



HHS Public Access

Author manuscript

Am J Drug Alcohol Abuse. Author manuscript; available in PMC 2017 September 28.

Published in final edited form as:

Am J Drug Alcohol Abuse. 2013 March ; 39(2): 108–114. doi:10.3109/00952990.2012.694537.

Occupation as Independent Risk Factor for Binge Drinking

Andrew J. Barnes, PhD and

Department of Healthcare Policy and Research, Virginia Commonwealth University School of Medicine, Richmond, VA, USA

E. Richard Brown, PhD

Department of Health Services, University of California, Los Angeles, CA, USA

Center for Health Policy Research, University of California, Los Angeles, CA, USA

Abstract

Background—Understanding associations between binge drinking and occupation is important from economic and public health perspectives.

Objective—While unadjusted differences in binge drinking by occupation have been reported previously, this study tests these differences after adjusting for important common determinants.

Methods—To assess the relationship between occupation and binge drinking after adjusting for worker characteristics, a probit model was fit to data from 29,785 working-age respondents to the 2005 California Health Interview Survey. Unadjusted and adjusted marginal effects are reported. Professionals, the largest employed category, were the referent.

Results—Professionals had a binge drinking risk of 16.6%. Before adjustment workers in several occupational groups had higher risk compared to professionals, including those in installation (15.2 percentage points higher; 95% CI: 9.2, 21.1), construction (14.8 points; 95% CI: 10.4, 19.2), sales (6.9 points; 95% CI: 4.0, 9.9), while those without employment had a 6.6 point lower risk (95% CI: –8.4, –4.9). After adjustment, workers employed in installation were 6.7 (95% CI 1.8, 11.7), construction 4.8 (95% CI 1.0, 8.6), and salespersons 5.3 (95% CI 2.8, 7.7) points more likely to binge drink relative to professionals. No significant adjusted differences in risk between professionals and those without a job were found.

Conclusions—This study demonstrates binge drinking varies significantly across occupations. Adjusting for worker characteristics accounted for much the unadjusted relationship between the being employed in physically demanding occupations (e.g. installation, construction) and binge drinking. Distinguishing between occupation- and employee-level determinants of alcohol misuse may improve employee assistance programs and preventive services.

Keywords

binge drinking; alcohol; occupation

Correspondence Andrew J. Barnes, Department of Healthcare Policy and Research, VCU School of Medicine, PO Box 980430, Richmond, VA 23298-0430, USA. Tel: +8048274361. Fax: +8046281233. abarnes3@vcu.edu.

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

Introduction

Understanding the association between binge drinking and occupation is important from both public health and economic perspectives. In 2010, 15.0% of U.S. adults reported binge drinking,⁽¹⁾ defined as consuming 5 (4) or more drinks in two hours for men (women) in the past month,⁽²⁾ far above the Healthy People 2010 goal of 6%.⁽³⁾ Nearly three-quarters of the alcohol consumed in the U.S. occurs during a binge drinking episode.⁽⁴⁾

Binge drinking has well documented effects on health. It is associated with intentional and unintentional injuries, alcohol poisoning, sexually transmitted diseases, unintended pregnancy, liver disease, high blood pressure, stroke, and other cardiovascular diseases. ^(1,5,6) Most binge drinking episodes occur in working age adults over 25 years old.⁽⁷⁾ For employers, consequences of employee binge drinking include high job turnover rates, co-worker conflict, injuries, higher health benefit costs, and workplace aggression.^(8–11) Economic costs resulting from lost productivity, health care costs, and legal and criminal consequences of binge drinking were estimated at \$170.7 billion in 2006, more than 76% of the total costs of excessive alcohol consumption.^(12,13)

Binge drinking may be affected by work-related mechanisms like social networks⁽¹⁴⁾ and job stress that vary across occupations.^(15–22) As a result, occupations, after adjusting for confounding worker characteristics, may be associated with higher or lower binge drinking risk. Results from studies on heavy alcohol use have found that employees in service and sales had elevated risk.^(23–25) Also, farm workers and service industry employees have been found to have higher risk and those working in professional occupations lower risk. ^(26,27) Studies using data from the 1994 and 1997 National Household Survey on Drug Abuse (NHSDA)⁽²⁵⁾ and the 2002–2004 National Survey on Drug Use and Health (NSDUH) ⁽²⁸⁾ found construction and extraction occupations had a higher prevalence of heavy alcohol use than those employed in professional and related occupations. However, previous studies were either unadjusted,^(24,25) omitting important confounders of the association between occupation and alcohol use, focused on lifetime risk of alcohol dependence rather than current binge drinking risk,⁽²³⁾ or analyzed smaller state or community samples that may not generalize to the US working age population.^(26,27)

