**Cohort Effects on Prevalences and Transitions of Alcohol Use, Dependence, and Remission: Findings from the World Mental Health Surveys**

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**Abstract**

**Background:** Previous research has found that age, historical period, and birth cohort effects are associated with differences in alcohol use and disorders. We used data from the WHO World Mental Health (WMH) Survey to determine the prevalences and transitions of alcohol use, abuse, dependence, and remission and to examine the effects of the prevalence of alcohol use of individuals’ cohorts.

**Methods:** The WHO Composite International Diagnostic Interview was used to assess119,602 adults in the 29 surveys of the WMH Survey. Associations between the prevalence of alcohol use among an individual’s age-specific cohort and the likelihood of transitioning to alcohol use, regular use, DSM-IV alcohol use disorders (AUD), and remission from use disorders were investigated. Lifetime prevalences, ages-of-onset and transition times between stages were also assessed.

**Results:** Four-fifths of all respondents had used alcohol at some point in their lifetime, 78.4% of users became regular users and 10.8% developed an AUD, and 73.8% of those with an AUD had remitted by the time of their interview. Early onset of use was significantly associated with increased risk of AUD the median age for which was 21 years. Making any transition – into increasing involvement with alcohol and remitting from AUD - was strongly associated with the percentage of the individual’s age cohort already using alcohol.

**Conclusions:** Alcohol use and regular use are common cross-nationally and 10.8% of drinkers develop an AUD with a median onset of age 21. Prevention programs targeting younger ages might reduce AUDs and expanding prevention programs’ approaches beyond a peer-based focus to include customized cohort wide approaches might enhance their impact.

**Keywords:** alcohol; abuse; dependence; remission; cohort; prevention

**Highlights**

* Alcohol use is common cross-nationally and 78.4% of users became regular users
* 10.8% of drinkers develop a lifetime Alcohol Use Disorder with an age 21 median onset
* All transitions are strongly associated with the alcohol use of individuals’ cohorts
* Using customized cohort wide approaches might enhance prevention program effects
* Targeting younger ages with prevention programs might reduce alcohol use disorders

**Introduction**

Age related differences in substance use and related problems are often attributed at least in part to developmental and maturational factors especially when cross-sectional comparisons are made (1-3). However, individuals are also strongly influenced by broader social-contextual effects (4-7)**.** Substance use initiation and early use is strongly linked to social and peer variables (8, 9)**.** Because of this, many substance use prevention programs target peer relationships, peer refusal skills, and perceptions of normative substance use by peers (10). Evidence indicates that the extent to which behavior is normative may be associated with adverse outcomes and progression to disorder(11, 12)suggesting that the relative deviance of behavior may be an important factor.

Previous research has consistently reported that chronological age, historical period (“secular influences”) and birth cohort effects are associated with differences in substance use and related problems (13-17)**.** Even the well-documented findings of gender differences in substance use and disorders have been found to be associated with age, period, and cohort effects (18-21). Many studies have reported that prevalences are higher in younger birth year cohorts and in more recent periods (22-24)**.** Studies comparing prevalences of substance use and disorders in different age cohorts have usually relied on data collected in a single country and most have emphasized period influences (25)**.** Period influences associated with substance use and transitions, including both risk and protective factors (e.g. substance use norms, enforcement of sanctions, substance availability, and perceptions of risk), have varied widely across geographical locations and in different time periods in history. Birth cohort effects more specifically include the shared social and environmental influences on the individuals born at particular times as they mature as a group, experiencing the extant period effects including changes in the period effects over time. There are complex issues involved in distinguishing period and cohort effects (26, 27)**.** While there is evidence of both influences, research has shown that substance use behaviors are especially related to cohort effects (22, 28, 29), which may filter or modify period effects and perhaps exert other social and peer influences. Peer effects include the influence of individuals’ friends and direct social network which likely overlap with but may alter broader period and cohort effects. It is likely that cohort and peer effects vary at different ages and stages of use.

Using data from the 29 surveys of the World Health Organization’s (WHO) World Mental Health (WMH) Survey, the aims of the present study were to estimate the prevalence of alcohol use, abuse and dependence, and remission from these disorders; to identify the age of onset for each of these stages and the speed of transition between stages; and to examine whether the level of use of these substances among an individual’s cohort, i.e. their age peers, affected their likelihood of beginning use, transitioning use to substance use disorder and remitting from disorder.

**Method**

**Sample**

The WHO’s WMH Survey Initiative is a co-ordinated set of cross-national epidemiological surveys of the prevalence and correlates of mental, behavioural, and substance use disorders. Using the World Bank classification at time of data collection, the 29 WMH surveys conducted in six continents include six carried out in countries classified as low- or lower-middle income, seven in upper-middle income countries and 16 in high income countries (see Table 1). All WMH surveys were probability samples of adult household residents with most surveys implementing a stratified multistage clustered area probability sampling design.

**Table 1 about here**

All WMH surveys administered the WMH Survey Initiative version of the Composite International Diagnostic Interview (WMH-CIDI)(30). The WMH-CIDI provides diagnostic information on a broad range of mental disorders according to both the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) and the WHO’s International Classification of Mental and Behavioural Disorders Version 10, as well as information on risk factors, impacts, patterns and treatment of mental disorders. The WMH-CIDI data was used for this report to identify individuals meeting diagnostic criteria for DSM-IV alcohol abuse and alcohol dependence.

As it is a relatively long instrument, the WMH-CIDI was regularly administered in two parts. Part I comprised a screening module and all core diagnostic assessments. Part II, administered to all those that met criteria for any core mental disorder as well as a probability subsample of other Part I respondents, assessed correlates and other disorders with lengthy sections or that were of secondary interest. Australia, Iraq, Israel, Romania and South Africa were exceptions, administering the entire WMH-CIDI in Part I.

The alcohol module was administered in Part II for eight surveys (Argentina, Japan, Medellin, Murcia, Northern Ireland, Poland, Portugal and the United States) and in Part I for all others. The sample (either Part I or Part II) in which the alcohol module was administered is the sample utilised in the current study’s analyses. The only exception being the People’s Republic of China (PRC); education was assessed in Part II of the PRC survey and, as education was a predictor of interest here, the Part II PRC survey sample was used in these analyses. Excluding 62 respondents (32 from Israel, 15 from Mexico, 11 from Japan and 4 from South Africa) who did not provide any response to the alcohol use questions, the total sample size was 119,602, with individual survey sample sizes ranging from 1,459 in Murcia to 12,790 in New Zealand. The weighted average response rate across all surveys was 69.2%, with individual survey rates ranging from 45.9% (France) to 97.2% (Colombia).

Interviews were conducted face-to-face by trained lay interviewers in respondents’ homes. Informed consent was obtained prior to commencement of all interviews. Paper-and-pencil interviews were utilised in Brazil, Bulgaria, Iraq, Lebanon, Nigeria, PRC, South Africa and Ukraine, and computer-assisted personal interviews used in all others. Standardised procedures for interviewer training, instrument translation and quality control were applied across all WMH countries to maximise comparability(31)**.**

**Table 1 about here**

**Assessment of Alcohol Use Disorders**

The DSM-IV alcohol use disorder (AUD) diagnoses of abuse and dependence were derived using standard WMH-CIDI diagnostic algorithms and lifetime DSM-IV diagnosis criteria used in the current report. The DSM-IV hierarchy rule was used such that respondents who met criteria for both AUD s were only classified as having alcohol dependence. WMH-CIDI-generated DSM-IV alcohol abuse and alcohol dependence diagnoses have previously been shown to be in moderate and substantial concordance, respectively, with clinician-administered interviews (32)**.**

To minimise unnecessary respondent burden, questions regarding AUD s were only asked of respondents who, in the year they drank most, consumed alcohol at least once a week or, if drinking less often, consumed at least three alcoholic drinks per drinking day. Thresholds were slightly higher in the Australian survey, with the regularity component set to having consumed alcohol at least three days per week (or, if drinking less, three or more drinks per day on the days they drank), and in the ESEMED surveys (Belgium, France, Germany, Italy, The Netherlands and Spain) respondents had to have drunk at least three days per week or, if drinking less often, consumed five or more alcoholic drinks on the days they drank. To be asked AUD questions, respondents from Colombia, Japan, Mexico, New Zealand, Peru and the US also had to indicate their use of alcohol (or drugs) had, at any time, caused family or friends to worry about them or repeatedly complain about their use; caused repeated arguments or problems either with their family or friends, people at work or school, or with the police; or, interfered with their responsibilities at work, at school, or at home.

