The Impact of Smoking Bans in Bars and Restaurants on Alcohol Consumption, Smoking, and Alcohol-Related Externalities*

Anne M. Burton†

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Smoking bans in bars and restaurants are one example of the many ways in which governments intervene to correct market failures such as externalities. These bans also represent a change in a non-price determinant of demand for alcohol consumed at bars, which could affect total alcohol consumption. This paper studies the effects of smoking bans on the amount and location of alcohol consumption, smoking, and alcohol-related externalities. I use a difference-in-differences method that exploits variation in the effective dates of smoking bans in bars and restaurants across cities, counties, and states. For individuals who drink, smoking bans result in an average increase in alcohol consumption of 1 drink per month. Occasional smokers drink an additional 2 drinks per month and former smokers drink 1 additional drink per month. These increases are most likely driven by changes in bar and restaurant alcohol consumption. Smoking bans have essentially no effect on extensive-margin smoking or violent crimes. They do, however, lead to a 4% increase in fatal drunk-driving crashes in areas with a high prevalence of smoking. Taken together, these results imply that smoking bans lead to unintended consequences in the form of increased alcohol consumption and drunk driving.

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†Ph.D. Candidate, Department of Economics, Cornell University. Email: amb622@cornell.edu

1 Introduction

Governments have long intervened to correct market failures, often through the regulation of goods that generate externalities. In the case of cigarettes, smoking bans in bars and restaurants are one such regulation. Ever since the 1964 Surgeon General's report linked smoking cigarettes to adverse health consequences, federal, state, and local governments have implemented numerous policies to minimize the prevalence of smoking and mitigate the externalities generated by secondhand smoke. Examples of such policies include cigarette taxes, minimum purchasing ages for tobacco, and smoking bans in bars and restaurants, the last of which is the focus of this paper.

Smoking bans in bars and restaurants represent 1) a transfer of the property rights over the air in bars from smokers to nonsmokers and 2) a change in a non-price determinant of demand for alcohol consumed in bars. This change in a non-price determinant of demand may differentially affect smokers and nonsmokers. If nonsmokers derive disutility from cigarette smoke, then a smoking ban in a bar increases a nonsmoker's utility of drinking in a bar, ceteris paribus. For smokers, revealed preference suggests that they derive utility from being able to smoke while they drink at a bar. In this case, a smoking ban would lower a smoker's utility from drinking in a bar, ceteris paribus. Indeed, many a bar owner predicted that a smoking ban would cause smokers to substitute drinking at bars for drinking at home (to the detriment of bar owners' bottom lines). However, the newfound inability to smoke in the bar is not the only change occurring. If individuals derive utility from the presence of other patrons, and if a smoking ban encourages nonsmokers to visit bars more often, then both smokers and nonsmokers may find the bar to be a more enjoyable place because more

friends are there.[1] Consequently, the net effect of smoking bans on smokers' (and to a lesser extent, nonsmokers') utility is theoretically ambiguous.

As with smoking bans' effect on utility from drinking at a bar, their effect on total alcohol consumption is a priori uncertain. Any change in marginal utility from drinking at a bar will change the marginal rate of substitution between drinking at a bar and drinking at home. Nonsmokers, for example, may substitute away from alcohol consumed at home to alcohol consumed at a bar. Alternatively, through habit formation or addiction, individuals may drink more at bars without reducing how much they drink at home. Therefore, the effect of smoking bans on total alcohol consumption is also ambiguous.

Do smoking bans in bars and restaurants affect overall alcohol consumption and are there heterogeneous effects for smokers and nonsmokers? Analyzing whether there are heterogeneous effects for smokers and nonsmokers is complicated by the potential endogeneity of smoking status, as some individuals may change their smoking behavior after these bans are implemented. If smoking bans lead to changes in smoking status, and if such changes are correlated with alcohol consumption, then estimates of the effect of smoking bans on alcohol consumption *by smoking status* would be biased. To address this potential endogeneity issue, this paper also investigates whether these bans affect the prevalence of smoking. If I find no effect of smoking bans on extensive-margin smoking, then I can more plausibly interpret the effects on alcohol consumption by smoking status as causal.

I find that, conditional on drinking alcohol in the past 30 days, smoking bans in bars and restaurants lead to an increase of one serving of alcohol per 30 days (a 4% increase).

[1] Conversely, for those who view increasing numbers of patrons in a bar as a congestion externality, a more crowded bar may be less enjoyable.

The effects are driven by changes in alcohol consumption for current and former smokers (as opposed to individuals who have never smoked), and they are most likely due to increases in bar and restaurant alcohol consumption. Smoking bans have essentially no effect on the prevalence of smoking.

To estimate the effects of smoking bans in bars and restaurants on smoking and drinking, I use the 2004-2012 waves of the Nielsen Consumer Panel and the Behavioral Risk Factor Surveillance System. The Nielsen Consumer Panel dataset includes measures of household geographic location, demographic characteristics, cigarette purchases and alcohol purchased for off-premises consumption, which I use to infer smoking status and measure alcohol consumed at home (using alcohol purchased for off-premises consumption as a proxy for home consumption). The Behavioral Risk Factor Surveillance System (BRFSS) dataset includes measures of individual geographic location, demographic characteristics, smoking status, and total alcohol consumption (but not location of consumption), which I use to measure extensive-margin smoking and total alcohol consumption. To deal with the observational-unit mismatch between the BRFSS and the Nielsen Consumer Panel (individual level versus household level), I aggregate each dataset to the county-month level using the respective sample weights. Under the assumption that total alcohol consumption equals alcohol consumption at home plus alcohol consumption at bars or restaurants, I can estimate the effect on alcohol consumption at bars and restaurants for different "types" of smokers.[2]

I use a difference-in-differences method where my identifying variation is the date of implementation of a smoking ban in bars and restaurants. The two primary assumptions

[2]Using BRFSS data, I define frequent smokers as those who smoke every day. Occasional smokers report smoking some days. Never smokers have never regularly smoked cigarettes (which in the BRFSS is defined as smoking at least 100 cigarettes in one's lifetime). Former smokers used to smoke every day or some day but they have quit.

needed for a difference-in-differences method are 1) that there are no concurrent changes in the treated jurisdictions that affect the outcome variables, conditional on the control variables, and 2) that in the absence of smoking bans, trends in the outcomes, conditional on the control variables, would be the same across the treatment and control groups. The plausibility of the first assumption is enhanced as I control for numerous demographic, economic, and policy variables.

This paper contributes to a vast literature in health economics on policies that target smoking and drinking, their respective effects on cigarette and alcohol consumption, and their effects on related externalities.[3,4] It also relates to an important but understudied literature on the interaction of risky health behaviors and their externalities (exceptions include Adams and Cotti, 2008; and Anderson, Hansen, and Rees, 2013).

Unlike earlier studies of the effects of smoking bans on alcohol consumption (e.g. Picone, Sloan, and Trogdon, 2004; and Koksal and Wohlgenant, 2016), I incorporate city and county-level smoking bans, which reduces the measurement error in the treatment status and, furthermore, allows for incorporating the effects of the spatial heterogeneity in the laws. The latter is crucial for understanding the potential behavioral responses. Many of the early laws were implemented at the county and city level. States have tended to implement smoking bans after some of their cities or counties implemented such bans. Spatial heterogeneity in the laws generates multiple margins along which individuals can behaviorally respond. If smokers want to avoid the ban, they can travel to a nearby city or county without a smoking

[3]Other papers on smoking study the effects of policies such as cigarette taxes, smoking bans, and clean indoor air laws (Adda & Cornaglia, 2006; Adda & Cornaglia, 2010; Anger et al., 2011; Evans et al., 1999; Kvasnicka et al., 2018, and many others).

[4]Other papers on alcohol consumption study the effect of policies such as the Minimum Legal Drinking Age and restrictions on the sale of off-premises alcohol on Sundays (Carpenter et al., 2016; Lovenheim and Steefel, 2011; Nilsson, 2017; and many others).

ban in order to smoke while drinking at the bar. Similarly, in some jurisdictions, smokers can substitute bars for gambling facilities. In some localities, gambling facilities are not included in bar and restaurant smoking bans. Other jurisdictions are near Native American reservations that have gambling facilities, which are not subject to state and local smoking bans because they are sovereign.

This paper also contributes to the economics of crime literature on the relationship between alcohol consumption and crime[5] and to the public economics literature on the spatial spillover effects of local policies and the optimal regulation of externalities.[6] The spatial heterogeneity in the laws and the potential changes in the amount and location of alcohol consumption give rise to competing externalities. On the one hand, smoking bans in bars and restaurants address the secondhand-smoke externalities that smokers impose on bar and restaurant workers and the other patrons. On the other hand, smoking bans may also generate changes in the incidence of alcohol-related externalities. If individuals drink outside the home more as a result of smoking bans, they may engage in more social interactions, some of which generate negative externalities (e.g. bar fights and sexual assaults). Drinking outside the home may also be associated with increases in the prevalence of drunk driving. If individuals drink more at home, they may be more susceptible to committing or being victims of domestic violence.

Smoking bans in bars and restaurants lead to an average (intensive-margin) increase in past-30-day alcohol consumption of approximately 1 drink. These increases are concentrated among occasional smokers (2.2 more drinks per month), former smokers (1.4 more drinks

[5] Anderson et al. (2018), Hansen (2015), Lindo et al. (2018), Markowitz and Grossman (1998), Tomé (2019).

[6] e.g. Beard et al. (1997), Beatty et al. (2009), Cawley et al. (2019), Lovenheim (2008), Lovenheim and Slemrod (2010), Ogawa and Wildasin (2009), and Stehr (2007).

per month), and frequent smokers (1.2 more drinks per month; not statistically significant). I find no effect on alcohol consumption at the extensive margin for any smoking status. I can rule out changes in the prevalence of alcohol consumption of greater than approximately 2.75 percentage points in either direction with the 95% confidence interval.

For alcohol purchased for off-premises consumption, I find small declines in the total quantity of alcohol purchased in the past month (-0.35 servings of alcohol). This effect is statistically significant at the 5% level. I find corresponding small but generally imprecise declines in the prevalence of purchasing alcohol for off-premises consumption in the past month. These declines in the total quantity and the prevalence of alcohol purchased for off-premises consumption occur for both smokers and nonsmokers, although not all of the subgroup results are statistically significant. Nevertheless, I can rule out economically meaningful increases in both the amount and prevalence of alcohol purchases for off-premises consumption, implying that the increase in total alcohol consumption is driven entirely by increases in bar and restaurant alcohol consumption.

With respect to smoking bans in bars and restaurants' effect on extensive-margin smoking, I find essentially no effect of smoking bans on smoking prevalence. I can rule out changes in smoking status (frequent, occasional, never, and former smokers) of larger than 0.6 percentage points in either direction at the 95% confidence level. However, given the low prevalence of occasional smoking, the 0.22 percentage point increase in occasional smoking is marginally statistically significant and represents a small (4%) increase in the prevalence of occasional smoking.

In a secondary analysis, I use the Uniform Crime Reports (UCR) and the Fatality Analysis Reporting System (FARS) for 2004-2012 to estimate the effects of these smoking bans on

alcohol-related externalities. I am unable to reject the null hypothesis of no effect of smoking bans on the crime rate for various violent crimes. In this context, a small (4%) increase in alcohol consumption does not appear to translate into increases in the more socially costly alcohol-related externalities. However, I do find small increases (4%) in fatal drunk driving crashes in areas with a high prevalence of smoking.

The next section of the paper (section 2) describes the data sources and institutional details of bar and restaurant smoking bans. Section 3 details the methods, key assumptions, and potential violations of key assumptions for the effects on smoking and drinking. My main results of the effect of smoking bans in bars and restaurants on alcohol consumption are in section 4. Section 5 contains the results for the measures of smoking. In section 6, I present results for the alcohol consumption measures disaggregated by smoking status. Section 7 outlines the reduced-form models and results for alcohol-related externalities. In section 8, I estimate a variety of alternative specifications and robustness checks. Section 9 concludes.

2 Data

I use several data sources in my analysis, all of which are described in further detail below. The measures of "treatment" (effective dates of smoking bans in bars and restaurants) come from the American Nonsmokers' Rights Foundation. For measures of alcohol consumption and location of alcohol consumption by smoking status, I use the Behavioral Risk Factor Surveillance System (BRFSS) and the Nielsen Consumer Panel. For data on alcohol-related crimes, I use the Uniform Crime Reports (UCR).

All of my smoking and drinking-related data contain county-level geographic identifiers. My sample period is 2004-2012 because those are the years I have consistent county identifiers for all of the datasets I use. The Nielsen Consumer Panel does not start until 2004, which I why I start my sample period then. I end in 2012 because starting with the 2013 wave, BRFSS stopped reporting county-level identifiers in the aggregated dataset due to privacy concerns. For the crime data, I use the same years for consistency, but my geographic unit is the agency level.

2.1 Measures of Alcohol Consumption and Smoking Status

I use measures of alcohol consumption from the Behavioral Risk Factor Surveillance System (BRFSS) and the Nielsen Consumer Panel dataset. The BRFSS data contain information on self-reported smoking status and frequency and amount of alcohol consumption. The BRFSS data do not include information on location of alcohol consumption. The raw BRFSS data are at the individual level. For my sample period, 2004-2012, 80-90% of observations in the BRFSS contain county identifiers (see figure 1).[7] During this period, nearly all states (and Washington, D.C.) participate in the BRFSS each year.[8] The BRFSS is designed to be representative at the state level.

The Nielsen data contain self-scanned cigarette and alcohol purchases at the household level from grocery stores, convenience stores, liquor stores, and other sources of off-premises consumption. The Nielsen data contain geographic identifiers as detailed as the zip code level, but for my purposes, I only need the county identifier. Nielsen's sampling procedures

[7]Not all observations have the county-level geographic identifiers because BRFSS suppresses county identifiers if fewer than 50 respondents live in the same county.

[8]Hawaii did not participate in the BRFSS in 2004.

are designed such that the data are representative at the national level.

For measures of smoking, both the BRFSS and the Nielsen trend similarly with other datasets that measure adult smoking in the U.S. For extensive-margin smoking, the BRFSS is consistent with the level and trend in the prevalence of smoking as measured by the Tobacco Use Supplement to the Current Population Survey (CPS-TUS), the National Health and Nutrition Examination Survey (NHANES), the National Health Interview Survey (NHIS), and the National Survey on Drug Use and Health (NSDUH) (see figure 2). Of note, there is an uptick in self-reported smoking in the BRFSS in 2011, which is the year the BRFSS started sampling using cell phones in addition to the usual landlines. For the (unconditional) average number of cigarettes smoked per day in the U.S. (full margin), the levels as measured by the Nielsen Consumer Panel (which reflect purchases as opposed to consumption) are consistently lower than the other four datasets mentioned previously (TUS, NHANES, NHIS, and NSDUH) but the trends are parallel (see figure 3).

The BRFSS and the Nielsen Consumer Panel have mismatched observational units (BRFSS is individual level but Nielsen is household level). In order to make my estimates and data consistent across datasets, I use the respective sample weights and aggregate each dataset to the county-month level.

Table 1 shows summary statistics for alcohol consumption for smokers and nonsmokers (BRFSS data). Smokers drink more than nonsmokers. The average adult reports consuming 12 servings of alcohol in the past 30 days; the average smoker consumes 17 drinks over 30 days while the average nonsmoker consumes 9 drinks in 30 days (the difference is statistically significant at the 1% level). Smokers are also slightly more likely to report drinking any alcohol in the past 30 days (the extensive margin). While 48% of adults report drinking

any alcohol in the past 30 days, the prevalence of drinking is 54% for smokers (and 45% for nonsmokers; the difference between smokers and nonsmokers is statistically significant at the 1% level). Among individuals who drink (the intensive margin), the gap in the total number of drinks consumed in the past 30 days is even larger for smokers and nonsmokers. On average, conditional on drinking in the past 30 days, individuals report drinking 24 drinks in the past 30 days (slightly less than 1 drink per day), while smokers report drinking 33 drinks (slightly more than 1 drink per day) and nonsmokers report drinking 19 drinks (approximately 2 drinks every 3 days; statistically significantly different than smokers' consumption at the 1% level).

