Published in final edited form as:

Drug Alcohol Depend. 2017 January 01; 170: 198–207. doi:10.1016/j.drugalcdep.2016.11.003.

Demographic Trends of Binge Alcohol Use and Alcohol Use Disorders among Older Adults in the United States, 2005–2014

Benjamin H. Han^{1,2}, Alison A. Moore³, Scott Sherman^{1,4}, Katherine M. Keyes⁵, and Joseph J. Palamar^{2,4}

¹New York University School of Medicine, Department of Medicine, Division of Geriatric Medicine and Palliative Care, 550 First Avenue, BCD 615, New York, NY 10016

²Center for Drug Use and HIV Research, New York University Rory College of Nursing, 433 First Avenue, 7th Floor, New York, NY 10010

³University of California, San Diego, Department of Medicine, Division of Geriatrics, 9500 Gilman Drive, La Jolla, CA 92093

⁴New York University Langone Medical Center, Department of Population Health, 550 First Avenue, New York, NY 10016

⁵Columbia University, Mailman School of Public Health, 722 West 168th Street, New York, NY 10032

Abstract

Background—Alcohol use is common among older adults, and this population has unique risks with alcohol consumption in even lower amounts than younger persons. No recent studies have estimated trends in alcohol use including binge alcohol and alcohol use disorders (AUD) among older adults.

Methods—We examined alcohol use among adults age 50 in the National Survey on Drug Use and Health (NSDUH) from 2005 to 2014. Trends of self-reported past-month binge alcohol use and AUD were estimated. Logistic regression models were used to examine correlates of binge alcohol use and AUD.

Address correspondence to: Benjamin H. Han, New York University School of Medicine, Department of Medicine, Division of Geriatric Medicine and Palliative Care, 550 First Avenue, BCD 615, New York, NY 10016, Benjamin.Han@nyumc.org, T: 646-501-9992.

Conflict of Interest

No conflict declared.

Contributors All authors are responsible for this reported research. B. Han conceptualized and designed the study, helped interpret results, drafted the initial manuscript, and revised the manuscript. J. Palamar designed the study, conducted the statistical analyses, helped interpret results, and critically reviewed the manuscript. A. Moore helped interpret results and critically reviewed the manuscript. S. Sherman helped conceptualize the study, interpret results, and critically reviewed the manuscript. All authors edited and approved the final manuscript as submitted. K. Keyes helped with assisted with statistical analyses, helped interpret results, and critically reviewed the manuscript.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Results—The prevalence of both past-month binge alcohol use and AUD increased significantly among adults age 50 from 2005/2006 to 2013/2014, with a relative increase of 19.2% for binge drinking (linear trend $p<0.001$) and a 23.3% relative increase for AUD (linear trend $p=0.035$). While men had a higher prevalence of binge alcohol use and AUD compared to females, there were significant increases in both among females. In adjusted models of aggregated data, being Hispanic, male, and a smoker or illicit drug user were associated with binge alcohol use, while being male, a smoker, an illicit drug user, reporting past-year depression, or mental health treatment were associated with AUD.

Conclusions—Alcohol use among older adults is increasing in the US, including past-month binge alcohol use and AUD with increasing trends among females. Providers and policymakers need to be aware of these changes to address the increase of older adults with unhealthy drinking.

Keywords

alcohol; epidemiology; older adults

1. INTRODUCTION

Alcohol is the most commonly used psychoactive substance by older adults (Moore et al., 2009), and the most common substance involved among older adults entering substance abuse treatment (Arndt et al., 2011; Han et al., 2009). Older adults (typically 65) can have particular vulnerabilities to alcohol due to physiological changes in aging (Oslin, 2000), increasing chronic disease burden (Moore et al., 2006), and medication use (Moore et al., 2007). This can place older adults at a higher risk for adverse outcomes from alcohol, and alcohol use can complicate the management of chronic disease (Moos et al., 2005). Higher quantities of alcohol use by older adults have been associated with functional impairments (Moore et al., 2003) and increased mortality risk (Holahan et al., 2014; Moore et al., 2007). This has led the National Institute on Alcohol Abuse and Alcoholism (NIAAA) to lower recommended drinking thresholds for adults age 65 and older (NIAAA, 2016).

Recent epidemiological studies on alcohol use by middle-aged and older adults from the 2005–2007 National Survey on Drug Use and Health (NSDUH), estimated the prevalence of past-year alcohol use to be 51% for adults age 50, 56% for adults age 50–65, and 43% for adults age 65. The study also found the prevalence of alcohol dependence to be 2.7% and alcohol abuse to be 3.4% for adults age 50 (Blazer and Wu, 2011). The prevalence of binge drinking for men was estimated to be 19.6% and for women it was estimated to be 6.3% (Blazer and Wu, 2009). Cross-sectional data from the 2005–2006 National Health and Nutrition Examination Survey of non-institutionalized Americans estimated 14.5% of older drinkers (age 50) consumed alcohol above the recommended limits by the NIAAA, and 11.7% reported past-year binge drinking (Wilson et al., 2014). A recent cross-sectional study of the 2010 Behavioral Risk Factor Surveillance System found a lower prevalence of binge alcohol use among adults age 45–64 at 13.3% and for adults 65 prevalence was estimated to be 3.8% (Centers for Disease Control [CDC], 2012). However, it was noted that the frequency of binge drinking was highest among binge drinkers age 65 with an average of 5.5 episodes a month compared to all other age groups (CDC, 2012).

Given the aging Baby Boomer generation, which has higher reported rates of substance use compared to any generation preceding it (Johnson and Gerstein, 2000; Kuerbis et al., 2014), we hypothesize that there have been increases in alcohol use, including binge drinking and alcohol use disorders among older adults. One study noted increases in the rates of alcohol-related hospital admissions for older adults from 1993 to 2010 (Sacco et al., 2015).

However, no studies have examined recent trends or changes in demographics shifts for alcohol use among older adults as the Baby Boomer generation continues to age.

Understanding demographic trends of alcohol use and alcohol use problems for older adults is vital for targeted public health screening and interventions. The aim of this study was to estimate the prevalence and to examine demographic trends of self-reported alcohol use -- in particular binge alcohol use and alcohol use disorders among older adults, and to determine correlates of use among older adults. To do this, we used cross-sectional data from the most recent ten years (2005–2014) of a nationally representative sample of non-institutionalized individuals in the US--the NSDUH, focusing on adults age 50 and older.

2. METHODS

2.1. Study Population

Data were utilized from the ten most recent cohorts (2005–2014) of NSDUH, an annual cross-sectional survey of non-institutionalized individuals in the 50 US states and the District of Columbia (Substance Abuse and Mental Health Services Administration [SAMHSA], 2013). A different cross-section of participants is sampled each year and thus the years are independent of each other. NSDUH is a nationally representative probability sample of individuals living in households and the sample was obtained via four stages: Census tracts were first selected within each state, then segments in each tract were selected, then dwelling, and then respondents were selected for the sample each year. Surveys were administered via computer-assisted interviewing (CAI)—conducted by an interviewer and audio computer-assisted self-interviewing (ACASI). Sampling weights were provided by NSDUH to address unit- and individual-level non-response. Weights were adjusted to ensure that estimates are consistent with estimates provided by the US Census Bureau. Additional information regarding sampling and the survey can be found elsewhere (SAMHSA, 2013). The weighted interview response rates for 2005–2014 NSDUH ranged from 71.2–76.0%.