In the earliest WMH surveys, a skip in the AUD section meant questions relating to alcohol dependence were only asked of respondents with a history of alcohol abuse. To capture cases of dependence without abuse, the WMH-CIDI was revised to allow all future WMH surveys to assess dependence among those who met the drinking threshold for being asked AUD questions, regardless of whether any abuse criteria had been met. To improve comparability between surveys conducted pre- and post the revision, cases of dependence without abuse were imputed for the earlier WMH surveys. The methodology for this imputation is described elsewhere (33)**.**

**Data Analysis**

All analyses were based on weighted data, and accounted for the survey design features, namely stratification and clustering. Person weights incorporated sample selection, nonresponse and poststratification factors, and Part II data weights adjusted for over-sampling of Part I respondents with mental disorders. These weighting procedures ensured that all samples are representative of the survey region’s population at time of data collection. Analyses were carried out using SAS Version 9.4.

Age of onset and speed of transition between various alcohol use stages were examined. These stages were use (first time drank an alcoholic beverage), regular use (drinking at least 12 drinks in a year), DSM-IV abuse and DSM-IV dependence. The broader ‘alcohol use disorder’ stage was defined as first onset of either abuse or dependence. We also assessed remission from dependence and remission from abuse *without* dependence (WOD), where remission was defined as the absence of all disorder related symptoms for more than 12 months prior to the interview. To improve cross-national comparability, all survey data was restricted to persons aged 18 and over at time of interview.

Estimates of lifetime prevalence percentages were produced using PROC SURVEYFREQ and life-table (actuarial) estimates of the survival functions for age of onset and remission were produced using the SAS PROC LIFETEST procedure and are reported as weighted prevalence. Associations between transition across stages of alcohol use and various demographic and contextual variables were assessed using discrete-time multivariate logistic regression models in SAS PROC SURVEYLOGISTIC using person-year as the unit of analysis and a logistic link function.

Person-year datasets were created in which each year in the life of each respondent, from the age of onset of the initial stage up to and including the age of onset of the transition, or age at interview (if censored), was treated as a separate observational record. The year of transition was coded 1 and earlier years coded 0, on a dichotomous response variable. Person-years were defined from six years of age for modelling commencement of use, from age of diagnosis of abuse or dependence for remission from abuse or dependence respectively, and in all other models from age of onset of the conditional stage. Survival coefficients and standard errors are presented as odds ratios (ORs) and 95% confidence intervals (CIs). Multivariate significance tests were made with Wald χ2 tests using Taylor series design-based coefficient variance-covariance matrices and significance evaluated at 0.05 with two-sided tests.

To estimate the impact of social and maturational changes on risk of transitioning to these alcohol stages, we evaluated a contextual variable to represent the individuals’ birth and survey cohort. Birth cohorts were based on individuals’ year of birth +/- 5 years, creating 11-year wide survey-specific cohorts centred around each year of birth. The cohort widths were reduced for those aged 18, 19, 20, 21 and 22 years to as close as possible ensure symmetry around birth year while also maintaining an arbitrary minimum of 50 persons within all survey cohorts. Cohorts were top-coded for those aged 65 and over at time of interview. The covariate was the estimated proportion of people (/10) in the individual’s birth cohort who had used alcohol by the prior person year.

Other covariates were sex, age of person year (<=14, 15-17, 18-20, 21-24, 25-29 and 30+ for all use/use disorder models and <=18, 19-20, 21-22, 23-24, 25-29, 30-39 and 40+ for remission from alcohol abuse or dependence) and time-varying education level (student, low, low/medium, medium/high or high). Age of commencing use was included in all models except commencement of use, and speed of transition from use to disorder in all remission models, with both variables classified as early, mid or late tertiles as defined by survey-specific cut-offs. Number of years with the disorder was also included in remission from abuse and remission from dependence models.

**Results**

**Prevalence of use, abuse, dependence, and alcohol use disorders and remission**

Lifetime prevalence estimates for AUDs and remission from these disorders are shown in Table 2. Combining all countries, more than four fifths of respondents (80.3%; SE 0.2) reported using alcohol at some point in their lifetime. Prevalence of regular alcohol use, alcohol abuse, alcohol dependence and AUDs were 63.0% (0.2), 6.3% (0.1), 2.3% (0.1) and 8.7% (0.1), respectively. Table 3 shows prevalence estimates of lifetime alcohol regular use and disorders conditional on ever having used alcohol, and of remission among those with use disorders. Most users of alcohol became regular users (78.4%; SE 0.2) at some point in their lifetime. Among those who had ever used alcohol, prevalence estimates of abuse, dependence and any use disorder were 7.9% (0.1), 2.9% (0.1) and 10.8% (0.1), respectively. However, among those with the specific disorder, over three quarters (78.3%; SE 0.6) of abuse cases and over three fifths (61.6%; SE 1.1) of dependence cases had remitted by time of interview, which translates to an overall remission rate of 73.8% (0.6) among alcohol use disorder cases.

**Table 2 about here**

**Table 3 about here**

**Age of onset distributions**

Figure 1 shows the cumulative age of onset (AOO) curves for onset of alcohol use, regular use, abuse, dependence, remission from abuse and remission from dependence among those that met criteria for that stage. The onset of use and regular use of alcohol largely occurred during the teenage years with 80% of respondents who ever used alcohol, and over 60% who had used regularly, having done so by age 20. The median AOO of any alcohol use disorder was 21 years. The median AOO of remission from abuse (30 years) observed to be four years lower than the median AOO of remission from dependence (34 years), and an overall median AOO of remission from any use disorder of 31 years.

**Figure 1 about here**

**Time to transition across stages of involvement with alcohol use**

Figure 2 shows the cumulative curves for time between alcohol stages. The transition from initial use to regular use showed the fastest transition speed, with more than half of all individuals who became regular users doing so within three years of first alcohol use. The time lag between onset of use to disorder was longer for abuse than dependence; for example, 80% of transitions to abuse occurred within 15 years of onset of use, while it took 18 years for the same proportion of alcohol dependence cases to meet disorder criteria. Among remission cases, the median transition time to remit from onset of the disorder was 7 years, though this transition was faster for abuse (6 years) than dependence (8 years).

**Figure 2 about here**

**Predictors of transition between stages**

Table 4 shows the results from investigating associations between covariates and transitions between stages of alcohol use, regular use, abuse, dependence and either use disorder where the outcome modelled is whether the transition of interest occurred in any given year. Men were significantly more likely to transition to use, regular use and use disorders. The impact of sex was largest in transitions from use to abuse where the odds of men transitioning were three and a half times the odds of females (OR 3.47; 95% CI 3.26-3.69). Compared to all other education levels, high education was associated with lower likelihood of transition to abuse and use disorders more generally. This protective association was further substantiated in the results from modelling transitions to dependence; persons with low to high-average education and who were not currently studying were at increased risk of alcohol dependence compared to those who had obtained a high level of education.

An individual’s age of onset was also significantly associated with transitions to regular use and use disorders. Relative to beginning alcohol use later in life, earlier commencement of alcohol use reduced the risk of transitioning to regular use but was associated with an increased risk of transitioning to alcohol use disorders.

**Table 4 about here**

**Remission from alcohol use disorders**

Table 5 shows the results from investigating associations of covariates with remission from alcohol use disorders. Remission from alcohol abuse without dependence, remission from dependence and remission from either alcohol use disorder were all significantly associated with being female.

A late transition from use to dependence was associated with increased odds of remitting compared to those that transitioned from use to disorder at a slower speed. Similarly, a late transition from use to abuse was associated with increased likelihood of remitting compared to those that transitioned from use to disorder at a more ‘average’ speed (i.e. mid-tertile transition group). More years with an abuse disorder was associated with a reduced likelihood of remitting (OR 0.98; 95% CI 0.97-0.99) while the reverse was observed in relation to dependence, with those who lived with the disorder longer more likely to remit (OR 1.02; 95% CI 1.01-1.03).

Persons with alcohol abuse who were current students (OR 0.69; 95% CI 0.55-0.88) or low (OR 0.81; 95% CI 0.72-0.92) education levels, as well as persons with alcohol dependence and a low level of education (OR 0.65; 95% CI 0.53-0.80) were all less likely to remit than others with the same disorder and high education levels. More generally, high education was associated with increased odds of remitting from any alcohol use disorder compared to students or those with low to high-average education levels.