2.2 Measures of Alcohol-Related Externalities

The Uniform Crime Reports (UCR) contain measures of various crimes reported to police. I focus on violent crimes because of the well-documented relationship between alcohol consumption and violence (Anderson, Crost, and Rees, 2018; Markowitz and Grossman, 1998; Tomé, 2019). Specifically, I analyze effects of smoking bans on crime rates for violent crime, murder, rape, aggravated assault, and simple assault. Following the literature, I aggregate the data to the agency-year level.[9] As noted in the literature, the Uniform Crime Reports contain numerous record errors (Evans and Owens, 2007; Chalfin and McCrary, 2018; Maltz and Weiss, 2006; Mello, 2019). In order to use the data, record errors and outliers must be identified in the data (typically done using a regression-based approach) and replaced with imputed values. I use Mello's cleaned version of the Uniform Crime Reports data.[10] He

[9] According to Mello (2019), instead of reporting monthly crime counts, many agencies report the full year's statistics all at once, making the monthly counts inaccurate. Therefore, I use annual crime estimates.

[10] I am very grateful to Steven Mello for sharing his data-cleaning code and cleaned Uniform Crime Reports data with me.

describes the data-cleaning procedure in detail in his paper (Mello, 2019).

For measures of drunk driving, I use various measures of fatal motor vehicle incidents from the Fatality Analysis Reporting System (FARS). The Fatality Analysis Reporting System is a database maintained by the National Highway Traffic and Safety Administration (NHTSA) that records characteristics of every fatal motor vehicle incident on public roadways in the United States. These characteristics include the number of fatalities, the time of day and day of week of the crash, whether the driver(s)'s blood alcohol concentration was tested and the results, and numerous other factors.

2.3 Measures of Smoking Bans ("Treatment")

The American Nonsmokers' Rights Foundation compiles the effective dates of indoor smoking bans in restaurants and bars for cities, counties, and states in the U.S. The map in figure 4 reflects the year of implementation for smoking bans in bars that were implemented at the county or state level prior to December 31, 2012 (the end of my sample period). Each color represents a different year of implementation. The jurisdictions shaded white reflect the control group, as they did not implement smoking bans in bars and restaurants prior to the end of my sample period (December 2012). Earlier adopters tended to be states in the West and the Northeast, while later adopters tended to be in the upper Midwest. The importance of incorporating city-level smoking bans is reflected in the map in figure 5. This map also includes counties where at least one city implemented a smoking ban in a bar. The year of implementation is recorded as the first year that any part of the county was subject to a smoking ban in bars. In the South in particular, many cities implemented smoking bans

in bars in the absence of legislation at the county or state level. As indicated in both maps, there is quite a bit of spatial and temporal variation in the implementation of the laws.

Smoking bans differ along several other dimensions as well. Some bans were passed by the state legislature or the local equivalent while others were passed by voters. Some went into effect very soon after being approved while others were phased in several months later. The enforcement authorities also vary: some laws are enforced by the Attorney General, others by local health directors, and others by fire marshals. There is also a range of penalties for violating the law. Penalties can be imposed on the business or the smoker. Typically, the business has an obligation to ensure that its employees do not smoke inside the bar or restaurant, and also to notify customers of the law by posting signs. If a customer starts smoking inside, the business generally has an obligation to alert the customer that smoking is not permitted by law. Once the business has met that obligation, if the customer continues to smoke, then the customer may incur the penalty. Typically the penalty is a fine of around $50 to $100, but for repeat offenders in some jurisdictions the fine may be as steep as $1,500 (Maine State Legislature, 2004, 2018; North Carolina General Assembly, 2010; North Dakota Legislative Branch, 2012; Van Ells, 2012).

For this analysis, I do not distinguish between the various provisions of smoking bans, beyond whether they apply to both bars and restaurants or restaurants only.

2.4 Measures of Control Variables

Annual county-level demographic characteristics come from the U.S. Census Bureau. Specifically, I control for annual county-level population percentages by sex (male, female),

race and ethnicity (non-Hispanic black; non-Hispanic Asian; non-Hispanic white; Hispanic; and other races, which aggregates individuals identifying as belonging to non-Hispanic American Indian and Alaska Native, Native Hawaiian and other Pacific Islander, or two or more racial groups), and age (less than 15, 15-24, 25-34, 35-44, 45-64, and 65 and above).

I also include measures of state-level policies regarding alcohol and tobacco. I use the state-level legal blood alcohol concentration (BAC) limit for driving under the influence from the Alcohol Policy Information System (APIS), a database compiled by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). I use state-level cigarette taxes from the Tax Burden on Tobacco (TBOT).

3 Reduced-Form Empirical Models of Smoking and Drinking

To identify the causal effect of smoking bans in bars and restaurants on the amount and location (at home or in a bar or restaurant) of alcohol consumption, smoking, and alcohol consumption by smoking status, I use a difference-in-differences method. I exploit the variation in the timing of the effective dates of these smoking bans at the county level, incorporating bans implemented at the city, county, and state level.

3.1 Difference-in-Differences Identification and Assumptions

There are two assumptions needed for a differences-in-differences estimate to capture a causal effect.

1. *Parallel trends:* in the absence of the smoking bans in bars and restaurants, trends in alcohol consumption, conditional on smoking type and the control variables, would be the same across treatment and control counties

2. That at the time of the implementation of smoking bans in bars or restaurants, there are no other changes occurring in the treated jurisdictions that affect alcohol consumption, conditional on smoking type and the control variables

Sections 3.3 through 3.5 outline potential instances in which these assumptions may not be satisfied.

3.2 Reduced-Form Regression Equation: Alcohol Consumption

In my primary specifications I aggregate the data for alcohol-related outcomes to the county level. The motivation for aggregating is that the Behavioral Risk Factor Surveillance System (BRFSS) surveys individuals but the Nielsen Consumer Panel surveys households, so there would be a mismatch between the units of observation for comparing overall alcohol consumption (BRFSS) and alcohol purchased for off-premises consumption (Nielsen). Aggregating the data to the county level gets around this mismatch. For the BRFSS data, when I aggregate the individual data to the county level I use the provided survey weights, which have been designed to make the estimates representative at the state level. For the Nielsen data, I also aggregate using the provided survey weights, which have been designed to make the estimates representative at the national level.

I estimate the following reduced-form Ordinary Least Squares equations for various measures of alcohol consumption.

$$alc_{c,t} = \alpha^{alc} + \beta^{alc} \cdot BR\ ban_{c,t} + \mathbf{X}_{c,t} \cdot \gamma^{alc} + \delta_c^{alc} + \rho_t^{alc} + \varepsilon_{c,t}^{alc} \quad (1)$$

$alc_{c,t}$ denotes the alcohol-related outcome for individuals in county c at time (month-year) t. In terms of measures of overall alcohol consumption (BRFSS data), my primary measures are the probability of self reporting any alcohol consumption in the past 30 days (extensive margin) and the total amount of self-reported alcohol consumed in the past 30 days by self-reported drinkers (intensive margin). In sections 8.1 and 8.2, I disaggregate the measure of total alcohol consumption in the past 30 days into the number of self-reported days drinking in the past 30 and the average amount of alcohol consumed on days when an individual drank. With respect to alcohol purchased for off-premises consumption (Nielsen Consumer Panel data), my primary measures are the probability of self scanning any alcohol purchases in the past month (extensive margin) and the total quantity of alcohol purchased for off-premises consumption in the past month (full margin). The extensive-margin measure is a proxy for whether alcohol was consumed at home and the full-margin measure is a proxy for the amount of alcohol consumed at home.

In my main specification, $BR\ ban_{c,t}$ represents the fraction of individuals subject to a smoking ban in both bars and restaurants at time t in county c. If a county has implemented a smoking ban, or the corresponding state, then the treatment variable takes a value of 1. If some but not all of the cities in a county have implemented a smoking ban, then the treatment variable takes a value strictly between 0 and 1. In a robustness check, I exclude city-level smoking bans. In this specification, treatment is an indicator variable that takes a value of 1 if a smoking ban is effective for the entire county and it equals 0 otherwise.

I also control for a smoking ban being effective in county c at time t for restaurants only, which is included in the vector $\mathbf{X}_{c,t}$ along with other characteristics that vary at the county level over time (described in more detail below). The omitted category is "no smoking ban effective in bars or restaurants". I have constructed the smoking ban indicators in this way because with the exception of a handful of cities, every jursidiction that implemented a smoking ban prior to the end of my sample period (December 2012) had either previously implemented a smoking ban in restaurants or implemented such a ban simultaneously. I am focusing on the behavioral responses to banning smoking in bars; consequently, the coefficient of interest is β^{alc} for the alcohol-related outcomes.

$\mathbf{X}_{c,t}$ represents a vector of characteristics that vary at the county level over time. Specifically, I include the percentages of the population in county c at time t that are male, non-Hispanic black, non-Hispanic Asian, Hispanic, other (non-Hispanic and non-white) races, under the age of 15, 15-24, 35-44, 45-64, and 65 or older; the state-level legal limit for blood alcohol concentration for operating a motor vehicle; and the state-level cigarette tax[11]. The omitted categories for the demographic variables are the percentages of the population that are female, non-Hispanic white, and between the ages of 25 and 34. I include the state-level policy variables because anti-smoking measures, such as cigarette taxes and smoking bans, are frequently implemented in conjunction with each other. By controlling for these other policy variables I can ensure that I am not conflating the effects of smoking bans with the effects of other anti-smoking policies.

The equation also includes county and time (month-year pair) fixed effects. δ_c^{alc} denotes

[11]Counties are subsets of states, which is why I can include time-varying state-level characteristics in a vector of time-varying county-level characteristics.

the county-level fixed effects and ρ_t^{alc} denotes the time (month-year pair) fixed effects.

I cluster the standard errors, $\varepsilon_{c,t}^{alc}$, at the county level. I use the county population as probability weights, which makes my results interpretable as the effects of smoking bans on alcohol consumption for the average person as opposed to the average county.

In section 6, I estimate the effects of smoking bans on alcohol consumption separately by smoking status:

$$alc_{s,c,t} = \alpha_s^{alc} + \beta_s^{alc} \cdot BR\ ban_{c,t} + \mathbf{X}_{c,t} \cdot \gamma_s^{alc} + \delta_{s,c}^{alc} + \rho_{s,t}^{alc} + \varepsilon_{s,c,t}^{alc} \tag{2}$$

In this specfication, $alc_{s,c,t}$ denotes the alcohol-related outcome for individuals self reporting smoking status s in county c at time (month-year) t. The coefficient of interest, β_s^{alc}, represents the effect of bar and restaurant smoking bans on alcohol-related outcomes for individuals with smoking status s. Running the regressions separately by smoking status also allows the coefficients for the control variables to differ by smoking status.

Smoking status s varies between the Behavioral Risk Factor Surveillance System (BRFSS) data and the Nielsen Consumer Panel data. With the BRFSS data I am able to distinguish between (self reported) individuals who smoke every day (frequent smokers), those who smoke some days (occasional smokers), those who have never smoked consistently (defined by BRFSS as smoking more than 100 cigarettes in one's lifetime), and individuals who used to smoke but no longer do so. With the Nielsen data, I infer smoking status (smoker or nonsmoker) from whether the household scans in cigarettes.

In order to maintain consistency across equations, I keep the same Greek letters for the various coefficients. I distinguish between the outcomes (drinking and smoking) with super-

scripts. The coefficients corresponding to the smoking outcomes have a superscript *smoke*. The coefficients corresponding to the alcohol consumption outcomes have a superscript *alc*.

3.3 Potential Endogeneity of Smoking Type

One of the primary motivations of these bans was to induce smokers to quit. If the smoking bans were effective, then some individuals would quit smoking and others might not initiate smoking, which would mean the bans caused the population comprising each type of smoker to change over time. Prior research has found that anti-smoking policies (including taxes) induce some people to quit smoking (e.g. Evans et al., 1999; Bharadwaj et al., 2014) and prevent others from initiating smoking (Liu, 2010). If smoking bans in bars and restaurants are having these effects on smokers or would-be smokers during my sample period, then the control groups would not be valid counterfactuals for the treated groups. My estimates of the effect of the smoking bans on alcohol consumption for each type would be biased if an individual's propensity to consume alcohol (or amount of consumption) was correlated with an individual's propensity to quit (or not initiate) smoking.

For example, suppose the null hypothesis that smoking bans have no effect on a smoker's alcohol consumption were true. Also suppose that the smoking bans in bars and restaurants induced the smokers who were the heaviest drinkers to quit smoking, thereby switching from the "frequent smoker" type to the "former smoker" type. Average alcohol consumption among frequent smokers would mechanically decrease and I might erroneously conclude that the smoking bans induced smokers to quit drinking when in reality, the smoking bans induced the drinkers to quit smoking.

To address this potential endogeneity issue, I directly test the effects of smoking bans in bars and restaurants on smoking status. Specifically, I estimate the following regression (linear probability model) using the Behavioral Risk Factor Surveillance System (BRFSS) data:

$$smoke_{s,c,t} = \alpha_s^{smoke} + \beta_s^{smoke} \cdot BR\ ban_{c,t} + \mathbf{X}_{c,t} \cdot \gamma_s^{smoke} + \delta_{s,c}^{smoke} + \rho_{s,t}^{smoke} + \varepsilon_{s,c,t}^{smoke} \tag{3}$$

Because I aggregate the individual-level data to the county level, $smoke_{s,c,t}$ denotes the proportion of individuals residing in county c at month-year t who report their smoking status as s. There are four possible smoking statuses: frequent smoker, occasional smoker, never smoker, and former smoker. I describe the results in more detail in section 5, but in general they indicate that during this time period (2004-2012), bar and restaurant smoking bans do not have an effect on the prevalence of smoking.

3.4 Differences Between What I Observe About Alcohol Consumption And What I Want to Measure

I am unable to directly observe location of alcohol consumption. I am able to observe self-reported (via the household's barcode scanner) purchases of alcohol for off-premises consumption, which I am considering a proxy for home consumption. Off-premises alcohol consumption does not have to occur at one's own home. Individuals could also consume the alcohol they purchased in a grocery or liquor store at, say, somebody else's home (e.g. a house party or a dinner party). The alcohol purchased for off-premises consumption is likely not being consumed at a bar but it could be consumed at some restaurants in some

jurisdictions (e.g. ones which permit patrons to bring their own wine). So long as any changes in the prevalence of bringing one's own alcohol (BYOB) to restaurants are not correlated with the implementation of smoking bans in bars and restaurants, my estimates for the alcohol-consumption measures will be unaffected.

3.5 Potential Sources of Measurement Error in the BRFSS and Nielsen

All data sources have their limitations. For data sources that contain self-reported measures of the consumption of stigmatized "goods" (cigarettes and alcohol), such as the BRFSS and the Nielsen Consumer Panel, these limitations include social desirability bias. Recall bias is another potential issue. Social desirability bias could manifest as individuals underreporting their consumption of cigarettes or alcohol (both on the extensive and intensive margins), because there is stigma in some social circles associated with the consumption of these goods. A constant level of underreporting would not be an issue for my identification strategy; what would be problematic is if the level of underreporting is correlated with the implementation of smoking bans in bars and restaurants. With respect to self-reported smoking behavior, my prior is that if individuals are going to change how they self report their smoking status (or quantity of cigarettes smoked), they would be more likely to underreport (or underreport to a greater extent) after the implementation of a smoking ban (as the smoking ban reflects an increase in the stigma surrounding smoking). Given my results in section 5, I don't think that is occurring in this context. However, my prior could be wrong, in which case, my results could be biased.

With respect to self-reported alcohol consumption and social desirability bias, so long as individuals are consistently misreporting their alcohol consumption it's not a problem. It's possible that local jurisdictions are implementing other policies concurrently with bar and restaurant smoking bans, and these other policies (especially if they directly target alcohol consumption) could affect the level of misreporting. To the extent that my specifications fail to control for these other policies, my estimates could suffer from omitted variable bias. Alternatively, if the increased stigmatization of one risky health behavior (smoking cigarettes) makes the stigma of other risky health behaviors (drinking alcohol) more salient, then smoking bans in bars and restaurants could be associated with increased underreporting of alcohol consumption even in the absence of simultaneously implemented alcohol policies.

Recall bias is another issue with self-reported data, and given that sufficiently large amounts of alcohol can inhibit memory formation, it is possible for recall bias to be an issue here. Recall bias is the error in self-reported estimates of past behavior that arises because individuals cannot remember past events with complete accuracy. It could affect my estimates if, say, smoking bans in bars and restaurants do lead to large increases in alcohol consumption, to the extent that individuals misreport their alcohol consumption because their alcohol consumption has driven a wedge between their perception of their alcohol consumption and their actual alcohol consumption. If individuals believe they drank less alcohol than their true consumption, then my estimates would be attenuated. Alternatively, if they do not remember how much alcohol they consumed, they could overestimate their alcohol consumption, in which case my results would be biased away from 0.

