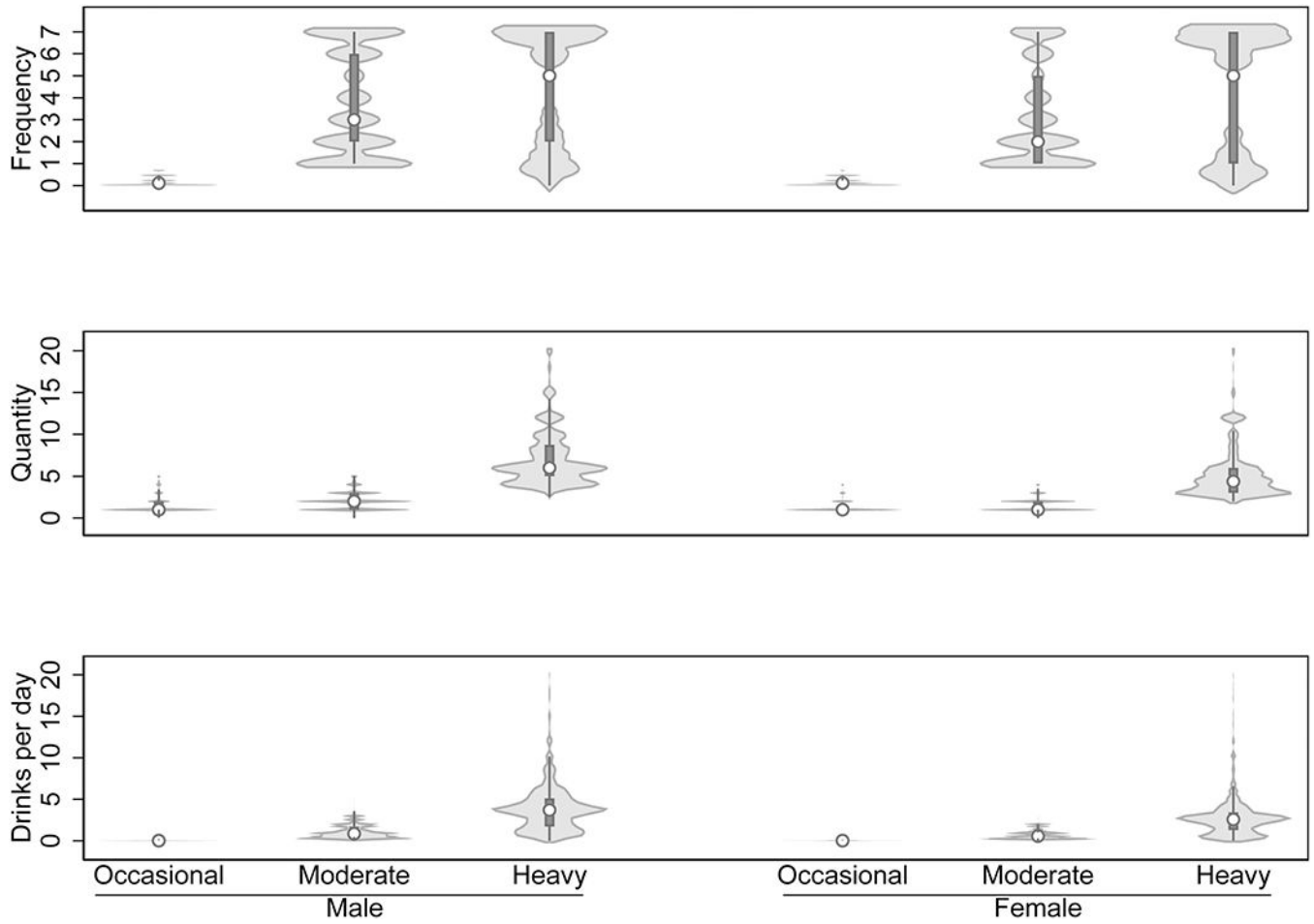
Figure 1.
Distribution of alcohol consumption outcomes among drinkers, by gender