**Cohort Effects**

Consistent across all transitions, the likelihood of an individual making any of the transitions considered was positively and significantly associated with the percentage of the individual’s age cohort having already started using alcohol. This was most notable among transitions from use to use disorder where, for every 10% increase of people in an individual’s cohort having already commenced alcohol use by the previous person year, there was a 49%, 64% and 49% increase in the adjusted odds of transitioning to abuse (OR 1.49; 95% CI 1.45-1.52), dependence (OR 1.64; 95% CI 1.56-1.73) and any alcohol use disorder (OR 1.49; 95% CI 1.45-1.52), respectively. Remission from AUDs was significantly associated with higher levels of alcohol use among an individual’s age cohort.

**Table 5 about here**

**Discussion**

In all countries combined, lifetime use of alcohol was common (80.3%) as was regular use (63.0%), and most users of alcohol became regular users at some point in their lifetime (78.4%). Among all respondents, lifetime prevalences of alcohol abuse, alcohol dependence and AUDs were 6.3%, 2.3% and 8.7% respectively while among lifetime non-abstainers, the prevalences were 7.9%, 2.9%, and 10.8% respectively. Remission was also common. Among those who had ever had an AUD, 73.9% of cases had remitted by the time of the interview.

Involvement with alcohol typically began in adolescence, with 80% of first use and 60% of regular use having begun before the respondents were 20 years old. The median age of AUD onset was 21 years. Our findings concur with the numerous reports of earlier onset of alcohol use being associated with a greater likelihood of developing AUDs(34-36). About a third of transitions from use to AUD occurred within 5 years of first alcohol use and about 80% of transitions from use to AUD occurred within 15 years.

These findings have implications for prevention. Although some decline in early drinking has been reported(37-39), programs that attempt to reduce future alcohol use problems by discouraging or delaying early alcohol use may need to target preadolescents as about 10% of respondents had first used alcohol by age 11. By age 15, about 50% of respondents had used alcohol and 10% were already regular drinkers.

Benefits of programs whose goals are to limit excessive alcohol use, to reduce harms associated with drinking, to prevent transition to AUDs, or to promote treatment seeking may be enhanced by being implemented before the age of 21 when about 50% of AUDs had already begun. Many such programs target college age populations(40-42). Prevention programs for high school age adolescents typically do not include responsible use or harm reduction approaches as alcohol use by teens is commonly viewed as problematic and such programs are viewed by some as implicitly sanctioning use.However, given our findings, implementing these types of programs for precollege-age drinkers may be helpful in preventing negative consequences including the transition of vulnerable already drinking adolescents to AUDs. The overall median AOO of remission from any use disorder was 31 years and the median transition time to remission from onset of the disorder was 7 years suggesting the importance of treatment outreach to young adults.

We did not find a consistent cross-national pattern of associations between the percentage of regular users in a survey and the percentages of those with AUDs, AUDs among lifetime users or remission from AUDs. Having a comparatively higher percentage of regular alcohol users in a country did not mean that there would necessarily be a proportionately higher level of AUDs or that the outcomes for those with AUDs would follow a pattern similar to that found in other countries. For example, in the 13 countries with more than 70% regular drinkers, the percentages of those with AUD ranged from 3.6% to 22.7%. Relatedly, the WHO Global Status Report on Alcohol and Health 2014 reported finding no consistent association between drinkers’ total alcohol per capita consumption and the prevalence of their heavy episodic drinking (39).

Men were significantly more likely to transition to use, regular use and AUDs and women were more likely to remit from AUDs. These patterns may be changing as it appears that the prevalences of AUDs among men and women are becoming more similar in more recent cohorts (22). High levels of education were associated with lower risk of transition to AUDs and increased likelihood of remission.

The prevalence of alcohol use in an individual’s birth cohort was consistently associated with all transitions, particularly the transition from use to disorder. Each 10% higher percentage of alcohol use in an individual’s cohort was associated with a 49% increase in the adjusted odds of transitioning to an alcohol use disorder (OR 1.49; 95% CI 1.45-1.52). Tailoring prevention efforts to the particular characteristics of different cohorts may enhance their impact. Continuously modifying prevention programs for successive cohorts of adolescents and young adults may be beneficial. As the prevalence of remission was also associated with cohort drinking prevalence, interventions targeting specific cohorts may also have an increased desistence effect.

These findings must be considered in the context of the limitations of the WMH surveys. The reported data comes from 29 surveys and is not full representation of all regions, income levels and other country characteristics. Response rates varied across surveys and there may have been cross-national variation in willingness to disclose personal information about alcohol use and associated problems. The respondent data is subject to the limitations of recall inherent in retrospective reporting. Because the WMH surveys rely solely on household surveys, data from subgroups that may differ from the larger national populations in terms of AUD prevalences and correlates was not included in the sampling frame. These groups include the homeless, people in jails, prisons, hospitals, shelters, halfway houses and sober living group homes, Substance Use Disorder inpatient treatment facilities, or living on military bases. Later age onset, relapse, and the influence of comorbidity are important issues not considered in this paper but are planned for future analyses.

Within the constraints of these limitations, the WMH results provide evidence that use and regular use of alcohol are common cross-nationally and 10.8% of drinkers develop an AUD with a median onset of age 21 years. Our findings of early onset and transitions of alcohol use suggest that early prevention programs might be more effective and that expanding the programs’ approaches beyond a peer-based focus to include customized cohort wide approaches might enhance their impact.

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**Contributors**

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The views expressed in this report are those of the authors and should not be construed to represent the views or policies of the WHO, other sponsoring organisations, agencies, or governments, and do not necessarily represent the views, official policy, or position of the US. Department of Health and Human Services or any of its affiliated institutions or agencies. Dr. Glantz’s role on this study is through his involvement as a Science Officer on U01-MH60220. He had no involvement in the other cited grants.

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**Table 1: WMH sample characteristics by World Bank income categoriesa,b**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Sampling** | **Field dates** | **Age range** | **Sample size** | | **Response ratec** | |
|  |  |  |  | **Part 1** | **Part 2** |  | |
| **Low and lower-middle income countries** | | | | | | | |
| Colombia | All urban areas of the country (about 73% of the total national population) | 2003 | 18-65 | 4,426 | 2,381 | 87.7% | |
| Iraq | Nationally representative | 2006-7 | 18-96 | 4,332 | 4,332 | 95.2% | |
| Nigeria | 21 of the 36 states in the country (about 57% of the national population) | 2002-4 | 18-100 | 6,752 | 2,143 | 79.3% | |
| PRC | Beijing and Shanghai metropolitan areas | 2001-3 | 18-70 | 5,201 | 1,628 | 74.7% | |
| Peru | Five urban areas of the country (about 38% of the total national population) | 2004-5 | 18-65 | 3,930 | 1,801 | 90.2% | |
| Ukraine | Nationally representative | 2002 | 18-91 | 4,725 | 1,720 | 78.3% | |
| ***Total*** |  |  |  | **29,366** | **14,005** | **82.8%** | |
| **Upper-middle income countries** | | | | | | | |
| Brazil | São Paulo metropolitan area | 2005-8 | 18-93 | 5,037 | 2,942 | | 81.3% |
| Bulgaria | Nationally representative | 2002-6 | 18-98 | 5,318 | 2,233 | | 72.0% |
| Colombia - Medellin | Medellin metropolitan area | 2011-12 | 19-65 | 3,261 | 1,673 | | 97.2% |
| Lebanon | Nationally representative | 2002-3 | 18-94 | 2,857 | 1,031 | | 70.0% |
| Mexico | All urban areas of the country (about 75% of the total national population) | 2001-2 | 18-65 | 5,782 | 2,362 | | 76.6% |
| Romania | Nationally representative | 2005-6 | 18-96 | 2,357 | 2,357 | | 70.9% |
| South Africa | Nationally representative | 2002-4 | 18-92 | 4,315 | 4,315 | | 87.1% |
| ***Total*** |  |  |  | **28,927** | **16,913** | | **78.5%** |
| **High income countries** | | | | | | | |
| Argentina | Eight largest urban areas of the country (about 50% of the total national population) | 2015 | 18-98 | 3,927 | 2,116 | | 77.3% |
| Australia | Nationally representative | 2007 | 18-85 | 8,463 | 8,463 | | 60.0% |
| Belgium | Nationally representative | 2001-2 | 18-95 | 2,419 | 1,043 | | 50.6% |
| France | Nationally representative | 2001-2 | 18-97 | 2,894 | 1,436 | | 45.9% |
| Germany | Nationally representative | 2002-3 | 19-95 | 3,555 | 1,323 | | 57.8% |
| Israel | Nationally representative | 2003-4 | 21-98 | 4,859 | 4,859 | | 72.6% |
| Italy | Nationally representative | 2001-2 | 18-100 | 4,712 | 1,779 | | 71.3% |
| Japan | Eleven metropolitan areas | 2002-6 | 20-98 | 4,129 | 1,682 | | 55.1% |
| Spain - Murcia | Murcia region | 2010-12 | 18-96 | 2,621 | 1,459 | | 67.4% |
| The Netherlands | Nationally representative | 2002-3 | 18-95 | 2,372 | 1,094 | | 56.4% |
| New Zealand | Nationally representative | 2004-5 | 18-98 | 12,790 | 7,312 | | 73.3% |
| Northern Ireland | Nationally representative | 2005-8 | 18-97 | 4,340 | 1,986 | | 68.4% |
| Poland | Nationally representative | 2010-11 | 18-65 | 10,081 | 4,000 | | 50.4% |
| Portugal | Nationally representative | 2008-9 | 18-81 | 3,849 | 2,060 | | 57.3% |
| Spain | Nationally representative | 2001-2 | 18-98 | 5,473 | 2,121 | | 78.6% |
| United States | Nationally representative | 2001-3 | 18-99 | 9,282 | 5,692 | | 70.9% |
| ***Total*** |  |  |  | **85,766** | **48,425** | | **63.1%** |
| ***Overall sample*** |  |  |  | **144,059** | **79,343** | | **69.2%** |

