Changes in heavy drinking following onset of health problems in a U.S. general population sample

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Abstract

Heavy episodic drinking is a well-established risk factor for heart disease, diabetes, certain cancers, stroke, hypertension and injuries, however, little is known about whether health problems precipitate changes in subsequent drinking patterns. Retrospective cohort analyses of heavy drinking by decade were conducted using data from the 2010 U.S. National Alcohol Survey (n=5,240). Generalized estimating equations models were used to predict any, monthly, and weekly heavy (5+) drinking occasions across decades of life following a diagnosis of hypertension, heart problems, diabetes, stroke, cancer, or serious injury. Experiencing heart problems was associated with higher odds of reduced weekly heavy drinking (adjusted odds ratio (OR_{adj}) = 3.5; 95% Confidence Interval (CI); 1.7–7.4). The onset of diabetes was also associated with higher odds of reducing any heavy drinking over the decade (OR_{adj}=1.7; 95% CI; 1.1–2.6). Cancer survivors were less likely to report no heavy drinking (OR_{adj}=0.5; 95% CI; 0.3–0.8) or no weekly heavy drinking (OR_{adj}=0.3; 95% CI; 0.2–0.7). Hypertension, stroke and injury were not found to have any significant associations. Reduced heavy drinking was more likely to be reported by Black drinkers following heart problems and Whites following a diabetes diagnosis. Increased heavy drinking following a cancer diagnosis was significant among women and Whites. Future studies on alcohol's heath and mortality risks should take into consideration effects of health problems on drinking patterns. Additionally, study results support increased prevention efforts targeting heavy drinking among cancer survivors, especially White women, and individuals with or being treated for hypertension.

Keywords

Alcohol; heavy drinking; cancer; diabetes; hypertension; injury; heart

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INTRODUCTION

The effects of health conditions on subsequent alcohol use patterns over the lifecourse have important implications for the design of studies aimed at estimating the reciprocal relationship of alcohol use on health and for optimizing treatment plans among those experiencing health conditions, particularly for alcohol-related health problems. First, the endogeneity of alcohol use patterns and health status over the lifecourse is among several important issues compromising the validity of most studies of alcohol's effects on health outcomes (Fillmore et al., 2006). The "sick quitter" effect (Shaper et al., 1988) suggests that some former drinkers quit in response to health problems, both alcohol-related and not, making use of former drinkers as controls problematic for analyses of alcohol's effects on health outcomes. Individuals' alcohol consumption patterns change from year to year (Kerr et al., 2002) and these changes have been linked to health outcomes (Fillmore et al., 2003). Furthermore, studies have identified relationships between life events such as divorce, financial problems, death of a relative, legal problems and health problems with changes in drinking, and found health problems to be mostly associated with reduced drinking (Veenstra et al., 2006). These studies have not clearly differentiated responses in drinking patterns over the lifecourse to different types of health problems or differential responses across demographic groups.

More recently, studies have focused on identifying significant changes in lifestyle behaviors, including alcohol use, following diagnosis or treatment for specific health conditions. An English study focusing on cancer found that diagnosis did not change the prevalence of daily or near daily alcohol use (Williams et al., 2013). A Danish study also found no change in alcohol consumption after a cancer diagnosis compared to the rest of the sample (Bidstrup et al., 2013). Among adults ages 50 and over, findings from the U.S. Health and Retirement Study showed declines in excessive alcohol consumption after diagnosis of cancer, diabetes, and stroke (Newsom et al., 2012a). An analysis of a Canadian sample, including participants who were aged 50 and older, also found that the prevalence of excessive alcohol consumption decreased among those diagnosed with diabetes and that the average number of drinks declined for those diagnosed with stroke or cancer (Newsom et al., 2012b). These studies provide mixed evidence of changes in certain drinking measures following a health diagnosis that also varied by health condition. In addition, none of these studies considered changes in the prevalence or the frequency of heavy drinking occasions following a diagnosis.