2.2. Measures

2.2.1. Alcohol use and binge alcohol use—Participants were asked how long it has been since consuming their last alcoholic beverage. We utilized recoded variables derived from this question indicating whether alcohol was reportedly used within the last 12 months, and within the last 30 days. They were also asked whether they have binged on alcohol within the last 30 days. Binge alcohol use was defined using SAMHSA's definition as drinking five or more drinks on the same occasion, which is defined as consuming this many drinks at same time or within a couple hours of each other (SAMHSA, 2013).

2.2.2. Alcohol use disorders—Those reporting alcohol use within the last 12 months were asked additional questions to determine whether they met criteria for abuse or

dependence as defined by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 2000). Although a diagnostic interview was not conducted, these questions were utilized as a proxy. A respondent was defined as having alcohol abuse if they reported a positive response to 1 DSM-IV abuse criteria and defined as having alcohol dependence if they indicated a positive response to 3 DSM-IV dependence criteria. The variable used for past-year alcohol use disorder includes respondents diagnosed with both past-year alcohol abuse or alcohol dependence, which is consistent with SAMHSA NSDUH reports (SAMHSA, 2013).

2.2.3. Demographics and health-related variables—We examined age (age 50–64 and >65, which were derived from predefined categories), gender, race (i.e., white non-Hispanic, black non-Hispanic, Hispanic, other race), educational attainment (i.e., <high school, high school, some college, college or more), annual total family income (i.e., <\$20,000; \$20,000–49,999; \$50,000–\$74,999; \$75,000+), and marital status (i.e., married, widowed, divorced or separated, or never married).

Participants were asked to rate their general health and response options for perceived health were “excellent”, “very good”, “good”, “fair”, and “poor”. They were also asked if they had ever been informed by a doctor or other medical professional that they have had the following 12 chronic diseases: asthma, bronchitis, cirrhosis of the liver, diabetes, heart disease, hepatitis, hypertension (high blood pressure), lung cancer, HIV/AIDS, sleep apnea, stroke, and ulcers. We computed a sum variable and recoded this into a binary variable indicating multiple self-reported chronic conditions (2 or more vs. 0–1 chronic conditions). This cutoff was chosen because multimorbidity is commonly defined as the co-occurrence of two or more chronic conditions (Tinetti et al., 2012). With regard to mental health, participants were asked whether they had experienced a depressive episode or anxiety within the past year. They were also asked if they had received mental health treatment within the past year.

Past 12-month and past 30-day tobacco use were queried and tobacco was defined as cigarettes, chewing tobacco, snuff, cigars, and pipe tobacco. Likewise, participants were asked about 12-month and 30-day use of a variety of illicit drugs (e.g., marijuana, cocaine) and we utilized two indicator variables indicating whether use of any was reported.

2.3. Statistical Analyses

These analyses focused on participants age 50 and older, who represented about 9.2%–16.2% of the full NSDUH sample each year. Since some outcomes of interest (e.g., heavy 30-day alcohol use, alcohol abuse/dependence) were relatively rare, similar to previous analyses (Hasin et al., 2015; Jones et al., 2015), we aggregated years into pairs to increase power to detect trends over time. Specifically, we collapsed years into 2005–2006, 2007–2008, 2009–2010, 2011–2012, and 2013–2014.

We first calculated descriptive statistics to estimate the weighted prevalence of self-reported past-year alcohol use of patterns across cohorts, as well as the prevalence of alcohol use patterns separately for each category of each covariate. We then calculated the absolute change over time by subtracting prevalence in 2013–2014 from prevalence in 2005–2006.

We also calculated the relative change over time by dividing prevalence in 2013–2014 by prevalence in 2005–2006. We then estimated whether there was a linear association between binge drinking and alcohol use disorder and time within each category of each covariate.

We aggregated data from all years into a single cross-section to determine whether covariates were related to the two outcomes of interest—binge drinking and alcohol use disorder. Using binary logistic regression we first estimated odds of each covariate separately, which produced unadjusted odds ratios (ORs). We then fit all covariates simultaneously (including indicators for year) using multiple logistic regression. The adjusted ORs (AORs) represent the odds of each category with all else in the model being equal.

We weighted all analyses to account for the complex survey design. Since our analyses utilized data from 10 cohorts, we divided the weights by 10 to obtain nationally representative estimates. Stata SE 13 (StataCorp, College Station, TX, 2009) was used for all analyses, and survey (“svy”) commands were utilized to provide accurate standard errors using Taylor series estimation methods (Heeringa et al., 2010). Secondary analysis of this publically available data was exempt for review by the New York University Langone Medical Center Institutional Review Board.

3. RESULTS

Sample characteristics and alcohol use across cohorts are presented in Table 1. Tests for trends suggest that between 2005/2006 and 2013/2014, there were significant increases in prevalence of past-year alcohol use (from 60.0% to 63.0%, $p<0.001$) and past-month alcohol use (from 47.1% to 49.9%, $p<0.001$). The prevalence of past-month binge alcohol use among adults age 50 and older significantly increased from 2005/2006 to 2013/2014 from 12.5% to 14.9% ($p<0.001$), representing a 19.2% relative increase. The prevalence of past-year alcohol use disorder also significantly increased from 3.0% to 3.7% ($p=0.035$).

With regard to past-month binge alcohol use (Table 2), middle-aged adults (age 50–64) reported a significant increase over time (a 23.2% relative increase, $p<0.001$). Females had a significantly large increase in the prevalence of past-month binge drinking from 6.3% to 9.1% (a 44.4% relative increase, $p<0.001$). Likewise, prevalence in past-month binge drinking significantly increased among white participants, those earning <\$20,000 or >\$75,000, those with a high school education, those who were married or never married, respondents who reported very good or fair/poor health, had multiple chronic conditions, and those who received mental health treatment in the past year.

As shown in Table 3, older adults (age ≥ 65) experienced a significant increase in prevalence of past-year alcohol use disorders over time (a 40.0% relative increase, $p=0.014$). Female participants had a large significant increase in past-year alcohol use disorders (an 84.6% relative increase, $p=0.001$) with males remaining stable. Prevalence of alcohol use disorder also significantly increased among white participants, those with a high school diploma, those earning less than \$20,000 per year, and those who were married. There was also an increase among those reporting that they are of fair or poor health.