*a* The World Bank (2015) Data accessed via: <http://data.worldbank.org/country>. Some of the WMH countries have moved into new income categories since the surveys were conducted. The income groupings above reflect the status of each country at the time of data collection. The current income category of each country is available at the preceding URL.

*b* For the purposes of cross-national comparisons we limit the sample to those 18+.

*c*The response rate is calculated as the ratio of the number of households in which an interview was completed to the number of households originally sampled, excluding from the denominator households known not to be eligible either because of being vacant at the time of initial contact or because the residents were unable to speak the designated languages of the survey. The weighted average response rate is 69.2%.

**Table 2: Prevalence of levels of involvement with alcohol use in the World Mental Health Surveys**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Total Sample** | **Use** | | **Regular Use** | | **Abusea** | | **Dependence** | | **Any alcohol use disorder** | | **Remission from abuse** | | **Remission from dependence** | | **Remission from any alcohol use disorder** | |
|  | **Nb** | **%c** | **SE** | **%c** | **SE** | **%c** | **SE** | **%c** | **SE** | **%c** | **SE** | **%c** | **SE** | **%c** | **SE** | **%c** | **SE** |
| ***Low and Lower-Middle income*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Colombia | 4,426 | 94.3 | 0.5 | 72.1 | 0.9 | 6.9 | 0.5 | 2.5 | 0.4 | 9.4 | 0.6 | 5.8 | 0.5 | 1.2 | 0.2 | 7.0 | 0.6 |
| Iraq | 4,332 | 3.8 | 0.4 | 3.2 | 0.4 | 0.5 | 0.2 | 0.2 | 0.1 | 0.7 | 0.2 | 0.3 | 0.1 | 0.2 | 0.1 | 0.5 | 0.2 |
| Nigeria | 6,752 | 55.8 | 0.8 | 25.3 | 0.6 | 1.9 | 0.2 | 0.3 | 0.1 | 2.2 | 0.2 | 1.5 | 0.2 | 0.1 | 0.0 | 1.6 | 0.1 |
| Peru | 3,930 | 97.1 | 0.3 | 78.3 | 0.7 | 4.3 | 0.3 | 1.5 | 0.2 | 5.7 | 0.4 | 3.3 | 0.3 | 0.9 | 0.1 | 4.2 | 0.3 |
| PRC | 1,628 | 65.4 | 1.8 | 39.5 | 1.5 | 3.7 | 0.6 | 1.1 | 0.2 | 4.8 | 0.6 | 2.6 | 0.4 | 0.4 | 0.1 | 3.0 | 0.4 |
| Ukraine | 4,725 | 96.4 | 0.4 | 77.8 | 1.2 | 10.0 | 0.7 | 3.7 | 0.4 | 13.7 | 0.8 | 6.3 | 0.5 | 1.5 | 0.2 | 7.8 | 0.6 |
| **Total** | **25,793** | **68.0** | **0.4** | **48.2** | **0.5** | **4.5** | **0.2** | **1.5** | **0.1** | **6.0** | **0.2** | **3.2** | **0.1** | **0.7** | **0.1** | **4.0** | **0.2** |
| ***Upper-Middle income*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Brazil | 5,037 | 86.6 | 0.5 | 56.6 | 0.7 | 6.6 | 0.5 | 3.3 | 0.3 | 9.8 | 0.6 | 4.8 | 0.3 | 2.0 | 0.3 | 6.8 | 0.4 |
| Bulgaria | 5,318 | 77.8 | 0.6 | 65.7 | 1.0 | 2.2 | 0.2 | 0.9 | 0.1 | 3.2 | 0.3 | 1.4 | 0.2 | 0.6 | 0.1 | 2.0 | 0.2 |
| Lebanon | 2,857 | 55.5 | 2.5 | 34.0 | 2.3 | 1.2 | 0.3 | 0.4 | 0.2 | 1.6 | 0.3 | 0.9 | 0.2 | 0.1 | 0.1 | 1.0 | 0.2 |
| Medellin | 1,673 | 87.1 | 1.5 | 59.5 | 2.8 | 8.0 | 1.2 | 4.8 | 0.8 | 12.8 | 1.4 | 6.7 | 1.1 | 2.6 | 0.6 | 9.3 | 1.2 |
| Mexico | 5,767 | 85.9 | 0.6 | 52.1 | 1.0 | 4.2 | 0.3 | 3.8 | 0.4 | 8.0 | 0.6 | 3.2 | 0.3 | 2.4 | 0.3 | 5.6 | 0.5 |
| Romania | 2,357 | 83.2 | 1.0 | 38.2 | 1.3 | 2.4 | 0.3 | 0.7 | 0.2 | 3.1 | 0.3 | 2.0 | 0.3 | 0.3 | 0.1 | 2.3 | 0.2 |
| South Africa | 4,311 | 40.6 | 1.2 | 35.3 | 1.1 | 8.8 | 0.7 | 2.7 | 0.4 | 11.5 | 0.8 | 4.9 | 0.5 | 1.4 | 0.3 | 6.3 | 0.6 |
| **Total** | **27,320** | **74.0** | **0.4** | **50.3** | **0.5** | **4.7** | **0.2** | **2.4** | **0.1** | **7.2** | **0.2** | **3.3** | **0.1** | **1.4** | **0.1** | **4.7** | **0.2** |
| ***High income*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Argentina | 2,116 | 82.1 | 1.3 | 63.6 | 2.2 | 7.0 | 0.7 | 1.2 | 0.3 | 8.2 | 0.7 | 5.8 | 0.7 | 0.9 | 0.3 | 6.7 | 0.7 |
| Australia | 8,463 | 94.1 | 0.4 | 82.1 | 0.6 | 18.7 | 0.6 | 4.0 | 0.3 | 22.7 | 0.6 | 16.1 | 0.6 | 2.1 | 0.2 | 18.3 | 0.6 |
| Belgium | 2,419 | 91.1 | 1.2 | 81.6 | 1.3 | 6.6 | 0.8 | 1.7 | 0.5 | 8.3 | 0.9 | 5.0 | 0.6 | 1.4 | 0.4 | 6.4 | 0.7 |
| France | 2,894 | 92.8 | 0.7 | 81.9 | 0.9 | 5.5 | 0.5 | 1.6 | 0.3 | 7.1 | 0.5 | 4.8 | 0.5 | 1.0 | 0.2 | 5.9 | 0.5 |
| Germany | 3,555 | 95.1 | 0.7 | 81.9 | 1.3 | 4.9 | 0.4 | 1.5 | 0.3 | 6.5 | 0.6 | 4.2 | 0.4 | 1.2 | 0.2 | 5.4 | 0.5 |
| Israel | 4,827 | 58.7 | 0.8 | 41.4 | 0.7 | 3.9 | 0.3 | 0.4 | 0.1 | 4.4 | 0.3 | 2.9 | 0.2 | 0.3 | 0.1 | 3.2 | 0.3 |
| Italy | 4,712 | 75.4 | 1.5 | 65.1 | 1.4 | 0.9 | 0.1 | 0.3 | 0.1 | 1.3 | 0.2 | 0.8 | 0.1 | 0.3 | 0.1 | 1.1 | 0.2 |
| Japan | 1,671 | 89.2 | 1.1 | 68.3 | 1.7 | 6.5 | 0.7 | 0.9 | 0.2 | 7.4 | 0.7 | 5.9 | 0.7 | 0.6 | 0.1 | 6.4 | 0.7 |
| Murcia | 1,459 | 89.4 | 1.3 | 75.4 | 2.4 | 4.9 | 0.7 | 1.5 | 0.5 | 6.4 | 0.6 | 4.2 | 0.8 | 1.2 | 0.5 | 5.4 | 0.7 |
| Netherlands | 2,372 | 94.1 | 0.7 | 83.3 | 1.3 | 7.4 | 0.8 | 1.5 | 0.3 | 8.9 | 0.9 | 6.0 | 0.7 | 1.1 | 0.2 | 7.1 | 0.8 |
| New Zealand | 12,790 | 94.8 | 0.3 | 85.7 | 0.5 | 7.5 | 0.3 | 4.6 | 0.2 | 12.1 | 0.4 | 6.0 | 0.3 | 3.1 | 0.2 | 9.1 | 0.3 |
| Northern Ireland | 1,986 | 83.1 | 1.0 | 74.9 | 1.3 | 10.7 | 0.9 | 2.5 | 0.4 | 13.2 | 1.0 | 8.5 | 0.8 | 1.8 | 0.3 | 10.3 | 0.9 |
| Poland | 4,000 | 86.3 | 0.6 | 63.4 | 0.7 | 8.8 | 0.4 | 2.2 | 0.2 | 11.1 | 0.5 | 6.1 | 0.4 | 0.9 | 0.2 | 7.0 | 0.4 |
| Portugal | 2,060 | 85.4 | 1.3 | 67.0 | 1.4 | 8.7 | 1.0 | 1.3 | 0.3 | 10.0 | 1.0 | 7.4 | 1.0 | 1.1 | 0.2 | 8.5 | 1.1 |
| Spain | 5,473 | 87.3 | 0.6 | 70.3 | 0.9 | 3.0 | 0.4 | 0.6 | 0.1 | 3.6 | 0.4 | 2.5 | 0.4 | 0.5 | 0.1 | 2.9 | 0.4 |
| United States | 5,692 | 91.6 | 0.9 | 72.9 | 1.3 | 7.8 | 0.4 | 6.0 | 0.4 | 13.8 | 0.6 | 6.3 | 0.3 | 4.2 | 0.3 | 10.5 | 0.4 |
| **Total** | **66,489** | **87.8** | **0.2** | **74.0** | **0.3** | **7.7** | **0.1** | **2.6** | **0.1** | **10.3** | **0.2** | **6.3** | **0.1** | **1.7** | **0.1** | **8.0** | **0.1** |
| **Overall Sample** | **119,602** | **80.3** | **0.2** | **63.0** | **0.2** | **6.3** | **0.1** | **2.3** | **0.1** | **8.7** | **0.1** | **5.0** | **0.1** | **1.4** | **<0.1** | **6.4** | **0.1** |

