EFFECTS OF VENUE-SPECIFIC STATE CLEAN INDOOR AIR LAWS ON SMOKING-RELATED OUTCOMES

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SUMMARY

A large literature has documented relationships between state clean indoor air laws (SCIALs) and smoking-related outcomes in the United States. These laws vary within states over time and across venues such as schools, government buildings, and bars. Few studies, however, have evaluated whether the effects of SCIALs are plausibly concentrated among workers who should have been directly affected because they worked at locations covered by the venue-specific restrictions. We fill this gap in the literature using data on private sector workers, government employees, school workers, eating and drinking place workers, and bartenders from the 1992–2007 Tobacco Use Supplements to the Current Population Survey. Our quasiexperimental models indicate robust effects of SCIALs restricting smoking in bars: these laws significantly increased the presence of workplace smoking restrictions as reported by bartenders and reduced the fraction of bartenders who smoke. We do not, however, find that SCIALs in private workplaces, government workplaces, schools, or restaurants increased the presence of workplace smoking restrictions among groups of workers working in venues covered by these laws. This suggests that the smoking reductions associated with SCIALs in previous research are unlikely to have been directly caused by effects of workplace smoking restrictions on workers. Copyright © 2009 John Wiley & Sons, Ltd.

1. INTRODUCTION

A large literature in economics and public health has examined the ability of public policies to influence smoking and smoking-related outcomes such as exposure to secondhand smoke. In particular, researchers and policymakers have increasingly focused on effects of state clean indoor air laws (SCIALs), policies that prohibit or restrict smoking in various venues such as private workplaces, schools, and restaurants. Numerous studies have shown that individuals who live in states with stronger clean indoor air policies covering more venues have better smoking-related outcomes than otherwise similar individuals in states with clean indoor air policies that are less strict or cover fewer venues (Emont *et al.*, 1993; Wasserman *et al.*, 1991; Chaloupka, 1992). A smaller body of more recent research – mainly by economists – has shown that some of these relationships for smoking-related outcomes are robust to including unrestricted state and year fixed effects in the models, thus identifying the effects of SCIALs from within-state changes in the number or restrictiveness of clean indoor air laws (Tauras, 2006; Yurkeli and Zhang, 2000).

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In this paper, we provide new evidence on the effects of SCIALs using the 1992–2007 Tobacco Use Supplements to the Current Population Survey (CPS TUS). These data provide large samples of individual-level responses to questions about employment, workplace smoking restrictions, and own-smoking outcomes. To the CPS TUS data, we match detailed policy information on the presence and strength of SCIALs for 12 separate venues (such as schools, government workplaces, and bars) using Robert Wood Johnson's ImpacTeen database.

Together, the CPS TUS microdata and state policy data allow us to make two important contributions to the existing literature. First, we are able to make explicit use of the venue-specific nature of clean indoor air laws by identifying groups of workers (through combinations of class of worker, occupation, and industry codes) who should have been directly affected by a venue-specific restriction while at work. For example, laws restricting smoking in schools should disproportionately affect smoking behaviors among teachers and other school workers, while policies banning smoking in bars should have relatively strong effects for bartenders. Second, we are able to test directly for 'compliance effects' of venue-specific SCIALs: whether the state laws changed actual worksite smoking policies as reported by workers in the CPS TUS data. Most existing research relates clean indoor air laws to smoking outcomes, but the compliance effect (whether the laws actually changed smoking restrictions in practice) is a key necessary condition for interpreting observed reductions in smoking associated with clean indoor air policy as being attributable to exposure to tougher restrictions *at work* (Carpenter, 2009, forthcoming).[1]

We combine these two features of the CPS TUS data below to test whether, say, SCIALs restricting smoking in government workplaces affected the worksite smoking policies and smoking-related behaviors reported by government workers. Together, these tests allow us to provide important evidence on whether and how venue-specific SCIALs affect outcomes. We estimate straightforward models of own reports of official worksite smoking restrictions and smoking behavior. In addition to controls for individual and state characteristics, all of our models also include fixed effects for the CPS TUS survey month and year as well as unrestricted state dummies; thus, our estimates of the effects of the venue-specific SCIALs are identified from the numerous changes in venue-specific restrictions within states over time.