Table 4 shows results from the multivariable logistic regression model with past-month binge drinking as the outcome variable. Results from the adjusted model suggest that more recent study participants, younger participants, males, Hispanics (versus non-Hispanic whites), those reporting higher household incomes >\$20,000, those who reported being divorced or separated, and those reporting past year use of tobacco or illicit drug had higher odds of reporting past-month binge drinking. History of multiple chronic conditions was associated with significantly lower odds of reporting past-month binge drinking (OR=0.79; 95% CI: 0.73–0.84; $p<0.001$) along with participants who reported fair or poor health status (versus excellent) (OR=0.83; 95% CI: 0.73–0.93; $p=0.003$).

Table 5 reports results from the multivariable logistic regression model with past-year alcohol use disorder as the outcome variable. Results from the adjusted model show that younger (age 50–64) participants (versus older; >65), males (versus females), higher household income >\$75,000, those who reported being divorced or separated (vs. married) and past year use of tobacco or illicit drug had higher odds of reporting past-year alcohol use disorders. In addition, past-year major depressive episode and respondents who received mental health treatment in the past year also had higher odds of alcohol use disorders.

4. DISCUSSION

The prevalence of alcohol use among older adults is increasing in the US; however, little is known about recent trends, demographic changes, and correlates of use. We found a significant increase in prevalence of past-month binge drinking and past-year alcohol use disorders in the US among older adults from a ten year period from 2005/2006 through 2013/2014, with large relative increases in AUD among adults age 65 and binge drinking among adults age 50–64. The results in this study indicate some demographic changes in trends of unhealthy alcohol use.

Our study found that among women, binge drinking and alcohol use disorders increased greatly during the study period. With regard to binge drinking, we also detected significant increases among older non-Hispanic whites, but by 2013/2014 Hispanics had the highest prevalence for binge drinking relative to other races. Those reporting household incomes \$75,000 also had significant increases and the highest binge drinking prevalence by 2013/2014 compared to other household incomes. Regarding alcohol use disorders, there were significant increases among non-Hispanic whites and household incomes <\$20,000. The significant demographic correlates of binge alcohol use and alcohol use disorders determined in this study including younger age, being male or not married, tobacco use, and illicit drug use, are similar to results of previous studies (Blazer and Wu, 2009, 2011; Choi et al., 2016; Moore et al., 2009). Our findings of high prevalence rates and correlates of Hispanic ethnicity with binge drinking corroborate with previous studies (Merrick et al., 2008), although we found no significant trends during the study period for this population.

Aging is marked by physiological changes that can place older adults at higher risk for impaired function, chronic disease, increased medication use, and geriatric conditions (e.g., falls and cognitive impairment; Cigolle et al., 2007). While there is evidence that moderate alcohol use may be associated with decreases in morbidity and mortality among older adults

(Kuerbis et al., 2014; Oslin, 2000; Thun et al., 1997), older adults with multiple chronic conditions are often particularly vulnerable to the negative effects of alcohol, especially when consuming alcohol in amounts exceeding NIAAA recommended drinking limits (Moore et al., 2006). In addition, there is a high prevalence among older adults who are prescribed medications that interact with alcohol (Breslow et al., 2015), which can lead to harmful effects (Moore et al., 2007). Binge alcohol use in particular may increase the risk for unintentional injuries (such as falls) and negatively impact chronic disease and chronic disease management (including cardiovascular disease) among older adults (CDC, 2015; NIAAA, 2000). Therefore, results from this study may raise concern given significant increases in binge alcohol use from 2005/2006 to 2013/2014 among older adults with self-reported "fair/poor" health, and increases among adults with multiple chronic diseases. Recommendations have been suggested to lower recommended drinking limits based on comorbidities for older adults (Moore et al., 2006), which will become more important as the trend of increased binge alcohol use among older adults with multimorbidity may continue.

While the findings in this study continue to show that older men are more likely to drink at potentially unhealthy levels, the large increases among older women who reported binge drinking or were diagnosed with alcohol use disorders is alarming. Older women are at particular risk for experiencing adverse effects associated with alcohol use given the larger impact of physiological changes in lean body mass compared to men as well as unique social and psychological factors (Blow and Barry, 2002), and experience the adverse effects of alcohol at lower amounts (Wilson et al., 2014). In addition, compared to men, older women are more likely to be prescribed psychotherapeutic medications (Hohman, 1989; Mamdani et al., 1999) that can lead to severe adverse reactions when taken concomitantly with alcohol (NIAAA, 2015). A distinctive risk for women alcohol consumption has been associated with increased risk for some breast cancers (Hamajima et al., 2002; Zang et al., 2007). Since older women generally drink less than men, they are less likely to be screened for or seek help for alcohol use problems (Blow and Barry, 2002). Our findings of a large increase in both binge alcohol use and alcohol use disorders among older women over the past ten years indicates an emerging public health problem. Health care providers need to be aware of this increasing trend of unhealthy alcohol use among older women, and ensure that screening for unhealthy alcohol use is part of regular medical care for this population.

For some demographic and health-related characteristics, results differed between bivariate and multivariate models, and between binge drinking and alcohol use disorders. For example, widowhood was associated with lower risks of binge drinking and alcohol use disorders in bivariate models compared to those who were married, but the difference was not significant when controlled for covariates. Those who are widowers may be older and have more comorbidities, highlighting the importance of adjusting for such factors in analyses of drinking among older populations. Further, in bivariate models, fair/poor health was associated with a lower risk of binge drinking compared to those in excellent health, but a higher risk of alcohol use disorder. When adjusted, those reporting fair/poor health remained at lower risk for binge drinking, and no significant relationship remained for alcohol use disorder. It is well documented that chronic health problems are associated with reducing and/or eliminating alcohol consumption among older adults (Moos et al, 2005;

Satre and Aarean, 2005), and these results are generally consistent with those findings in that older adults with fair or poor health are less likely to engage in unhealthy drinking patterns (Geroldi et al., 1994; Hajat et al., 2004; Satre et al., 2007). However, such reductions may not apply to alcohol use disorders, which may be more chronic conditions requiring additional management in the presence of multiple health morbidities. We also note that these analyses raise important future directions of research. For example, bivariate analyses suggested that mental health problems and service utilization might also be increasing across time among older adults. The extent to which these trends are independent of trends in alcohol use or a consequence of such trends is an important future direction, as mental health challenges are an important part of the care for older adults.

4.1 Limitations

The NSDUH relies on self-report and therefore is subject to social-desirability bias and recall bias; although the survey attempts to limit the former via audio computer-assisted self-interviewing (SAMSHA, 2013). Second, because NSDUH samples the civilian, non-institutionalized population, it does not include active members on the military, homeless, incarcerated, or institutionalized adults who may have different alcohol use patterns than those surveyed. Third, the survey is cross-sectional and different participants were sampled each year of the study period; therefore, this study cannot establish causality. In addition, mental health may simultaneously be a cause, consequence, or correlate of alcohol use, and the cross-sectional nature of the NSDUH survey creates difficulties in teasing apart directionality of the associations. However, we recomputed models with and without mental health covariates and results did not change any associations of other covariates. Nonetheless, results on associations between mental health and substance use should not be interpreted with causal directions of effect implied. Finally, we utilized variables based on SAMSHA's definition for binge drinking as drinking 5 or more alcohol drinks on the same occasion for at least 1 day in the previous 30 days (SAMSHA, 2013). The NIAAA and the CDC, however, utilize a different cutoff for binge drinking, defined as a pattern of drinking that brings blood alcohol concentration to 0.08 g/dL, or 5 drinks for men and 4 drinks for women in roughly a two-hour period (NIAAA, 2004). The NIAAA also recommends lower thresholds for adults 65 and older: no more than 4 drinks on any given day for both men and women (NIAAA, 2016). Since our analysis used the higher cutoff for the binge drinking criteria for women and for older adults (> 65), our study is likely to have underestimated the prevalence for binge drinking among women and older adults compared to using the NIAAA cut offs.