4 Main Results: Alcohol Consumption

4.1 Effect of Smoking Bans on Overall Alcohol Consumption (BRFSS)

Figure 6 and table 2 show the results for the effect of smoking bans in bars and restaurants on various measures of alcohol consumption using the BRFSS data. The first column of table 2 shows the effect of smoking bans in bars and restaurants on the average amount of alcohol consumption (measured by the self-reported total number of servings of alcohol consumed in the past 30 days). After the implementation of smoking bans in bars and restaurants, individuals consume an additional 0.52 drinks over 30 days. This effect is statistically significant at the 1% level and represents a 4.48% increase in alcohol consumption on average. Smoking bans in bars and restaurants lead to small to moderate increases in alcohol consumption, on average.

Column 2 of table 2 shows what happens to the prevalence of drinking alcohol in the past 30 days (the extensive margin, which is measured by the percentage of individuals reporting any alcohol consumption in the past 30 days). Smoking bans in bars and restaurants are associated with a 0.20 percentage point reduction in the percentage of individuals who report drinking alcohol in the past 30 days, which is not statistically significantly different than 0. I can rule out self-reported changes in the prevalence of alcohol consumption smaller than -1.4% and larger than 0.6% at the 5% significance level. I interpret this result as a precisely estimated null effect of smoking bans in bars and restaurants on the prevalence of any alcohol consumption in the past 30 days; in other words, these bans do not affect the overall prevalence of past-30-day alcohol consumption.

The effect of smoking bans in bars and restaurants on the intensive margin of alcohol

consumption (amount of drinks consumed in the past 30 days conditional on drinking alcohol in the past 30 days) is shown in the third column of table 2. The implementation of smoking bans in bars and restaurants results in an average increase of 0.91 servings of alcohol consumed over the past 30 days among those who drink. This effect is statistically significant at the 1% level and it represents an 4.17% increase in alcohol consumption among drinkers. Smoking bans lead to small to moderate increases in alcohol consumption on the intensive margin.

The amount of alcohol consumed over 30 days is a function of the number of days an individual drank alcohol and the average amount of alcohol the individual consumed on each day the individual drank. Columns 4 and 5 of table 2 disaggregate the effects on intensive-margin alcohol consumption into these two components. For individuals who drank alcohol in the past 30 days, smoking bans in bars and restaurants are associated with an increase in the number of days spent drinking (out of the past 30 days) of 0.06 days, on average (column 4). I cannot reject the null hypothesis of no effect of smoking bans in bars and restaurants on the number of days spent drinking. Individuals do not appear to be drinking more often, on average, after smoking bans are implemented.

Conditional on drinking that day, smoking bans in bars and restaurants result in a 0.06-serving increase in the average amount of alcohol individuals consume (column 5). This effect is statistically significant at the 1% level, and it represents a 2.31% increase in the average amount of alcohol consumed per day.

The last column of table 2 (column 6) shows the effect of smoking bans in bars and restaurants on the maximum amount of alcohol consumed on one occasion (conditional on drinking alcohol in the past 30 days). The implementation of smoking bans in bars

and restaurants leads to an increase in the maximum amount of alcohol consumed of 0.08 servings, on average. This effect is statistically significant at the 1% level, and it represents a 2.25% increase in maximum alcohol consumption.

Overall, these results are consistent with smoking bans in bars and restaurants leading to small to medium increases in casual alcohol consumption among individuals who drink. Given that the magnitudes of the effect sizes for the average amount consumed per day and the maximum amount consumed on one occasion are similar, it appears that, on average, individuals are drinking more on each day versus drinking the same amount most days and a lot more on 1 day.

4.2 Effect of Smoking Bans on Alcohol Purchases for Off-Premises Consumption (Nielsen)

Table 3 shows the effects of smoking bans in bars and restaurants on off-premises alcohol purchases (which I am considering a proxy for alcohol consumed at home). The first column shows the effect of smoking bans in bars and restaurants on the total quantity of alcohol purchases. The implementation of smoking bans in bars and restaurants is associated with an average decrease in the amount of servings of alcohol purchased for off-premises consumption of 0.35 drinks per month, which is statistically significantly different than 0 at the 5% level. This effect size corresponds to a 6.61% decrease in purchases. Smoking bans in bars and restaurants are associated with small to moderate declines in the quantity of alcohol purchased for off-premises consumption.

The second column of table 3 shows the effects on extensive-margin off-premises alcohol

purchases, or whether households purchase any alcohol for off-premises consumption. I find that smoking bans in bars and restaurants lead to a 0.30 percentage point reduction in the prevalence of past-month off-premises alcohol purchases, which is not statistically significant at conventional levels. There is a precisely estimated null effect of smoking bans on the prevalence of past-month alcohol purchases for off-premises consumption.

In the aggregate, while I find small to medium increases in alcohol consumption using the BRFSS data, there are no corresponding increases in alcohol purchased for off-premises consumption. Therefore, the aggregate increases in alcohol consumption must be driven by increases in bar and restaurant alcohol consumption as opposed to at-home alcohol consumption.

5 Effect of Smoking Bans on Extensive-Margin Cigarette Smoking (BRFSS)

Table 4 shows the results for the effect of smoking bans in bars and restaurants on extensive-margin cigarette consumption (whether individuals smoke cigarettes) for the prior 30 days using the BRFSS data. After the implementation of a bar and restaurant smoking ban, there are no meaningful changes in the prevalence of each smoking status.

The prevalence of self-reported frequent (every day) smoking increases by 0.13 percentage points, which is not statistically significantly different than 0. The prevalence of self-reported occasional (some day) smoking increases by 0.22 percentage points, which is marginally statistically significant (10% level). As the proportion of individuals who identify as occasional

smokers is quite small (5.25% of the sample), this effect size represents an increase in occasional smoking of 4.19%. The prevalence of self-reported never smoking declines by 0.09 percentage points, which is not statistically significantly different than 0. The prevalence of individuals self identifying as former smokers declines by 0.26 percentage points, which is not statistically significantly different than 0.

Overall, there is essentially no effect of smoking bans on extensive-margin smoking during this time period (2004-2012). There may be ever-so-slight increases in occasional smoking, but I can rule out moderate increases in the prevalence of occasional smoking. I can also rule out economically meaningful changes in the prevalence of frequent, never, and former smoking.

6 Disaggregating the Effects on Alcohol Consumption by Smoking Status

In the last two sections I have shown that, on average, individuals drink more after smoking bans in bars and restaurants are implemented. In this section, I analyze the effect of smoking bans on alcohol consumption by smoking status. Given that I do not find meaningful changes in smoking prevalence, the potential endogeneity of smoking status is likely not a concern in this context.

As mentioned earlier, a smoking ban in a bar likely has differential effects on the non-price determinants of demand (e.g. the atmosphere of the bar) for smokers and nonsmokers, which means that they may respond in different ways to this policy. Therefore, understanding

who is changing their behavior and in what ways is crucial for understanding the policy implications and the ways in which these results may generalize to other settings.

6.1 Effect of Smoking Bans on Extensive-Margin Alcohol Consumption (BRFSS)

Table 5 shows the results for the effect of smoking bans in bars and restaurants on extensive-margin alcohol consumption for the prior 30 days using the BRFSS data (interpretable as the percentage of individuals in the county who drank any alcohol). I am able to rule out meaningful changes in the prevalence of past-30-day alcohol consumption. After the implementation of a smoking ban in a bar and a restaurant, the fraction of frequent smokers who self report drinking in the past 30 days declines by 0.24 percentage points. Smoking bans in bars and restaurants are associated with a 0.35 percentage point decrease in the prevalence of drinking in the past 30 days for occasional smokers. For never smokers, the prevalence of drinking increases by 0.15 percentage points. For former smokers, the prevalence of drinking declines by 0.67 percentage points. None of these estimates are statistically significantly different than 0.

Overall, these results are precisely estimated null effects. Smoking bans in bars and restaurants do not lead to changes in the prevalence of alcohol consumption for any smoking status.

6.2 Effect of Smoking Bans on Intensive-Margin Alcohol Consumption (BRFSS)

Table 6 shows the results for the effect of smoking bans in bars and restaurants on intensive-margin alcohol consumption for the prior 30 days using the BRFSS data. All of the results in this section are conditional on drinking any alcohol in the past 30 days. After smoking bans in bars and restaurants are implemented, frequent smokers drink an additional 1.15 drinks per month. This effect is not statistically significant, which means I cannot reject the null hypothesis of no effect of bar and restaurant smoking bans on intensive-margin alcohol consumption for frequent smokers. I can, however, rule out economically meaningful reductions (greater than 4%) in alcohol consumption for frequent smokers at the 5% significance level.

Occasional smokers drink an additional 2.20 drinks per month after the implementation of smoking bans in bars and restaurants, which is statistically significant at the 5% level. This effect size corresponds to a 7.91% increase in the number of drinks consumed per month, on average.

Never smokers drink 0.28 more drinks per month after the implementation of the smoking bans; this coefficient is not statistically significantly different than 0 at conventional levels. I can rule out economically meaningful declines in alcohol consumption for never smokers (greater than 2%) with the 95% confidence interval.

Former smokers drink an additional 1.36 drinks per month. This effect size is statistically significantly different than 0 at the 1% level and corresponds to a 5.99% increase in the average number of drinks consumed per month for former smokers.

On average, people are not drinking less after smoking bans in bars and restaurants are implemented. Occasional and former smokers increase their drinking by small to moderate amounts.

6.3 Effect of Smoking Bans on Alcohol Purchased for Off-Premises Consumption (Nielsen)

Table 7 shows the results for the effect of bar and restaurant smoking bans on the total quantity of alcohol purchased for off-premises consumption in the past month using the Nielsen data. After the implementation of smoking bans in bars and restaurants, smokers' monthly off-premises alcohol purchases decline by 0.20 servings of alcohol, on average. This effect is marginally statistically significant (10% level). I can rule out economically meaningful increases in purchases for off-premises consumption with the 95% confidence interval.

Nonsmokers' monthly off-premises alcohol purchases decline by 0.14 servings of alcohol after smoking bans are implemented in bars and restaurants, which is not statistically significant at conventional levels. I can rule out economically meaningful increases (larger than 2%) in the quantity of past-month alcohol purchases.

Turning to the extensive margin (the prevalence of off-premises alcohol purchases), which is shown in table 8, smoking bans in bars and restaurants lead to a 0.73 percentage point decrease in the prevalence of off-premises alcohol purchases for smokers. This effect is not statistically significant. I can rule out economically meaningful increases (larger than 3%) in smokers' prevalence of purchasing alcohol for off-premises consumption.

For nonsmokers, smoking bans in bars and restaurants are associated with a 0.11 percent-

age point decline in the prevalence of past-month off-premises alcohol purchases. This effect is not statistically significantly different than 0 at conventional levels. I can rule out economically meaningful increases (larger than 3%) in the prevalence of nonsmokers purchasing alcohol for off-premises consumption.

Overall, I am able to rule out increases in both the total quantity of alcohol purchased for off-premises consumption as well as the prevalence of purchasing alcohol for off-premises consumption for both smokers and nonsmokers. Therefore, the observed increases in alcohol consumption for occasional and former smokers that I find using the BRFSS data must be driven by changes in bar and restaurant (on-premises) alcohol consumption for these groups.

7 Effect of Smoking Bans on Alcohol-Related Externalities

7.1 Reduced-Form Regression Equation: Crime

As mentioned earlier, I aggregate various measures of violent crime to the agency-year level. Consistent with the literature, I use the number of crimes per 10,000 people as my outcome variable. I consider the agency treated if its corresponding city, county, or state has implemented a smoking ban in bars and restaurants. I estimate the following equation:

$$crime_{a,y} = \alpha^{crime} + \beta^{crime} \cdot BR\ ban_{a,y}\ + \mathbf{X}_{a,y} \cdot \gamma^{crime} + \delta_a^{crime} + \rho_y^{crime} + \varepsilon_{a,y}^{crime} \qquad (4)$$

$crime_{a,y}$ is defined as the crime rate (per 10,000 people) for agency a in year y. $BR\ ban_{a,y}$

represents the fraction of year y for which the agency's jurisdiction is subject to a smoking ban in bars and restaurants.[12] The vector $\mathbf{X}_{a,y}$ includes control variables for a smoking ban in restaurants only, the state-level blood alcohol concentration limit, and the state cigarette tax.[13]

δ_a^{crime} denotes agency-level fixed effects and ρ_y^{crime} represents year fixed effects. I cluster the standard errors, $\varepsilon_{a,y}^{crash}$, at the agency level. I weight the regressions by the population estimates for the agency's jurisdiction, which allows me to interpret the results as the effect of smoking bans on crime rates experienced by the average person as opposed to the average agency.

7.2 Results: Crime

Smoking bans in bars and restaurants do not have an effect on various measures of violent crime, as shown in table 9. None of the effects are statistically significant, but I will briefly discuss the point estimates to show that they are also not economically significant. For all violent crimes, smoking bans in bars and restaurants lead to a reduction in the violent crime rate of 0.55 crimes per 10,000 people, a decrease of 1.03%. Smoking bans are associated with a reduction of 0.01 murders per 10,000 people, a 2.27% decrease. Reported rapes increase by 0.05 per 10,000 people after smoking bans are implemented, an increase of 1.67%. Aggravated assaults decline by 0.34 per 10,000 people, a 0.95% decrease. Smoking bans lead to a reduction of 0.82 simple assaults per 10,000 people, a 0.83% decrease. All of the observed changes in crime rates are quite small, suggesting that these null effects are

[12] For most years, $BR\ ban_{a,y}$ will equal 0 or 1. In the year it was implemented, $BR\ ban_{a,y}$ represents the number of months out of the year the ban was in place.

[13] I don't include controls for population demographics because agency-level demographics are not available.

relatively precisely estimated. Although smoking bans in bars and restaurants lead to small to moderate increases in alcohol consumption, there is no corresponding increase in violent crime. These results suggest that small increases in alcohol consumption do not lead to increases in violent behavior.

7.3 Reduced-Form Regression Equation: Drunk Driving

Consistent with the smoking and drinking outcomes, I aggregate fatal drunk-driving crashes to the county-month level. I define drunk-driving crashes as those in which at least one vehicle driver had a blood alcohol concentration of at least 0.08 g/dL, which is the legal limit for Driving Under the Influence for adults for all states during the majority of my sample period. Given the large differences in population size across counties, I use the log of crashes so that the effect size is measured in percent changes, which is more comparable across counties than the level of crashes. For many counties, there are no fatal crashes in a given month, so I take the log of 1 plus fatal crashes.

I also interact the treatment variable with indicators for smoking prevalence. I use data from the 1992 Tobacco Use Supplement to the Current Population Survey (TUS) to split states into thirds, denoted high, medium, and low smoking prevalence. I use state-level measures of smoking because the TUS does not contain reliable county-level geographic identifiers. I use the 1992 TUS because it is the earliest available and 1992 is before all but a handful of jurisdictions implement smoking bans, making it a useful pre-treatment measure

of smoking prevalence. I estimate the following equation:

$$log(crash_{c,t}+1) = \alpha^{crash} + BR\,ban_{c,t} \cdot \mathbb{I}\{smk\,prevalence\}_{c,t} \cdot \beta^{crash} + \mathbf{X}_{c,t} \cdot \gamma^{crash} + \delta_c^{crash} + \rho_t^{crash} + \varepsilon_{c,t}^{crash} \tag{5}$$

$crash_{c,t}$ denotes fatal drunk-driving crashes in county c at time (month-year) t. As in section 3.2, $BR\ ban_{c,t}$ represents the fraction of individuals subject to a smoking ban in both bars and restaurants at time t in county c. $\mathbb{I}\{smk\ prevalence\}_{c,t}$ represents indicator variables for high, medium, and low smoking prevalence. The vector $\mathbf{X}_{c,t}$ contains the same control variables as in section 3.2[14]. δ_c^{crash} denotes the county-level fixed effects and ρ_t^{crash} denotes the time (month-year pair) fixed effects.

I cluster the standard errors, $\varepsilon_{c,t}^{crash}$, at the county level. I use the county population as probability weights, which makes my results interpretable as the effects of smoking bans on drunk driving crashes for the average person as opposed to the average county.