SE - standard error

a Without dependence.

b N is the total number of unweighted respondents who answered alcohol use questions.

c Estimates are based on weighted data.

**Table 3: Conditional prevalence of levels of involvement with alcohol use in the World Mental Health Surveys**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Regular Use | Use** | | | **Abuse| Use** | | | **Dependence | Use** | | | **Any alcohol use disorder | Use** | | | **Remission from abuse | LT abuse** | | | **Remission from dependence | LT dependence** | | | **Remission from any alcohol use disorder | LT alcohol use disorder** | | |
|
|  | **na** | **%b** | **SE** | **na** | **%b** | **SE** | **na** | **%b** | **SE** | **na** | **%b** | **SE** | **na** | **%b** | **SE** | **na** | **%b** | **SE** | **na** | **%b** | **SE** |
| ***Low and Lower-Middle income*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Colombia | 4,143 | 76.5 | 0.9 | 4,143 | 7.3 | 0.6 | 4,143 | 2.7 | 0.4 | 4,143 | 10.0 | 0.7 | 230 | 84.0 | 2.8 | 106 | 48.8 | 7.3 | 336 | 74.6 | 3.4 |
| Iraq | 170 | 86.5 | 2.5 | 170 | 13.8 | 5.2 | 170 | 5.4 | 2.9 | 170 | 19.2 | 5.7 | 16 | 55.2 | 22.9 | 7 | 93.9 | 5.2 | 23 | 66.1 | 19.0 |
| Nigeria | 3,912 | 45.4 | 1.0 | 3,912 | 3.4 | 0.3 | 3,912 | 0.6 | 0.1 | 3,912 | 4.0 | 0.3 | 145 | 76.1 | 2.8 | 26 | 32.6 | 10.7 | 171 | 69.7 | 2.9 |
| Peru | 3,806 | 80.7 | 0.6 | 3,806 | 4.4 | 0.3 | 3,806 | 1.5 | 0.2 | 3,806 | 5.9 | 0.4 | 157 | 76.6 | 3.9 | 52 | 62.5 | 6.2 | 209 | 73.0 | 2.6 |
| PRC | 1,063 | 60.5 | 2.2 | 1,063 | 5.6 | 0.8 | 1,063 | 1.7 | 0.3 | 1,063 | 7.3 | 1.0 | 75 | 69.8 | 8.1 | 46 | 37.7 | 7.8 | 121 | 62.4 | 6.5 |
| Ukraine | 4,539 | 80.7 | 1.1 | 4,539 | 10.4 | 0.7 | 4,539 | 3.8 | 0.4 | 4,539 | 14.2 | 0.9 | 395 | 63.3 | 2.8 | 143 | 40.0 | 4.1 | 538 | 57.0 | 2.4 |
| **Total** | 17,633 | 70.9 | 0.5 | 17,633 | 6.6 | 0.3 | 17,633 | 2.2 | 0.1 | 17,633 | 8.8 | 0.3 | 1,018 | 72.3 | 1.8 | 380 | 46.5 | 3.1 | 1398 | 65.8 | 1.6 |
| ***Upper-Middle income*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Brazil | 4,322 | 65.3 | 0.8 | 4,322 | 7.6 | 0.6 | 4,322 | 3.8 | 0.4 | 4,322 | 11.3 | 0.7 | 300 | 72.9 | 3.6 | 176 | 61.3 | 3.8 | 476 | 69.0 | 2.8 |
| Bulgaria | 4,009 | 84.5 | 0.8 | 4,009 | 2.9 | 0.3 | 4,009 | 1.2 | 0.2 | 4,009 | 4.1 | 0.4 | 114 | 63.5 | 5.9 | 47 | 68.1 | 7.3 | 161 | 64.9 | 4.4 |
| Lebanon | 1,557 | 61.4 | 2.2 | 1,557 | 2.1 | 0.5 | 1,557 | 0.7 | 0.3 | 1,557 | 2.8 | 0.6 | 29 | 74.6 | 9.7 | 10 | 29.0 | 10.9 | 39 | 63.3 | 9.5 |
| Medellin | 1,446 | 68.3 | 2.9 | 1,446 | 9.2 | 1.3 | 1,446 | 5.5 | 1.0 | 1,446 | 14.6 | 1.6 | 156 | 83.4 | 3.8 | 82 | 55.1 | 8.6 | 238 | 72.8 | 4.5 |
| Mexico | 4,857 | 60.7 | 1.0 | 4,857 | 4.9 | 0.4 | 4,857 | 4.4 | 0.5 | 4,857 | 9.4 | 0.6 | 226 | 75.6 | 4.4 | 157 | 64.0 | 5.6 | 383 | 70.1 | 3.8 |
| Romania | 1,943 | 45.9 | 1.5 | 1,943 | 2.9 | 0.3 | 1,943 | 0.8 | 0.2 | 1,943 | 3.8 | 0.3 | 59 | 81.2 | 7.2 | 21 | 38.6 | 11.5 | 80 | 71.8 | 7.5 |
| South Africa | 1,594 | 87.0 | 0.9 | 1,594 | 21.6 | 1.4 | 1,594 | 6.7 | 0.9 | 1,594 | 28.3 | 1.7 | 340 | 55.9 | 3.4 | 101 | 52.8 | 6.7 | 441 | 55.1 | 2.9 |