To preview, we find robust evidence that state laws restricting smoking in bars significantly increased the prevalence of bartender-reported worksite smoking restrictions and reduced the likelihood of smoking among bartenders. We do not, however, find robust effects of SCIALs that cover private workplaces, government buildings, schools, or restaurants on outcomes for workers who should have been most directly affected by those policies (private sector workers, government workers, school workers, and workers in eating and drinking places, respectively). This suggests that any effects of SCIALs on smoking-related outcomes in previous research are unlikely to have been caused by workers' direct exposure to tougher worksite restrictions.

The remainder of the paper proceeds as follows: Section 2 describes the relevant literature and provides a conceptual framework. Section 3 describes the CPS TUS microdata and ImpacTeen policy data and outlines the empirical approach. Section 4 presents the main results and Section 5 concludes.

2. CONCEPTUAL FRAMEWORK

There are several mechanisms through which workplace SCIALs can be related to smoking restrictions and smoking-related outcomes. First, there is a direct causal link: states adopt laws stating that workplaces must restrict smoking, workplaces comply with the laws and implement restrictions, and people working at those places either stop smoking or reduce their cigarette consumption.[2]

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[1]In the following section, we discuss several reasons why changes in SCIALs might not directly lead to commensurate changes in actual worksite smoking policies.

[2]Evans *et al.* (1999) is among the first studies to look at the effect of employer-instituted work bans on smoking behaviors but does not consider the laws evaluated here.

SCIALs and workplace smoking restrictions can also affect smoking-related outcomes indirectly. If peer effects are important to smoking behaviors (as suggested by Cutler and Glaeser, 2007, and others) workplace smoking restrictions may spill over to people other than workers at venues that restrict smoking. For example, both spouses may quit smoking after one spouse's workplace restricts smoking. Another possibility is that workplace smoking restrictions affect customers' smoking. This mechanism is most plausible for restrictions on smoking in public workplaces, such as bars and restaurants. If there are indirect peer and customer effects, venue-specific workplace SCIALs may reduce smoking among individuals besides the workers at the specific venues to which the SCIALs apply.

Changes in social norms and the acceptability of smoking may be a common determinant of SCIAL adoption, workplace smoking restrictions, and reduced smoking. Models that do not account for changes in social norms thus might mistakenly suggest a causal relationship between SCIALs, workplace smoking restrictions, and smoking because of omitted variable bias.[3]

In addition, passage of SCIALs might not lead to commensurate changes in actual worksite smoking policies. Some employers may purposely defy the law because of concerns about negative effects on their businesses.[4] Other employers may not be well informed about laws since state laws vary significantly as to which venues are actually subject to SCIALs and how stringent such laws are. Finally, some employers may have already implemented restrictions without having been compelled to do so.

Previous research on effects of venue-specific restrictions is unable to shed light on the mechanisms through which SCIALs affect smoking. Indeed, earlier studies reached mixed conclusions as to whether venue-specific SCIALs affect smoking. Tauras (2006) finds that restrictions on smoking at shopping malls have a larger negative effect on smoking among the general population than restrictions at private workplaces or restaurants, while restrictions at health facilities are positively associated with smoking intensity. Tauras (2004) reports a positive relationship between smoking among the general population and restrictions at government workplaces but a negative relationship for restrictions at hotels and restaurants. Adda and Cornaglia (2009, forthcoming) find that cotinine levels among households with a smoker are *positively* related to smoking restrictions at restaurants and bars, likely due to the displacement of smoking from those venues into homes.[5] Previous studies did not directly test for compliance with worksite SCIALs or focus on smoking among workers at specific affected venues. Examining the relationship between venue-specific SCIALs, actual reported worksite smoking policies, and smoking among workers at affected venues is, therefore, an important exercise.

