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Economic Loss and Alcohol Consumption and Problems during the 2008-9 U.S. Recession

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Abstract

Background—There is some evidence that individual-level job loss can lead to greater alcohol consumption and problems. While other forms of economic loss were common during the recent recession, these are rarely investigated in studies of macroeconomic decline. The present study examined the relationship between types of economic loss in the 2008-9 recession and alcohol outcomes, and whether this varied by gender and age.

Methods—Data are from the 2009-10 U.S. National Alcohol Survey ($N=5,382$). We used multivariable regression to estimate associations between economic loss and alcohol volume, monthly drunkenness, negative drinking consequences and alcohol dependence in the overall sample and within gender and age groups (18–29, 30–49, 50+), controlling for demographic and alcohol history covariates.

Results—In the overall sample, severe economic loss (job or housing loss) was positively associated with negative drinking consequences, alcohol dependence and (marginally) drunkenness, while moderate loss (loss of retirement savings, reduced work hours/wages, trouble paying the rent/mortgage) was unassociated with alcohol outcomes. Important gender and age differences were observed. Women reporting retirement loss, reduced hours/wages and job loss consumed 41–70% more alcohol than women unaffected by the recession, and men who experienced job loss and housing problems had increased risk for drunkenness, drinking consequences and dependence. Middle-aged Americans affected by partial or complete job loss and housing problems also had greater risk of drunkenness and alcohol-related problems, and older adults who lost retirement savings drank 42% more alcohol than their peers unaffected by the recession. With the exception of negative drinking consequences, young adult alcohol outcomes were largely unrelated to recessionary loss.

Conclusions—This study highlights the adverse effects of recession-induced economic losses on alcohol use and problems in demographic subgroups. As men and middle-aged Americans were at risk for multiple, adverse alcohol outcomes, these groups may warrant special alcohol screening and intervention efforts in future macroeconomic crises.

Keywords

recession; heavy drinking; alcohol problems; unemployment; gender

INTRODUCTION

Although the U.S. recession officially ended in June 2009 and the unemployment rate has since dropped from 10.0% in 2009 to 7.7% in early 2013 (Bureau of Labor Statistics, 2013), many Americans still struggle to make ends meet. Currently, 12 million Americans are unemployed and an additional 8 million are limited to part-time work because their hours have been cut and they are unable to find full-time employment (Bureau of Labor Statistics, 2013). This translates into daily hardship and strain for many families, as evidenced by the highest federal poverty levels since the early 1980s (Danziger et al., 2012), the two million additional households that “doubled-up” between 2007 and 2011 (United States Census Bureau, 2011), and the 45% increase in U.S. food stamp program enrollment between 2009 and 2012 (Tavernise, 2012).

While the health effects of the recent recession have yet to be fully realized, economic downturns have been shown to have an unusual mix of health-related impacts. For instance, economic declines have been linked to deteriorating mental health and higher rates of suicide (Catalano et al., 2011; Stuckler et al., 2009) but also to less smoking and more exercise (Ruhm and Black, 2002), the latter possibly due to less discretionary income and greater available time to devote to health (Dee, 2001; Ettner, 1997; Ruhm and Black, 2002).

Stress, time and income are all factors that are also relevant to alcohol consumption and problems, although their effects may be countervailing. On the one hand, many people drink alcohol to reduce tension and cope with stress, and drinking for these purposes is associated with heavy consumption and alcohol-related problems (Abbey et al., 1993; Cooper et al., 1992; Mares et al., 2013). Theoretical models have elaborated the link between economic strain and alcohol use in which the experience of negative emotional states plays an important role (e.g., see Pearlin and Radabaugh, 1976; Peirce et al., 1994). In this framework which informs the present study, alcohol use is motivated by the desire to reduce feelings of emotional distress and regulate negative emotions (Cappell and Greeley, 1987; Cooper et al., 1995; Cooper et al., 1992; Greeley and Oei, 1999). Notably, because employment constrains time available for drinking (and other activities), reducing or losing employment can also increase drinking. On the other hand, other experiences associated with economic downturns – fiscal conservatism, loss of income, and fear of job loss – can temper drinking (Catalano and Bellows, 2005; Catalano et al., 2011; Ruhm and Black, 2002). Thus, the net effect of recession-induced economic loss on alcohol consumption and problems is quite unclear.