4.2 Conclusion

This study is among the first to examine recent trends and demographic changes in binge alcohol use and alcohol use disorders among older adults in the US, and supports projections of large increases in older adults with substance use disorders who will need treatment (Han et al., 2009). Our findings demonstrate that alcohol use, binge alcohol use, and alcohol use disorders have continued to increase among older adults, particularly among females. We also found a significant increase in binge alcohol use among older adults with multiple chronic conditions. These national trends in alcohol use among these groups present distinct

risks and challenges, and suggest the importance of screening these populations for binge alcohol use and alcohol use disorders.

Acknowledgments

Role of the funding source This research was funded by several grants through the National Institutes of Health: NYU CTSA grant 1KL2 TR001446 from the National Center for Advancing Translational Sciences (Han), K24AA15957 from the National Institute on Alcohol Abuse and Alcoholism (Moore), K01 DA-038800 from the National Institute on Drug Abuse (Palamar), and 1K24DA038345 from the National Institute on Drug Abuse (Sherman). The National Institutes of Health provided financial support for the project and the preparation of the manuscript but did not have a role in the design of the study, the analysis of the data, the writing of the manuscript, nor the decision to submit the present research. The Inter-university Consortium for Political and Social Research and National Survey on Drug Use and Health (NSDUH) principal investigators had no role in analysis, interpretation of results, or in the decision to submit the manuscript for publication.

The authors would like to thank the Inter-university Consortium for Political and Social Research for providing access to these data (<http://www.icpsr.umich.edu/icpsrweb/landing.jsp>).

References

- American Psychiatric Association. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders. 4. Washington, DC: 2000. Text revision
- Arndt S, Clayton R, Schultz SK. Trends in substance abuse treatment 1998–2008: increasing older adult first-time admissions for illicit drugs. *Am J Geriatr Psychiatry*. 2011; 19:704–711. DOI: 10.1097/JGP.0b013e31820d942b [PubMed: 21785290]
- Blazer DG, Wu L. The epidemiology of at risk and binge drinking among middle-aged and elderly community adults: national survey on drug use and health. *Am J Psychiatry*. 2009; 166:1162–1169. [PubMed: 19687131]
- Blazer DG, Wu LT. The epidemiology of alcohol use disorders and subthreshold dependence in a middle-aged and elderly community sample. *Am J Geriatr Psychiatry*. 2011; 19:685–694. DOI: 10.1097/JGP.0b013e3182006a96 [PubMed: 21785289]
- Blow FC, Barry KL. Use and misuse of alcohol among older women. *Alcohol Res Health*. 2002; 26:308–315. [PubMed: 12875042]
- Breslow RA, Dong C, White A. Prevalence of alcohol-interactive prescription medication use among current drinkers: United States, 1999 to 2010. *Alcohol Clin Exp Res*. 2015; 39:371–379. [PubMed: 25597432]
- Centers for Disease Control. Vital signs: binge drinking prevalence, frequency, and intensity among adults—U.S., 2010. *MMWR*. 2012; 61:14–19. [PubMed: 22237031]
- Centers for Disease Control. [accessed 09.01.16] Fact Sheets - Binge Drinking. 2015. Available from: <http://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm>
- Choi NG, DiNitto DM, Marti CN, Choi BY. Sociodemographic characteristics and health status of lifetime abstainers, ex-drinkers, bingers, and nonbingers among baby boomers and older adults. *Subst Use Misus*. 2016; 51:637–648. DOI: 10.3109/10826084.2015.1133645
- Cigolle CT, Langa KM, Kabeto MU, Tian Z, Blaum CS. Geriatric conditions and disability: the health and retirement study. *Ann Intern Med*. 2007; 147:156–164. [PubMed: 17679703]
- Geroldi C, Rozzini R, Frisoni GB, Trabucchi M. Assessment of alcohol consumption and alcoholism in the elderly. *Alcohol*. 1994; 11:513–516. [PubMed: 7865153]
- Hajat S, Haines A, Bulpitt C, Fletcher A. Patterns and determinants of alcohol consumption in people aged 75 years and older: results from the MRC trial of assessment and management of older people in the community. *Age Ageing*. 2004; 33:170–177. [PubMed: 14960434]
- Hamajima N, Hirose K, Tajima K, Rohan T, Calle EE, Heath CW Jr. Collaborative Group on Hormonal Factors in Breast C. Alcohol, tobacco and breast cancer--collaborative reanalysis of individual data from 53 epidemiological studies, including 58,515 women with breast cancer and 95,067 women without the disease. *Br J Cancer*. 2002; 87:1234–1245. DOI: 10.1038/sj.bjc.6600596 [PubMed: 12439712]