3. METHODS

3.1. Data

Our individual-level data are from the CPS TUS. These surveys have been carried out periodically since 1992 and have been used in previous research to evaluate the effects of SCIALs and other tobacco control policies (Tauras, 2006; Lovenheim, 2008).[6] The data contain detailed information about smoking, demographic characteristics, and employment. Individuals who work indoors and are not

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[3]We address this concern by controlling for antismoking sentiment (DeCicca *et al.*, 2008) in robustness tests. Our results are not affected.

[4]There are many newspaper accounts of bar and restaurant owners, for example, actively defying smoking bans. Unfortunately, we do not have data on the penalties for noncompliance with SCIALs, which typically include fines (on the order of hundreds to thousands of dollars) for each violation.

[5]We do not review here a small number of public health studies that have descriptively examined a variety of outcomes for particular occupation groups relevant for our analysis. Shopland *et al.* (2004), for example, find that food service workers are less likely to be covered by official worksite smoking restrictions than are other workers.

[6]The CPS TUS were carried out two or three times in each of seven waves: 1992–1993, 1995–1996, 1998–1999, 2000, 2001–2002, 2003, and 2006–2007. Our study incorporates every survey that included information about workplace restrictions on smoking; this was not included in the 2000 CPS TUS.

self-employed report whether their workplace has any official restrictions on smoking in the workplace.[7] We create an indicator variable equal to one if an individual reports that his/her worksite has any official restriction on smoking.[8] Although workers' self-reports of worksite smoking restrictions are unlikely to be perfectly accurate, they are likely to be better than other measures of compliance with SCIALs. Employers, for example, could be unwilling to report noncompliance with SCIALs due to fear of sanctions; this reporting bias should be less salient for workers who do not face such liability. Moreover, if SCIALs change employer implementation of workplace smoking policies but these are not actually translated into changes in workers' perceptions of those policies, SCIALs should not be expected to affect worker outcomes. As such, worker reports provide a valuable perspective on whether, how, and to what extent SCIALs affected smoking-related outcomes.

We also use the CPS TUS data to create two variables that measure smoking-related outcomes. We classify an individual age 18 or older as a smoker if he/she reports that he/she currently smokes every day or some days. We measure smoking intensity among smokers using information on the number of days in the past 30 days a respondent reported smoking multiplied by the average number of cigarettes he/she reported smoking on the days he/she smoked. We use the natural log of this value as the dependent variable in smoking intensity models.

Our data on SCIALs come from Robert Wood Johnson's ImpacTeen database.[9] These data represent a comprehensive effort to track and consistently code each state's clean indoor air restrictions in 12 venues: private workplaces, government workplaces, restaurants, bars, health-care facilities, public schools, private schools, shopping malls, public transit, child care centers, recreational facilities, and cultural facilities. These ratings have a couple of key advantages over other sources of information on state clean indoor air policies. First, they cover our entire sample period (1992–2007); hence, we can use the full CPS TUS series in our analysis. This allows us to incorporate more recent policy changes than previous work.[10] Second, the ImpacTeen ratings include considerably more detail than any other tracking system of clean indoor air laws. The ImpacTeen data cover more venues than other sources of such laws, and within each venue it provides strength ratings that indicate the relative restrictiveness of each venue-specific policy on a scale of 0–3 or 0–5. The exact coding varies across venues, but for most venues a rating of zero indicates no restriction; a rating of 1 indicates a restriction that allows a separate designated smoking area; a rating of 2 indicates a restriction that requires a separately ventilated area; and a rating of 3 indicates a complete ban on smoking.[11] These ratings allow us to take advantage of variation in both the strength of each policy and the specific venues covered.