7.4 Results: Drunk Driving

I find that smoking bans in bars and restaurants have differential effects on fatal drunk driving crashes by smoking prevalence, as shown in table 10. Across all jurisdictions, smoking bans in bars and restaurants have no effect on fatal drunk-driving crashes. However, in areas with a high prevalence of smoking, smoking bans in bars and restaurants lead to approximately a 4% increase in fatal drunk-driving crashes. This effect is statistically significant at the 5% level. Conversely, smoking bans do not have an effect on drunk driving

[14]The fraction of the county population subject to a smoking ban in a restaurant only, the percentages of the population in county c at time t that are male, non-Hispanic black, non-Hispanic Asian, Hispanic, other (non-Hispanic and non-white) races, under the age of 15, 15-24, 35-44, 45-64, and 65 or older; the state-level legal limit for blood alcohol concentration for operating a motor vehicle; and the state-level cigarette tax

crashes in areas with medium and low smoking prevalence. They are associated with a 2% decline in crashes in medium-smoking-prevalence areas and a 1% decline in crashes in low-smoking-prevalence areas. Neither effect is statistically significant, and I can rule out economically meaningful changes in the prevalence of drunk-driving crashes for both.

These results are consistent with prior work by Adams and Cotti (2008), which also finds an increase in drunk driving after smoking bans are implemented in bars and restaurants. As Adams and Cotti explain, these results are consistent with smokers driving to nearby jurisdictions without smoking bans so they may smoke and drink at a bar, then driving home drunk. That I only find an effect on drunk driving in areas with a high smoking prevalence lends further support to this hypothesis, as it is consistent with smokers being the ones driving drunk.

8 Alternative Specifications and Robustness Checks: Alcohol Consumption and Smoking

In sections 8.1 through 8.3 I turn to more disaggregated measures of alcohol consumption in order to analyze along what margins individuals are changing their alcohol consumption. Are they drinking on more days throughout the month, are they drinking more alcohol on the days they drink, or are they doing both? Understanding the effects at a more detailed level can illustrate whether these changes in drinking behavior may have negative health consequences. For example, going from two to six drinks one night each week may have different health effects than drinking two drinks each on an additional two days per week

(even though the total change in weekly alcohol consumption, four additional drinks, is the same).

In sections 8.4 and 8.5, I compare the results from my primary specification, which includes city-level bans, to results from alternative specifications where I consider a subset of smoking bans (state-only bans or state and county-level bans). This comparison highlights whether and how measurement error in my treatment variable (for example, the kind arising from coding areas with only city-level bans as untreated when they should be treated) can affect my results.

8.1 Effect of Smoking Bans on Number of Days Drank (BRFSS)

Appendix table *A*.1 shows the results for the effect of smoking bans in bars and restaurants on the number of days individuals consumed alcohol (over the past 30 days, conditional on drinking). After the implementation of smoking bans in bars and restaurants, frequent smokers drink alcohol on 0.03 additional days per month. Occasional smokers drink alcohol on an additional 0.28 days per month. Never smokers drink on 0.03 additional days per month. Former smokers see a 0.06-day increase in the number of days they drank. None of these estimates are statistically significantly different than 0.

Overall, bar and restaurant smoking bans are not associated with economically meaningful changes in the number of days per month individuals of any smoking status drink alcohol (conditional on drinking in the past 30 days). For frequent, never, and former smokers, I find precisely estimated null effects of smoking bans on the number of days drank in the last month. For occasional smokers, I can rule out small decreases and moderate increases in the

number of days spent drinking.

8.2 Effect of Smoking Bans on Average Amount of Alcohol Consumed on Drinking Days (BRFSS)

Appendix table *A.2* shows the results for the effect of smoking bans in bars and restaurants on the average amount of alcohol individuals consumed on days they drank (conditional on drinking during the past 30 days). After smoking bans in bars and restaurants are implemented, frequent smokers drink, on average, an additional 0.03 drinks on days they drink. For occasional smokers, bar and restaurant smoking bans are associated with an increase of 0.07 drinks on average, on days they drink alcohol. Never smokers drink an additional 0.03 servings of alcohol, on average, on days they drink. None of these effects are statistically significantly different than 0. In contrast, former smokers drink an additional 0.10 drinks per day on days they drink alcohol, which is statistically significantly different than 0 at the 1% level. This effect size corresponds to a 4.72% increase.

Overall, I can rule out economically meaningful declines in the number of drinks consumed on days individuals drank alcohol for each smoking status. I find that former smokers experience small to moderate increases in their average alcohol consumption on days they drink.

8.3 Effect of Smoking Bans on Maximum Amount of Alcohol Consumed on One Occasion (BRFSS)

Appendix table *A*.3 shows the results for the effect of bar and restaurant smoking bans on the maximum amount of alcohol consumed on one occasion in the past 30 days. For frequent smokers, the implementation of smoking bans in bars and restaurants is associated with a 0.08-drink increase in the maximum amount of alcohol consumed on one occasion. Occasional smokers see essentially no change (+0.01 drinks) in the maximum amount of alcohol consumed on one occasion. Similarly, for never smokers, bar and restaurant smoking bans are associated with essentially no change in the maximum amount of alcohol consumed on one occasion (+0.02 drinks). None of those estimates are statistically significant. In contrast, for former smokers, smoking bans in bars and restaurants are associated with a 0.09-drink increase in the maximum amount of alcohol consumed on one occasion. This effect size is statistically significant at the 5% level and corresponds to a 2.8% increase in the maximum amount of alcohol consumed on one occasion.

Overall, smoking bans in bars and restaurants have no effect on the maximum amount of alcohol consumed by frequent, occasional, and never smokers. For former smokers, these bans are associated with small but not economically meaningful increases in the maximum amount of alcohol consumed on one occasion.

8.4 Effect of Smoking Bans When I Only Use State-Level Bans

To more directly compare my results with the previous literature on smoking bans and alcohol consumption, I run an alternative specification where I only use state-level bans.

Any jurisdiction without a state-level ban (even if it is covered by a city or county-level ban) is considered part of the control group. The effects are similar to my main specification, although the disaggregated results by smoking status are slightly different. Figures 7 and 8 show the main results. Smoking bans in bars and restaurants lead to an average increase in alcohol consumption of 0.60 drinks over the past 30 days, which is statistically significant at the 1% level. There is a corresponding 1.13-drink increase along the intensive margin, which is also statistically significant at the 1% level. There is essentially no effect of smoking bans on the extensive margin of alcohol consumption (-0.27 percentage points, not statistically significantly different than 0). There are small increases in the number of days individuals drank, the average amount they drank per day, and the maximum amount of alcohol they drank on one occasion, although the effect on the number of days is only marginally statistically significant.

For alcohol purchases, there are small declines in the total quantity of alcohol purchased for home consumption (-0.21 drinks), but the effect is not statistically significant. After smoking bans are implemented, the prevalence of purchasing alcohol for home consumption declines by 1.50 percentage points, which is statistically significant at the 5% level. Given the overlapping confidence intervals for the effects on overall alcohol consumption and the total quantity of alcohol purchases, I cannot say definitively that the increases seen in the BRFSS are coming from increases in bar and restaurant alcohol consumption.

Figures 9 through 12 show the effects on alcohol consumption disaggregated by smoking status. Figure 9 shows the effects on extensive-margin alcohol consumption. There is no effect of smoking bans in bars and restaurants along the extensive margin for frequent or never smokers. There is a 1.75 percentage point decline in the prevalence of drinking for

occasional smokers, which is marginally statistically significant. There is a 0.75 percentage point decline for former smokers, which is also marginally statistically significant. Although marginally significant, both of these effects are small.

Figure 10 shows the effects on intensive-margin alcohol consumption. Bar and restaurant smoking bans lead to an increase of 2.24 drinks per month for frequent smokers, which is statistically significant at the 5% level. They are associated with a 1.61-drink increase for occasional smokers, although the effect is not statistically significant. Smoking bans lead to a 0.58-drink increase for never smokers, which is statistically significant at the 5% level. They lead to a 1.36-drink increase for former smokers, which is significant at the 1% level. These results are qualitatively similar to my main specification (where I include city and county-level bans). The notable difference is that when I only use state-level bans, I find statistically significant increases in intensive-margin alcohol consumption for frequent, never, and former smokers, whereas in my main specification I find statistically significant increases for occasional and former smokers.

Figures 11 and 12 show the results for alcohol purchases by smoking status. Smoking bans are associated with small declines in the total quantity of alcohol purchased for home consumption for both smokers and nonsmokers (-0.17 and -0.16 drinks per month, respectively), although neither effect is statistically significant. Smoking bans are associated with a 1.96 percentage point decrease in the prevalence of purchasing alcohol for home consumption in the past month for smokers, although this effect is not significant. They are associated with a 1.39 percentage point decrease in the prevalence of purchasing alcohol for nonsmokers, which is marginally statistically significant. These results are generally consistent with the specification that includes county and city-level bans.

8.5 Effect of Smoking Bans When I Exclude City-Level Bans

Overall the results are similar regardless of whether I incorporate the city-level smoking bans but there are some notable differences. What could account for these discrepancies? Referring back to the maps of the implementation dates of smoking bans may provide some insights (figures 4 and 5). Generally speaking, places where many city-level bans were implemented before county or state-level bans are in the Midwest and South, in states such as North Dakota, Kansas, Texas, Wisconsin, Missouri, Kentucky, Mississippi, Alabama, and South Carolina. As shown in figure 14, these states have a higher prevalence of smoking than the national average (CDC 2019). The fact that some of the results change when I incorporate the city-level bans could potentially be due to different effects of smoking bans in jurisdictions with more or less smoking. In future work, I will test this hypothesis by interacting the treatment variable (smoking bans) with a measure of smoking prevalence prior to the implementation of smoking bans (to avoid the potential endogeneity of smoking prevalence).

Figure 13 and table 11 show the results for the effect of smoking bans in bars and restaurants on various measures of alcohol consumption using the BRFSS data when I exclude city-level bans from the analysis. When I exclude city-level bans the effect sizes tend to be larger, although they are not statistically significantly different from each other. After the implementation of smoking bans in bars and restaurants, individuals consume, on average, an additional 0.75 drinks over 30 days. This effect is statistically significant at the 1% level. Smoking bans in bars and restaurants are associated with a 0.11 percentage point reduction in the percentage of individuals who report drinking alcohol in the past 30 days, which is

not statistically significantly different than 0. Turning to the intensive margin (amount of drinks consumed in the past 30 days conditional on drinking alcohol in the past 30 days), smoking bans in bars and restaurants result in an average increase of 1.92 servings of alcohol consumed over the past 30 days. This effect is statistically significant at the 1% level.

For individuals who drank alcohol in the past 30 days, smoking bans in bars and restaurants are associated with small and statistically significant increases in the number of days individuals drank, the average amount of alcohol consumed per day, and the maximum amount of alcohol consumed on one occasion.

For the baseline effects of smoking bans on alcohol consumption, when I exclude city-level bans, the estimated effects on total alcohol consumption, intensive-margin alcohol consumption, and the number of days spent drinking are a bit larger. The estimated effects on the extensive margin, average amount consumed conditional on drinking that day, and maximum amount consumed on one occasion are the same. The general interpretation is the same under both specifications though: smoking bans lead to small to moderate increases in alcohol consumption.

Table 12 shows the effects of smoking bans in bars and restaurants on alcohol purchased for off-premises consumption. The implementation of smoking bans in bars and restaurants is associated with an average decrease in the amount of servings of alcohol purchased for off-premises consumption of 0.32 drinks per month, which is not statistically significantly different than 0. With the 95% confidence interval, I can rule out economically meaningful increases in off-premises alcohol purchases. These results are broadly similar to the results that incorporate city-level bans. These results imply that the increases in overall alcohol consumption that I find in the BRFSS data are being driven by increases in alcohol consumed

at bars and restaurants.

I find that smoking bans in bars and restaurants lead to a 1.00 percentage point reduction in the prevalence of past-month off-premises alcohol purchases, which is statistically significant at the 5% level. When I exclude city-level smoking bans, smoking bans in bars and restaurants lead to small declines in the prevalence of drinking at home. The effect size is a bit larger in magnitude (-1.00 vs. -0.30), but broadly speaking the results are qualitatively similar: in both specifications I can rule out economically meaningful increases in the prevalence of purchasing any alcohol for off-premises consumption in the past month.

Turning to the effects on alcohol consumption by smoking status, table 14 shows the results for the effect of smoking bans in bars and restaurants on extensive-margin alcohol consumption for the prior 30 days using the BRFSS data. Smoking bans in bars and restaurants have no effect on the prevalence of drinking in the past 30 days for any smoking status. Table 15 shows the results for the effect of smoking bans in bars and restaurants on intensive-margin alcohol consumption for the prior 30 days using the BRFSS data. After smoking bans in bars and restaurants are implemented, frequent smokers drink an additional 3.61 drinks per month. This effect is not statistically significant. Occasional smokers drink an additional 5.41 drinks per month after the implementation of smoking bans in bars and restaurants, which is statistically significant at the 5% level. Never smokers drink an additional 1.09 drinks per month after the implementation of the smoking bans; this coefficient is statistically significant at the 5% level. Former smokers drink an additional 1.08 drinks per month, which is similar in magnitude to the effect size for never smokers; however, this estimate is not statistically significantly different from 0.

Table 16 shows the results for the effect of bar and restaurant smoking bans on the

total quantity of alcohol purchased for off-premises consumption in the past month. After the implementation of smoking bans in bars and restaurants, smokers' monthly off-premises alcohol purchases decline by 0.13 servings of alcohol and nonsmokers' purchases decline by 0.16 servings of alcohol. Neither of these effects are statistically significant. This specification yields results that are less precise but otherwise qualitatively similar to the specification with city-level bans for both smokers and nonsmokers: the coefficients are small, negative, and generally not statistically significantly different than 0.

The effects on the the extensive margin are shown in table 17. Smoking bans in bars and restaurants lead to a 2.25 percentage point decrease in the prevalence of off-premises alcohol purchases for smokers. This effect is statistically significant at the 5% level. For nonsmokers, smoking bans in bars and restaurants are associated with a 1.07 percentage point decline in the prevalence of past-month off-premises alcohol purchases. This effect is statistically significant at the 10% level. These effect sizes when I exclude city-level bans are larger in magnitude than the effect sizes I find when I incorporate city-level bans. In both cases, however, I can rule out economically meaningful increases in the prevalence of buying any alcohol for off-premises consumption for smokers and nonsmokers.

9 Conclusion

The presence of externalities are a commonly accepted reason for governments to intervene in markets. In the case of cigarettes, the secondhand-smoke externality has well-documented negative health consequences. Smoking bans in bars and restaurants have made some individuals better off with respect to smoking and secondhand-smoke-related health

outcomes (e.g. Anger, Kvasnicka, and Siedler, 2011; Bharadwaj, Johnsen, and Løken, 2014; Jones et al., 2015; and Kvasnicka, Siedler, and Ziebarth, 2018).

However, these bans have also generated unintended consequences with respect to alcohol consumption and drunk driving. Smoking bans in bars and restaurants result in average increases in alcohol consumption of approximately 1 drink per month (conditional on drinking), or 4%. These increases appear to be concentrated among occasional smokers (2.20 drinks per 30 days) and former smokers (1.36 drinks per 30 days). They are also most likely driven entirely by changes in bar and restaurant consumption, as purchases for off-premises consumption are flat or decline after smoking bans in bars and restaurants are implemented. Smoking bans in bars and restaurants also lead to a 4% increase in fatal drunk-driving crashes in areas with a high prevalence of smoking.

These small increases in alcohol consumption probably do not have negative implications for social welfare. Many individuals derive utility from alcohol consumption, which means moderate increases in alcohol consumption may be beneficial from a social welfare perspective. The same cannot be said for drunk driving; the increase in drunk driving fatalities has negative effects on social welfare. It is worth noting that the likely reason for increased drunk driving, smokers driving to nearby jurisdictions where they can smoke and drink at the bar and then driving drunk home, is a feature of the spatial heterogeneity in the law. A federal smoking ban in bars and restaurants may not have the same effects on drunk driving.

Given that smoking bans do not appear to lead to a decline in alcohol consumption at bars and restaurants, it begs the question: why didn't more bars and restaurants voluntarily adopt smoking bans? To start, many bar owners didn't think that a smoking ban would be good for business (Milwaukee Record, 2015). In addition, they effectively faced a Prisoner's

Dilemma situation. The best financial outcome might be for all bars to be smoke free, but if one bar were to defect, they would capture all of the smokers' business. That concern was in fact raised by bar owners when the enactment of these bans was being debated (Maine State Legislature, 2004). In this instance, smoking bans served to solve a coordination failure among private businesses.