This study contributes to the field by assessing the relationship between major occupation category and binge drinking risk, before and after adjusting for common determinants including work hours, health status, education, demographics, and household structure. To do so, we use a large statewide representative sample of California working-age adults. Finding which occupations are associated with binge drinking risk, after controlling for confounding workers characteristics, can help employers and public health professionals develop targeted employee education and assistance programs to reduce alcohol misuse and increase productivity.^(29,30)

Materials and Methods

Sample

We analyze data from a working age subsample of 29,875 participants 25–64 years old in the 2005 Adult California Health Interview Survey (CHIS).(31) The CHIS is a population-based random-digit dial telephone survey using a multi-stage sample design conducted bi-annually since 2001 and is representative of California’s noninstitutionalized population living in households.(32–36) Households were randomly sampled from all households with telephones, and an adult respondent was sampled within each household. The household screener interview completion rate was 59.3%, and the adult interview completion rate was 54.0%, yielding an overall response rate of 26.9%.(32–36) The representativeness of the weighted and unweighted CHIS sample has been benchmarked against other large population data sets including the 2000 Census and California Behavioral Risk Factor Surveillance System (BRFSS).(32–36)

Outcome Variables

Binge drinking—Consistent with National Institute on Alcohol Abuse and Alcoholism (NIAAA) guidelines, a binge drinking episode was defined in the 2005 CHIS as a male (female) respondent who had five (four) or more drinks on one occasion in the past 30 days. (2,31,37)

Predictor Variables

Occupation—For employed individuals not in the armed forces, the 2005 CHIS categorized respondents’ occupation using one of ten Census Bureau major occupation groups. Occupation was defined as the current main job of the respondent and the categories collected included: 1) professional and related; 2) management, business, and financial; 3) service; 4) sales and related; 5) office and administrative support; 6) construction and extraction; 7) farming, forestry, and fishing; 8) installation, maintenance, and repair; 9) production; and 10) transportation and material moving. Respondents who were not working were included in the analysis using “not employed” as their occupation. Individuals in the armed forces, 0.1% of the sample, or with an uncodable occupation, 1.4% of the sample, were not included in the analysis. To balance the stability and interpretability of categorical occupation indicators, professionals were chosen as the referent group because they were the most frequent major occupation category among employed respondents.

Controls for work hours and worker characteristics—Our regression models controlled for work hours, health status, demographic, and household structure variables commonly correlated with binge drinking and occupation.(7,28,38,39) Work hours were centered and divided by ten to present more interpretable estimates. Work hours squared was included to capture potential non-linear relationships between work hours and binge drinking risk.

Being in good, very good, or excellent health and current cigarette smoking was also controlled for as was mental health using the short-form of the Kessler Psychological Distress Scale (K6).(40) The K6 measure summarizes Likert scale responses to six questions

about psychological stress; scores may range from 0 to 24, with scores of 13 or higher indicating probable serious mental illness.(41) We modeled psychological distress for participants as a binary measure indicating whether or not the K6 summary score was 13 or greater.

Demographic covariates included gender, education (high school or less was the referent, some college, college degree, or post-graduate education), age (25–29 was the referent, 30–39, 40–49, 50–59, and 60–64 years), and race/ethnicity (non-Latino white was the referent, Asian/Pacific Islander, African American, Latino, or other). Household composition covariates included annual household income (under \$16,600 was the referent, \$16,601–\$33,000, \$33,001–\$54,000, \$54,001–\$83,000, and over \$83,000), marital status (married was the referent, never married, widowed, and divorced), whether any children under the age of 12 lived in the household, and whether total household income supported 4 or more members.