| **Total** | 19,728 | 68.0 | 0.5 | 19,728 | 6.4 | 0.3 | 19,728 | 3.3 | 0.2 | 19,728 | 9.7 | 0.3 | 1,224 | 69.1 | 1.8 | 594 | 59.3 | 2.8 | 1818 | 65.8 | 1.5 |
| ***High income*** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Argentina | 1,677 | 77.5 | 1.9 | 1,677 | 8.6 | 0.8 | 1,677 | 1.4 | 0.3 | 1,677 | 10.0 | 0.9 | 205 | 82.4 | 2.5 | 35 | 79.0 | 7.7 | 240 | 81.9 | 2.4 |
| Australia | 7,945 | 87.3 | 0.6 | 7,945 | 19.9 | 0.7 | 7,945 | 4.2 | 0.3 | 7,945 | 24.1 | 0.7 | 1,464 | 86.2 | 1.2 | 342 | 53.8 | 3.6 | 1806 | 80.5 | 1.3 |
| Belgium | 2,215 | 89.6 | 0.9 | 2,215 | 7.2 | 0.9 | 2,215 | 1.9 | 0.6 | 2,215 | 9.1 | 0.9 | 155 | 76.7 | 5.3 | 40 | 82.9 | 3.8 | 195 | 78.0 | 4.5 |
| France | 2,706 | 88.3 | 0.7 | 2,706 | 6.0 | 0.6 | 2,706 | 1.7 | 0.3 | 2,706 | 7.6 | 0.5 | 155 | 87.3 | 2.7 | 47 | 66.2 | 8.7 | 202 | 82.7 | 3.5 |
| Germany | 3,385 | 86.1 | 1.1 | 3,385 | 5.2 | 0.5 | 3,385 | 1.6 | 0.3 | 3,385 | 6.8 | 0.6 | 184 | 85.3 | 2.8 | 44 | 78.8 | 6.7 | 228 | 83.8 | 3.0 |
| Israel | 2,873 | 70.5 | 0.9 | 2,873 | 6.7 | 0.5 | 2,873 | 0.7 | 0.2 | 2,873 | 7.4 | 0.5 | 194 | 73.3 | 3.2 | 23 | 68.4 | 10.7 | 217 | 72.8 | 3.1 |
| Italy | 3,579 | 86.4 | 0.9 | 3,579 | 1.2 | 0.2 | 3,579 | 0.5 | 0.1 | 3,579 | 1.7 | 0.3 | 40 | 91.3 | 5.0 | 16 | 73.8 | 9.0 | 56 | 86.4 | 4.5 |
| Japan | 1,510 | 76.5 | 1.4 | 1,510 | 7.3 | 0.8 | 1,510 | 1.0 | 0.2 | 1,510 | 8.3 | 0.8 | 137 | 90.5 | 3.1 | 31 | 63.4 | 9.7 | 168 | 87.2 | 3.2 |
| Murcia | 1,272 | 84.3 | 1.9 | 1,272 | 5.5 | 0.7 | 1,272 | 1.6 | 0.6 | 1,272 | 7.1 | 0.7 | 73 | 85.3 | 7.6 | 20 | 79.4 | 13.5 | 93 | 84.0 | 6.1 |
| Netherlands | 2,230 | 88.5 | 1.1 | 2,230 | 7.9 | 0.8 | 2,230 | 1.6 | 0.3 | 2,230 | 9.5 | 0.9 | 172 | 81.4 | 3.8 | 38 | 71.8 | 8.1 | 210 | 79.8 | 3.3 |
| New Zealand | 11,866 | 90.4 | 0.4 | 11,866 | 7.9 | 0.3 | 11,866 | 4.9 | 0.2 | 11,866 | 12.8 | 0.4 | 986 | 80.4 | 1.7 | 737 | 67.7 | 2.1 | 1723 | 75.5 | 1.5 |
| Northern Ireland | 1,669 | 90.2 | 1.1 | 1,669 | 12.9 | 1.1 | 1,669 | 3.0 | 0.5 | 1,669 | 15.9 | 1.2 | 208 | 79.4 | 3.4 | 68 | 70.4 | 7.1 | 276 | 77.7 | 3.1 |
| Poland | 3,469 | 73.5 | 0.8 | 3,469 | 10.2 | 0.5 | 3,469 | 2.6 | 0.3 | 3,469 | 12.8 | 0.5 | 400 | 68.6 | 3.2 | 121 | 42.5 | 5.8 | 521 | 63.3 | 2.4 |
| Portugal | 1,745 | 78.5 | 1.5 | 1,745 | 10.2 | 1.1 | 1,745 | 1.6 | 0.3 | 1,745 | 11.8 | 1.2 | 181 | 85.4 | 3.2 | 40 | 79.1 | 8.0 | 221 | 84.5 | 3.1 |
| Spain | 4,718 | 80.5 | 0.7 | 4,718 | 3.5 | 0.5 | 4,718 | 0.7 | 0.1 | 4,718 | 4.1 | 0.5 | 149 | 81.4 | 4.0 | 31 | 82.5 | 9.9 | 180 | 81.6 | 3.9 |
| United States | 5,316 | 79.6 | 1.0 | 5,316 | 8.5 | 0.4 | 5,316 | 6.5 | 0.4 | 5,316 | 15.0 | 0.6 | 584 | 80.3 | 1.6 | 494 | 70.4 | 2.6 | 1078 | 76.0 | 1.6 |
| **Total** | 58,175 | 84.3 | 0.2 | 58,175 | 8.8 | 0.2 | 58,175 | 3.0 | 0.1 | 58,175 | 11.8 | 0.2 | 5,287 | 82.0 | 0.7 | 2,127 | 65.8 | 1.3 | 7,414 | 77.9 | 0.6 |
| **Overall Sample** | 95,536 | 78.4 | 0.2 | 95,536 | 7.9 | 0.1 | 95,536 | 2.9 | 0.1 | 95,536 | 10.8 | 0.1 | 7,529 | 78.3 | 0.6 | 3,101 | 61.6 | 1.1 | 10,630 | 73.8 | 0.6 |

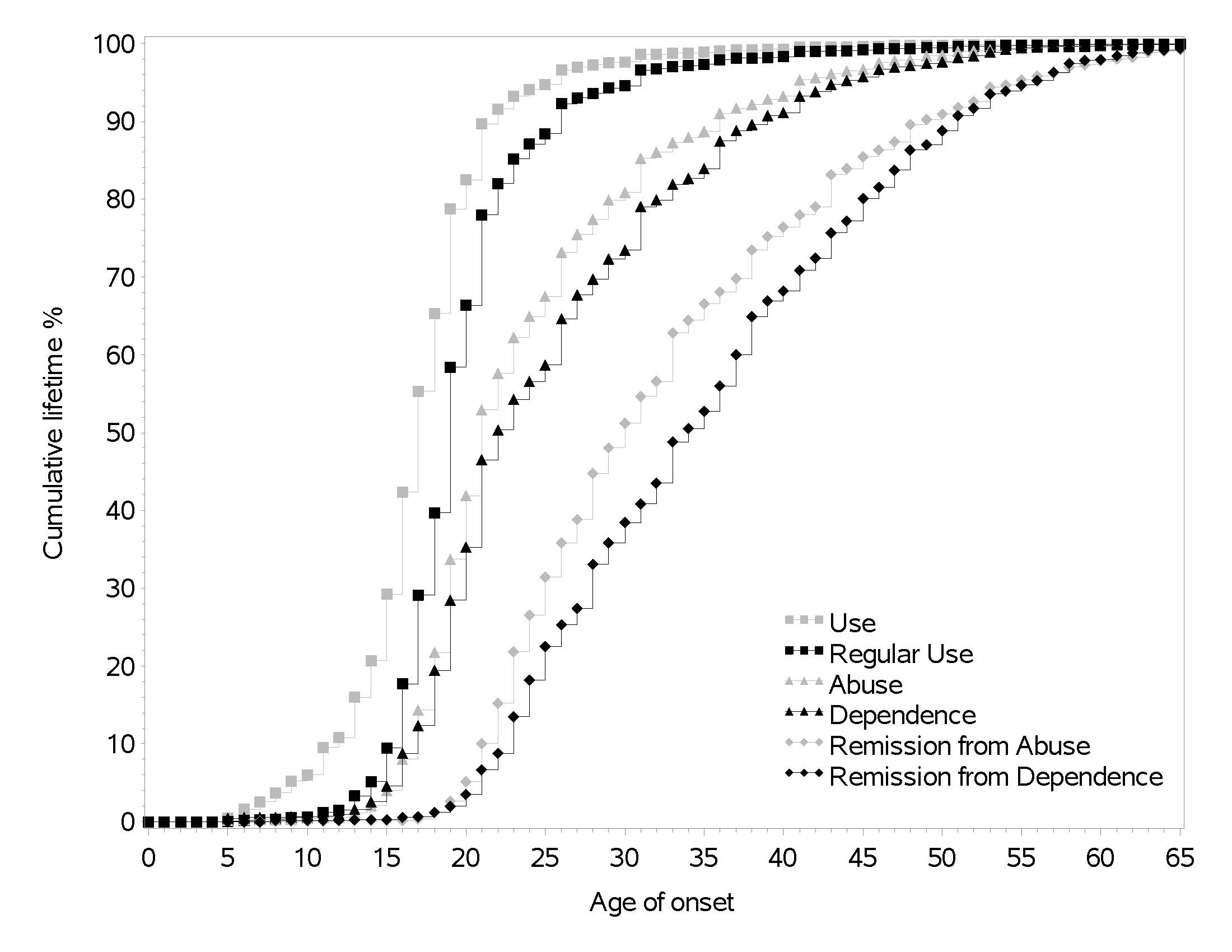
SE - standard error; LT – lifetime.