In future work I will test for heterogeneity in the policy impacts. I will control for border county policies or the distance to the nearest county with a different policy, in order to test whether smokers are exploiting the spatial heterogeneity in the policy and avoiding the ban. I will also analyze whether there are differential effects by smoking prevalence or geographic region, similar to what I have done for the drunk-driving results. I will also conduct event studies for my various outcomes to check for parallel pre-trends. Lastly, I will conduct a back-of-the-envelope cost-benefit analysis of this policy by comparing the health and mortality benefits of secondhand smoke avoided with the lives lost from drunk driving.

The results of this paper show that when risky health behaviors are substitutes or complements, a policy change targeting one risky health behavior can have spillover effects on another risky health behavior. In this instance, a policy ostensibly aimed at minimizing smoking and secondhand smoke had unintended consequences on alcohol consumption and drunk driving. Optimal policy regarding risky health behaviors and their externalities needs to anticipate the behavioral responses arising from the substitutability or complementarity of risky health behaviors.

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11 Figures and Tables

Figure 1

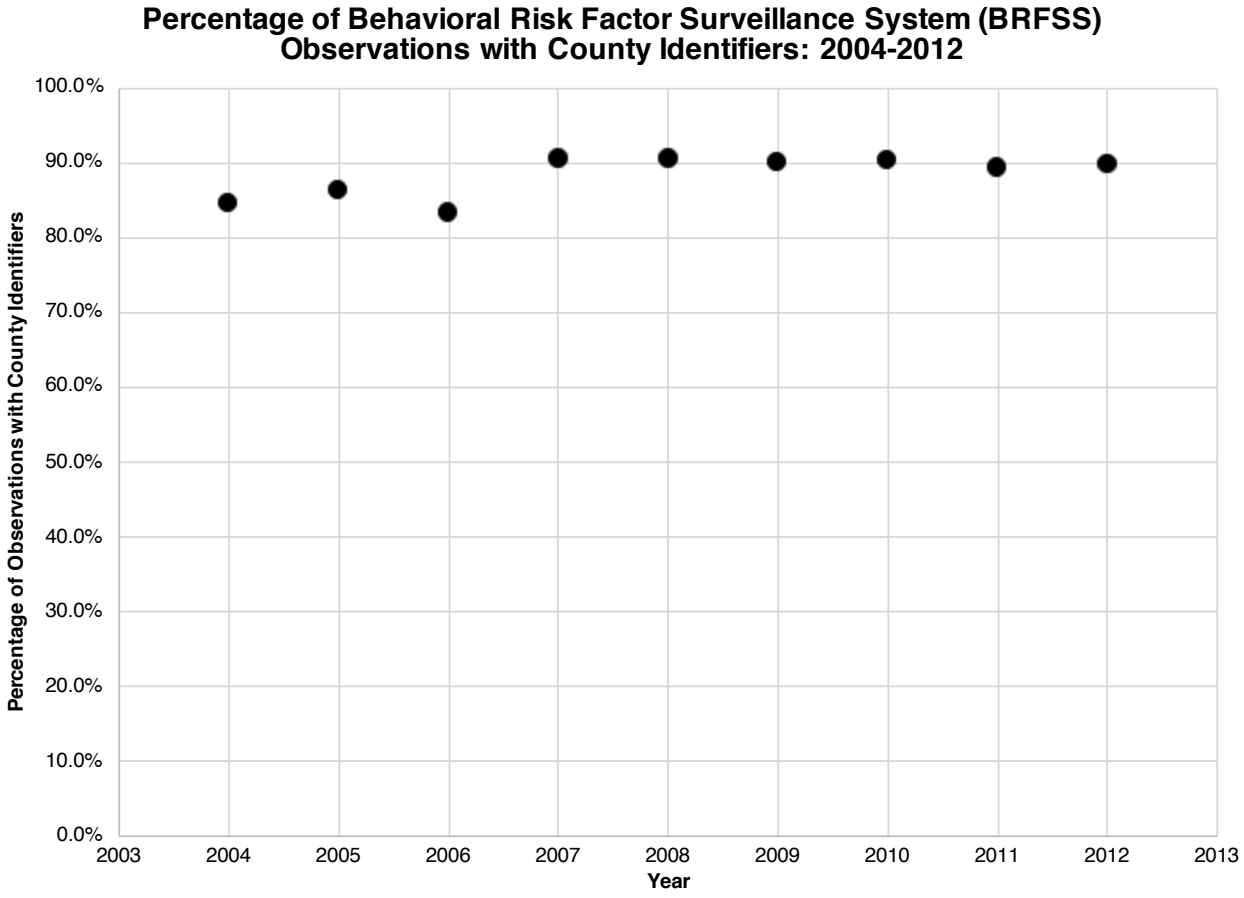

Figure 2

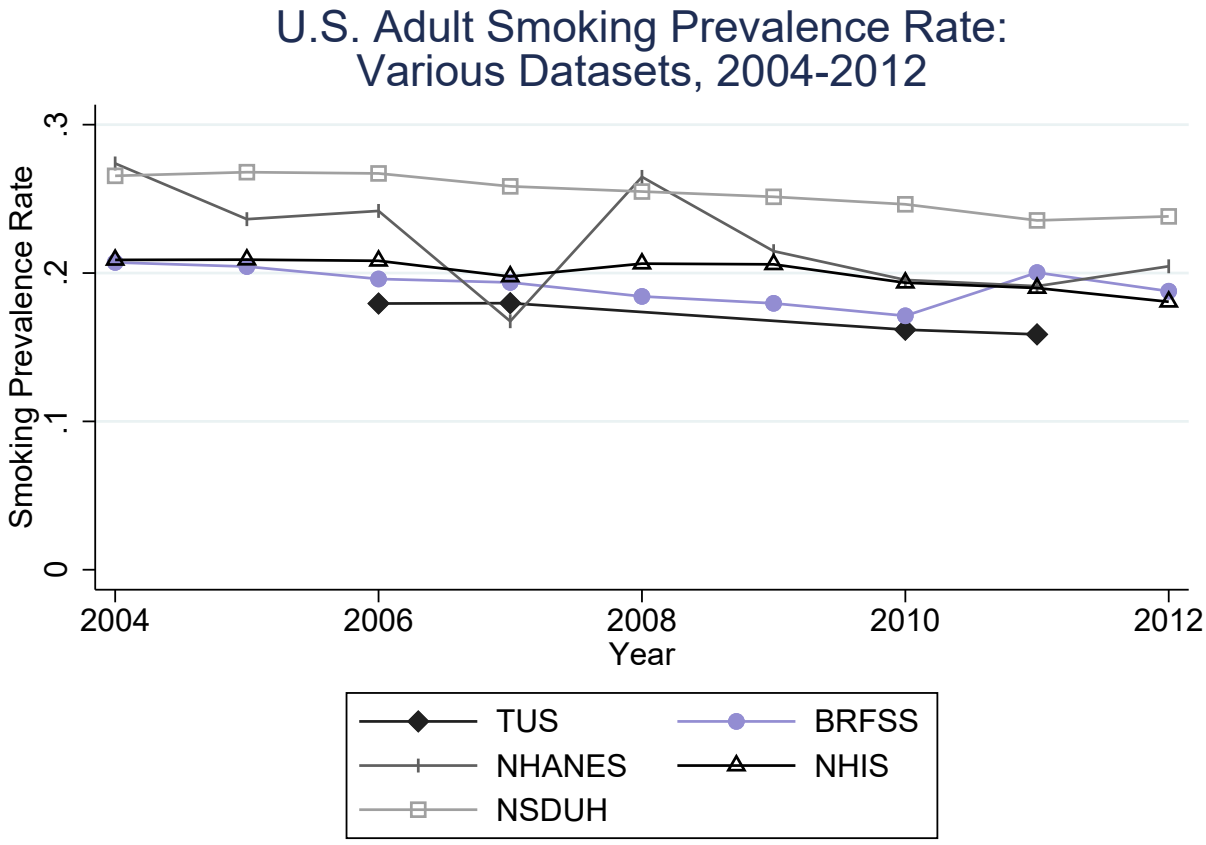

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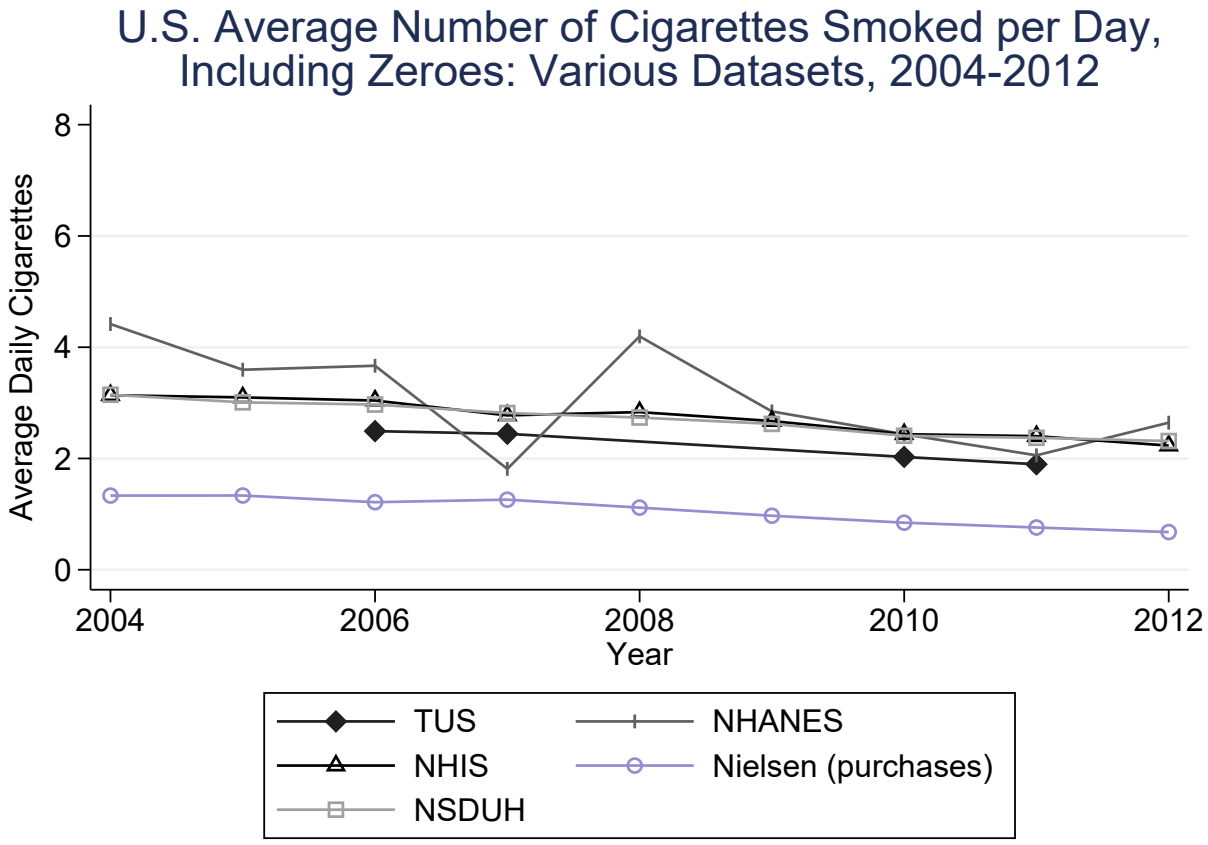
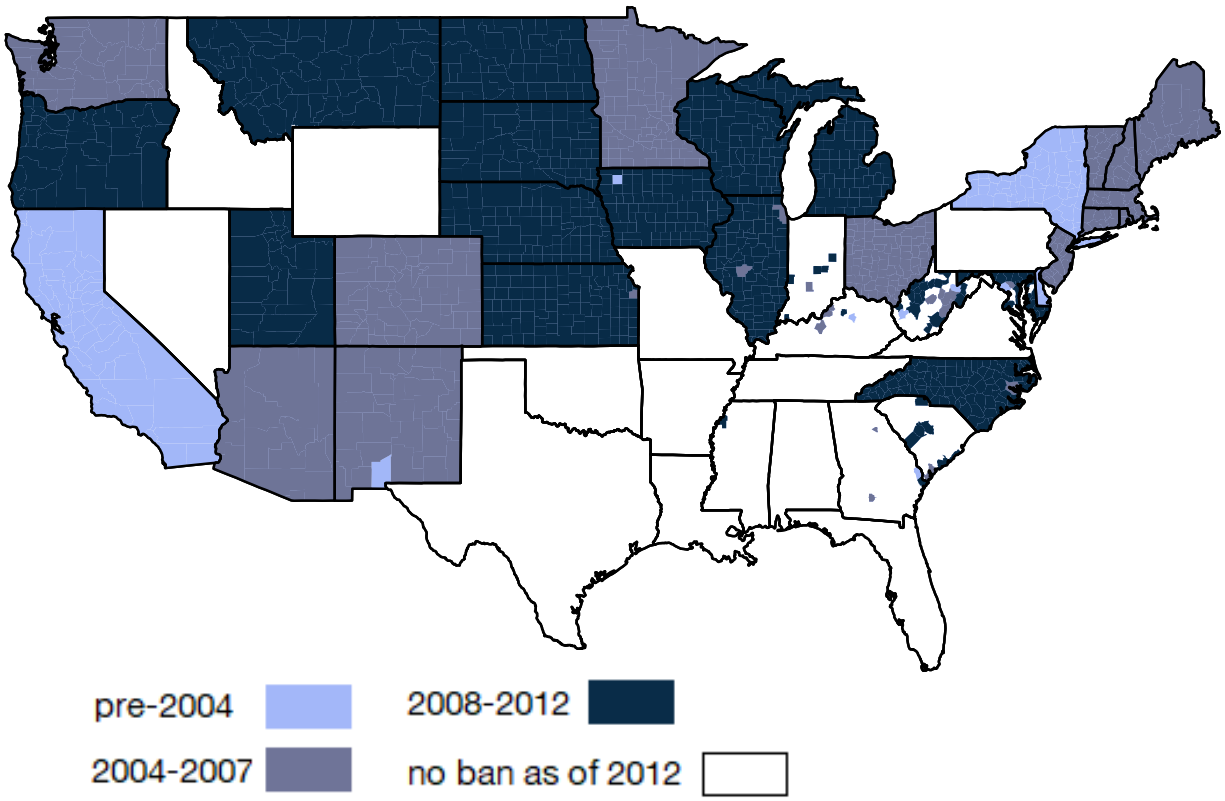
Figure 3



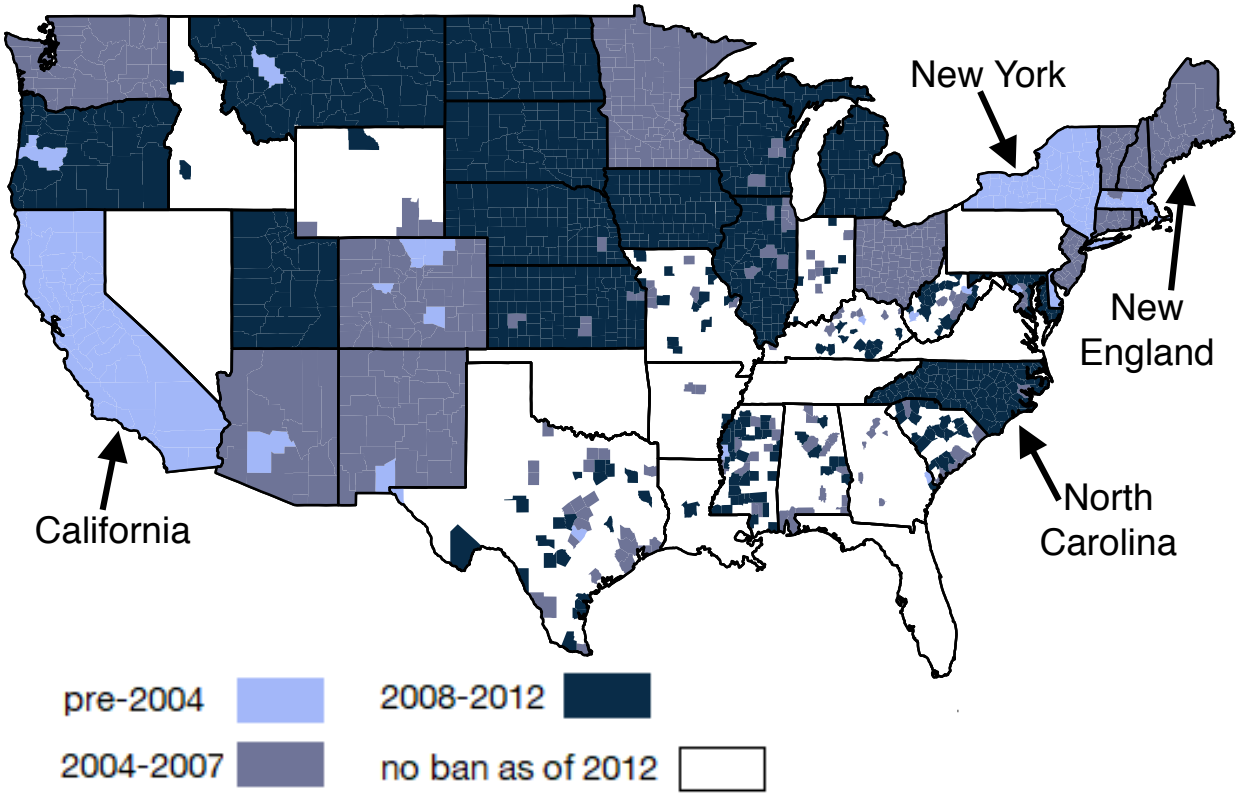
Reproduced from DeCicca, Kenkel, and Lovenheim (forthcoming)