Statistical methods

To transform multi-stage, geographically stratified survey data into unbiased California population estimates while preserving confidentiality in public use files, replicate weights were used. Population point estimates and variances were calculated by jackknifing replicate weights provided by CHIS.(36)

Descriptive statistics are presented for the entire California working-age population. Bivariate associations between binge drinking and model covariates were tested using a probit model. Unadjusted marginal effects representing the absolute difference in binge drinking risk between control variable categories are presented. The unadjusted marginal effects are analogous to crude odds ratios except they allow differences in binge drinking to be discussed as percentage points of risk rather than odds. A probit model was also used to assess the association of binge drinking with occupation while controlling for worker characteristics. Adjusted marginal effects are presented to examine the absolute difference in binge drinking for each predictor while holding other model covariates constant and at the sample average. The “svy” command in Stata11 was used in all statistical analyses to account for the survey design.

Results

Overall sample characteristics

In 2005, 18.2% of working age Californians reported at least one episode of binge drinking in the past 30 days (Table 1). Working age adults were more commonly employed in professional and related occupations (21.6%), management, business, and financial (11.0%), and service related occupations (10.9%), and less commonly in construction and extraction (4.9%), production (4.6%), transportation and material moving (3.8%), and installation, maintenance and repair (2.6%). More than 20% of working age adults were not employed. On average, individuals worked 32.7 (standard error 0.16) hours per week. Most working age adults were in good or excellent health (81.8%) and few reported psychological distress (4.4%) or that they were current smokers (16.5%). Among working age Californians in

2005, 51.0% were non-Latino white, 26.2% were Latino, 13.0% were Asian/Pacific Islander, and 5.9% were African-American. Half were female (50.5%), most were either 30–39 (28.9%) or 40–49 (28.7%) year old, and more than half (63.9%) were married. Few working age adults had a graduate school education (13.5%), children under 12 in the household (11.7%), or household incomes of \$83,000 or more per year (22.1%). Less than half supported four or more people with their household income (45.5%).

Unadjusted associations of binge drinking

Binge drinking status varied significantly by major occupation category before adjustment (Table 2). Among workers employed in professional and related occupations, 16.6% reported binge drinking risk in the past 30 days. Relative to professionals, individuals employed in traditionally more physically demanding occupations were more likely to binge drink. Installation, maintenance, and repair workers were 15.2 (95% CI 9.2, 21.1) percentage points more likely to binge drink and workers in construction and extraction were 14.8 (95% CI 10.4, 19.2) and transportation and material moving workers 9.6 (95% CI 5.0, 14.2) percentage points more likely to bring drink.

Those in sales and related occupations were 6.9 (95% CI 4.0, 9.9) percentage points more likely to binge drink than those in professional occupations. Management, business, and financial workers were 3.9 (95% CI 1.5, 6.3) and service workers 2.6 (95% CI 0.3, 5.0) percentage points higher. Individuals who were not employed were 6.6 (95% CI –8.4, –4.9) percentage points likely to binge drink compared to professionally employed individuals.

Adjusted associations of binge drinking

After adjusting for work hours and employee characteristics, workers employed in installation, maintenance and repair jobs had a 6.7 (95% CI 1.8, 11.7) percentage points greater absolute risk of binge drinking compared to professionals while holding all covariates constant and at the sample average. Workers in construction and extraction occupations had a 4.8 (95% CI 1.0, 8.6) percentage point greater binge drinking risk. No significant differences were found in binge drinking risk between workers in professional occupations and those employed in farming, forestry, and fishing, production, or transportation and material moving. The adjusted results suggest individual differences in education, race/ethnicity, work hours, household structure and health status accounted for much of the unadjusted association between the propensity to be employed in a physically demanding occupations and binge drinking.

Office and administrative support personnel had a 3.6 percentage point greater binge drinking risk relative to professionals (95% CI 1.3, 5.9), compared to marginally significant 2.6 (–0.1, 5.4) point difference before adjustment, suggesting controlling for worker characteristics and work hours was important in describing the relationship between the likelihood of being in administrative occupations and binge drinking risk.

Adjusted estimates of the association between management, sales, and service occupations and binge drinking were consistent with unadjusted estimates suggesting worker-level characteristics did not confound the relationship between these occupations and drinking risk. Individuals employed in management, business, and financial occupations had a 3.5

(95% CI 1.5, 5.6) percentage point greater binge drinking risk relative to professionals and service workers a 2.8 (0.6, 5.1) point increased risk. Salespersons had a 5.0 (95% CI 2.8, 7.3) percentage point greater risk relative to professionals. No significant adjusted differences were found in binge drinking risk between workers in professional occupations and those who were not employed.