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[7]The questions about workplace smoking restrictions were only asked of self-respondents to the smoking supplement; hence, we use the self-response weights to obtain population representative results. This yields a maximum of 1 133 546 observations for adults 18 and older with a valid nonzero self-response weight. We exclude observations for two reasons. The first group of 615 113 observations was out of scope for the workplace smoking policy questions (were not in the labor force or unemployed, self-employed or not working for pay, worked outdoors or in a home or in a vehicle or at varied locations). The second group had an invalid response for smoking status (3312 observations), did not know/refused/had no response to the questions about working indoors (7682 observations), or did not know/refused/had no response to the questions about workplace smoking bans (5643 observations). This left our final sample of 501 796 workers with responses to the workplace smoking policy questions.

[8]Specifically, individuals are asked, 'Does your place of work have an official policy that restricts smoking in any way?'

[9]These are the ImpacTeen Tobacco Control Policy Data. A version of these data for 1991–2008 is posted on the ImpacTeen (2009) website (www.impacteen.org). We used the version as posted on their website on 5 June 2009.

[10]Most other sources (e.g. the National Cancer Institute's State Cancer Legislative Database (SCLD) and the American Lung Association's State Legislated Actions on Tobacco Institutions (SLATI)) stop tracking the state policies well before the end of our sample. The ImpacTeen ratings are strongly correlated with SCLD and SLATI data for the venues and time periods for which we have comparable series. The other commonly used coding is the Americans for Nonsmoker's Rights Foundation (ANRF), which passively tracks restrictions for a subset of our venues. There is a mismatch in the geography for the CPS TUS and the ANRF that precludes matching the CPS TUS to the ANRF data exactly.

[11]For venues that range from 0 to 5, 5 represents a full ban. The exceptions to these general rules can be found in Appendix B of the ImpacTeen tobacco policy codebook.

3.2. Regression model

Our main empirical approach for evaluating the effects of SCIALs on worksite smoking restrictions and smoking behaviors is a straightforward state and year fixed effects model. Changes in outcomes for individuals in states over time coincident with policy adoption are compared with changes in outcomes for individuals in states that did not change policy. These models take the following general form:

$$Y_{ist} = \alpha + \beta_1 X_{ist} + \beta_2 Z_{st} + \beta_3 \text{ (Venue-Specific SCIAL Ratings)}_{st} + S_s + T_t + \varepsilon_{ist}, \qquad (1)$$

where Y_{ist} are our various outcomes of interest for individual i in state s at time t. For dichotomous outcomes (the presence of any worksite smoking restriction and smoking), we estimate linear probability models for the ease of interpretation; for smoking intensity, we estimate OLS regressions with log cigarettes as the dependent variable.[12] X_{ist} is a vector of individual demographic characteristics and includes sex, age and its square, marital status dummies, education dummies, race/ethnicity dummies, a dummy variable indicating residence outside a metropolitan statistical area, and dummy variables for family income.[13] Z_{st} is a vector of time-varying state characteristics and policies and includes the state unemployment rate, annual state employment growth rate, percent of population below the poverty line, and the real value of the state excise tax on a pack of cigarettes.[14] S_s is a full set of state fixed effects and captures all time-invariant state characteristics that may impact outcomes (e.g. religiosity). T_t is a full set of survey year and month dummies and accounts for secular changes in outcomes common to everyone in the sample in each year or month (e.g. season). Standard errors are clustered at the state level (Bertrand et al., 2004).

Venue-Specific SCIAL Ratings$_{st}$ is a vector of 12 venue-specific restrictions that vary at the state/year level. For our baseline specification, these ImpacTeen ratings range from 0 to 3 for all venues except public and private schools, child-care centers, recreational facilities, cultural facilities, and public transit (which range from 0 to 5).[15]

3.3. Venues

One of our key contributions is to evaluate the effects of venue-specific SCIALs among groups of workers likely to have been directly affected by such laws. There are five venues for which we can reasonably identify workers likely to have been affected by venue-specific SCIALs: private sector workplaces, government workplaces, public and private schools, restaurants, and bars. We identify workers in these venues based on occupation, industry, or class of worker. Specifically, we define private and government sector workers based on the CPS class of worker code. School workers are defined using the CPS industry codes for elementary and secondary schools. We identify restaurant workers as those individuals employed at eating and drinking places. We use bartenders in eating and drinking places (defined using CPS occupation and industry codes) as individuals who should be disproportionately likely to be affected by SCIALs covering bars. We focus on bar SCIALs when examining bartenders because a large share (37%) of bartenders works in stand-alone bars rather than

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[12]This follows the health economics literature that estimates two-part models of smoking participation and intensity (Cragg, 1971; Manning et al., 1981; Duan et al., 1983; Mullahy, 1998). Our main results for the dichotomous outcomes are robust to using a probit model.