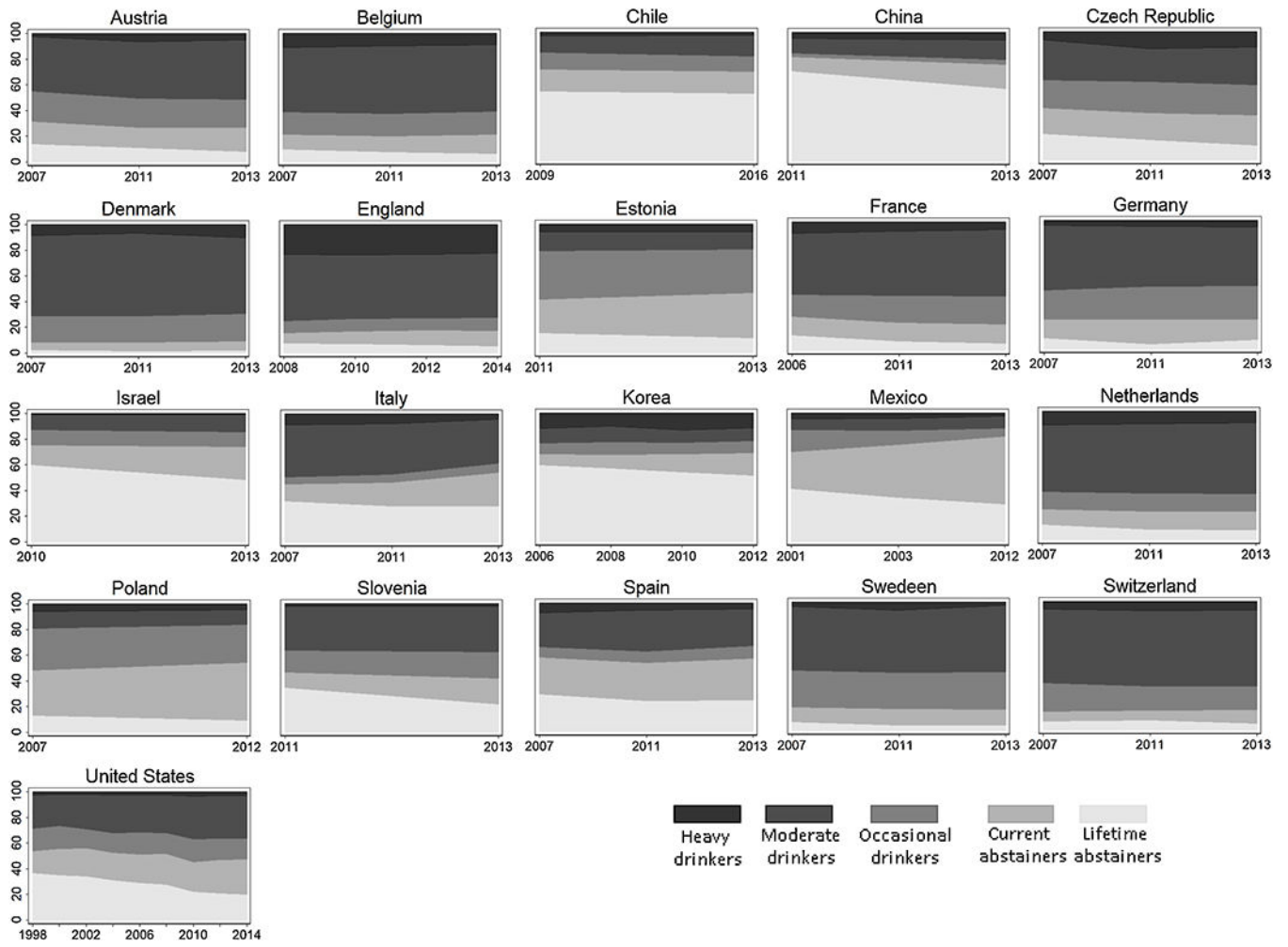
Figure 2.
Historical variation in types of drinkers and abstainers, by country
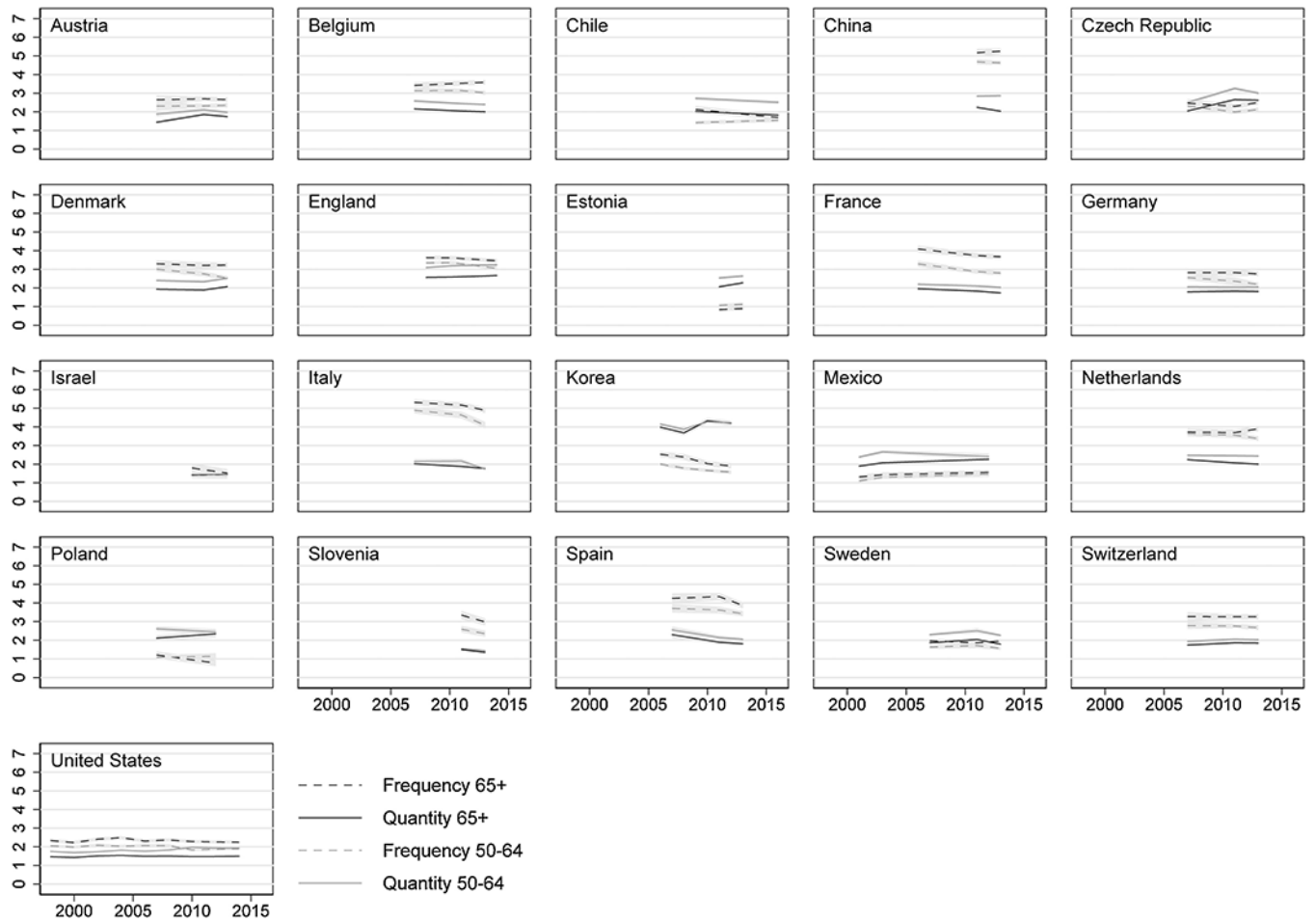
Figure 3. Historical variation in frequency and quantity of alcohol consumption among drinkers, by age and country