Certainly the extant literature on unemployment and alcohol outcomes is noted for a lack of clear and consistent research findings, which might be due to methodological differences related to outcome measures, study populations, and the use of aggregate versus individual-level data. But even at the individual level, studies of unemployment and drinking have yielded mixed results: unemployment has been associated with *increased* alcohol use,

problem drinking and abuse, *decreased* alcohol use and abuse, and *no effect* on drinking outcomes (Catalano et al., 2011; Gallo et al., 2001; Khan et al., 2002). The most rigorous investigations based on panel studies have, however, found that involuntary job loss results in heavy drinking and alcohol-related problems (e.g., (Dooley and Prause, 1998; Eliason and Storrie, 2009; Mossakowski, 2008).

Importantly, while prior research has largely focused on job loss, the 2008-9 U.S. recession had wide-ranging impacts that extended to partial job loss, housing instability, and the loss of retirement savings. As further economic downturns are expected in the coming decade (Reinhart and Rogoff, 2009), knowing whether these other types of recessionary loss affect drinking behavior and related problems can be valuable for prevention and intervention purposes. A key aim of the current study is thus to examine the relationship between different types of economic loss experienced during the recession (job loss, reduced work hours/pay, difficulty paying for housing, housing loss, and loss of retirement savings) and alcohol consumption and problems.

Another significant and understudied question is whether recessions affect demographic subgroups differently. Recently, we investigated racial/ethnic differences in exposure and vulnerability to economic loss during the recession, and found that African Americans experienced more alcohol-related problems in relation to severe economic loss compared to whites (Zemore et al., 2013). In the present study, we examine differential effects of economic loss across gender and age groups in the general population, with some expectation of differences. Men are more likely than women to consume alcohol, drink heavily, and experience alcohol-related problems, and men's drinking (vs. women's) has been more strongly linked to stressors related to work and financial strain (Dawson et al., 2005; Matheson et al., 2012; Shaw et al., 2011). Additionally, because men's earning power still surpasses women's, they are likely to still be the primary breadwinner within a given dual-earner household. We therefore expect men's drinking to be more adversely affected by recessionary events. However, recent studies indicate that women's drinking behavior is converging with that of men, and thus factors that have historically constrained women's drinking may be less relevant today (Keyes et al., 2008). This, along with the much greater labor force participation of women in recent decades, suggests that women's drinking might also be influenced by recession-related economic loss.

With respect to age groups, rarely has the relationship between economic decline and alcohol outcomes been investigated in older adults, presumably because they are less likely to be employed. But there has been a rapid increase in the number of older Americans who are working, and who have been impacted by involuntary unemployment (Johnson, 2012; Gallo et al., 2001). Further, the extensive loss of retirement savings during the recent recession would likely impact older Americans most immediately. On the other hand, young adults were most likely to lose jobs during the recession (Johnson, 2012) and they have the highest rates of heavy drinking and alcohol disorder (Grant et al., 2004), which put them at increased risk for drinking problems following adverse employment events (Dooley and Prause, 1998). Thus, while we expect to see the impact of economic loss on alcohol outcomes across age groups, we expect it to be greater in young adults.

As noted, very few studies have examined gender and age differences in the effects of economic decline on alcohol outcomes, and with mixed results. Of two studies analyzing U.S. state-level data, one found rising unemployment to be associated with similar reductions in overall consumption and heavy monthly consumption across gender and age groups (Ruhm and Black, 2002), and the other showed rising unemployment was related to increased binge drinking, particularly among men and younger persons (Dee, 2001). In a third, retrospective longitudinal study of plant closures in Sweden, middle-aged women and younger men were most likely to be hospitalized for alcohol-related causes following involuntary job loss (Eliason and Storrie, 2009).

The present study aims to extend prior research by examining economic loss experienced during the 2008-9 U.S. recession in a nationally representative sample of adults. We focus on a variety of losses that were prevalent during the recent downturn but which have rarely been investigated, and examine these in relation to four distinct alcohol outcomes, including volume of consumption, drinking to drunkenness, negative drinking consequences, and alcohol dependence. We investigate these relationships in the overall study sample and assess whether they vary across subgroups of women and men, and young, middle-aged and older Americans.