a n is the total unweighted number of respondents in the conditional cohort.

b Estimates are based on weighted data.

c Without dependence.

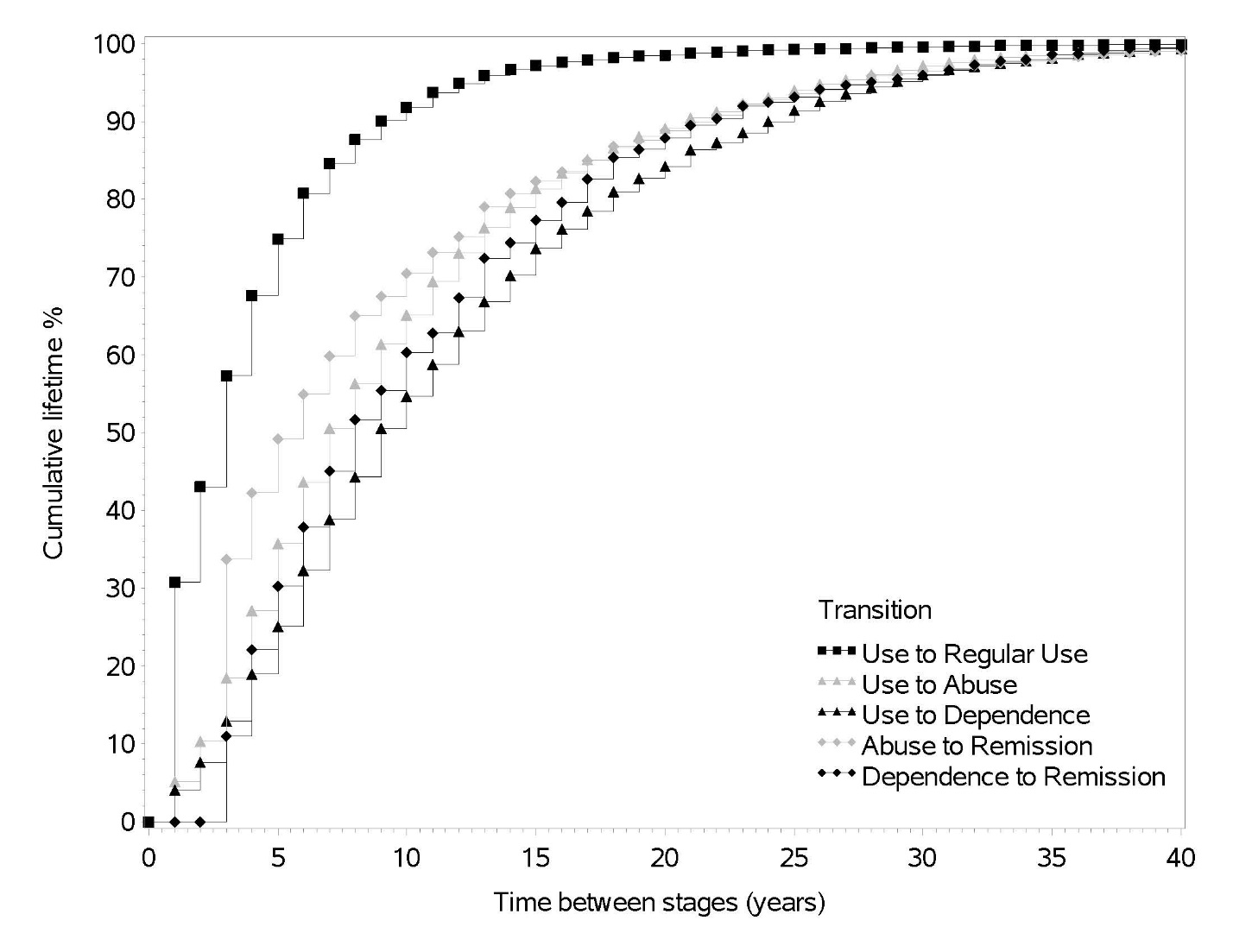
**Figure 1: Age of onset of alcohol use, regular use, use disorders and remission in the World Mental Health Surveysa,b**



a Each curve includes only respondents that reached the specific stage.

b Persons with missing age of onset of remission were excluded from associated curves (N=690 – remission from abuse; N=224 – remission from dependence)

**Figure 2: Transition times between alcohol use, regular use, use disorder and remission in the World Mental Health Surveysa.b**



a Each curve only includes respondents with a diagnosis of the second stage.

b Persons with missing age of onset of remission were excluded from associated curves (N=690 – remission from abuse; N=224 – remission from dependence)