Notes: Frequency and quantity are reported for drinkers. Quantity was top-coded at 7 for 4.86% of the observations that had extreme values.

Figure 4.
Percentage of drinkers for males and females, by country
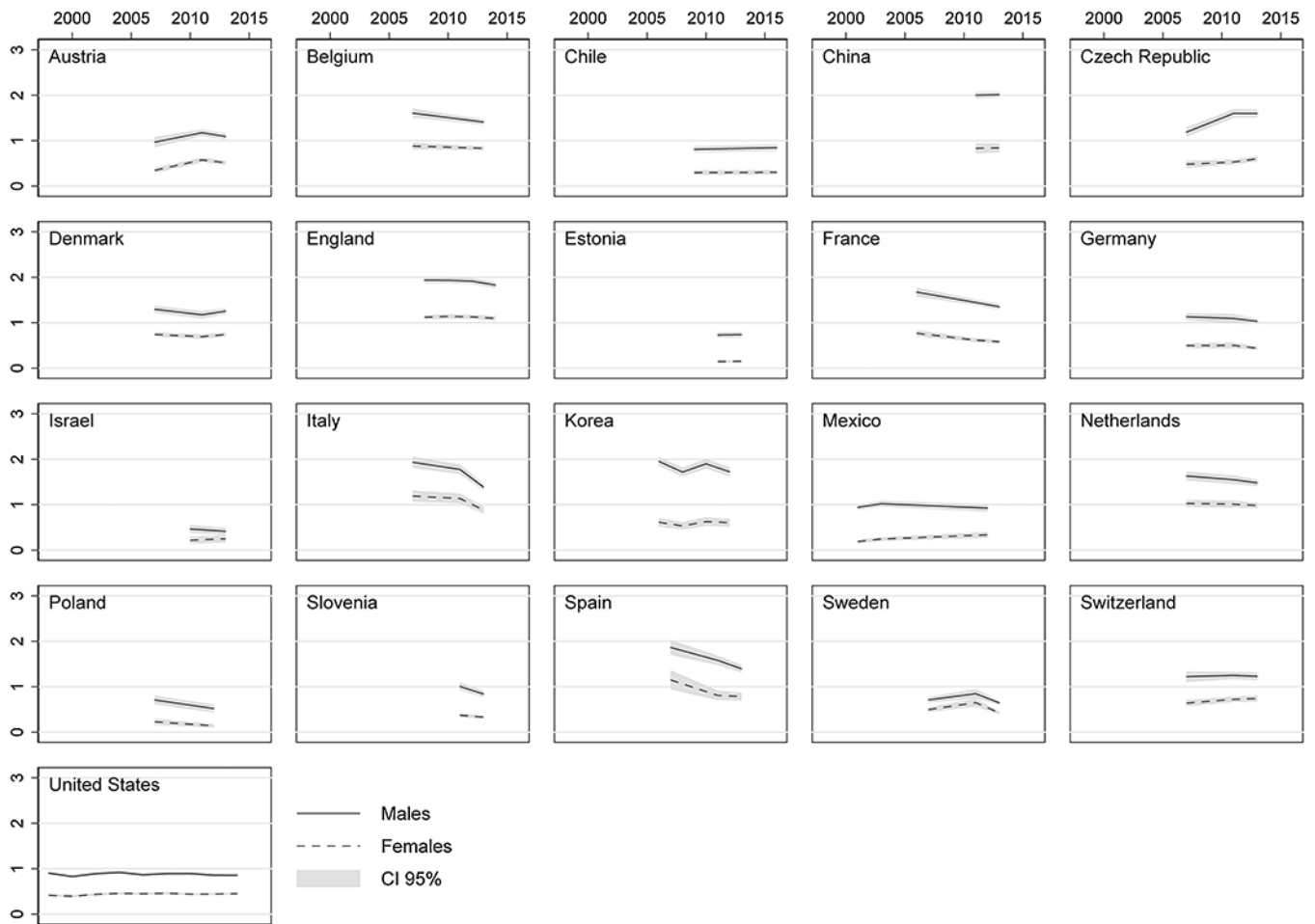
Figure 5. Average drinks per day for males and females among drinkers, by country
Notes: Drinks per day reported for drinkers and top-coded at 7 for 1.37% of the observations that had extreme values.