[13]Full details on our control variables can be found in Appendix A.

[14]State excise taxes come from Orzechowski and Walker (2004) and Campaign for Tobacco Free Kids (2009). We deflate nominal variables with the personal consumption expenditures deflator from the Bureau of Economic Analysis. State unemployment rates are from the Bureau of Labor Statistics. State employment growth rates are based on Bureau of Economic Analysis employment levels. State poverty statistics are from the US Census Bureau.

[15]We also estimated variations of this model using only strength-weighted measures of SCIALs for venues specific to a group of workers, as well as regressions that use a simple strength-weighted index of all restrictions instead of separate controls for each venue-specific restriction. In this model, the vector of Venue-Specific SCIAL Ratings is replaced by a single Strength-Weighted SCIAL Index, where the index variable is equal to the simple sum of the 12 venue-specific values. The index can range from 0 to 48; similar indices have been used in previous research.

in restaurants.[16] Bartenders are only a small fraction (5%) of employees at eating and drinking places; thus, we focus on restaurant SCIALs when examining all workers at eating and drinking places.

We are not able to create groups of workers who should have been relatively affected by SCIALs that apply to the other venues included in the ImpacTeen data. These venues are as follows: recreational facilities, child-care centers, cultural facilities, public transit, health-care facilities, and shopping malls. This is primarily because there is no clear way of identifying employed individuals in these worksites (e.g. it is impossible to distinguish people who work at a shopping mall from those who work at a stand-alone store in the CPS data).

4. RESULTS

4.1. Descriptive statistics

Since all of our models include state and time fixed effects, identification of the effects of venue-specific SCIALs requires within-state changes in venue-specific restrictions. Table I shows that such variation exists, particularly in recent years. For each venue tracked in the ImpacTeen data, we present the annual average across all states for each venue-specific strength-weighted index during 1992–2007, weighted using the sum of the CPS TUS populations for each state. The possible values for the specific venues shown in the other columns can range from 0 to 3 (or 0–5 for public schools, private schools, child care centers, recreational facilities, cultural facilities, and public transit).

Several patterns are apparent in Table I. First, clean indoor air restrictions were already widespread at the beginning of our sample period: by 1992, each of the 12 venues was already covered somewhere in the United States by at least some type of restriction. Second, there is substantial variation in SCIALs across venues. In 1992, for example, bars and shopping malls had considerably more limited coverage than health-care facilities and public schools. Third, there have been numerous changes in SCIALs over time and especially since 2000. The venue-specific indexes all increased substantially over time. Finally – and most importantly for our identification strategy – the timing and the magnitude of the changes in SCIALs vary across venues. Although Table I shows that the late 1990s were a general period of stagnation with respect to strengthened SCIAL restrictions, there are numerous instances where year-to-year changes in one venue-specific index do not exactly track changes in other venues, particularly in the latter part of our sample period. This differential timing of adoption of venue-specific restrictions forms the basis for identification of our fixed effects models.