Estimates from the single equation probit model were robust to alternative specifications tested. Specifically, a two-part probit model was estimated in which the probability of any alcohol use was first modeled followed by the probability of binge drinking conditional on any alcohol use. The first and second parts were then combined and the sign and magnitude of the adjusted associations of model covariates and binge drinking risk were comparable between the single equation and two-part probit models.

Discussion

This study demonstrates that occupational characteristics independently contribute to binge drinking risk and adjustment for workers characteristics is important when determining the relative degree of risk across occupations. Controlling for differences in employee characteristics (e.g., education, gender, age) and work hours accounted for much the unadjusted association between employment in physically demanding occupations (i.e., construction and extraction, installation, maintenance and repair, transportation and material moving) and binge drinking. Although the risk differences for construction and installation occupation remained significant after adjustment, their magnitude decreased by half or more. Furthermore, the magnitude and strength of binge drinking risk differences between professionals and the non-employed decreased substantially after adjustment as well. These results suggest, for example, differences in health and education between construction workers and professionals, or between employed and non-employed, drive much of the unadjusted relationship between these occupations and binge drinking. Conversely, the unadjusted and adjusted estimates relating sales, service, management, business, and financial occupations and binge drinking were broadly consistent, suggesting occupation-level risk factors largely independent of worker characteristics.

As to the representativeness of our findings to California and national workforces, the results of this study found 18.2% of working age Californians binge drank at least once a month, compared to 15.8% from BRFSS data.⁽¹⁾ The discrepancy may be attributable to differences in the age range of the BRFSS population (i.e. all adults) and the restriction of the study sample to 25–64 year olds. In fact, the binge drinking point estimate for all adults in the CHIS sample, 16.4% (not shown), falls within the confidence interval of the BRFSS estimates for California (95% CI 14.9% – 16.7%).⁽¹⁾ The prevalence of binge drinking by gender, education, and race/ethnicity in the CHIS 2005 data follow similar patterns to those reported in the 2006 and 2007 NSDUH.⁽²⁵⁾

This study's finding 16.6% of workers employed in professional and related occupations binge drank is concordant with Matano et al.'s result that 15.3% of a highly educated community sample binge drank in the past month.⁽²⁷⁾ Studies using the 2002–2004 NSDUH found between 2.8% and 8.3% of workers employed in professional and related

occupations drank heavily in the past month (i.e. binge drinking 5 or more times in the past month), suggesting binge drinking is much more common among professionals than heavy alcohol use.(25,28) No adjusted difference in the likelihood of binge drinking between professionals and individuals who were not employed were found in this analysis, unlike prior work by Diala et al. that found professionals, as well as all other occupations, after adjustment, were more likely than those not in the labor force to abuse alcohol.(23) However, Diala et al. did not control for health status effects on both labor force participation and alcohol use. If healthier individuals are more likely to drink, as well as work, and the true effect of working increases binge drinking, then failing to control for health will bias the occupation effect on drinking away from zero. Similar to NSDUH unadjusted estimates, this study found that working in installation, maintenance and repair, and construction and extraction occupations were positively associated with alcohol misuse after adjustment, although our unadjusted prevalence estimates were higher due to the lower threshold for alcohol misuse used in our study.

We acknowledge several limitations when interpreting our results. Findings based on the CHIS sample may not generalize to the U.S. as a whole. However, California is among the ten largest global economies and in 2010 had a binge drinking rate near the median of all U.S. states.(42,43) Further, if the multivariate models were properly specified, the adjusted results using a wide array of worker characteristics should be broadly applicable because they control for differing population attributes across states. Also, it is possible that individuals' drinking preferences may determine their occupation or that unobserved variables biased the associations reported. To the extent that workers choose occupations that align with their drinking preferences, our current estimates will be overstated. However, it is more difficult to determine the net effect of omitted variables on our estimates. We also acknowledge several additional limitations related to the occupation categories used in our analyses. Occupation categories were coded by CHIS interviewers based on participant self report thus error in correctly mapping the true occupation into Census Bureau major occupation categories can occur at the participant and interviewer level causing an attenuation of the true relationship between occupation category and binge drinking. This study was unable to examine which characteristics of the major occupational groupings or which specific occupations accounted for the observed variation in binge drinking risk. Furthermore, the adjusted associations of major occupation categories with binge drinking risk may not generalize to all occupations within a category due to potential heterogeneous occupation-level determinants of alcohol misuse (e.g. autonomy and job demands may vary within an occupation category).