This study addresses the limitations of the prior literature by focusing on frequency of heavy drinking in relation to a specific set of prevalent health conditions assessed in the National Alcohol Survey, a cross-sectional adult sample of the U.S. population collected in 2009 and 2010. Heavy drinking over the lifecourse was assessed though retrospective questions on the frequency of heavy drinking days during the respondents teens', 20's, 30's and 40's (measured in "decades") in addition to past year drinking measures (Greenfield et al., 2014). This decades approach provides a unique perspective to capture changes in heavy drinking through specific life stages, and align them to a significant life event of a health diagnosis. Investigating both chronic and acute health problems, this study focused on hypertension, heart problems, diabetes, stroke, cancer and serious injury and the age at which these were

first diagnosed or identified (Kerr et al., 2015). Furthermore, given the underlying subgroup differences in heavy drinking in relation to health conditions, analyses on the probability of heavy drinking in each decade following the date of first being diagnosed with each health issue were examined separately for men and women, and by racial/ethnic groups of non-Hispanic Whites, non-Hispanic Blacks, and Hispanics. We generally hypothesize that the onset of health problems will result in reduced heavy drinking prevalence and frequency but also anticipate that not all health problems will have the same effect and that not all sub-groups will be affected in the same way in response to each health condition.

METHODS

Data

The 2010 U.S. National Alcohol Survey (2010 NAS) was a Computer Assisted Telephone Interview (CATI) household survey of the U.S. adult population aged 18 or older. Conducted for the Alcohol Research Group by ICF Macro between June 2009 and March 2010, the 2010 NAS utilized a sampling frame of all 50 states and the District of Columbia and included a base sample and racial/ethnic minority oversamples of Hispanic and African American populations. One adult in the surveyed household was randomly selected for interview. The average interview time was 55 minutes and the cooperation rate was 49.9%. This cooperation rate is consistent with those from other national household telephone surveys (Dutwin and Lavrakas, 2016). The study was approved by the Public Health Institute Institutional Review Board (IRB #I14-007).

Measures

Lifetime heavy drinking was assessed from a series of questions on the frequency of heavy drinking across respondents' lifetime beginning with the age of drinking onset through respondents' current age at interview. These questions were situated within each decade of life: teens, 20s, 30s, and 40s. For each decade, respondents were asked their frequency of drinking five or more (5+) drinks on one occasion using the following response options: "every day or nearly every day", "at least once a week", "at least once a month", at least once a year", and "never" (Greenfield et al., 2014). For those aged 50 and older, we calculated 5+ frequency during the last 12 months prior to the interview date, utilizing graduated frequency series items on 12 or more, 8–11 and 5–7 drinks (Greenfield, 2000). Drinks were defined as the U.S. standard (14 grams of ethanol) through examples of beer, wine and liquor pours. Given our hypothesized relationship that the onset of a health condition is associated with reduced heavy drinking, we reverse coded the outcome focusing on changes at three levels: no heavy drinking, no monthly heavy drinking, and no weekly heavy drinking.

Health condition onset was derived from a series of questions asking "have you ever been told by a doctor or other health professional that you had [health condition]?" Those who answered yes were asked, "at what age were you first told." Age of onset for "hypertension or high blood pressure", "heart or coronary problem", "diabetes", "stroke", "cancer", and "injuries" from a serious accident was assessed and examined. For those between the ages of 40 and 69, we captured onset of disease up to two years prior to the interview age. We

excluded respondents, ages 40–69, diagnosed less than two years prior to interview age to avoid overlap with the past year drinking measure.

Demographic and socioeconomic characteristics include gender, age at interview, race/ethnicity (White, Black, Hispanic, other), marital status (married, separated/divorced/widowed, never married), highest education level (less than high school, high school graduate, some college, and college graduate or more), household income (less than $20k, $20k–<$40k, $40k–<$60k, $60k–<$80k and more than $80k), employment status (full or part time employment, unemployed, retired, homemaker, and others). All variables served as control variables for the final models. Separate analyses were also performed by gender and race/ethnicity.

Statistical Analysis

Of the total 6,855 respondents in the sample, we restricted the analysis to respondents with no missing data on age and those younger than 70 years old for an analytic sample of 5,240. Thus the analysis was focused on respondents ages 20 to 69 using their heavy drinking status in their 20s, 30s, 40s, and among those ages 50–69, current heavy drinking status. The analysis capitalized on the retrospective lifecourse drinking patterns by maximizing all available alcohol data. For example, heavy drinking in the 20s was examined for all respondents ages 20–69, while for those ages 30–69 and ages 40–69, heavy drinking in the 30s and 40s, respectively, were examined. Among those ages 50–69, the current interview's measure of heavy drinking that occurred in the past 12 months was used to capture heavy drinking in the 50s or 60s. Table 1 shows the valid sample size for each age group and the corresponding heavy drinking prevalence at each age period.