MATERIALS AND METHODS

The 2009-10 U.S. National Alcohol Survey (NAS12) was a national household Computer-Assisted Telephone Interview (CATI) survey of persons ages 18 and older. Data were collected between June 2009 and March 2010 using list-assisted Random Digit Dialing (RDD) with a sampling frame of all 50 states and the District of Columbia. In addition to a main sample, the NAS12 includes racial/ethnic minorities and low-population states, as well as a cell phone sample responding to an abridged NAS questionnaire. Interviews were conducted in English and Spanish. The NAS12 cooperation rate was 52.1% overall, and 49.9% for the landline sample ($N=5,382$) analyzed in the current study (the cell phone sample was excluded due to the lack of key, recession items in the cell phone survey). Although low, these rates are consistent with those from recent telephone surveys (Curtin et al., 2005). Importantly, studies show that increased nonresponse does not necessarily result in biased population estimates (Groves, 2006; Keeter et al., 2006). Extensive analysis of the NAS telephone surveys compared with face-to-face surveys with typically higher response rates, and also analysis of the telephone-based, 2000 NAS's replicate subsamples with varying response rates, indicated no significant bias in alcohol estimates associated with this level of response (e.g., see (Greenfield et al., 2006; Midanik and Greenfield, 2003).

Measures

Economic Loss due to the Recession—This was measured by the following questions: 1) Have you or another member of your household been negatively affected by the recent economic downturn or recession? i.e., since January 2008; (If yes) Since January 2008, did you or anyone in your household ... 2) have their hours or pay reduced at work; 3) lose a job; 4) have trouble paying rent or mortgage; 5) lose their housing, either owned or rented; and 6) lose retirement money or savings. Additionally, respondents reporting a

reduction in their hours or pay (partial job loss) or complete job loss were also asked whether they personally had experienced this loss. (This question was asked only for these two types of loss.) All items were associated with a 7-level ordinal measure of household income, supporting their validity (p 's $\leq .001$). For every type of loss, a three-category variable was created indicating that the respondent experienced the specific loss of interest, some other loss, or no economic loss at all. Summary variables were also created to indicate *severe economic loss*, defined *a priori* as the loss of a job or housing. The latter represent more extreme versions of a reduction in work hours/pay and trouble paying the rent/mortgage which, along with the loss of retirement savings, were categorized as *moderate economic loss*. Note that in sensitivity analyses, we analyzed an alternative measure of severity of economic loss based on the number of different types of household loss experienced (0, 1–2, or 3+ losses). The two measures had roughly similar distributions, and generated very similar results. Here we present results for the conceptually driven measure, as it is arguably more meaningful and readily interpreted than the alternative, quantitative measure.

Alcohol Outcomes—The 12-month outcome variables included total volume of alcohol consumed, frequency of drunkenness, negative drinking consequences, and alcohol dependence. *Alcohol volume* was derived using the graduated frequency (GF) approach developed by the Alcohol Research Group, which provides an optimal volume plus pattern measure (Greenfield, 2000; Rehm, 1998). Following the self-reported personal maximum amount drank in a single day within the past year, the GF approach assesses frequency of drinking specified quantities of combined alcohol, starting with the highest quantity and proceeding to the lowest. The GF alcohol volume measure has been validated against drinking diaries (Greenfield et al., 2009). The measure was log-transformed to reduce skewness. Our heavy drinking indicator, *frequency of drunkenness*, captures self-reported, subjective drunkenness and is a strong predictor of negative drinking consequences and alcohol dependence symptoms (Midanik, 1999), and may be a better indicator of problem drinking than other heavy drinking indicators (Greenfield and Kerr, 2008). To reduce skewness, a dichotomous variable was created indicating drunkenness on a monthly or more frequent basis (yes/no). *Negative drinking consequences* were assessed with a 15-item scale constructed from standard items widely used in prior national studies, and dichotomized to indicate a standard 2+ criterion (Midanik and Greenfield, 2000; Midanik and Clark, 1995). The 15 items capture five different kinds of problems that the respondent experienced and attributed to his/her drinking, including arguments or fights, injuries or accidents, workplace or job-related problems, trouble with the law, and health problems. Our measure of *alcohol dependence* is a dichotomous measure indicating that the respondent experienced at least one symptom in three or more of seven dependence domains defined by DSM-IV (American Psychiatric Association, 1994). This measure is based on 17 items, and has been validated in prior NAS studies (Caetano and Tam, 1995).