- Han B, Gfroerer J, Colliver JD, Penne MA. Substance use disorder among older adults in the United States in 2020. *Addiction*. 2009; 104:88–96. [PubMed: 19133892]
- Hasin DS, Saha TD, Kerridge BT, Goldstein RB, Chou SP, Zhang H, Jung J, Pickering RP, Ruan WJ, Smith SM, Huang B, Grant BF. Prevalence of marijuana use disorders in the United States between 2001–2002 and 2012–2013. *JAMA Psychiatry*. 2015; 72:1235–1242. [PubMed: 26502112]
- Heeringa, S.; West, BT.; Berglund, PA. *Applied Survey Data Analysis*. Chapman & Hall/CRC; Boca Raton, FL: 2010.
- Hohmann AA. Gender bias in prescribing in primary care. *Med Care*. 1989; 27:478–490. [PubMed: 2725082]
- Holahan CJ, Schutte KK, Brennan PL, Holahan CK, Moos RH. Episodic heavy drinking and 20-year total mortality among late-life moderate drinkers. *Alcohol Clin Exp Res*. 2014; 38:1432–1438. DOI: 10.1111/acer.12381 [PubMed: 24588326]
- Johnson RA, Gerstein DR. Age, period, and cohort effects in marijuana and alcohol incidence: United States females and males, 1961–1990. *Subst Use Misuse*. 2000; 35:925–948. [PubMed: 10847217]
- Jones CM, Logan J, Gladden RM, Bohm MK. Vital signs: demographic and substance use trends among heroin users - United States, 2002–2013. *MMWR*. 2015; 64:719–725. [PubMed: 26158353]
- Kuerbis A, Sacco P, Blazer DG, Moore AA. Substance abuse among older adults. *Clin Geriatr Med*. 2014; 30:629–654. DOI: 10.1016/j.cger.2014.04.008 [PubMed: 25037298]
- Mamdani M, Herrmann N, Austin P. Prevalence of antidepressant use among older people: population-based observations. *J Am Geriatr Soc*. 1999; 47:1350–1353. [PubMed: 10573446]
- Merrick EL, Horgan CM, Hodgkin D, Garnick DW, Houghton SF, Pana L, Saitz R, Blow FC. Unhealthy drinking patterns in older adults: prevalence and associated characteristics. *J Am Geriatr Soc*. 2008; 56:214–223. [PubMed: 18086124]
- Moore AA, Endo JO, Carter MK. Is there a functional relationship between excessive drinking and functional impairment in older persons? *J Am Geriatr Soc*. 2003; 51:44–49. [PubMed: 12534844]
- Moore AA, Giuli L, Gould R, Hu P, Zhou K, Reuben D, Greendale G, Karlamangla A. Alcohol use, comorbidity, and mortality. *J Am Geriatr Soc*. 2006; 54:757–762. [PubMed: 16696740]
- Moore AA, Whiteman EJ, Ward KT. Risks of combined alcohol-medication use in older adults. *Am J Geriatr Pharmacother*. 2007; 5:64–74. [PubMed: 17608249]
- Moore AA, Karno MP, Grella CE, Lin JC, Warda U, Liao DH, Hu P. Alcohol, tobacco, and nonmedical drug use in older U.S. Adults: data from the 2001/02 national epidemiologic survey of alcohol and related conditions. *J Am Geriatr Soc*. 2009; 57:2275–2281. [PubMed: 19874409]
- Moos RH, Brennan PL, Schutte KK, Moos BS. Older adults' health and changes in late-life drinking patterns. *Aging Ment Health*. 2005; 9:49–59. [PubMed: 15841832]
- National Institute of Alcohol Abuse and Alcoholism. [accessed 09.01.16] NIAAA Council Approves Definition Of Binge Drinking; NIAAA Newsletter. 2004. p. 3 Available from: http://pubs.niaaa.nih.gov/publications/Newsletter/winter2004/Newsletter_Number3.pdf
- National Institute of Alcohol Abuse and Alcoholism. Tenth Special Report To The U.S. Congress On Alcohol And Health. National Institute of Health; Bethesda, MD: 2000.
- National Institute on Alcohol Abuse and Alcoholism. Alcohol: A Women's Health Issue. NIAAA; Bethesda, MD: 2015. Available from: <http://pubs.niaaa.nih.gov/publications/brochurewomen/women.htm> [accessed 09.01.16]
- National Institute on Alcohol Abuse and Alcoholism. Older Adults. NIAAA; Bethesda, MD: 2016. Available from: <https://www.niaaa.nih.gov/alcohol-health/special-populations-co-occurring-disorders/older-adults> [accessed 09.01.16]
- Oslin DW. Alcohol use in late life: disability and comorbidity. *J Geriatr Psychiatry Neurol*. 2000; 13:134–140. [PubMed: 11001136]
- Sacco P, Unick GJ, Kuerbis A, Koru AG, Moore AA. Alcohol-related diagnoses in hospital admissions for all causes among middle-aged and older adults: trends and cohort differences from 1993 to 2010. *J Aging Health*. 2015; 27:1358–1374. [PubMed: 25903980]
- Satre DD, Arean PA. Effects of gender, ethnicity, and medical illness on drinking cessation in older primary care patients. *J Aging Health*. 2005; 17:70–84. [PubMed: 15601784]

- Satre DD, Gordon NP, Weisner C. Alcohol consumption, medical conditions, and health behavior in older adults. *Am J Health Behav.* 2007; 31:238–248. [PubMed: 17402864]
- StataCorp. Stata Statistical Software: Release13. 0. StataCorp; College Station, TX: 2013.
- Substance Abuse and Mental Health Services Administration (SAMHSA). Results From The 2012 National Survey On Drug Use And Health: Summary Of National Findings. Rockville, MD: 2013. NSDUH Series H-46, HHS Publication No. (SMA) 13–4795 [accessed 09.01.16]
- Thun MJ, Peto R, Lopez AD, Monaco JH, Henley SJ, Health CW, Doll R. Alcohol consumption and mortality among middle-aged and elderly U.S. adults. *N Engl J Med.* 1997; 337:1705–1714. [PubMed: 9392695]
- Tinetti ME, Fried TR, Boyd CM. Designing health care for the most common chronic condition—multimorbidity. *JAMA.* 2012; 307:2493–2494. [PubMed: 22797447]
- Wilson SR, Knowles SB, Huang Q, Fink A. The prevalence of harmful and hazardous alcohol consumption in older U.S. adults: data from the 2005–2008 National Health and Nutrition Examination Survey (NHANES). *J Gen Intern Med.* 2014; 29:312–319. [PubMed: 24101531]
- Zhang SM, Lee IM, Manson JE, Cook NR, Willett WC, Buring JE. Alcohol consumption and breast cancer risk in the Women's Health Study. *Am J Epidemiol.* 2007; 165:667–676. [PubMed: 17204515]

HIGHLIGHTS

- No studies have reported recent trends in alcohol use among older adults.
- Binge drinking and alcohol use disorders are increasing among older adults in the United States (US).
- Older women reported large increases in binge drinking and alcohol use disorders in the US.
- Older binge drinkers reported significant increases in chronic disease in the US.

Table 1
Sample characteristics across cohorts for adults 50 and older, %—United States 2005–2014

Characteristic	2005–2006 (n=10,953)	2007–2008 (n=10,676)	2009–2010 (n=11,233)	2011–2012 (n=13,076)	2013–2014 (n=15,302)	Combined Years (n=61,240)
Alcohol use prevalence						
Alcohol use in past year ¹	60.0	60.3	61.4	62.1	63.0	61.4
Alcohol use in past month ¹	47.1	47.4	48.0	49.0	49.9	48.4
Binge alcohol use past 30 days ²	12.5	13.6	14.1	14.0	14.9	13.9
Alcohol use disorder past year ³	3.0	3.1	3.5	3.1	3.7	3.3
Age group						
50–64	58.9	59.5	59.4	59.6	58.1	59.1
65	41.1	40.5	40.6	40.4	41.9	40.9
Sex						
Male	46.1	46.2	46.4	46.8	46.6	46.4
Female	53.9	53.8	53.6	53.2	53.4	53.6
Race/ethnicity						
Non-Hispanic White	77.9	77.1	76.5	75.4	74.1	76.1
Non-Hispanic African American	9.6	9.7	9.8	10.0	10.3	9.9
Hispanic	7.8	8.1	8.4	8.9	9.7	8.6
Non-Hispanic Asian	3.0	3.3	3.6	3.5	3.8	3.5
Other	1.8	1.8	1.7	2.2	2.1	1.9
Education						
<High School	18.1	17.5	16.3	14.5	13.9	16.0
High School	32.4	32.8	32.4	31.9	31.2	32.1
Some College	21.9	22.2	22.5	23.4	24.5	23.0
College or more	27.6	27.5	28.9	30.2	30.4	29.0
Total family income						
<\$20,000	41.8	38.6	38.9	38.5	36.7	38.8
\$20–\$49,999	35.8	36.6	36.3	35.1	35.7	35.9
\$50,000–\$74,999	11.2	13.4	12.1	12.4	12.6	12.4