As our main research aim was to estimate the effect of health condition onset on heavy drinking, to address the problem of temporality, we aligned the outcome of heavy drinking status so that the behavior occurred in the decade after the age of onset of health condition. This ordering is illustrated in Table 1. For example, in the 20–69 age group column, we report the heavy drinking prevalence that occurred in the 20s and earlier for the corresponding health condition that was first diagnosed before age 20. Note that a person is coded as positive for health condition onset within a given period (i.e., ages 20–29) only when the age of onset falls in that same period. Thus, for a person aged 65 at the time of the interview with a reported diagnosis of heart disease at age 35, this person was coded as positive for heart disease onset during the age period 30–39, and negative for all other age periods (before 20s, 20 to 29, and 0 to two years before the interview date).

These data are clustered such that an individual has repeated measures of drinking and disease observations that are organized by age period: 20–29, 30–39, 40–49, and 50–69. To account for the clustering, a Generalized Estimating Equation (GEE) model is used to estimate the effects of prior disease onset on *subsequent* heavy drinking. In addition to demographics and socioeconomic characteristics, predictors in the models included prior decade heavy drinking (i.e. during teens for those 20–29). Furthermore, an indicator for decades was entered in the models to account for the general heavy drinking trajectory over time. Including these past heavy drinking and trend measures allows the estimated odds ratios to reflect differential reductions or increases in the risks of heavy drinking by those

experiencing each health condition in relation to those with similar past drinking trajectories. Data were weighted in all analyses to adjust for the probability of selection (multiple phone lines and number of adult residents in households), ethnic oversampling, and non-response. Data were also post-stratification weighted to reflect the U.S. adult (18+) population proportions by age group, gender and ethnicity by region.

RESULTS

Table 1 provides descriptive data showing the prevalence of heavy (5+) drinking frequency at each time period: during 20s (for all respondents age 20–69), 30s (for those ages 30–69), 40s (for those ages 40–69) and 50s or 60s (for those ages 50–69). As expected, prevalence of heavy drinking declines with age. Also shown in Table 1 (lower section) is the prevalence of health condition onset (i.e., hypertension, heart disease, diabetes, stroke, cancer and injury) by age period: before 20, 20–29, 30–39 and 40–67. The onset of the majority of health conditions occurred during the oldest age group. The most prevalent health condition is hypertension, followed by diabetes and heart disease.

To provide context regarding non-health factors associated with subsequent drinking, Table 2 shows the GEE model results predicting no heavy drinking by demographic and socioeconomic characteristics, the time indicators as well as prior heavy drinking. This model excludes the health condition variables. As seen in Table 2, both prior heavy drinking and time are strong predictors, with people less likely to drink heavily at older ages. Women, Black and Hispanic groups were less likely to drink heavily, while those never married and in the highest income group were more likely to drink heavily. A quadratic relationship was seen between age at interview and no heavy drinking.

Controlling for demographic and prior decades heavy drinking variables, Table 3 shows the adjusted odds ratios (OR) of each health condition onset, controlling for the onset of the other health conditions, predicting three heavy drinking outcomes separately: no heavy drinking, no monthly heavy drinking and no weekly heavy drinking, in GEE models. Diabetes onset significantly predicted having no heavy drinking days (OR = 1.65). While heart disease onset was also positively associated with no heavy drinking days (OR = 1.51), the estimate was not statistically significant. Both heart disease and diabetes were positively associated with having no monthly heavy drinking days with only heart disease having a significant relationship (heart disease $OR_{adj} = 1.85$; diabetes $OR_{adj} = 1.77$). Only heart disease significantly predicted having no weekly heavy drinking days ($OR_{adj} = 3.48$). Cancer onset was found to be negatively related to no heavy drinking in all three outcomes with OR's ranging from 0.31 to 0.50, significant for no heavy drinking days and no weekly heavy drinking, and marginally significant for no monthly heavy drinking. It is also important to note that hypertension and serious injury do not appear to be related to the likelihood of heavy drinking.

Taking into consideration potential subgroup differences, we then examined the effect of health condition onset on heavy drinking by gender and separately by race/ethnicity in GEE models. Due to the low prevalence of heavy drinking and disease onset, we limited our analysis to the no heavy drinking days measure and we conducted separate, rather than joint

models for gender and race/ethnicity. The results are shown in Table 4. Heart disease and diabetes onset were associated with reporting greater likelihood of no heavy drinking for men at a marginal significance level, and diabetes onset was positively associated with no heavy drinking for women, but the estimate was not significant. Cancer onset was significantly associated with increased or continued heavy drinking for women.