Alcohol-related History and Demographic Covariates—Potential selection bias was an important concern in this study, as a pre-existing history of heavy drinking or alcohol problems could predispose individuals to economic losses, as well as to heavy drinking and alcohol problems, the study's main outcomes. Three alcohol-related history variables were

considered as potential covariates in our multivariate models: alcohol-related health problems prior to the recession (i.e., before 2008), parental alcoholism, and history of heavy drinking. The measure of alcohol-related health problems was based on the age at which the respondent's drinking *first* affected their health, together with the respondent's current age. Parental alcoholism was based on the respondent's self-report that their mother and/or father had been "a problem drinker or alcoholic." Our measure of heavy drinking history captures 5+ drinking frequency during the teens for respondents in their 20s, 5+ frequency in the 20s for respondents in their 30s, and so on. Bivariate analyses indicated that alcohol-related health problems and parental alcoholism were significantly associated with recession-related loss and 12-month alcohol outcomes, and were thus included as covariates in the final models. Heavy drinking history was not associated (and therefore not included as a covariate), possibly because the variable was too distal a measure of heavy drinking pattern prior to the recession. Demographic covariates included gender, age, race/ethnicity, marital status, and educational attainment. Supplemental analyses also controlled for employment status and past-year individual income; the latter variable included "missing income" as a category.

Statistical Analysis

Linear and logistic regressions were used to estimate associations between economic loss and alcohol outcomes. Specific types of loss were examined one at a time, without controlling for all losses simultaneously. Models adjusted for potential demographic confounders and alcohol-related history variables that were significantly associated with economic loss and 12-month alcohol outcomes in bivariate analyses (p 's $\leq .05$). Statistical adjustments were made sequentially, adjusting first for demographic variables (model 1), and subsequently adding alcohol history variables (model 2, fully adjusted). Additionally, supplemental analyses were conducted in which we also adjusted for income and employment status in model 1. However, we recognized that this might be statistically "over-controlling" as both income and employment status could lie on a causal pathway from economic loss to alcohol outcomes. Controlling for income and employment did in fact reduce point estimates, but did not alter the pattern of findings, nor significance levels.

Analyses were conducted in the overall study sample, and also within gender and age groups. Data were weighted to adjust for the probability of selection, ethnic oversampling, and nonresponse. Data were further weighted to the U.S. population distribution using post-stratification weights based on the 2006-08 American Community Survey estimates for gender, age, ethnicity, education, and state population. Analyses were conducted using STATA 11.0 (Stata Corp., 2009) in order to apply standard errors appropriate for the study's complex survey design.

RESULTS

Table 1 shows the characteristics of the sample, including exposure to economic loss and prior alcohol history. Roughly half (52.2%) of the respondents reported that their household was affected by the recession. The most common types of economic loss were a reduction in work hours/pay and the loss of retirement savings, reported by roughly one-third and one-

fourth of respondents, respectively, followed by loss of a job, trouble paying the rent or mortgage, and loss of housing. In addition to these household-level impacts of the recession, nearly one-fifth (18.3%) reported a personal reduction in work hours/wages, and 9.0% personally lost a job. As we reported in a prior study, young adults were more exposed to severe economic loss such as job and housing loss, while middle-aged persons (aged 30–49) were more likely to report reduced hours/wages and trouble paying the rent/mortgage (Zemore et al., 2013). Persons aged 40+ were most likely to report loss of retirement savings, and men and women were very similar in their exposure to each of these recession-related losses.

Economic Loss and Alcohol Consumption and Problems

As shown in Table 2, respondents who were affected by the recession had twice the odds of negative drinking consequences compared to those unaffected by the recession (AOR=2.37), and greater odds of alcohol dependence although the latter was not statistically significant after adjusting for differences in demographic characteristics and alcohol-related history (AOR=1.75).

The strength of associations varied by the type of loss and alcohol outcome. Loss of retirement savings was the only form of loss significantly associated with increased alcohol volume (unstd. beta, $b=.31$), but was not significantly associated with any other alcohol outcomes (all p 's $>.05$). Recession-related losses that presumably have more immediate impact, such as reduced hours/pay, job loss, trouble paying for housing, and housing loss, were all significantly related to alcohol problems in fully adjusted models. Housing loss was associated with the greatest risk for drinking consequences and alcohol dependence by far (AORs=9.52 and 5.93, respectively), followed by job loss which was associated with these alcohol problems as well as drunkenness (AOR=1.71, $p=.05$). Adjusting for demographic characteristics, family alcoholism and prior history of alcohol-related health problems, severe economic loss, but not moderate loss, was associated with alcohol-related problems and (marginally) monthly drunkenness.