Characteristic	2005–2006 (n=10,953)	2007–2008 (n=10,676)	2009–2010 (n=11,233)	2011–2012 (n=13,076)	2013–2014 (n=15,302)	Combined Years (n=61,240)
\$75,000	11.2	11.4	12.8	14.0	15.0	13.0
Marital status						
Married	64.1	63.7	62.8	62.3	61.7	62.8
Widowed	15.3	13.9	13.7	12.9	12.6	13.6
Divorced or separated	15.4	16.0	17.0	18.2	18.8	17.2
Never married	5.3	6.4	6.5	6.6	7.0	6.4
Tobacco use						
Past month use	21.2	21.2	20.4	20.1	19.5	20.4
Past year use	24.0	24.0	23.2	22.7	22.3	23.2
Illicit drug use						
Past month use	2.5	2.7	3.5	3.9	4.7	3.5
Past year use	4.2	5.0	5.9	6.4	7.7	5.9
Overall health						
Excellent	17.4	17.1	17.0	17.4	17.6	17.3
Very Good	31.0	31.4	32.7	32.5	32.1	32.0
Good	31.4	30.2	30.2	30.4	30.2	30.5
Fair/Poor	20.1	21.4	20.1	19.6	20.0	20.2
Chronic disease⁴						
Multiple chronic conditions (≥ 2 chronic disease)	26.4	27.0	27.4	27.6	28.1	27.3
Mental health						
Past year major depressive episode	6.8	7.0	7.0	7.4	8.1	7.3
Anxiety in past year	3.9	4.3	4.6	4.6	5.6	4.6
Received mental health treatment in past year	12.3	13.3	13.3	14.1	15.3	13.7

¹ p<0.001 for trend for each subsequent year from 2005–2006 as the comparison.

² p<0.001 for trend for each subsequent year from 2005–2006 as the comparison. Binge drinking defined as five or more drinks on the same occasion.

³ p=0.035 for trend for each subsequent year from 2005–2006 as the comparison. Alcohol use disorder defined on DSM IV criteria for alcohol abuse or dependence

⁴ Chronic conditions include: Asthma, Bronchitis, Cirrhosis, Diabetes, Heart Disease, Hepatitis, High Blood Pressure, Lung Cancer, HIV/AIDS, Sleep Apnea, Stroke, Ulcers

Prevalence Estimates for self-reported past-month binge alcohol use by demographic, chronic disease, and substance use characteristics for adults 50 and older, United States 2005–2014

Table 2

Characteristic	2005–2006 (n=10,953)	2007–2008 (n=10,676)	2009–2010 (n=11,233)	2011–2012 (n=13,076)	2013–2014 (n=15,302)	% Absolute Change from 2005–2006 to 2013–2014	% Relative Change from 2005–2006 to 2013–2014	p-value ^d
Prevalence past month binge alcohol²	12.5	13.6	14.1	14.0	14.9	2.4	19.2	<0.001
Age group								
50–64	15.5	17.6	17.5	17.9	19.1	3.6	23.2	<0.001
65	8.1	7.7	9.0	8.3	9.0	0.9	11.1	0.174
Sex								
Male	19.6	21.2	21.3	21.0	21.5	1.9	9.7	0.146
Female	6.3	7.1	7.8	7.9	9.1	2.8	44.4	<0.001
Race/ethnicity								
Non-Hispanic White	12.1	13.7	14.3	14.3	14.8	2.7	22.3	<0.001
Non-Hispanic African American	14.5	14.2	14.6	15.9	15.6	1.1	7.6	0.344
Hispanic	14.8	14.3	15.0	11.9	17.2	2.4	16.2	0.446
Non-Hispanic Asian	6.7	8.6	4.5	6.6	8.9	2.2	32.8	0.655
Other	16.6	9.8	15.1	19.7	14.5	–2.1	–12.7	0.377
Education								
<High School	11.8	12.3	12.4	13.1	14.6	2.8	23.7	0.064
High School	13.1	15.2	15.4	15.9	17.8	4.7	35.9	<0.001
Some College	13.5	14.4	15.4	14.7	14.9	1.4	10.4	0.329
College or more	11.4	11.8	12.5	12.1	12.0	0.6	5.3	0.540
Total family income								
<\$20,000	9.9	10.1	11.9	11.0	12.4	2.5	25.3	0.004
\$20–\$49,999	13.7	14.9	14.1	14.7	14.5	0.8	5.8	0.473

Characteristic	2005–2006 (n=10,953)	2007–2008 (n=10,676)	2009–2010 (n=11,233)	2011–2012 (n=13,076)	2013–2014 (n=15,302)	% Absolute Change from 2005–2006 to 2013–2014	% Relative Change from 2005–2006 to 2013–2014	p-value ^d
\$50,000–\$74,999	15.0	15.9	17.1	17.7	15.9	0.9	6.0	0.400
\$75,000	15.4	18.5	17.9	17.6	20.9	5.5	35.7	0.010
Marital status								
Married	12.3	14.6	14.1	14.3	14.6	2.3	18.7	0.010
Widowed	6.9	6.8	8.0	7.8	8.7	1.8	26.1	0.058
Divorced or separated	18.0	15.2	18.8	16.6	18.6	0.6	3.3	0.292
Never married	14.4	14.4	13.9	17.4	18.3	3.9	27.1	0.020
Tobacco use								
Past month use	24.7	26.6	27.8	26.5	27.2	2.5	10.1	0.175
Past year use	24.4	26.9	26.9	25.8	27.6	3.2	13.1	0.084
Illicit drug use								
Past month use	35.7	35.0	40.0	41.8	35.6	–0.1	–0.3	0.786
Past year use	34.6	34.0	37.7	37.4	33.2	–1.4	–4.1	0.797
Overall health								
Excellent	11.8	13.7	13.9	13.3	14.3	2.5	21.2	0.167
Very Good	12.8	15.1	15.2	15.8	15.9	3.1	24.2	0.003
Good	14.0	13.7	14.3	13.4	14.8	0.8	5.7	0.541
Fair/Poor	10.1	11.2	12.0	12.9	13.7	3.6	35.6	<0.001
Chronic disease³								
Multiple chronic conditions (≥ 2 chronic disease)	9.9	10.5	10.1	11.8	11.8	1.9	19.2	0.010
Mental health								
Past year major depressive episode	9.5	13.9	12.9	14.7	12.6	3.1	32.6	0.161
Anxiety in past year	8.9	15.1	14.9	15.6	13.2	4.3	48.3	0.182
Received mental health treatment in past year	9.7	13.9	13.8	14.6	14.5	4.8	49.5	0.003

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

¹Trend for each subsequent year from 2005–2006 as the comparison

²Binge drinking defined as five or more drinks on the same occasion.