Altogether, this study provides new evidence from a large sample of working age adults that major occupation categories have differing binge drinking risks, independent of worker characteristics that have often been omitted from prior studies. Notably, differences in employee attributes accounted for much of the risk of physically demanding occupations but not those who are employed in occupations related to management, sales, or service. This suggests that the increased binge drinking risk attributed to working in physically demanding occupations relative to other occupations found in previous studies is confounded by systematic differences between these two types of workers in education, age, marital status, race/ethnicity and household income.(25,28) Disentangling occupational (e.g.

social networks, job stress) versus individual (e.g. educational attainment) determinants of alcohol misuse may increase the effectiveness of employee assistance approaches in reducing workers' alcohol abuse. More research on the independent effects of occupational experiences on alcohol abuse is needed to further refine workplace interventions in order to decrease personal, employer, and societal costs associated with alcohol misuse.(29,30)

References

1. Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System Survey Data. 2010
2. National Institute on Alcohol Abuse and Alcoholism. NIAAA Newsletter. 2004 Winter;3:3.
3. Cooper M, Russell M, Skinner J, Frone M, Mudar P. Stress and alcohol use: moderating effects of gender, coping, and alcohol expectancies. *J Abnorm Psychol.* 1992 Feb; 101(1):139–52. [PubMed: 1537960]
4. Office of Juvenile Justice and Delinquency Prevention. [Accessed on January 2, 2009] Drinking in America: myths, realities, and prevention policy. 2005. Available at: http://www.udetc.org/documents/Drinking_in_America.pdf
5. Centers for Disease Control and Prevention. Quick stats binge drinking. 2009
6. Puddey I, V R, Dimmitt S, et al. Influence of pattern of drinking on cardiovascular disease and cardiovascular risk factors. *Addiction.* 1999; 94(5):649–63. [PubMed: 10563030]
7. Naimi T, Brewer R, Mokdad A, Denny C, Serdula M, Marks J. Binge Drinking Among US Adults. *JAMA.* 2003; 289(1):70–75. [PubMed: 12503979]
8. Mangione TW, Howland J, Amick B, Cote J, Lee M, Bell N, et al. Employee drinking practices and work performance. *J Stud Alcohol.* 1999; 60(2):261–70. [PubMed: 10091965]
9. McFarlin SK, Fals-Stewart W. Workplace absenteeism and alcohol use: a sequential analysis. *Psychol Addict Behav.* 2002; 16(1):17–21. [PubMed: 11934081]
10. McFarlin SK, Fals-Stewart W, Major DA, Justice EM. Alcohol use and workplace aggression: an examination of perpetration and victimization. *J Subst Abuse.* 2001; 13(3):303–21. [PubMed: 11693454]
11. Webb GR, Redman S, Hennrikus DJ, Kelman GR, Gibberd RW, Sanson-Fisher RW. The relationships between high-risk and problem drinking and the occurrence of work injuries and related absences. *J Stud Alcohol.* 1994; 55(4):434–46. [PubMed: 7934051]
12. Burke TR. The economic impact of alcohol abuse and alcoholism. *Public Health Rep.* 1988; 103(6):564–8. [PubMed: 3141948]
13. Harwood H. Updating Estimates of the Economic Costs of Alcohol Abuse in the United States: Estimates, Update Methods, and Data. National Institute on Alcohol Abuse and Alcoholism. 2000 (NIH Publication No. 98-4327).
14. Ahern J, Galea S, Hubbard A, Midanik L, Syme SL. Culture of drinking and individual problems of alcohol use. *American Journal of Epidemiology.* 2008; 167(9):9–1041.
15. Ames G, Grube J. Alcohol availability and workplace drinking: Mixed method analyses. *Journal of Studies of Alcohol.* 1999; 60:383–393.
16. Ames, G., Janes, C. Drinking, social networks, and the workplace: Results of an environmentally focused study. New York: Quorum; 1990.
17. Bennett J, Lehman W. Employee exposure to co-worker substance use and negative consequences: The moderating effects of work group membership. *Journal of Health and Social Behavior.* 1999; 40:307–322. [PubMed: 10513150]
18. Bennett J, Lehman W, Reynolds G. Team Awareness for Workplace Substance Abuse Prevention: The Empirical and Conceptual Development of a Training Program. *Prevention Science.* 2000; 1(3):157–172. [PubMed: 11525346]
19. Martin JK, Roman PM, Blum TC. Job stress, drinking networks, and social support at work: a comprehensive model of employees' problem drinking behaviors. *The Sociological Quarterly.* 1996; 37(4):579–599.