Differences across Gender and Age

Gender- and age-stratified analyses revealed distinct patterns across demographic subgroups (see Table 3, summary of significant results). In fully adjusted models, alcohol volume was 41% to 70% greater among women reporting loss of retirement savings, personal reduction in hours/pay, or personal job loss compared to women who were unaffected by the recession ($b=0.41, 0.53$, and 0.70 respectively, all p 's $<.01$). Among men, personal job loss was the only type of economic loss related to alcohol consumption ($b=0.65$, $p=.05$). In general, economic losses were significantly associated with other alcohol outcomes among men: job loss (household-level and personal), trouble paying the rent/mortgage, and housing loss were all related to increased odds of monthly drunkenness (AORs ranged from 2.09 to 3.77, p 's $<.05$), negative drinking consequences (AORs ranged from 3.74, $p=.01$ for household job loss to 14.4, $p=.001$ for housing loss) and alcohol dependence (AORs ranged from 2.90, $p=.05$ for household job loss to 8.34, $p=.01$ for housing loss) in fully adjusted models. Among women, there were no significant associations between economic loss and monthly

drunkenness or alcohol-related problems after controlling for demographic and alcohol history differences.

Age-stratified analyses showed a consistent pattern of associations between economic loss and alcohol outcomes among respondents aged 30 to 49 (Table 3). Compared to those unaffected by the recession, those who experienced job loss (household and/or personal), trouble paying the rent/mortgage, or housing loss had at least three-times the odds of negative drinking consequences (AORs ranged from 3.19, $p = .05$ for trouble paying the rent/mortgage to 18.7, $p = .001$ for housing loss) and alcohol dependence (AORs ranged from 3.03, $p = .05$ to 16.6, $p = .001$ for these same types of losses). In addition, middle-aged respondents with reduced work hours/wages (household and personal) had thrice the odds of alcohol dependence compared to those unaffected by the recession ($p = .05$). The oldest respondents (aged 50+) appeared to be the most impacted by loss of retirement savings: in this group alcohol consumption was 42% greater among those losing retirement money compared to those untouched by the recession ($b = 0.42$, $p = .01$). Among young adults aged 18–29, economic loss was unrelated to alcohol volume, drunkenness, and alcohol dependence. However, job loss, trouble paying the rent/mortgage, and housing loss were associated with negative drinking consequences in this age group (AORs ranged from 4.16 to 6.07, all p 's $\leq .05$).

DISCUSSION

The current study of economic loss due to the 2008-9 recession highlights several important, new findings not only about different types of loss that were common during the recent recession, but also their relationships to alcohol outcomes in population subgroups. A key finding was that recession-induced job loss was consistently associated with alcohol outcomes. Among women, job loss was linked with greater volume of consumption, and among men and middle-aged Americans it was associated with monthly drunkenness, negative drinking consequences, and alcohol dependence. Results were robust, persisting after adjustment for demographic characteristics, family alcoholism and alcohol-related health problems prior to the recession, and are consistent with prior studies noted earlier demonstrating the negative impacts of job loss on alcohol outcomes.

Second, we found that housing instability due to the recession was consistently related to alcohol problems among men and the middle-aged group. As the loss of housing is likely the most severe, destabilizing form of economic loss examined here, it is not surprising that this evidenced the strongest association with drinking problems. But the strength of this relationship might also reflect the cumulative impact of multiple economic losses, whereby housing loss represents a culminating event following other hardships such as partial or complete job loss, and difficulties paying for housing. Supporting this possibility, a clear majority of those reporting housing loss also experienced reduced hours/wages (67%), job loss (63%), and trouble paying the rent/mortgage (73%). By contrast, only 13% of respondents affected by job loss also experienced housing loss.

Given the severe disruption that housing loss entails, it is interesting that it was related to alcohol outcomes only among men and middle-aged respondents. This may be because

women are generally less likely to drink heavily and have alcohol problems. This might also reflect gender differences in social support resources, as prior research shows that homeless women, particularly those with children, seek and receive more support and social services than homeless men (DiBlasio and Belcher, 1995). Similarly, young people might have received greater support than middle-aged adults during the recession. Certainly, younger adults were most likely to move into their parents' homes during the economic downturn (Zhenchao, 2012).

Compared to job loss and housing instability, reduced work hours/pay and the loss of retirement savings would seem to be less severe recessionary losses. Consistent with this, these losses were unrelated to drinking problems and indeed all alcohol outcomes among men, and young and middle-aged respondents. This is significant, as these were the two most common forms of economic adversity experienced during the recession. But not all groups were unaffected by these losses. In particular, older Americans who lost retirement savings consumed more alcohol than their peers who experienced no recessionary loss, a finding compatible with Shaw et al.'s (2011) study showing that older people tend to drink more heavily in response to greater financial strain. But while that study found this to be true only among older men, our results show that retirement loss was related to drinking volume only in women. In addition, women who had a reduction in their own work hours/wages drank greater amounts of alcohol, as did women who personally lost a job.