³Chronic conditions include: Asthma, Bronchitis, Cirrhosis, Diabetes, Heart Disease, Hepatitis, High Blood Pressure, Lung Cancer, HIV/AIDS, Sleep Apnea, Stroke, Ulcers.

Table 3

Prevalence Estimates for self-reported past-year alcohol use disorder by demographic, chronic disease, and substance use characteristics for adults 50 and older, United States 2005–2014

Characteristic	2005–2006 (n=10,953)	2007–2008 (n=10,676)	2009–2010 (n=11,233)	2011–2012 (n=13,076)	2013–2014 (n=15,302)	% Absolute Change from 2005–2006 to 2013–2014	% Relative Change from 2005–2006 to 2013–2014	p-value ^f
Prevalence past month alcohol use disorder²	3.0	3.1	3.5	3.1	3.7	0.7	23.3	0.035
Age group								
50–64	4.0	4.4	4.5	4.0	4.8	0.8	20.0	0.265
65	1.5	1.1	1.9	1.8	2.1	0.6	40.0	0.014
Sex								
Male	5.0	4.7	5.3	4.8	5.1	0.1	2.0	0.813
Female	1.3	1.6	1.9	1.7	2.4	1.1	84.6	0.001
Race/ethnicity								
Non-Hispanic White	3.0	3.2	3.4	3.3	3.8	0.8	26.7	0.013
Non-Hispanic African American	2.8	3.2	4.3	3.1	3.4	0.6	21.4	0.599
Hispanic	3.3	3.2	3.6	1.6	3.3	0.0	0.0	0.554
Non-Hispanic Asian	0.3	1.6	0.9	0.1	0.9	0.6	200.0	0.759
Other	6.3	1.5	4.8	7.8	7.4	1.1	17.5	0.140
Education								
<High School	2.5	2.5	3.3	3.2	3.3	0.8	32.0	0.096
High School	2.4	3.1	3.0	3.1	3.5	1.1	45.8	0.034
Some College	3.3	3.5	4.2	3.0	3.3	0.0	0.0	0.679
College or more	3.8	3.1	3.5	3.2	4.3	0.5	13.2	0.458
Total family income								
<\$20,000	2.2	2.3	3.5	3.0	3.1	0.9	40.9	0.005
\$20–\$49,999	2.8	3.3	2.9	3.1	3.4	0.6	21.4	0.289

Characteristic	2005–2006 (n=10,953)	2007–2008 (n=10,676)	2009–2010 (n=11,233)	2011–2012 (n=13,076)	2013–2014 (n=15,302)	% Absolute Change from 2005–2006 to 2013–2014	% Relative Change from 2005–2006 to 2013–2014	p-value ^f
\$50,000–\$74,999	4.8	3.1	3.5	3.3	4.1	–0.7	–14.6	0.761
\$75,000	4.7	5.0	5.1	3.6	5.2	0.5	10.6	0.907
Marital status								
Married	2.5	3.1	3.0	2.9	3.5	1.0	40.0	0.019
Widowed	1.6	1.1	1.9	1.0	2.1	0.5	31.3	0.467
Divorced or separated	6.2	4.4	5.9	5.0	4.9	–1.3	–21.0	0.345
Never married	3.8	4.3	4.7	4.5	4.4	0.6	15.8	0.591
Tobacco use								
Past month use	6.2	7.0	6.7	6.9	7.5	1.3	21.0	0.173
Past year use	6.4	6.9	6.4	6.8	7.5	1.1	17.2	0.255
Illicit drug								
Past month use	13.7	18.2	17.8	17.3	18.2	4.5	32.8	0.372
Past year use	13.4	15.4	15.2	15.7	14.5	1.1	8.2	0.834
Overall health								
Excellent	2.3	3.3	2.5	2.4	3.9	1.6	69.6	0.142
Very Good	3.2	3.6	3.7	3.0	3.7	0.5	15.6	0.802
Good	3.0	2.9	3.6	2.8	3.3	0.3	10.0	0.647
Fair/Poor	3.2	2.4	3.7	4.6	4.0	0.8	25.0	0.005
Chronic disease^g								
Multiple chronic conditions (≥ 2 chronic disease)	2.8	2.5	3.0	3.5	3.4	0.6	21.4	0.091
Mental health								
Past year major depressive episode	6.1	6.6	6.9	7.2	6.7	0.6	9.8	0.650
Anxiety in past year	6.9	6.6	5.6	7.3	5.5	–1.4	–20.3	0.542
Received mental health treatment in past year	5.5	6.2	6.9	7.2	6.1	0.6	10.9	0.478

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

¹ Trend for each subsequent year from 2005–2006 as the comparison

² Alcohol use disorder defined on DSM IV criteria for alcohol abuse or dependence

³ Chronic conditions include: Asthma, Bronchitis, Cirrhosis, Diabetes, Heart Disease, Hepatitis, High Blood Pressure, Lung Cancer, HIV/AIDS, Sleep Apnea, Stroke, Ulcers

Multivariable logistic regression analysis of demographic, chronic disease, and substance use characteristics associated with past-month binge alcohol use for adults 50–2005–2014 (n=8,804)

Table 4

Characteristic	OR	(95% CI)	p-value	AOR	(95% CI)	p-value
Year						
2005–2006	1.00			1.00		
2007–2008	1.11	(1.00, 1.22)	0.500	1.09	(0.98, 1.21)	0.104
2009–2010	1.15	(1.05, 1.26)	0.003	1.14	(1.03, 1.27)	0.012
2011–2012	1.15	(1.03, 1.28)	0.010	1.13	(1.01, 1.26)	0.033
2013–2014	1.23	(1.12, 1.34)	<0.001	1.22	(1.10, 1.34)	<0.001
Age group						
50–64	1.00			1.00		
65	0.43	(0.40, 0.47)	<0.001	0.59	(0.54, 0.64)	<0.001
Sex						
Male	1.00			1.00		
Female	0.31	(0.29, 0.34)	<0.001	0.37	(0.34, 0.40)	<0.001
Race/ethnicity						
Non-Hispanic White	1.00			1.00		
Non-Hispanic African American	1.10	(0.99, 1.22)	0.090	1.05	(0.93, 1.19)	0.419
Hispanic	1.07	(0.97, 1.18)	0.201	1.15	(1.03, 1.29)	0.016
Non-Hispanic Asian	0.47	(0.37, 0.60)	<0.001	0.58	(0.45, 0.75)	<0.001
Other	1.13	(0.94, 1.36)	0.196	1.01	(0.82, 1.23)	0.960
Education						
<High School	1.00			1.00		
High School	1.26	(1.14, 1.38)	<0.001	1.20	(1.07, 1.34)	0.002
Some College	1.17	(1.05, 1.30)	0.005	1.00	(0.89, 1.13)	0.952
College or more	0.93	(0.84, 1.02)	0.126	0.76	(0.66, 0.86)	<0.001
Total family income						
<\$20,000	1.00			1.00		
\$20–\$49,999	1.35	(1.27, 1.43)	<0.001	1.16	(1.08, 1.25)	<0.001