Some interesting variations were observed between racial/ethnic groups. For Whites, diabetes onset was associated with no heavy drinking while cancer onset was found to be associated with increased heavy drinking, similar to the results in Table 3 for the total sample. For Blacks, heart disease onset was strongly associated with no heavy drinking, while stroke onset was associated with subsequent heavy drinking. For Hispanics, stroke onset was significantly associated with no heavy drinking. The above results related to stroke should be taken with caution due to the low prevalence of stroke as shown in Table 1.

DISCUSSION

This study contributes to the alcohol-health field by investigating how individuals' heavy drinking behaviors may change as a result of a diagnosis or treatment of a health problem, and furthermore, distinguishing changes in drinking based on type of health condition. Our analyses suggest differential relationships between the onset of health conditions and problems and later heavy drinking. Analyses of hypertension and serious injury indicate that these do not appear to have any impact on heavy drinking. Cancer onset appears to be associated with increased heavy drinking, with the strongest effects seen for women and Whites, while this effect does not appear to influence heavy drinking among men, Blacks or Hispanics. Previous studies noted a decrease in heavy alcohol use among cancer survivors. (Park et al., 2015) Drinking post cancer diagnosis is associated with increased mortality, (Lambert et al., 2005; Mayne et al., 2009; Weaver et al., 2013) or reoccurrence (Kwan et al., 2013) for breast cancer and head and neck cancers. Stroke onset was found to have mixed associations and, given the low prevalence of stroke in the study sample, results are not definitive. These results raise important concerns regarding whether U.S. adults are aware of, or being advised about, appropriate reductions in heavy drinking following a diagnosis or onset of a health problem.

We also found that the onset of heart problems and diabetes were associated with reduced heavy drinking. Heart or coronary problem onset was associated with reduced heavy drinking frequency overall and stronger effects were found among men and Blacks. Diabetes onset was associated with reduced prevalence of heavy drinking and this effect was confirmed or suggested in all subgroups with similar odds ratios in all groups except for Blacks who had much higher and statistically significant odds of not having any heavy drinking days. Thus, in health care settings, additional education and intervention efforts should be tailored to Blacks to reduce heavy drinking following onset of diabetes.

Previous research has found reductions in drinking frequency and volume to be associated with a variety of heath measures, although primarily among older drinkers. A British study of changes in alcohol consumption patterns over a ten-year period among older adults ages 61–85 found that changes were quite common, and occurred in both directions with 40%

reducing and 11% increasing their drinking. Experiencing illness, medication adherence, and taking health precautions were among the most prevalent reasons for reducing alcohol use, together with fewer social occasions (Britton and Bell, 2015). Using data from the National Epidemiologic Survey on Alcohol and Related Conditions 2001–02 sample and 3 year follow-up, factors for alcohol use cessation varied over the lifecourse with health-related correlates of lower self-reported health status and cardiovascular disease incidence being more salient factors at older ages, although liver disease was an important health factor for younger drinkers (Dawson et al., 2012). A 10-year longitudinal study of an English sample of older adults found that declining self-reported health status as well as continued fair/poor health status were associated with greater reductions in alcohol use over time compared to improving or continued good health status (Holdsworth et al., 2016).

Understanding the potential impact of specific health problems on drinking over the lifecourse is an important step in the development of causal models for estimating the impact of drinking patterns on health outcomes. Our previous analysis of the 2005 NAS found that estimated protective effects of moderate alcohol consumption on heart problems and hypertension were not observed after lifetime drinking and other characteristics were controlled though propensity score matching (Kerr and Ye, 2010). However, a protective effect for diabetes did remain. The endogeneity of drinking and health is a key area of concern regarding studies of alcohol's health and mortality risks (Stockwell et al., 2016). Our analyses indicate that while some health problems appear to result in appropriate reductions in heavy drinking, others do not. Furthermore, these reductions are not consistent across gender and race/ethnicity indicating more complexity to these relationships than we had originally hypothesized. These findings emphasize the importance of research studies utilizing longitudinal and prospective designs to address causality and timing proximity issues as well as qualitative studies aimed at understating motivations for drinking change among those experiencing these health conditions.