Our finding of greater alcohol consumption among women who lost retirement savings and had their jobs scaled back or eliminated raises the question of whether these were mostly women of higher socioeconomic status, who are more likely to drink and to have higher average consumption (Karlman et al., 2006). Conversely, they might have been women with fewer economic resources to help buffer them against the effects of financial loss. Post-hoc descriptive analyses suggest that the latter explanation may be more applicable, as single-parent status was the most striking factor differentiating women who lost jobs from those unaffected by the recession (32% vs. 11%, respectively, were single mothers). Moreover, some research has found that single mothers consume more alcohol than partnered mothers, possibly due to greater stress (Kuntsche et al., 2011) which is likely to be magnified by personal job loss during a severe recession. On a more positive note, women affected by job loss were not at elevated risk for either monthly drunkenness or alcohol-related problems.

The observed pattern of results across age groups, particularly the relative absence of associations among young respondents, was somewhat surprising to us. The adverse alcohol outcomes so apparent among persons aged 30–49 echo findings of elevated, stress-related mortality linked to rising unemployment in the middle-aged (Stuckler et al., 2009), and could reflect a greater burden of family responsibilities and therefore greater distress among persons in this age group. In contrast, young adults might be buffered by parental economic support to a greater extent than older adults, as noted earlier.

It is worth highlighting that young adult drinking and drunkenness were unrelated even to severe forms of economic loss in our study. Recently published trend data show a decline in heavy drinking among U.S. young adults through the recession years (Burgard, 2012). In

view of this, our individual-level null findings might indicate that young adult drinking was less swayed by experiences of recessionary loss, and more so by changes in broader, peer norms and social network drinking, which tend to be powerful determinants of behavior within this age group (Jones-Webb et al., 1997; Siebert and Wilke, 2007). If the recession brought about a general shift towards “drier” drinking norms among young adults, this, together with economic buffering from parents, might partly explain why we found no association between economic loss and drinking behavior at the individual-level.

Yet it is interesting that recessionary loss was linked to drinking consequences among young adults. We speculate that in households affected by economic hardship there may be increased pressure on young adults to curb or give up their drinking (and alcohol-related expenses). In exploratory analyses we found that individuals living in households affected by job loss, but who did not personally lose a job, had two times the odds of negative drinking consequences compared to persons unaffected by recessionary loss (data not shown). Specifically, they had more arguments and fights with a spouse, household member or others due to their drinking, even though they did not have greater alcohol consumption, drunkenness, or risk for alcohol dependence.

With regard to the general question of net, direct effects of recessionary loss on drinking and alcohol problems, our study demonstrates that such loss is associated with adverse alcohol outcomes which may vary across population subgroups. Thus, although recession-induced, economic loss may shrink discretionary income, we found greater overall consumption, drunkenness and alcohol-related problems in various subgroups impacted by economic loss. Yet our study does not address whether people reduced their drinking in general, regardless of whether they were affected by the recession. We considered this possibility in gender-stratified, descriptive analyses of NAS data from 2005 and 2010 and found that overall drinking volume did not differ significantly across the two survey years. But there was a trend towards lower volume in 2010 among those unaffected by the recession, particularly men, contrasting with increased volume among men and women impacted by recession-related job loss. Our study findings therefore suggest that in the context of recession-induced job (and income) loss, the relative cost of alcohol might not be as strong a determinant of individual drinking as one might assume, and that drinking to relieve stress might overcome financial constraints. This is especially plausible when we consider that the real price of alcohol has declined dramatically in recent decades and is highly affordable today (Kerr et al., in press).

Several limitations to the present study should be acknowledged. First, we are unable to make causal inferences from this cross-sectional study, and thus cannot address the primacy of social causation versus social selection. Adjusting for alcohol history variables did result in substantially lower point estimates for almost all alcohol outcomes, confirming alcohol history as an important source of bias. Second, for most types of economic loss examined we lacked data on whether the respondent was affected directly or indirectly through someone in their household. Results presented in Table 2 might therefore underestimate associations between *personal* economic loss and alcohol outcomes, as suggested by the finding that partial and complete job loss experienced personally (but not at the household level) were significantly related to women’s alcohol consumption. Third, power limitations

precluded analyses of gender by age subgroups. Also, we had no or very limited data on prior history of unemployment and duration of job loss, both of which have been associated with adverse alcohol outcomes (Mossakowski, 2008). Finally, as noted earlier, our findings are based on detailed recession data collected only in the NAS landline telephone survey. Because cell phone use tends to be higher among young adults, exclusion of the cell phone sample could potentially bias the study's results. We explored this possibility by analyzing a single, general recession item present in both the landline and cell phone surveys ("Were you or anyone in your household negatively affected by the recession?"). The young adult, landline and cell samples were similar in their response (53.5% vs. 50.9%, respectively, indicated they were affected) and showed very similar associations between this and alcohol outcomes. Considering also the use of post-stratification weighting described earlier, the study results do not appear to be biased by the exclusion of the cell phone sample.