Figure 4: Map of Smoking Bans in Bars Implemented by Counties and States by December 31, 2012



Data Source: American Nonsmokers' Rights Foundation

Figure 5: Map of Smoking Bans in Bars Implemented by Cities, Counties, and States by December 31, 2012



Data Source: American Nonsmokers' Rights Foundation

Figure 6: Includes City-Level Bans

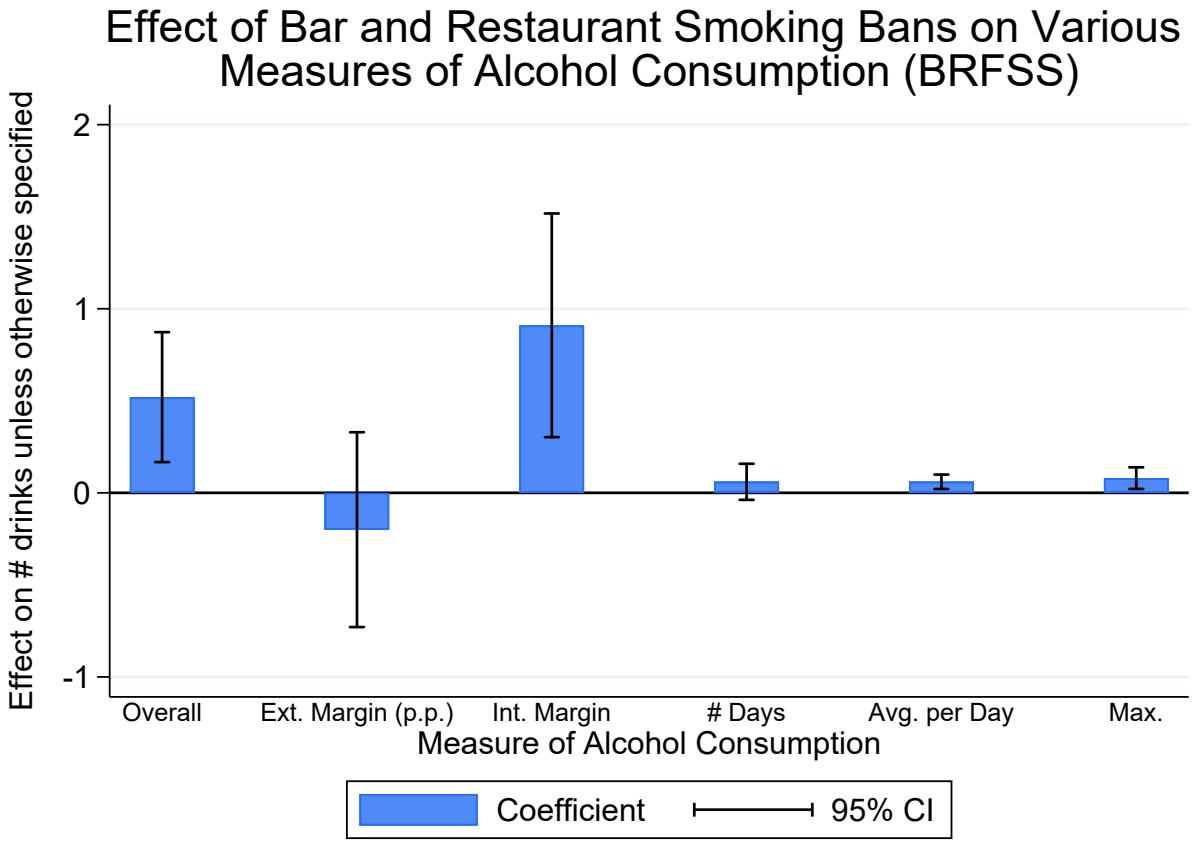


Figure 7

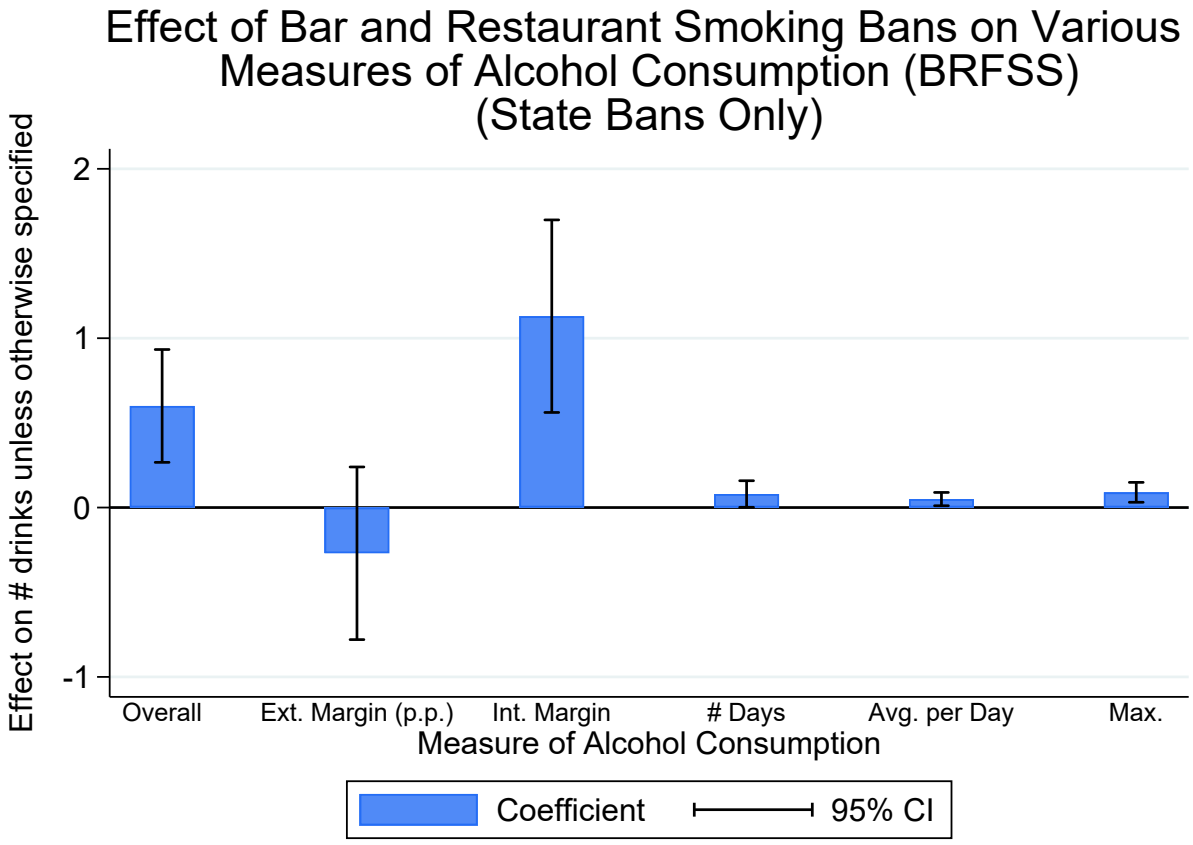

Effect of Bar and Restaurant Smoking Bans on Various Measures of Alcohol Consumption (BRFSS) (State Bans Only)
Effect on # drinks unless otherwise specified
2
1
0
-1
Overall
Ext. Margin (p.p.)
Int. Margin
Days
Avg. per Day
Max.
Measure of Alcohol Consumption
Coefficient
95% CI

Figure 8

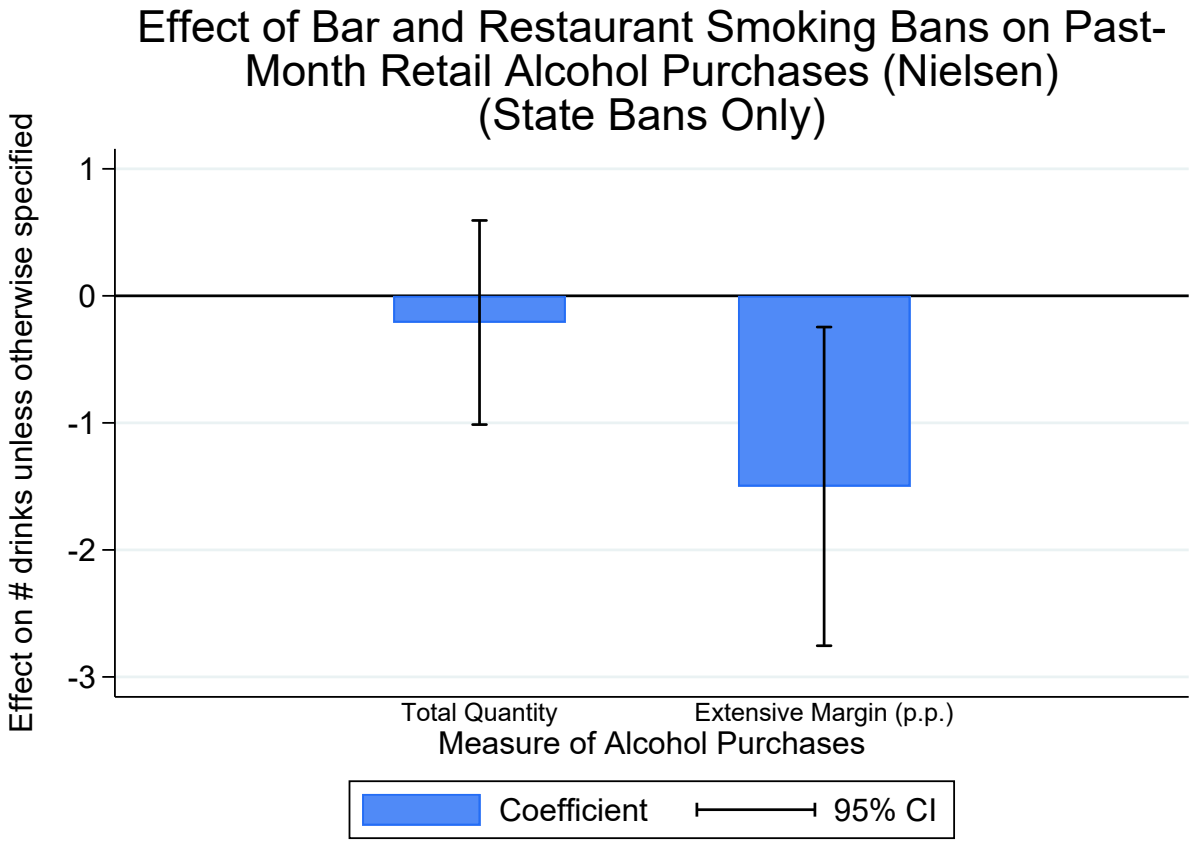

Effect of Bar and Restaurant Smoking Bans on Past-Month Retail Alcohol Purchases (Nielsen) (State Bans Only)
Effect on # drinks unless otherwise specified
1
0
-1
-2
-3
Total Quantity
Extensive Margin (p.p.)
Measure of Alcohol Purchases
Coefficient
95% CI

Figure 9

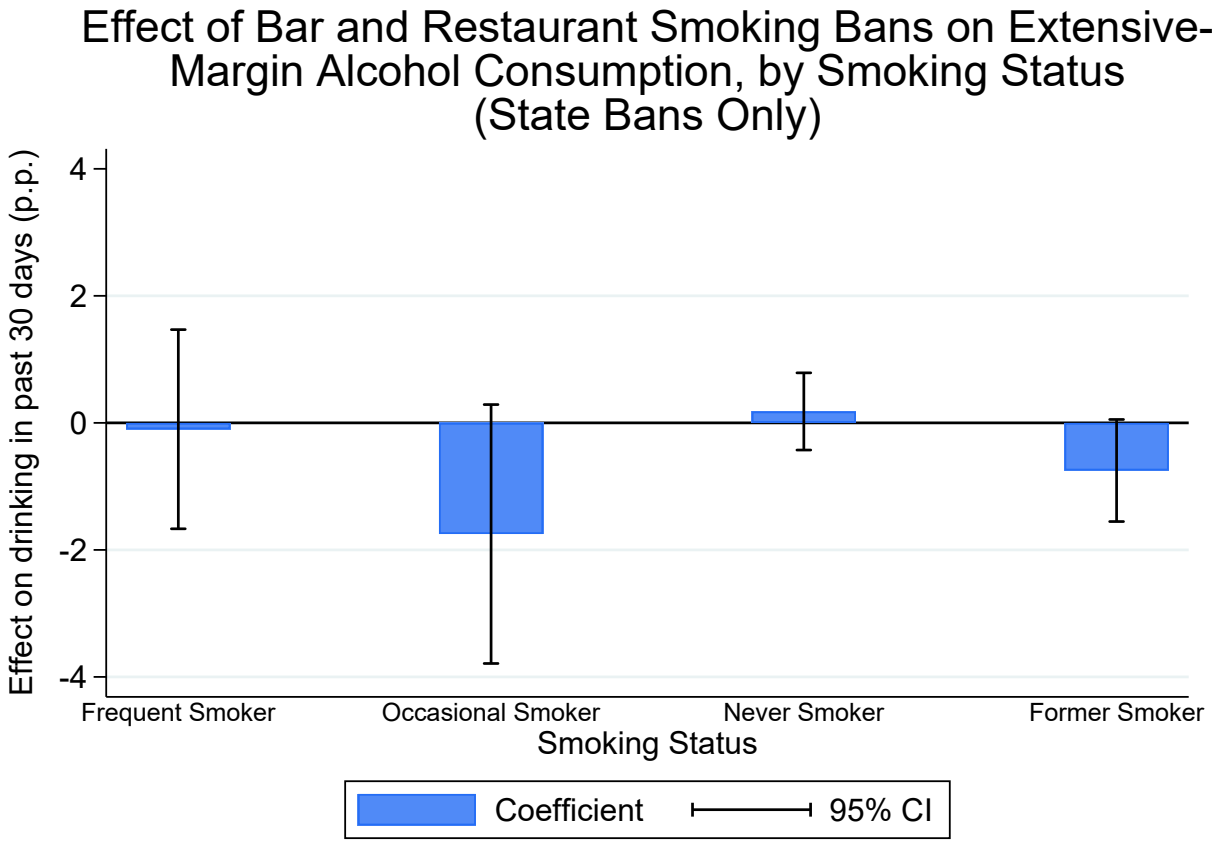

Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Alcohol Consumption, by Smoking Status (State Bans Only)
Effect on drinking in past 30 days (p.p.)
4
2
0
-2
-4
Frequent Smoker
Occasional Smoker
Never Smoker
Former Smoker
Smoking Status
Coefficient
95% CI