**Table 4: Multivariate associations of transitions to alcohol use, regular use and use disorder in the World Mental Health Surveys**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Transition** | | | | | | | |
|  | **Commencing Use** | | **Use to regular use** | | **Use to abuse (W/O prior dependence)** | | **Regular use to abuse (W/O prior dependence)5** | |
| **Variable1** | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** |
| **Male** | 1.90\* | (1.86-1.94) | 2.03\* | (1.98-2.08) | 3.47\* | (3.26-3.69) | 2.78\* | (2.51-3.08) |
| *X21 [p]* | *3986.28\*\** | *[<0.001]* | *2992.54\*\** | *[<0.001]* | *1548.32\*\** | *[<0.001]* | *394.73\*\** | *[<0.001]* |
| **Percentage of individual’s age cohort already using2** | 1.41\* | (1.40-1.42) | 1.21\* | (1.20-1.22) | 1.49\* | (1.45-1.52) | 1.64\* | (1.55-1.72) |
| *X21 [p]* | *5164.07\*\** | *[<0.001]* | *1873.13\*\** | *[<0.001]* | *949.03\*\** | *[<0.001]* | *349.57\*\** | *[<0.001]* |
| **Education (Ref: High)** |  |  |  |  |  |  |  |  |
| Student | 1.07 | (0.99-1.15) | 1.02 | (0.96-1.08) | 1.39\* | (1.22-1.58) | 1.11 | (0.89-1.40) |
| Low | 0.90\* | (0.83-0.97) | 1.03 | (0.97-1.10) | 1.59\* | (1.41-1.80) | 2.40\* | (1.97-2.92) |
| Low-average | 1.10\* | (1.02-1.19) | 1.04 | (0.98-1.10) | 1.61\* | (1.44-1.80) | 1.99\* | (1.64-2.41) |
| High-average | 1.04 | (0.96-1.12) | 0.95 | (0.89-1.01) | 1.27\* | (1.14-1.42) | 1.44\* | (1.17-1.77) |
| *X24 [p]* | *138.25\*\** | *[<0.001]* | *24.19\*\** | *[<0.001]* | *89.09\*\** | *[<0.001]* | *154.46\*\** | *[<0.001]* |
| **Individual’s age of commencing alcohol (Ref: Late)3** |  |  |  |  |  |  |  |  |
| Early |  |  | 0.63\* | (0.61-0.66) | 2.24\* | (2.04-2.46) | 2.84\* | (2.42-3.33) |
| Mid |  |  | 0.77\* | (0.75-0.80) | 1.33\* | (1.21-1.46) | 1.54\* | (1.30-1.83) |
| *X22 [p]* |  |  | *500.93\*\** | *[<0.001]* | *409.42\*\** | *[<0.001]* | *239.07\*\** | *[<0.001]* |
| **Sample Size4** | 119,602 | | 95,536 | | 95,536 | | 74,094 | |
|  |  |  |  |  |  |  |  |  |
| **Variable1** | **Use to dependence** | | **Regular use to dependence** | | **Use to any alcohol use disorder** | | **Regular use to any alcohol use disorder** | |
| **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** |
| **Male** | 2.70\* | (2.53-2.88) | 2.06\* | (1.87-2.28) | 3.44\* | (3.24-3.65) | 2.66\* | (2.50-2.83) |
| *X21 [p]* | *915.60\*\** | *[<0.001]* | *197.69\*\** | *[<0.001]* | *1690.73\*\** | *[<0.001]* | *993.71\*\** | *[<0.001]* |
| **Percentage of individual’s age cohort already using2** | 1.33\* | (1.29-1.37) | 1.40\* | (1.33-1.48) | 1.49\* | (1.45-1.52) | 1.33\* | (1.29-1.36) |
| *X21 [p]* | *396.49\*\** | *[<0.001]* | *145.90\*\** | *[<0.001]* | *974.89\*\** | *[<0.001]* | *396.38\*\** | *[<0.001]* |
| **Education (Ref: High)** |  |  |  |  |  |  |  |  |
| Student | 1.47\* | (1.29-1.67) | 1.2 | (0.96-1.51) | 1.33\* | (1.18-1.51) | 1.41\* | (1.24-1.59) |
| Low | 1.51\* | (1.33-1.71) | 2.25\* | (1.85-2.74) | 1.64\* | (1.46-1.84) | 1.56\* | (1.39-1.75) |
| Low-average | 1.59\* | (1.42-1.77) | 1.94\* | (1.60-2.36) | 1.63\* | (1.46-1.81) | 1.61\* | (1.45-1.79) |
| High-average | 1.28\* | (1.15-1.43) | 1.44\* | (1.17-1.77) | 1.27\* | (1.14-1.41) | 1.28\* | (1.15-1.42) |
| *X24 [p]* | *73.91\*\** | *[<0.001]* | *122.12\*\** | *[<0.001]* | *120.86\*\** | *[<0.001]* | *95.69\*\** | *[<0.001]* |
| **Individual’s age of commencing alcohol (Ref: Late)3** |  |  |  |  |  |  |  |  |
| Early | 1.80\* | (1.64-1.98) | 2.21\* | (1.89-2.60) | 2.20\* | (2.02-2.41) | 1.76\* | (1.61-1.93) |
| Mid | 1.17\* | (1.06-1.29) | 1.33\* | (1.12-1.57) | 1.31\* | (1.20-1.43) | 1.15\* | (1.05-1.26) |
| *X22 [p]* | *238.97\*\** | *[<0.001]* | *147.26\*\** | *[<0.001]* | *412.85\*\** | *[<0.001]* | *239.34\*\** | *[<0.001]* |
| **Sample Size4** | 95,536 | | 74,497 | | 95,536 | | 74,094 | |

OR – odds ratio; CI – confidence interval; W/O – without; \*/\*\* - significant at the 0.05 level, two-sided test.

1. Models also controlled for age person year (not shown in table) - groups were <= 14, 15-17, 18-20, 21-24, 25-29, and 30+ (results not shown).
2. %(/10) of +/-5-yr cohort used by prior person year. e.g. For an individual born in 1975 the cohort would be persons born between 1970 and 1980. An OR of 1.5 for commencement of use would be interpreted as an increase of 50% in the odds of commencing use with an increase of 10% of people in the age cohort who had commenced use by the previous person year (controlling for all other variables in the model).
3. *Individual’s age of commencing alcohol use* is split into survey-specific tertiles among all those who ever used alcohol and was included in all models except ‘Commencing Use’.
4. The total unweighted number of respondents included in model, conditioning on initial stage.
5. Individuals with onset of abuse prior to onset of regular use, or who never met criteria for regular use, were excluded from the model (N=403).
6. Response modelled is onset of first alcohol use disorder (either abuse or dependence).

**Table 5: Multivariate associations of remission from DSM-IV alcohol use disorders in the World Mental Health Surveys**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable1** | **Remission among people who had met criteria for DSM-IV alcohol…** | | | | | |
| **Abuse (without dependence)** | | **Dependence** | | **Use disorder7** | |
| **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** |
| **Male** | 0.80\* | (0.73-0.87) | 0.69\* | (0.61-0.79) | 0.78\* | (0.72-0.84) |
| *X21 [p]* | *23.87\*\** | *[<0.001]* | *31.84\*\** | *[<0.001]* | *42.96\*\** | *[<0.001]* |
| **Percentage of individual’s age cohort already using** | 1.83\* | (1.68-1.99) | 1.66\* | (1.34-2.06) | 1.82\* | (1.67-1.98) |
| *X21 [p]* | *196.87\*\** | *[<0.001]* | *21.16\*\** | *[<0.001]* | *199.18\*\** | *[<0.001]* |
| **Education level (Ref: High)** |  |  |  |  |  |  |
| Student | 0.69\* | (0.55-0.88) | 0.78 | (0.40-1.49) | 0.70\* | (0.56-0.88) |
| Low | 0.81\* | (0.72-0.92) | 0.65\* | (0.53-0.80) | 0.73\* | (0.65-0.81) |
| Low-average | 0.9 | (0.81-1.01) | 0.91 | (0.75-1.10) | 0.87\* | (0.79-0.96) |
| High-average | 0.92 | (0.82-1.04) | 0.83 | (0.68-1.02) | 0.90\* | (0.81-1.00) |
| *X24 [p]* | *17.40\*\** | *[0.002]* | *21.45\*\** | *[<0.001]* | *38.87\*\** | *[<0.001]* |
| **Individual’s age of commencing use (Ref: Late)2** |  |  |  |  |  |  |
| Early | 0.96 | (0.86-1.07) | 1.02 | (0.84-1.22) | 0.97 | (0.88-1.06) |
| Mid | 0.92 | (0.83-1.02) | 1.02 | (0.84-1.23) | 0.94 | (0.85-1.03) |
| *X22 [p]* | *3.01* | *[0.222]* | *0.04* | *[0.981]* | *1.97* | *[0.373]* |
| **Individual’s speed to transition from use to disorder (Ref: Late)3** |  |  |  |  |  |  |
| Early | 0.95 | (0.85-1.07) | 0.79\* | (0.64-0.98) | 0.95 | (0.86-1.05) |
| Mid | 0.85\* | (0.76-0.97) | 0.79\* | (0.67-0.94) | 0.86\* | (0.78-0.95) |
| *X22 [p]* | *8.18\*\** | *[0.017]* | *7.28\*\** | *[0.026]* | *11.86\*\** | *[0.003]* |
| **Number of years with alcohol disorder** | 0.98\* | (0.97-0.99) | 1.02\* | (1.01-1.03) | 0.99\* | (0.98-0.99) |
| *X21 [p]* | *35.59\*\** | *[<0.001]* | *8.33\*\** | *[0.004]* | *22.23\*\** | *[<0.001]* |
| **Sample Size5,6** | 6,839 | | 2,874 | | 9,713 | |

OR – odds ratio; CI – confidence interval; \*/\*\* - significant at the 0.05 level, two-sided test.

1. Models also controlled for age person year (not shown in table) with age groups <= 18, 19-20, 21-22, 23-24, 25-29, 30-39, and 40+ (results not shown).
2. *Individual’s age of commencing alcohol use* is split into survey-specific tertiles among all those who ever used alcohol.
3. *Individual’s speed of transition from alcohol use* *to disorder* is split into survey specific tertiles.
4. %(/10) of +/-5-yr cohort used by prior person year.
5. The total unweighted number of respondents included in model, conditioning on initial stage.
6. Individuals with a missing age of onset of remission were excluded from the model (N=690 for remission from abuse and N=224 for remission from dependence).
7. Includes persons with either abuse or dependence.