Characteristic	OR	(95% CI)	p-value	AOR	(95% CI)	p-value
\$50,000–\$74,999	1.57	(1.43, 1.73)	<0.001	1.21	(1.09, 1.35)	0.001
\$75,000	1.80	(1.63, 1.99)	<0.001	1.42	(1.25, 1.60)	<0.001
Marital status						
Married	1.00			1.00		
Widowed	0.51	(0.45, 0.57)	<0.001	0.92	(0.81, 1.06)	0.256
Divorced or separated	1.30	(1.21, 1.41)	<0.001	1.15	(1.05, 1.26)	0.002
Never married	1.16	(1.04, 1.30)	0.010	0.97	(0.85, 1.11)	0.642
Tobacco use						
Past year use	3.19	(2.98, 3.43)	<0.001	2.28	(2.11, 2.45)	<0.001
Illicit drug use						
Past year use	3.82	(3.49, 4.19)	<0.001	2.45	(2.21, 2.72)	<0.001
Overall health						
Excellent	1.00			1.00		
Very Good	1.14	(1.03, 1.25)	0.008	1.09	(0.98, 1.20)	0.099
Good	1.06	(0.97, 1.15)	0.202	0.99	(0.90, 1.10)	0.903
Fair/Poor	0.88	(0.79, 0.98)	0.023	0.83	(0.73, 0.93)	0.003
Chronic disease¹						
Multiple chronic conditions (≥ 2 chronic disease)						
No	1.00			1.00		
Yes	0.70	(0.65, 0.74)	<0.001	0.79	(0.73, 0.84)	<0.001
Mental health						
Past year major depressive episode	0.91	(0.81, 1.03)	0.120	0.92	(0.79, 1.07)	0.268
Anxiety in past year	0.99	(0.88, 1.11)	0.816	1.03	(0.87, 1.22)	0.711
Received mental health treatment in past year	0.96	(0.89, 1.05)	0.386	1.02	(0.90, 1.16)	0.735

¹ Chronic conditions include: Asthma, Bronchitis, Cirrhosis, Diabetes, Heart Disease, Hepatitis, High Blood Pressure, Lung Cancer, HIV/AIDS, Sleep Apnea, Stroke, Ulcers. AOR = adjusted odds ratio; CI = confidence interval.

Table 5

Multivariable logistic regression analysis of demographic, chronic disease, and substance use characteristics associated with past-year alcohol use disorder for adults 50- 2005–2014 (n=2,148)

Characteristic	OR	(95% CI)	p-value	AOR	(95% CI)	p-value
Year						
2005–2006	1.00			1.00		
2007–2008	1.03	(0.84, 1.28)	0.763	0.97	(0.78, 1.21)	0.813
2009–2010	1.17	(0.94, 1.44)	0.150	1.08	(0.86, 1.36)	0.515
2011–2012	1.05	(0.88, 1.26)	0.571	0.93	(0.77, 1.13)	0.457
2013–2014	1.23	(1.03, 1.47)	0.022	1.08	(0.89, 1.30)	0.448
Age group						
50–64	1.00			1.00		
65	0.38	(0.33, 0.44)	<0.001	0.63	(0.53, 0.74)	<0.001
Sex						
Male	1.00			1.00		
Female	0.35	(0.30, 0.40)	<0.001	0.39	(0.33, 0.45)	<0.001
Race/ethnicity						
Non-Hispanic White	1.00			1.00		
Non-Hispanic African American	1.00	(0.82, 1.23)	0.969	1.01	(0.81, 1.26)	0.926
Hispanic	0.88	(0.70, 1.10)	0.265	1.03	(0.81, 1.32)	0.792
Non-Hispanic Asian	0.22	(0.12, 0.40)	<0.001	0.27	(0.14, 0.52)	<0.001
Other	1.78	(1.34, 2.35)	<0.001	1.46	(1.08, 1.98)	0.015
Education						
<High School	1.00			1.00		
High School	1.03	(0.87, 1.23)	0.729	1.04	(0.85, 1.27)	0.723
Some College	1.17	(0.97, 1.41)	0.094	1.10	(0.88, 1.37)	0.396
College or more	1.23	(1.03, 1.46)	0.020	1.19	(0.94, 1.49)	0.139
Total family income						
<\$20,000	1.00			1.00		
\$20–\$49,999	1.10	(0.98, 1.25)	0.116	1.06	(0.92, 1.22)	0.438

Characteristic	OR	(95% CI)	p-value	AOR	(95% CI)	p-value
\$50,000–\$74,999	1.34	(1.11, 1.61)	0.002	1.07	(0.86, 1.34)	0.529
\$75,000	1.70	(1.44, 2.01)	<0.001	1.32	(1.06, 1.63)	0.013
Marital status						
Married	1.00			1.00		
Widowed	0.51	(0.40, 0.64)	<0.001	0.92	(0.71, 1.19)	0.520
Divorced or separated	1.78	(1.57, 2.03)	<0.001	1.38	(1.20, 1.59)	<0.001
Never married	1.48	(1.25, 1.75)	<0.001	1.07	(0.88, 1.28)	0.501
Tobacco use						
Past year use	3.25	(2.91, 3.64)	<0.001	2.02	(1.80, 2.26)	<0.001
Illicit drug use						
Past year use	6.71	(5.85, 7.70)	<0.001	3.70	(3.21, 4.25)	<0.001
Overall health						
Excellent	1.00			1.00		
Very Good	1.21	(1.01, 1.45)	0.044	1.14	(0.94, 1.39)	0.186
Good	1.08	(0.90, 1.31)	0.408	1.03	(0.84, 1.26)	0.798
Fair/Poor	1.26	(1.07, 1.48)	0.006	1.03	(0.84, 1.28)	0.747
Chronic disease[/]						
Multiple chronic conditions (≥ 2 chronic disease)						
No	1.00			1.00		
Yes	0.91	(0.81, 1.03)	0.120	0.91	(0.79, 1.05)	0.189
Mental health						
Past year major depressive episode	2.33	(1.98, 2.74)	<0.001	1.31	(1.07, 1.61)	0.010
Anxiety in past year	2.09	(1.75, 2.50)	<0.001	1.03	(0.80, 1.31)	0.838
Received mental health treatment in past year	2.40	(2.10, 2.73)	<0.001	1.95	(1.62, 2.35)	<0.001

[/]Chronic conditions include: Asthma, Bronchitis, Cirrhosis, Diabetes, Heart Disease, Hepatitis, High Blood Pressure, Lung Cancer, HIV/AIDS, Sleep Apnea, Stroke, Ulcers. AOR = adjusted odds ratio; CI = confidence interval.