Figure 10

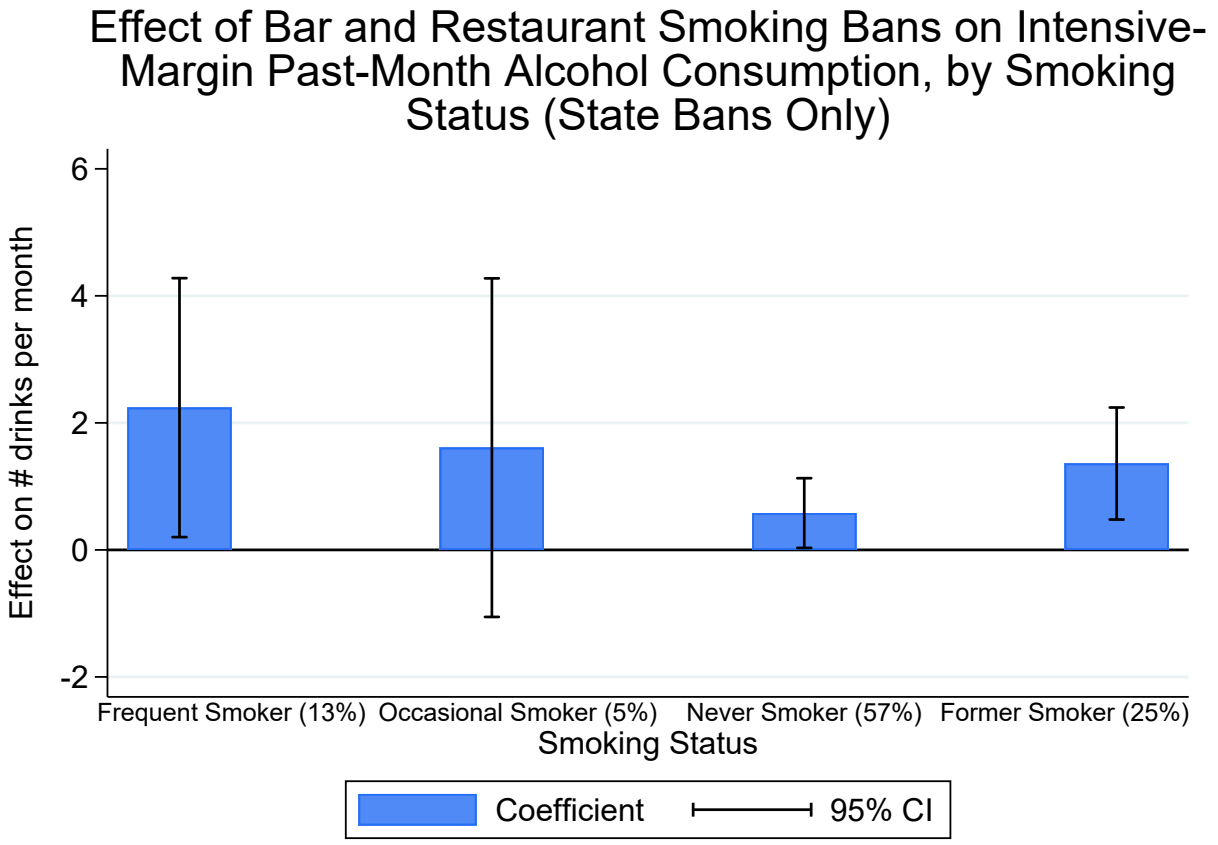

Effect of Bar and Restaurant Smoking Bans on Intensive-Margin Past-Month Alcohol Consumption, by Smoking Status (State Bans Only)
Effect on # drinks per month
6
4
2
0
-2
Frequent Smoker (13%)
Occasional Smoker (5%)
Never Smoker (57%)
Former Smoker (25%)
Smoking Status
Coefficient
95% CI

Figure 11

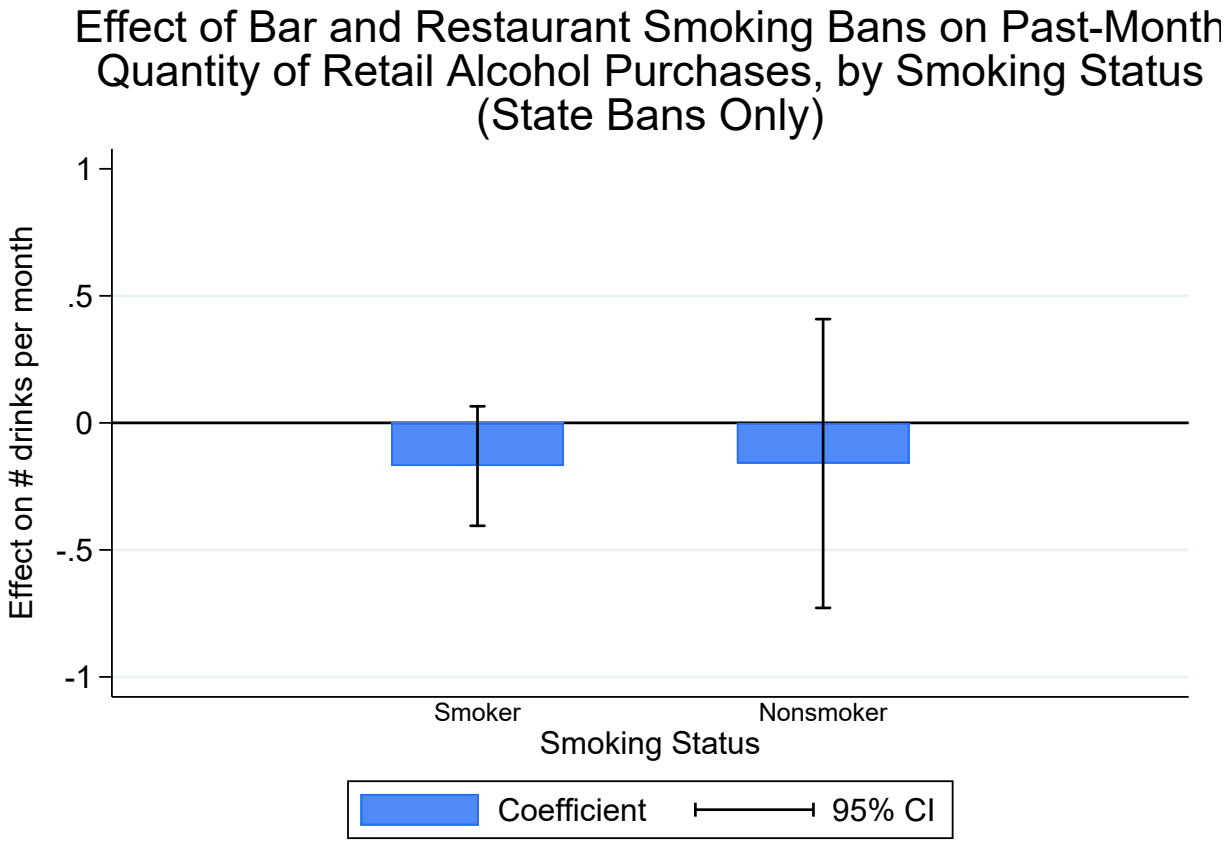

Effect of Bar and Restaurant Smoking Bans on Past-Month Quantity of Retail Alcohol Purchases, by Smoking Status (State Bans Only)
Effect on # drinks per month
1
.5
0
-.5
-1
Smoker
Nonsmoker
Smoking Status
Coefficient
95% CI

Figure 12

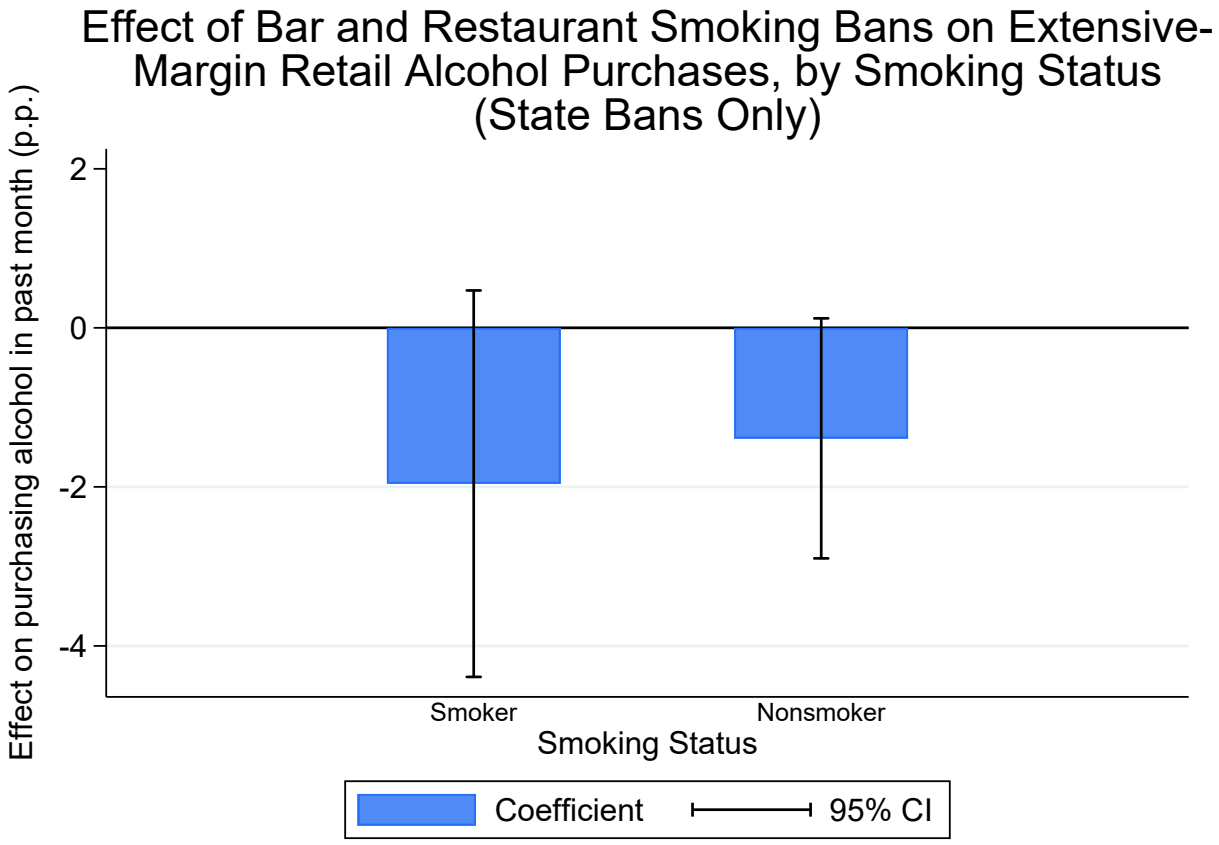

Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Retail Alcohol Purchases, by Smoking Status (State Bans Only)
Effect on purchasing alcohol in past month (p.p.)
2
0
-2
-4
Smoker
Nonsmoker
Smoking Status
Coefficient
95% CI

Figure 13: Excludes City-Level Bans

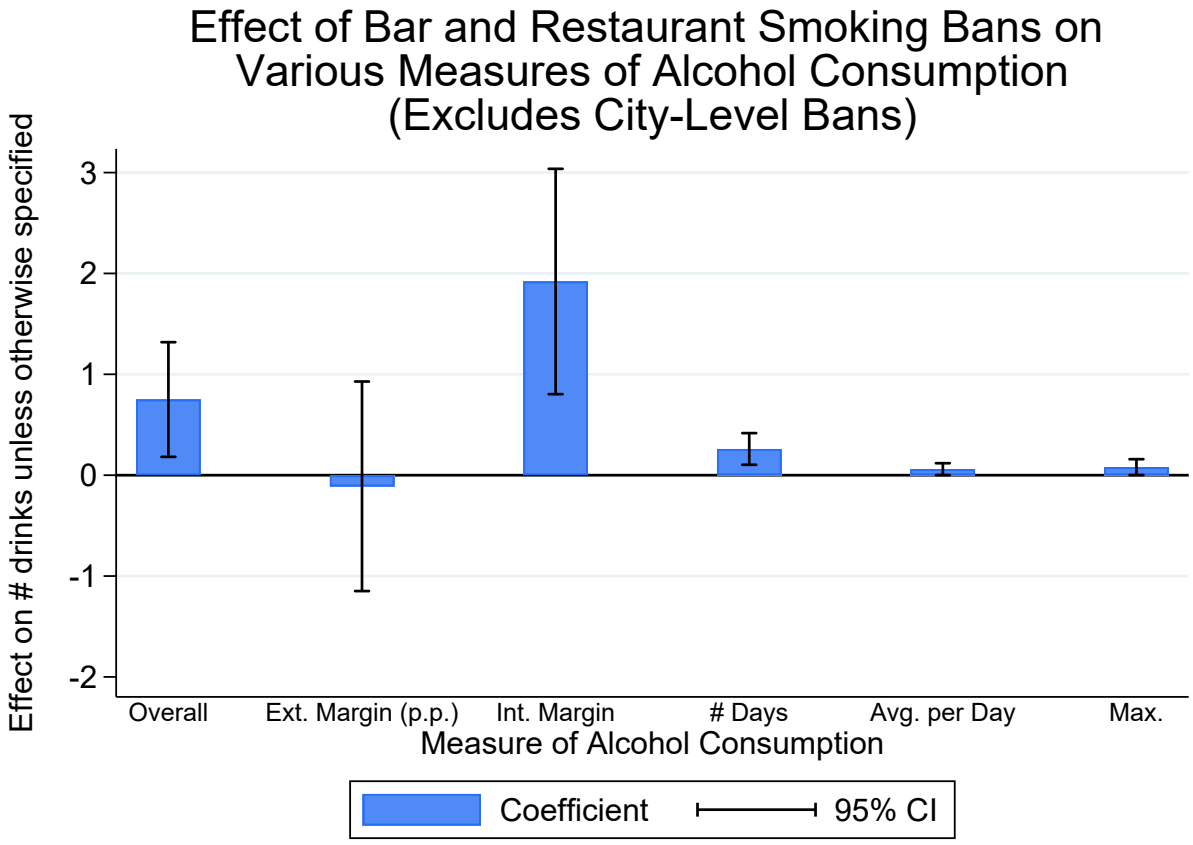
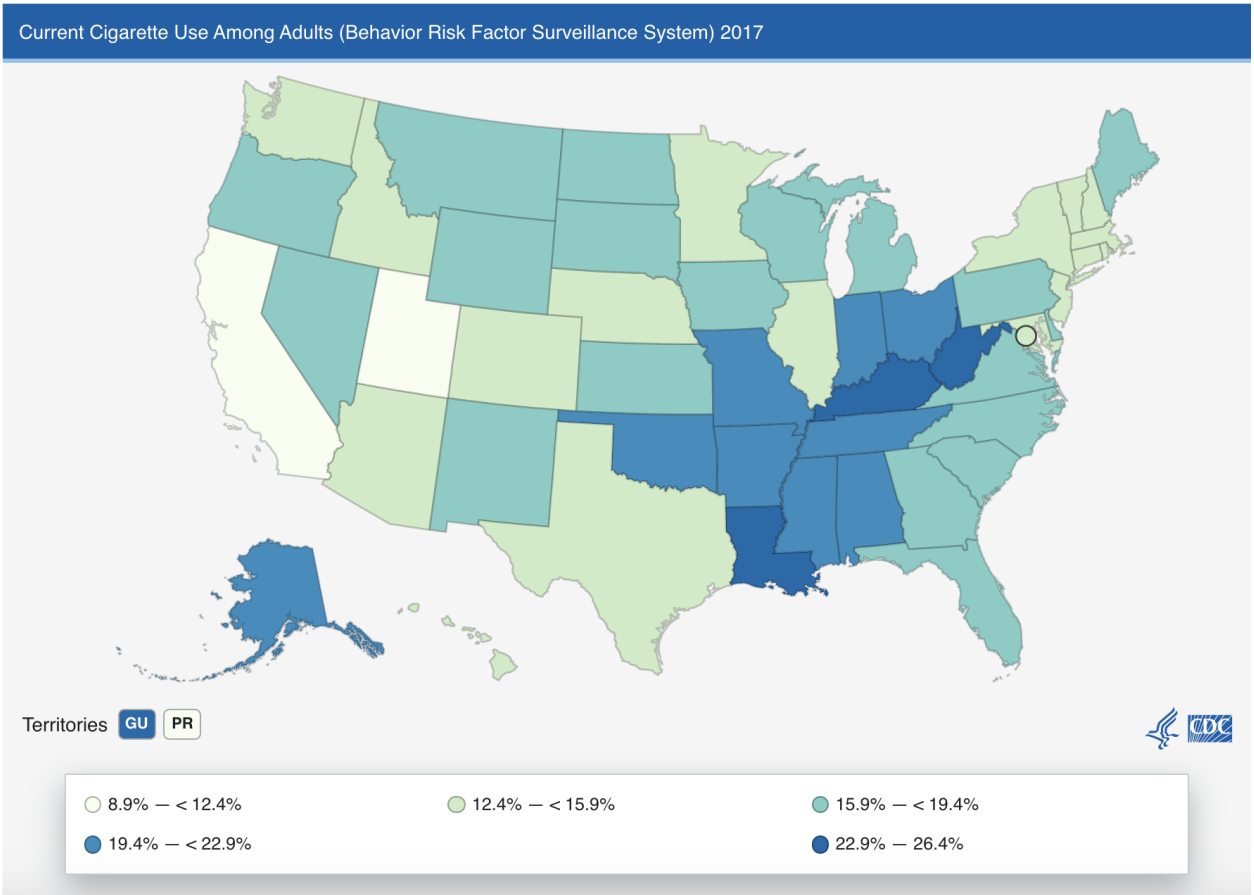


Figure 14

Map of Current Cigarette Use Among Adults



Source: Centers for Disease Control, State Tobacco Activities Tracking and Evaluation (STATE) System

Table 1: Summary statistics of alcohol consumption by smoking status (BRFSS, past 30 days)

Smoking Status	Overall (1)	Smoker (2)	Nonsmoker (3)	(2) - (3) (4)
Full Margin	12.03	17.34	8.94	8.39***
# Drinks (per month)				
N	516,064	189,934	326,130	
Extensive Margin	48.22	53.67	45.03	8.64***
percentage pts.				
N	517,610	191,047	326,563	
Intensive Margin	24.08	32.68	19.41	13.27***
# Drinks (per month) | Drinking				
N	375,055	132,034	243,021	

Note: Column (4) represents the alcohol-related outcome for smokers minus the alcohol-related outcome for nonsmokers. *** denotes $p < 0.01$ for a t-test of the difference in means between smokers and nonsmokers (assuming unequal variances).