Table II presents key descriptive statistics on smoking outcomes, SCIAL coverage, and workplace smoking restrictions for the 1992–2007 CPS TUS data. Each column reflects a separate group of workers. Means for private sector workers, government sector workers, school workers, eating and drinking place workers, and bartenders are reported in Columns 1–5, respectively. There are large differences in smoking rates and official workplace smoking restrictions for different groups of workers. Although 34% of all workers in eating and drinking places and 51% of bartenders in those places report being a current smoker, only 10% of school workers and 15% of government workers smoke. Workplace smoking restrictions also vary substantially across the different types of workers: although only 77% of all eating and drinking place workers report the presence of any smoking restriction at work, over 96% of school workers report a restriction. Notably, only about 43% of bartenders in eating and drinking places report the presence of any workplace smoking restriction. The large difference

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[16]Authors' calculation from the 2003–2007 CPS TUS. We can only separately identify bars (drinking places) from restaurants (eating places) beginning with the 2003 CPS TUS (the first sample year with updated 2000 Census industry codes). Throughout, we focus on bartenders in eating and drinking places. Thus, the bartenders we consider are a perfect subset of the group of eating and drinking place workers we consider. Bartender is the most common occupation among workers in bars (49% of the bar workforce).

Table I. Average strength-weighted indices of venue-specific state clean indoor air laws

	Private	Government	Public schools	Private schools	Restaurants	Bars	Child-care centers	Health-care facilities	Recreational facilities	Cultural facilities	Public transit	Shopping malls
1992	0.39	0.62	1.08	0.62	0.49	0.03	0.74	0.93	0.74	1.37	1.53	0.06
1993	0.39	0.67	1.29	0.62	0.48	0.03	0.87	0.95	0.76	1.41	1.54	0.06
1995	0.67	0.95	1.92	1.15	0.86	0.03	2.05	1.26	1.37	2.00	1.45	0.50
1996	0.66	0.94	1.93	1.15	0.86	0.03	2.05	1.25	1.35	2.00	1.45	0.48
1998	0.66	0.99	1.97	1.14	0.86	0.36	2.18	1.24	1.36	2.00	1.55	0.49
1999	0.66	1.01	2.06	1.20	0.86	0.37	2.17	1.25	1.36	2.00	1.55	0.49
2001	0.67	1.03	2.27	1.22	0.88	0.38	2.22	1.26	1.38	2.01	1.55	0.51
2002	0.71	1.05	2.30	1.25	0.88	0.39	2.24	1.29	1.41	2.04	1.59	0.56
2003	0.99	1.32	2.43	1.41	1.15	0.58	2.38	1.57	1.62	2.26	1.64	0.99
2006	1.51	1.75	2.77	2.01	1.64	1.11	2.83	2.01	2.46	2.94	1.94	1.59
2007	1.67	1.82	2.80	2.05	1.77	1.19	2.95	2.10	2.65	3.05	2.00	1.69

Notes: Authors' tabulations of means of the venue-specific restrictions from the ImpacTeen database (www.impacteen.org) for the 51 states and DC for each year, weighted using the population age 18 and older in the CPS TUS with valid responses to the question about workplace smoking restrictions (indoor workers who answered the survey themselves). The values for restrictions in each venue range from 0 to 3 except for public schools, private schools, child-care centers, recreational facilities, cultural facilities, and public transit, which range from 0 to 5.

Table II. Descriptive statistics

	(1) Private sector workers	(2) Government sector workers	(3) School workers	(4) Eating/drinking places All workers	(5) Eating/drinking places Bartenders
Workplace restricts smoking	0.851 (0.356)	0.955 (0.207)	0.965 (0.185)	0.766 (0.423)	0.426 (0.495)
Current smoker	0.228 (0.419)	0.146 (0.353)	0.104 (0.305)	0.341 (0.474)	0.507 (0.500)
Number of cigarettes last 30 days among current smokers	445 (307)	424 (307)	370 (287)	435 (298)	501 (339)

Notes: Shown are weighted sample means (standard deviations) among indoor workers from the 1992–2007 Tobacco Use Supplements to the Current Population Survey with valid responses to the question about workplace smoking restrictions. Private sector workers and government workers are defined by respective class of worker codes in the CPS. School workers and eating and drinking place workers are defined by industry codes in the CPS. Bartenders are identified by occupation codes in the CPS; only bartenders in eating and drinking places are included here.

between the fractions of all eating and drinking place workers and of bartenders reporting workplace smoking restrictions (along with the fact that many bartenders work in drinking places, but bartenders are a small share of eating place workers) supports our focus on restaurant SCIALs for the former group and bar SCIALs for the latter group.