20. MacDonald Z, Shields MA. The Impact of Alcohol Consumption on Occupational Attainment in England. *Economica*. 2001; 68(271):427–453.
21. Barrett G. The effect of alcohol on earnings. *The Economic Record*. 2002; 78(1):79–96.
22. Frone MR. Work stress and alcohol use. *Alcohol Res Health*. 1999; 23(4):284–91. [PubMed: 10890825]
23. Diala CC, Muntaner C, Walrath C. Gender, Occupational, and Socioeconomic Correlates of Alcohol and Drug Abuse Among U.S. Rural, Metropolitan, and Urban Residents. *The American Journal of Drug and Alcohol Abuse*. 2004; 30(2):409–428. [PubMed: 15230083]
24. Substance Abuse and Mental Health Services Administration Office of Applied Studies. NSDUH Report: Worker Substance use, By Industry Category. Aug 23.2007
25. Larson SL, Eyerman J, Foster MS, Gfroerer JC. Worker Substance Use and Workplace Policies and Programs. 2007 DHHS Publication No. SMA 07-4273, Analytic Series A-29.
26. Jarman D, Naimi TS, Pickard S, Daley W, De A. Binge Drinking and Occupation, North Dakota, 2004–2005. *Preventing Chronic Disease*. 2007; 4(4):1–11.
27. Matano RA, Wanat SF, Westrup D, Koopman C, Whitsell SD. Prevalence of Alcohol and Drug Use in a Highly Educated Workforce. *Journal of Behavioral Health Services & Research*. 2002; 29(1): 30. [PubMed: 11840903]
28. Substance Abuse and Mental Health Services. Worker Drug Use and Workplace Policies and Programs: Results from the 1994 & 1997 National Household Survey on Drug Use. 1999; 3352:99. OAS Series A#11, DHHS Publication No. (SMA).
29. Osilla KC, Zellmer SP, Larimer ME, Neighbors C, Marlatt GA. A brief intervention for at-risk drinking in an employee assistance program. *J Stud Alcohol Drugs*. 2008; 69(1):14–20. [PubMed: 18080060]
30. Osilla KC, dela Cruz E, Miles JN, Zellmer S, Watkins K, Larimer ME, et al. Exploring productivity outcomes from a brief intervention for at-risk drinking in an employee assistance program. *Addict Behav*. 2010; 35(3):194–200. [PubMed: 19897312]
31. CHIS. California Health Interview Survey 2005 Adult Public Use File, Release 1 [computer file]. 2007
32. CHIS. California Health Interview Survey 2005 Methodology Series: Report 3 - Data Processing Procedures. 2007
33. CHIS. California Health Interview Survey 2005 Methodology Series: Report 2 - Data Collection Methods. 2007
34. CHIS. California Health Interview Survey 2005 Methodology Series: Report 1 - Sample Design. 2007
35. CHIS. California Health Interview Survey 2005 Methodology Series: Report 4 - Response Rates. 2007
36. CHIS. California Health Interview Survey 2005 Methodology Series: Report 5 – Weighting and Variance Estimation. 2007
37. Wechsler H, Davenport A, Dowdall G, Moeykens B, Castillo S. Health and behavioral consequences of binge drinking in college. A national survey of students at 140 campuses. *JAMA*. 1994; 272(21):6.
38. 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(10):1162–1169. [PubMed: 19687131]
39. Yang S, Lynch JW, Raghunathan TE, Kauhanen J, Salonen JT, Kaplan GA. Socioeconomic and Psychosocial Exposures across the Life Course and Binge Drinking in Adulthood: Population-based Study. *American Journal of Epidemiology*. 2007; 165(2):184–193. [PubMed: 17074968]
40. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med*. 2002; 32(6):959–76. [PubMed: 12214795]
41. Kessler R, Barker P, Colpe J, Epstein J, Gfroerer J, Hiripi E. Screening for serious mental illness in the general population. *Arch Gen Psychiatr*. 2003; 60:184–189. [PubMed: 12578436]