Table 2: Effect of Bar and Restaurant Smoking Bans on Alcohol Consumption (BRFSS): Includes City-Level Bans

	Overall	Extensive Margin	Intensive Margin	# Days	Avg. per Day	Max.
Bar and Restaurant Ban	0.52***	-0.20	0.91***	0.06	0.06***	0.08***
(standard error)	(0.18)	(0.27)	(0.31)	(0.05)	(0.02)	(0.03)
[95% confidence interval]	[0.18, 0.87]	[-0.72, 0.33]	[0.30, 1.52]	[-0.03, 0.16]	[0.01, 0.10]	[0.02, 0.14]
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Dep. Var. Mean	11.66	53.19	21.91	8.36	2.41	3.51
% of Mean	4.48%	-0.37%	4.17%	0.73%	2.31%	2.25%
R^2	0.04	0.26	0.03	0.09	0.05	0.05
N	189,660	189,791	161,421	162,125	161,824	148,054

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 3: Effect of Bar and Restaurant Smoking Bans on Alcohol Purchases (Nielsen): Includes City-Level Bans

	Total Quantity	Extensive Margin
Bar & Restaurant Ban	-0.35**	-0.30
(standard error)	(0.15)	(0.30)
[95% confidence interval]	[-0.65, -0.06]	[-0.88, 0.29]
Demographic Controls	Yes	Yes
Alcohol Policy Controls	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax
County FE	Yes	Yes
Time FE	Yes	Yes
Dep. Var. Mean	5.33	25.78
% of Mean	-6.61%	-1.15%
R^2	0.36	0.40
N	280,632	280,632

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 4: Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Past-Month Cigarette Consumption (BRFSS): Includes City-Level Bans

Smoking Status:	Frequent	Occasional	Never	Former
Bar and Restaurant Ban	0.13	0.22*	-0.09	-0.26
(standard error)	(0.17)	(0.13)	(0.23)	(0.18)
[95% confidence interval]	[-0.20, 0.45]	[-0.04, 0.48]	[-0.53, 0.36]	[-0.62, 0.10]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	13.04	5.25	56.60	25.10
% of Mean	0.98%	4.19%	-0.15%	-1.04%
R^2	0.11	0.03	0.12	0.07
N	190,096	190,096	190,096	190,096

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 5: Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Past-Month Alcohol Consumption (BRFSS): Includes City-Level Bans

Smoking Status:	Frequent	Occasional	Never	Former
Bar and Restaurant Ban	-0.24	-0.35	0.15	-0.67
(standard error)	(0.70)	(1.17)	(0.32)	(0.44)
[95% confidence interval]	[-1.61, 1.13]	[-2.63, 1.94]	[-0.48, 0.77]	[-1.54, 0.19]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	58.63	64.74	48.94	57.72
% of Mean	-0.41%	-0.53%	0.30%	-1.16%
R^2	0.07	0.07	0.22	0.16
N	122,221	68,756	174,017	152,539

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 6: Effect of Bar and Restaurant Smoking Bans on Intensive-Margin Past-Month Alcohol Consumption (BRFSS): Includes City-Level Bans

Smoking Status:	Frequent	Occasional	Never	Former
Bar and Restaurant Ban	1.15	2.20**	0.28	1.36***
(standard error)	(1.31)	(1.11)	(0.32)	(0.42)
[95% confidence interval]	[-1.43, 3.72]	[0.02, 4.39]	[-0.35, 0.91]	[0.55, 2.18]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	35.92	27.88	16.06	22.78
% of Mean	3.19%	7.91%	1.73%	5.99%
R^2	0.03	0.03	0.03	0.03
N	85,645	46,161	129,394	113,598

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 7: Effect of Bar and Restaurant Smoking Bans on Total Quantity of Past-Month Alcohol Purchases (Nielsen): Includes City-Level Bans

Smoking Status:	Smoker	Nonsmoker
Bar and Restaurant Ban	-0.20*	-0.14
(standard error)	(0.12)	(0.10)
[95% confidence interval]	[-0.43, 0.03]	[-0.35, 0.06]
Demographic Controls	Yes	Yes
Alcohol Policy Controls	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax
County FE	Yes	Yes
Time FE	Yes	Yes
Dependent Variable Mean	1.92	3.52
% of Mean	-10.33%	-4.00%
R^2	0.32	0.34
N	198,570	267,973

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 8: Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Past-Month Alcohol Purchases (Nielsen): Includes City-Level Bans

Smoking Status:	Smoker	Nonsmoker
Bar and Restaurant Ban	-0.73	-0.11
(standard error)	(0.87)	(0.34)
[95% confidence interval]	[-2.44, 0.98]	[-0.79, 0.56]
Demographic Controls	Yes	Yes
Alcohol Policy Controls	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax
County FE	Yes	Yes
Time FE	Yes	Yes
Dependent Variable Mean	31.54	24.35
% of Mean	-2.31%	-0.46%
R^2	0.27	0.37
N	198,570	267,973

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 9: Effect of Bar and Restaurant Smoking Bans on Violent Crimes per 10,000 People

Crime Type:	Violent	Murder	Rape	Aggravated Assault	Simple Assault
Bar and Restaurant Ban	-0.55	-0.01	0.05	-0.34	-0.82
(standard error)	(0.96)	(0.02)	(0.04)	(0.75)	(1.09)
[95% confidence interval]	[-2.43, 1.33]	[-0.05, 0.03]	[-0.04, 0.13]	[-1.81, 1.12]	[-2.96, 1.32]
Alcohol Policy Controls	BAC	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
Agency FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Dependent Variable Mean	53.18	0.54	2.89	35.94	98.80
% of Mean	-1.03%	-2.27%	1.67%	-0.95%	0.83%
R^2	0.91	0.84	0.77	0.86	0.94
N	104,766	104,766	104,766	104,766	104,766

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Policy controls are (1) whether the jurisdiction is subject to a smoking ban in restaurants only, (2) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (3) the state cigarette tax per pack. Controls also include agency and year fixed effects. Standard errors are clustered at the agency level. Regressions are probability weighted using the population for the agency's jurisdiction.

Table 10: Effect of Bar and Restaurant Smoking Bans on Log of Fatal Drunk Driving Crashes

Smoking Prevalence	All	High Smoking	Medium Smoking	Low Smoking
Bar and Restaurant Ban	-0.00	0.04**	-0.02	-0.01
(standard error)	(0.01)	(0.02)	(0.02)	(0.02)
[95% confidence interval]	[-0.02, 0.02]	[0.01, 0.07]	[-0.05, 0.01]	[-0.04, 0.02]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
R^2	0.70	0.70	0.70	0.70
N	339,264	339,264	339,264	339,264

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) whether the jurisdiction is subject to a smoking ban in restaurants only, (2) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (3) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 11: Effect of Bar and Restaurant Smoking Bans on Alcohol Consumption (BRFSS): Excludes City-Level Bans

	Full Margin	Extensive Margin	Intensive Margin	# Days	Avg. per Day	Max.
Bar & Restaurant Ban	0.75***	-0.11	1.92***	0.26***	0.06**	0.08**
(standard error)	(0.29)	(0.53)	(0.57)	(0.08)	(0.03)	(0.04)
[95% confidence interval]	[0.19, 1.32]	[-1.16, 0.93]	[0.81, 3.04]	[0.10, 0.41]	[0.01, 0.12]	[0.01, 0.15]
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Dep. Var. Mean	11.66	53.19	21.91	8.36	2.41	3.51
% of Mean	6.45%	-0.21%	8.78%	3.09%	2.65%	2.35%
R^2	0.04	0.26	0.03	0.09	0.05	0.05
N	189,660	189,791	161,421	162,125	161,824	148,054

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 12: Effect of Bar and Restaurant Smoking Bans on Alcohol Purchases (Nielsen): Excludes City-Level Bans

	Full Margin	Extensive Margin
Bar & Restaurant Ban	-0.32	-1.00**
(standard error)	(0.29)	(0.48)
[95% confidence interval]	[-0.89, 0.26]	[-1.94, -0.07]
Demographic Controls	Yes	Yes
Alcohol Policy Controls	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax
County FE	Yes	Yes
Time FE	Yes	Yes
Dep. Var. Mean	5.33	25.78
% of Mean	-5.92%	-3.89%
R^2	0.36	0.40
N	280,632	280,632

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 13: Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Past-Month Cigarette Consumption (BRFSS): Excludes City-Level Bans

Smoking Status:	Everyday	Someday	Never	Former
Bar and Restaurant Ban	-0.03	0.28*	-0.14	-0.11
(standard error)	(0.27)	(0.16)	(0.33)	(0.26)
[95% confidence interval]	[-0.56, 0.50]	[-0.04, 0.59]	[-0.79, 0.51]	[-0.62, 0.40]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	13.04	5.25	56.60	25.10
% of Mean	0.23%	5.29%	-0.24%	-0.44%
R^2	0.11	0.03	0.12	0.07
N	190,096	190,096	190,096	190,096

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 14: Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Past-Month Alcohol Consumption (BRFSS): Excludes City-Level Bans

Smoking Status:	Everyday	Someday	Never	Former
Bar and Restaurant Ban	-0.07	-0.32	0.20	-0.51
(standard error)	(1.07)	(1.82)	(0.62)	(0.69)
[95% confidence interval]	[-2.17, 2.03]	[-3.90, 3.26]	[-1.02, 1.41]	[-1.85, 0.84]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	58.63	64.74	48.94	57.72
% of Mean	-0.12%	-0.49%	0.40%	-0.88%
R^2	0.07	0.07	0.22	0.16
N	122,221	68,756	174,017	152,539

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 15: Effect of Bar and Restaurant Smoking Bans on Intensive-Margin Past-Month Alcohol Consumption (BRFSS): Excludes City-Level Bans

Smoking Status:	Everyday	Someday	Never	Former
Bar and Restaurant Ban	3.61	5.41**	1.09**	1.08
(standard error)	(2.34)	(2.55)	(0.49)	(0.85)
[95% confidence interval]	[-0.98, 8.20]	[0.41, 10.40]	[0.14, 2.04]	[-0.59, 2.75]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	35.92	27.88	16.06	22.78
% of Mean	10.05%	19.40%	6.79%	4.74%
R^2	0.03	0.04	0.03	0.03
N	85,645	46,161	129,394	113,598

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 16: Effect of Bar and Restaurant Smoking Bans on Full-Margin Alcohol Purchases (Nielsen): Excludes City-Level Bans

Smoking Status:	Smoker	Nonsmoker
Bar and Restaurant Ban	-0.13	-0.16
(standard error)	(0.26)	(0.20)
[95% confidence interval]	[-0.64, 0.39]	[-0.56, 0.23]
Demographic Controls	Yes	Yes
Alcohol Policy Controls	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax
County FE	Yes	Yes
Time FE	Yes	Yes
Dependent Variable Mean	1.92	3.52
% of Mean	-6.77%	-4.55%
R^2	0.32	0.34
N	198,570	267,973

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table 17: Effect of Bar and Restaurant Smoking Bans on Extensive-Margin Alcohol Purchases (Nielsen): Excludes City-Level Bans

Smoking Status:	Smoker	Nonsmoker
Bar and Restaurant Ban	-2.25**	-1.07*
(standard error)	(1.03)	(0.59)
[95% confidence interval]	[-4.26, -0.24]	[-2.23, 0.09]
Demographic Controls	Yes	Yes
Alcohol Policy Controls	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax
County FE	Yes	Yes
Time FE	Yes	Yes
Dependent Variable Mean	31.54	24.35
% of Mean	-7.13%	-4.39%
R^2	0.27	0.37
N	198,570	267,973

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

A Additional Figures and Tables

Table A.1: Effect of Bar and Restaurant Smoking Bans on Number of Days Spent Drinking in Past 30 Days (Conditional on Drinking in the Past 30 Days): Includes City-Level Bans

Smoking Status:	Frequent	Occasional	Never	Former
Bar and Restaurant Ban	0.03	0.28	0.03	0.06
(standard error)	(0.14)	(0.18)	(0.06)	(0.09)
[95% confidence interval]	[-0.25, 0.31]	[-0.07, 0.63]	[-0.09, 0.14]	[-0.12, 0.25]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	9.76	8.55	7.18	10.20
% of Mean	0.29%	3.28%	0.37%	0.60%
R^2	0.04	0.05	0.08	0.06
N	86,904	46,853	130,017	114,293

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) whether the jurisdiction is subject to a smoking ban in restaurants only, (2) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (3) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table A.2: Effect of Bar and Restaurant Smoking Bans on Average Alcohol Consumption per Drinking Day (Conditional on Drinking in Past 30 Days): Includes City-Level Bans

Smoking Status:	Frequent	Occasional	Never	Former
Bar and Restaurant Ban	0.03	0.07	0.03	0.10***
(standard error)	(0.08)	(0.08)	(0.02)	(0.03)
[95% confidence interval]	[-0.12, 0.18]	[-0.08, 0.22]	[-0.02, 0.07]	[0.05, 0.15]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	3.26	3.10	2.07	2.16
% of Mean	0.85%	2.15%	1.21%	4.72%
R^2	0.04	0.05	0.04	0.04
N	86,162	46,568	129,767	114,055

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.

Table A.3: Effect of Bar and Restaurant Smoking Bans on Maximum Alcohol Consumption on 1 Occasion (Conditional on Drinking in Past 30 Days): Includes City-Level Bans

Smoking Status:	Frequent	Occasional	Never	Former
Bar and Restaurant Ban	0.08	0.01	0.02	0.09**
(standard error)	(0.11)	(0.10)	(0.03)	(0.04)
[95% confidence interval]	[-0.14, 0.31]	[-0.19, 0.21]	[-0.04, 0.07]	[0.02, 0.16]
Demographic Controls	Yes	Yes	Yes	Yes
Alcohol Policy Controls	BAC	BAC	BAC	BAC
Smoking Policy Controls	Cig. Tax	Cig. Tax	Cig. Tax	Cig. Tax
County FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Dependent Variable Mean	4.83	4.67	2.96	3.19
% of Mean	1.75%	0.22%	0.61%	2.80%
R^2	0.04	0.06	0.04	0.04
N	76,671	41,170	117,972	103,746

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Note: Demographic controls are the percentages of the county population that is male, Hispanic, non-Hispanic black, non-Hispanic Asian, non-Hispanic non-white other racial groups, younger than 15, 15 to 24, 35 to 44, 45 to 64, and 65 or older. The omitted categories for the demographic controls are the percentage female, percentage white, and percentage aged 25 to 34. Policy controls are (1) an indicator for a law mandating the BAC limit for driving under the influence is 0.08, and (2) the state cigarette tax per pack. Controls also include county and month-year fixed effects. Standard errors are clustered at the county level. Regressions are probability weighted using the county population.