Despite these limitations, the current study is an important contribution to the literature on economic recessions and drinking behavior, much of which is based on aggregate-level studies. To our knowledge, this is the first study that employs nationally representative data to examine alcohol outcomes in relation to individual-level economic loss due to the 2008-9 U.S. recession in gender and age subgroups. Our findings suggest that earlier reports associating job loss with serious alcohol problems generalize to the contemporary, American labor force, despite repeated calls for public health interventions to mitigate the adverse effects of labor market contraction on problem drinking. In light of the multiple adverse alcohol outcomes observed among men and middle-aged Americans, these population groups may warrant special efforts aimed at linking them with alcohol screening and intervention services in future recessions.

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Table 1

Sample Characteristics and Economic Loss due to the 2008-9 U.S. Recession: U.S. National Alcohol Survey, 2009-2010 ($N = 5382$)

	No.	(Wtd. %)
Demographics		
Age		
18–29	436	(20.4)
30–39	642	(18.0)
40–49	951	(21.1)
50–59	1138	(17.2)
60+	2094	(23.3)
Race/ethnicity		
Non-Hispanic White	3133	(68.3)
Black	1040	(11.3)
Hispanic	1035	(13.1)
Other	174	(7.3)
Male	1937	(48.6)
Married/living with partner	2973	(64.1)
Education		
< High school diploma	627	(14.8)
High school dipl./some college	2745	(58.8)
College degree or higher	1982	(26.4)
Employment		
Employed	2658	(56.0)
Unemployed	367	(9.0)
Other	2346	(35.0)
Past-year individual income (tertiles), \$ ^a		
12,500	1567	(30.9)
> 12,500 – 30,000	1335	(27.6)
> 30,000	1705	(27.6)
Missing	775	(13.9)
Economic Loss Due to Recession		
Household affected by recession	2697	(52.2)
Loss of retirement savings	1319	(24.3)
Reduction in work hours/pay	1431	(31.5)
Personal reduction in hours/pay	838	(18.3)
Job loss	721	(16.4)
Personal job loss	382	(9.0)
Trouble paying rent/mortgage	732	(16.0)
Housing loss	144	(3.5)
Severity of loss ^b		
Moderate	1496	(27.6)

	No.	(Wtd. %)
Severe	778	(17.6)
Alcohol-related History		
Experienced alcohol-related health problems prior to recession	670	(14.6)
Had parent(s) with alcoholism	1206	(24.0)

No.: Unweighted numbers; Wtd: weighted

^a Individual income is the past-year household income divided by the number of family members residing in the house (respondent, spouse/partner, and # of children under age 18 for whom respondent is responsible).

^b Moderate loss includes loss of retirement savings, reduction in work hours/pay and/or trouble paying rent/mortgage. Severe loss includes loss of a job and/or housing.