42. Cal Facts. [Accessed May 4, 2012] 2006. Available at: http://www.lao.ca.gov/2006/cal_facts/2006_calfacts_econ.htm
43. Centers for Disease Control and Prevention (CDC). Vital signs: binge drinking prevalence, frequency, and intensity among adults - United States, 2010. *MMWR Morb Mortal Wkly Rep.* 2012; 61(1):14–19. [PubMed: 22237031]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1Descriptive Statistics (n =29,785)¹

	2005 California Working Age Population (95% CI)
Binge Drinker	
Yes	18.2% (17.6, 18.8)
Major Occupation Category	
Professional and related	21.6% (20.9, 22.3)
Management, business and financial	11.0% (10.6, 11.5)
Service	10.9% (10.4, 11.4)
Sales and related	7.1% (6.7, 7.5)
Office and administrative support	9.7% (9.3, 10.2)
Farming, forestry, and fishing	1.0% (0.9, 1.1)
Construction and extraction	4.9% (4.5, 5.3)
Installation, maintenance, and repair	2.6% (2.3, 2.9)
Production	4.6% (4.2, 5.0)
Transportation and material moving	3.8% (3.4, 4.2)
Not employed	22.8% (22.3, 23.3)
Work Hours	
Average weekly work hours (standard error)	32.7 (32.4, 33.0) (SE 0.16)
Health Status	
Good, very, good, excellent health	81.8% (81.2, 82.4)
Psychological distress (Kessler 6-13)	4.4% (3.9, 4.5)
Current smoker	16.5% (16.0, 17.1)
Education	
High school or less	38.5% (38.2, 38.8)
Some college	24.2% (23.6, 24.7)
College	23.8% (23.3, 24.4)
Graduate school	13.5% (13.1, 13.9)
Demographics	
Female	50.5% (50.3, 50.6)
25–29 years old	13.1% (13.0, 13.2)
30–39 years old	28.9% (28.8, 29.1)
40–49 years old	28.7% (28.5, 28.8)
50–59 years old	21.7% (21.4, 22.0)
60–64 years old	7.6% (7.3, 7.9)
Asian/Pacific islander	13.0% (12.7, 13.3)
African American	5.9% (5.6, 6.1)
Latino	26.2% (25.7, 26.7)

	2005 California Working Age Population (95% CI)
Other	3.9% (3.6, 4.2)
Non-Latino white	51.0% (50.6, 51.4)
Household Structure	
Married	63.9% (63.1, 64.7)
Never married	14.5% (13.9, 15.1)
Widowed or divorced	21.6% (20.9, 22.3)
Children under 12 in household	11.7% (11.3, 12.2)
Household income supports 4	45.5% (44.3, 45.6)
Household income \$16,000	17.5% (17.0, 18.1)
\$16,601–\$33,000	20.2% (19.5, 20.9)
\$33,001–\$54,000	18.2% (17.5, 18.9)
\$54,001–\$83,000	22.0% (21.4, 22.6)
\$83,000	22.1% (21.5, 22.7)

¹The descriptive statistics were weighted using the 2005 CHIS adult sample weights and are representative of the 2005 California working age population (N=18,499,563).

Table 2Marginal Effects of Major Occupation Category and other Covariates on Binge Drinking Risk¹ (n=29,785)