Table 1.

Data description

Country	Survey	Years	Year span	N	Age first wave	Age last wave	Sample aging
Austria	SHARE	2007-2011-2013	6	5,751	67.11	67.46	0.35
Belgium	SHARE	2007-2011-2013	6	7,578	65.35	66.17	0.82
Chile	EPS	2009-2016	7	8,942	63.54	64.65	1.11
China	CHARLS	2011-2013	2	16,530	62.77	63.03	0.26
Czech Republic	SHARE	2007-2011-2013	6	8,177	64.46	67.06	2.60
Denmark	SHARE	2007-2011-2013	6	4,990	64.53	65.50	0.97
England	ELSA	2008-2010-2012-2014	6	10,597	65.43	67.71	2.28
Estonia	SHARE	2011-2013	3	6,945	66.74	68.45	1.71
France	SHARE	2006-2011-2013	7	6,889	65.40	67.82	2.42
Germany	SHARE	2007-2011-2013	6	7,159	65.14	64.99	−0.15
Israel	SHARE	2010-2013	3	3,117	68.12	68.16	0.04
Italy	SHARE	2007-2011-2013	6	6,335	65.81	67.25	1.44
Korea	KLOSA	2006-2008-2010-2012	6	9,766	65.30	67.23	1.93
Mexico	MHAS	2001-2003-2012	11	14,817	63.34	70.56	7.22
Netherlands	SHARE	2007-2011-2013	6	5,486	64.16	66.38	2.22
Poland	SHARE	2007-2012	5	2,631	64.36	67.23	2.87
Slovenia	SHARE	2011-2013	2	3,662	65.72	66.94	1.22
Spain	SHARE	2007-2011-2013	6	7,832	67.39	68.66	1.27
Sweden	SHARE	2007-2011-2013	6	5,746	66.58	68.65	2.07
Switzerland	SHARE	2007-2011-2013	6	4,163	65.18	66.90	1.72
United States	HRS	1998-2000-2002-2004-2006-2008-2010-2012-2014	16	32,768	67.38	69.15	1.77
Total			**6**	**179,881**	**65.42**	**67.14**	**1.72**

Notes: Health and Retirement Study (HRS); English Longitudinal Study of Aging (ELSA); Survey of Health, Ageing and Retirement in Europe (SHARE), Korean Longitudinal Study of Aging (KLOSA), China Health and Retirement Longitudinal Study (CHARLS), Mexican Health and Aging Study (MHAS), Social Protection Survey (EPS for its name in Spanish).

Table 2.

Coding schema to create a harmonized drinking status variable

1. *Lifetime or long-term abstainer*: Lifetime abstainers never had a drink or had less than 12 drinks in their entire lifetime, while long-term abstainers have not drunk for at least four years and do not report evidence of ever drinking in the past.

2. *Current abstainer*: Does not drink now, but drank in the past (or we cannot rule out that they ever drank in the past).

3. *Occasional drinker*: Frequency less than 1 day per week, drinks per day 3 for men or 2 for women, and no binging in a single day >5 for men or >4 for women.

4. *Moderate drinker*: Frequency 1 or more days per week, drinks per day <3 for men or <2 for women, and no binging in a single day >5 for men or >4 for women.

5. *Heavy drinker*: Men have >3 drinks per day or binge >5 in a single day, and women have >2 drinks per day or binge >4 in a single day.

Table 3.

Descriptive statistics, overall and by gender and age group

Variable	All (N=179,881)		Male (N=81,253)		Female (N=98,628)		50-64 years (N=87,877)		65 years and older (N=93,768)	
	Mean or %	95% CI	Mean or %	95% CI	Mean or %	95% CI	Mean or %	95% CI	Mean or %	95% CI
Drinking status (%)										
Heavy	6.02	5.95, 6.09	9.46	9.33, 9.59	3.33	3.27, 3.41	7.89	7.78, 8.01	4.34	4.25, 4.42
Moderate	30.19	30.06, 30.33	39.55	39.34, 39.77	22.86	22.7, 23.03	32.37	32.17, 32.57	28.22	28.04, 28.41
Occasional	15.73	15.63, 15.84	14.39	14.23, 14.54	16.79	16.64, 16.93	17.26	17.10, 17.42	14.36	14.22, 14.50
Current abstainers	20.71	20.59, 20.83	20.96	20.78, 21.14	20.51	20.35, 20.67	17.38	17.22, 17.54	23.71	23.54, 23.88
Lifetime or long-term abstainers	27.35	27.22, 27.48	15.64	15.48, 15.8	36.51	36.32, 36.7	25.10	24.92, 25.28	29.37	29.19, 29.56
Frequency (days per week)	2.57	2.56, 2.58	3.00	2.99, 3.02	2.08	2.06, 2.09	2.41	2.39, 2.42	2.76	2.74, 2.77
Quantity (number of SDUs when drinking)	2.57	2.56, 2.59	3.10	3.08, 3.13	1.96	1.94, 1.98	2.83	2.80, 2.85	2.29	2.27, 2.32
Drinks per day (average N of daily drinks per week)	1.12	1.10, 1.13	1.49	1.47, 1.51	0.69	0.67, 0.70	1.15	1.13, 1.17	1.08	1.06, 1.10

Notes: SDUs are standard drinking units. Frequency, quantity, and drinks per day are reported among drinkers.