Study findings should be taken into consideration with the following limitations. First, heavy drinking frequency and year of health problem onset are based on retrospective questions. Generally good test-retest reliability has been found for our decades-based heavy drinking measure (Greenfield et al., 2014) as well as for an alternative decades-based retrospective drinking measure relying on questions about quantity, frequency and 6+ days (Bell and Britton, 2015). Our use of age of health problem onset does not require complete accuracy because in our modeling, health problems are located within age decades rather than specific ages. However, as a result of these wider time periods, there is a variable time lag between the health problem onset and subsequent drinking decade that reduces the specificity of the link between heath onset and heavy drinking changes. Further, only the age of first diagnosis was asked and so subsequent health events of the same kind were not included in the model.

In addition to the implications for future research studies of alcohol-related health outcomes, our results point to several prevention and clinical implications. Study findings showed that drinkers diagnosed with hypertension are not reducing heavy drinking, a behavior which carries a sustained risk for continued high blood pressure and, if left untreated, long-term effects on the heart. Heavy drinking has been found to be associated with poor adherence to medication and behavioral lifestyles resulting in poor management of hypertension (Cook

and Cherpitel, 2012). Better access to care and interventions for individuals with alcohol-related health problems could potentially improve disease management, treatment adherence and overall health (Cook and Cherpitel, 2012). Findings of increased heavy drinking among cancer patients and survivors are of particular concern as many cancers are alcohol-related, and continued heavy drinking can increase risk for mortality or recurrence, although this relationship is not widely enough recognized (Nelson et al., 2012). It may be that cancer survivors increase drinking as part of an enhanced focus on enjoying life following their recovery. Previous studies have not found higher rates of heavier drinking in cancer survivors as compared to the general population (Wang et al., 2015). However, the alcohol pattern measures available in these studies may have limited their ability to observe changes in heavy drinking.

CONCLUSIONS

For the general population, interventions to encourage reductions to non-binge levels of drinking may be important for those with or recovering from hypertension, cancer and serious injuries. The behavior changes seen following heart problems and diabetes onset indicate that positive reductions in heavy drinking following these health problems occur and efforts to build on these effects for drinkers with the other health conditions are also warranted.

Acknowledgments

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Highlights

- Diabetes and heart problem onset related to reductions in heavy drinking

- Cancer survival associated with increased heavy drinking

- No changes in heavy drinking after hypertension or injury

Table 1

Prevalence of lifetime heavy drinking frequency and health condition onset during the prior period for each lifetime decade group, U.S. 2010 National Alcohol Survey.

Age group	20–69 (n=5,168)	30–69 (n=4,694)	40–69 (n=3,876)	50–69 (n=2,717)
Frequency of Heavy Drinking	20s	30s	40s	50s or 60s[a]
Never	40.4%	51.0%	61.7%	86.3%
Yearly	12.8%	18.3%	17.6%	7.4%
Monthly	18.5%	15.6%	10.9%	2.6%
Weekly	28.3%	15.1%	9.7%	3.8%
Health condition onset	<20	20–29	30–39	40–67[b]
Hypertension	1.6%	4.1%	7.1%	30.6%
Heart disease	1.6%	0.9%	1.4%	11.2%
Diabetes	0.8%	1.0%	2.6%	12.1%
Stroke	0.2%	0.1%	0.4%	3.5%
Cancer	0.0%	0.9%	1.2%	6.9%
Injury	5.6%	5.2%	4.4%	9.4%

[a]Heavy drinking in the 50s or 60s was measured from past 12-month status at the time of the interview.

[b]Health condition onset was required to be at least 2 years before respondents interview.

Table 2

Odds Ratios (OR) and 95% Confidence Intervals (CI) from a GEE model predicting No Heavy Drinking Days in a decade across lifetime decades for those aged < 70, U.S. 2010 National Alcohol Survey (N=5,186)