Table 2

Associations between Economic Loss and Alcohol Consumption and Problems

	Alcohol Volume, logged	Monthly Drunkenness	2+ Negative Drinking Consequences	Alcohol Dependence
Type of Loss	<i>b</i> (SE)	OR (95%CI)	OR (95% CI)	OR (95% CI)
Household affected by recession				
Unadjusted	0.11(0.12)	1.19(0.81–1.75)	2.73(1.47–5.08)**	2.04(1.07–3.88)*
Model 1 ^a	0.10(0.11)	1.19(0.79–1.79)	2.67(1.39–5.14)**	2.14(1.09–4.19)*
Model 2 ^b	0.04(0.11)	1.08(0.71–1.64)	2.37(1.20–4.68)*	1.75(0.85–3.58)
Loss of retirement savings				
Unadjusted	0.53(0.14)***	1.10(0.70–1.74)	2.01(0.96–4.24) [†]	1.55(0.68–3.52)
Model 1	0.39(0.13)**	1.20(0.74–1.96)	2.51(1.11–5.70)*	2.12(0.90–4.99) [†]
Model 2	0.31(0.14)*	1.05(0.64–1.72)	2.07(0.91–4.73) [†]	1.58(0.65–3.86)
Reduction in work hours/pay				
Unadjusted	0.13(0.14)	1.28(0.83–1.97)	2.75(1.42–5.36)**	2.44(1.22–4.88)*
Model 1	0.06(0.13)	1.21(0.76–1.92)	2.48(1.24–4.99)*	2.46(1.19–5.06)*
Model 2	0.001(0.13)	1.11(0.69–1.77)	2.26(1.10–4.64)*	2.11(0.97–4.57) [†]
Job loss				
Unadjusted	0.32(0.18) [†]	1.94(1.19–3.19)**	4.73(2.29–9.80)***	3.75(1.79–7.85)***
Model 1	0.34(0.17)*	1.90(1.12–3.21)*	3.90(1.84–8.26)***	3.35(1.57–7.17)**
Model 2	0.27(0.17)	1.71(1.00–2.92)*	3.39(1.60–7.19)***	2.71(1.21–6.05)*
Trouble paying rent or mortgage				
Unadjusted	0.04(0.18)	1.48(0.87–2.51)	4.49(2.17–9.28)***	3.55(1.68–7.47)***
Model 1	0.21(0.17)	1.57(0.90–2.73)	4.13(1.96–8.71)***	3.32(1.57–7.00)**
Model 2	0.11(0.17)	1.32(0.75–2.32)	3.39(1.61–7.12)***	2.44(1.11–5.36)*
Housing loss				
Unadjusted	0.26(0.43)	2.48(0.98–6.34) [†]	12.53(4.84–32.44)***	8.24(2.96–22.95)***
Model 1	0.35(0.37)	2.33(0.82–6.61)	10.41(3.72–29.08)***	6.75(2.21–20.59)***
Model 2	0.29(0.36)	2.07(0.79–5.39)	9.52(3.69–24.60)***	5.93(2.07–16.99)***
Severity of Loss				
Unadjusted				
Moderate loss	0.22(0.13) [†]	0.96(0.61–1.51)	1.66(0.81–3.41)	1.50(0.65–3.44)
Severe loss	0.22(0.18)	1.79(1.09–2.93)*	4.45(2.16–9.17)***	3.55(1.71–7.36)***
Model 1				
Moderate loss	0.12(0.13)	0.95(0.59–1.54)	1.81(0.84–3.92)	1.72(0.73–4.05)
Severe loss	0.26(0.16)	1.77(1.05–2.99)*	3.73(1.77–7.86)***	3.19(1.50–6.78)**
Model 2				
Moderate loss	0.05(0.13)	0.85(0.52–1.38)	1.58(0.72–3.48)	1.39(0.56–3.46)
Severe loss	0.19(0.16)	1.60(0.94–2.73) [†]	3.26(1.54–6.90)**	2.61(1.17–5.79)*

Unstandardized beta coefficients and odds ratios shown. The reference group are those persons who experienced no recession-related economic loss of any type.

^aModel 1: Adjusted for gender, age, race/ethnicity, marital status, education.

^b Model 2 (fully adjusted model): Adjusted for all demographics in Model 1, history of alcohol-related health problems prior to the recession, and parental alcoholism.

*
 p .05,

**
 p .01,

 p .001,

†
 p .10.

Table 3

Alcohol Outcomes Regressed on Economic Loss: Summary of Significant Results within Gender and Age Groups

	Women		Men	
	Alc. Vol.	Alc. Vol.	Drunk.	2+ Conseq.
Loss of retirement savings	✓			
Reduction in hours/pay				
Household				
Personal	✓			
Job loss				
Household			✓	✓
Personal	✓	✓	✓	✓
Trouble paying rent/mort.			✓	✓
Housing loss			✓	✓
	Age 18-29		Age 30-49	
	2+ Conseq.	Alc. Vol.	Drunk.	2+ Conseq.
Loss of retirement savings				✓
Reduction in hours/pay				
Household				✓
Personal			✓	✓
Job loss				
Household	✓		✓	✓
Personal		✓	✓	✓
Trouble paying rent/mort.	✓			✓
Housing loss	✓		✓	✓

✓ indicates a significant, positive association at $p < .05$; no significant negative associations were observed. Logistic regressions used for all alcohol outcomes except alcohol volume, which entailed multiple linear regression. The reference group are those persons within the specified gender and age group who experienced no recession-related economic loss of any type. Models adjusted for gender (in age-stratified models), age (in gender-stratified models), race/ethnicity, marital status, education, history of alcohol-related health problems prior to the recession, and parental alcoholism.