Variable	Unadjusted Marginal Effect (95% CI)	P-value	Adjusted Marginal Effect ² (95% CI)	P-value
Major Occupation Category				
Professional and related	16.6%	n/a	16.6%	n/a
Management, business and financial	+3.9% (1.5, 6.3)	<0.001	+3.5% (1.5, 5.6)	<0.001
Service	+2.6% (0.3, 5.0)	0.024	+2.8% (0.6, 5.1)	0.013
Sales and related	+6.9% (4.0, 9.9)	<0.001	+5.3% (2.8, 7.7)	<0.001
Office and administrative support	+2.6% (-0.1, 5.4)	0.061	+3.6% (1.3, 5.9)	0.003
Farming, forestry, and fishing	+3.2% (-2.2, 8.6)	0.225	+2.1% (-2.7, 6.9)	0.385
Construction and extraction	+14.8% (10.4, 19.2)	<0.001	+4.8% (1.0, 8.6)	0.012
Installation, maintenance, and repair	+15.2% (9.2, 21.1)	<0.001	+6.7% (1.8, 11.7)	0.007
Production	+3.0% (-1.3, 7.3)	0.157	0.6% (-2.9, 4.3)	0.710
Transportation and material moving	+9.6% (5.0, 14.2)	<0.001	+3.2% (-0.6, 7.1)	0.099
Not employed	-6.6% (-8.4, -4.9)	<0.001	-2.5% (-6.8, 1.7)	0.244
Work Hours				
Hours worked	+3.9% (3.0, 4.8)	<0.001	-0.1% (-1.8, 1.9)	0.977
Hours worked squared	-0.2% (-0.4, -0.1)	<0.001	+0.1% (-0.2, 0.2)	0.963
Health Status				
Excellent, very good or good health	+4.7% (2.8, 6.5)	<0.001	+1.8% (-0.3, 3.9)	0.095
Psychological distress (Kessler 6-13)	3.9% (7.0, -0.8)	0.0014	-0.3% (-3.9, 3.3)	0.863
Current smoker	+15.4% (13.0, 7.8)	<0.001	+12.6% (10.5, 14.8)	<0.001
Education				
Some college	-0.08% (-2.7, 1.0)	0.380	-1.3% (-3.3, 0.7)	0.204
College	-0.1% (-2.2, 2.0)	0.927	-0.2% (-2.5, 2.0)	0.828
Graduate school	-4.6% (-6.7, -2.4)	<0.001	-3.2% (-5.6, -0.9)	0.008
Demographics				
Female	-14.3% (-15.6, -13.0)	<0.001	-11.1% (-12.6, -9.7)	<0.001
30-39 yrs old	-9.0% (-11.8, -6.3)	<0.001	-7.5% (-10.1, -4.9)	<0.001
40-49 yrs old	-13.3% (-15.7, -10.8)	<0.001	-11.6% (-14.0, -9.3)	<0.001
50-59 yrs old	-18.6% (-21.1, -16.1)	<0.001	-16.2% (-18.7, -13.8)	<0.001
60-64 yrs old	-21.0% (-23.6, -18.3)	<0.001	-17.0% (-20.0, -14.0)	<0.001
Asian/Pacific islander	-10.2% (-12.0, -8.4)	<0.001	-9.4% (-11.1, -7.7)	<0.001
African American	-7.3% (-9.8, -4.9)	<0.001	-7.0% (-9.4, -4.5)	<0.001
Latino	+1.1% (-0.9, 3.1)	0.279	+0.8% (-1.4, 2.9)	0.496
Other race/ethnicity	+3.1% (-1.4, 7.7)	0.180	+1.1% (-2.8, 4.9)	0.586
Household Structure				
Never married	+10.1% (7.6, 12.5)	<0.001	+6.8% (4.3, 9.3)	<0.001

Variable	Unadjusted Marginal Effect (95% CI)	P-value	Adjusted Marginal Effect ² (95% CI)	P-value
Widowed or divorced	+3.4% (1.9, 4.8)	<0.001	+4.0% (2.4, 5.6)	<0.001
Has children under 12 in household	+3.9% (1.8, 6.0)	<0.001	<i>+1.8% (-0.1, 3.7)</i>	0.068
Household size 4 or more	+0.3% (-1.3, 1.8)	0.737	-1.2% (-2.7, 0.1)	0.133
Household income \$16,601–\$33,000	+4.2% (1.9, 6.5)	<0.001	+3.8% (1.8, 5.7)	<0.001
\$33,001–\$54,000	+4.0% (1.8, 6.3)	<0.001	+5.1% (2.9, 7.2)	<0.001
\$54,001–\$83,000	+4.5% (2.3, 6.6)	<0.001	+7.1% (4.8, 9.3)	<0.001
\$83,000	+4.8% (2.3, 7.3)	<0.001	+9.3% (6.4, 12.3)	<0.001

¹ Marginal effects are percentage point increases. Estimates in bold are significant at the 5% level, estimates in italics are significant at the 10% level.

² Adjusted marginal effects control for major occupation category, work hours, health status, education, demographics and household structure. Referent groups are: professional and related occupations, fair or poor health, Kessler 6 score below 12, non-smoker, education level of high school or less, male, 25–29 years old, non-Latino white ethnicity, married, no children under 12 in household, a household size less than 4, and household income less than \$16,601.