	OR	95% CI
Gender- male	0.46	(0.40, 0.53)
Age at interview, continuous	0.90	(0.85, 0.95)
Age at interview, squared	1.001	(1.0006, 1.0017)
Ethnicity (White ref)		
Black	1.59	(1.28, 1.98)
Hispanic	1.30	(1.04, 1.62)
other	1.34	(0.98, 1.83)
Marital status (married ref)		
Separate/divorced	0.82	(0.66, 1.02)
Widowed	0.96	(0.74, 1.25)
Never married	0.73	(0.57, 0.93)
Education (< HS grad ref)		
High school grad	0.98	(0.76, 1.27)
Some college	1.00	(0.76, 1.31)
College grad/more	1.12	(0.86, 1.47)
Household income ($20k ref)		
20,001–40k	0.90	(0.71, 1.15)
40,001–60k	0.82	(0.63, 1.07)
60,001–80k	0.80	(0.60, 1.08)
>80k	0.71	(0.54, 0.92)
Missing	1.47	(1.10, 1.96)
Employment (Employed ref)		
Unemployed	0.91	(0.70, 1.17)
Retired	0.88	(0.71, 1.10)
Homemaker	1.30	(0.95, 1.78)
Other	1.05	(0.82, 1.35)
Time (20s ref)		
30s	5.92	(4.87, 7.19)
40s	7.94	(6.58, 9.58)
50s/60s	39.86	(30.66, 51.82)
No 5+ prior period	27.51	(23.06, 32.82)

Table 3

Adjusted Odds Ratios (OR) and 95% Confidence Intervals (CI) from GEE models predicting decades no heavy drinking frequency levels by prior period disease status, U.S. 2010 National Alcohol Survey[a]

	OR	95% CI
No Heavy Drinking		
Hypertension	0.80	(0.59, 1.10)
Heart disease	1.51	(0.89, 2.54)
Diabetes	1.65	(1.05, 2.61)
Stroke	0.61	(0.22, 1.70)
Cancer	0.46	(0.26, 0.84)
Injury	1.13	(0.82, 1.56)
No MONTHLY Heavy Drinking		
Hypertension	0.97	(0.67, 1.41)
Heart disease	1.85	(1.03, 3.33)
Diabetes	1.77	(0.99, 3.16)
Stroke	1.00	(0.33, 3.04)
Cancer	0.50	(0.25, 1.00)
Injury	1.34	(0.93, 1.94)
No WEEKLY Heavy Drinking		
Hypertension	0.69	(0.47, 1.02)
Heart disease	3.48	(1.65, 7.36)
Diabetes	1.15	(0.41, 3.21)
Stroke	1.13	(0.31, 4.11)
Cancer	0.31	(0.15, 0.66)
Injury	1.11	(0.76, 1.63)

[a]Dependent variables, in separate GEE models, are No 5+, No Monthly 5+, and No Weekly 5+, each in decades following onset of specific condition. All models control for gender, age, age-squared, race/ethnicity, marital status, education, household income, employment status, and time (decades).

Table 4

Adjusted Odds Ratios (OR) and 95% Confidence Intervals (CI) from GEE models predicting <u>no heavy drinking days</u> in each decade, U.S. 2010 National Alcohol Survey.[a] Separate models were estimated by gender and by race/ethnicity group.

	OR	95% CI
Men		
Hypertension	0.77	(0.50, 1.19)
Heart disease	1.78	(0.99, 3.20)
Diabetes	1.66	(0.92, 2.99)
Stroke	0.59	(0.17, 2.01)
Cancer	0.53	(0.23, 1.23)
Injury	1.16	(0.75, 1.81)
Women		
Hypertension	0.83	(0.55, 1.27)
Heart disease	1.15	(0.45, 2.94)
Diabetes	1.68	(0.83, 3.38)
Stroke	0.76	(0.11, 5.41)
Cancer	0.41	(0.18, 0.94)
Injury	1.08	(0.71, 1.63)
White		
Hypertension	0.71	(0.49, 1.03)
Heart disease	1.46	(0.80, 2.66)
Diabetes	1.73	(1.01, 2.98)
Stroke	0.83	(0.22, 3.05)
Cancer	0.47	(0.25, 0.91)
Injury	1.14	(0.79, 1.65)
Black		
Hypertension	0.79	(0.39, 1.62)
Heart disease	7.19	(2.19, 23.59)
Diabetes	4.18	(0.60, 29.25)
Stroke	0.06	(0.02, 0.21)
Cancer	0.92	(0.29, 2.91)
Injury	2.07	(0.85, 5.05)
Hispanic		
Hypertension	1.52	(0.64, 3.61)
Heart disease	0.83	(0.26, 2.65)
Diabetes	1.55	(0.47, 5.09)
Stroke	22.42	(1.14, 442.47)
Cancer	3.01	(0.55, 16.65)
Injury	1.01	(0.31, 3.30)

[a]All models control for prior heavy drinking (5+), gender, age, age-squared, race/ethnicity, marital status, education, household income, employment status, and time (decades).