4.2. Venue-specific SCIAL effects on compliance

We first examine worksite compliance with SCIALs to determine whether laws affect actual clean indoor air policies. We present these results in Table III. Each column presents the coefficients on the 12 SCIALs from a separate estimation of Equation (1) for each of the relevant groups of workers: private sector workers, government sector workers, school workers, all workers in eating/drinking places, and bartenders in eating/drinking places. The dependent variable is an indicator equal to 1 for individuals who report that their worksite has an official policy that restricts smoking. The sample is restricted to non self-employed individuals who work indoors, the group asked about workplace smoking policy.

Table III. Estimated effects of venue-specific SCIALs on whether workplace restricts smoking at all, various groups of workers

	(1) Private sector workers	(2) Government workers	(3) School workers	(4) Eating/drinking places All workers	(5) Eating/drinking places Bartenders
Private workplaces SCIAL	0.003	−0.004	−0.010	−0.004	0.001
	(0.007)	(0.004)	(0.007)	(0.012)	(0.097)
Government workplaces SCIAL	0.006	0.003	0.003	0.011	−0.028
	(0.004)	(0.002)	(0.006)	(0.009)	(0.054)
Public schools SCIAL	0.002	0.003*	0.002	−0.001	−0.027
	(0.002)	(0.002)	(0.002)	(0.005)	(0.028)
Private schools SCIAL	−0.002	−0.0004	0.003	0.007	0.038
	(0.003)	(0.0018)	(0.002)	(0.006)	(0.034)
Restaurants SCIAL	−0.008	−0.002	0.001	−0.023	−0.039
	(0.004)	(0.004)	(0.004)	(0.014)	(0.077)
Bars SCIAL	−0.003	−0.0005	−0.005**	0.009	0.113**
	(0.002)	(0.0025)	(0.002)	(0.006)	(0.041)
Child-care centers SCIAL	0.001	−0.002	−0.002	−0.003	0.027
	(0.002)	(0.002)	(0.002)	(0.005)	(0.019)
Health-care facilities SCIAL	0.003	0.003	0.005	−0.009	−0.005
	(0.006)	(0.005)	(0.005)	(0.016)	(0.085)
Recreational facilities SCIAL	0.002	−0.002	0.002	0.002	−0.013
	(0.004)	(0.003)	(0.003)	(0.010)	(0.038
Cultural facilities SCIAL	−0.002	0.001	−0.002	0.016	0.003
	(0.005)	(0.003)	(0.003)	(0.010)	(0.049)
Public transit SCIAL	0.001	0.001	−0.002	−0.009	−0.030
	(0.002)	(0.003)	(0.002)	(0.006)	(0.036)
Shopping malls SCIAL	0.005	0.003	0.006	0.017	0.059
	(0.005)	(0.004)	(0.004)	(0.014)	(0.098)
N	404 989	96 807	43 207	25 085	1380

Notes: *Significant at 5%; **significant at 1%. Shown are estimated coefficients from OLS regressions (each column is a separate model). The dependent variable is an indicator variable equal to 1 if the individual reports that her workplace has an official policy on workplace smoking. Robust standard errors clustered at the state level are in parentheses. Observations are weighted with the CPS TUS self-response supplement weight. All samples include only indoor workers. Private sector workers and government workers are defined by respective class of worker codes in the CPS. School workers and eating and drinking place workers are defined by industry codes in the CPS. Bartenders are identified by occupation codes in the CPS; only bartenders in eating and drinking places are included here. Coefficients on additional controls not reported (but available upon request) include the following: survey month, year, and state fixed effects; the real excise tax on a pack of cigarettes; and the individual and state demographic characteristics described in the text.

The regressions include all the control variables described above; those coefficients are not shown here but are available on request.

The results in Table III provide very limited evidence of compliance effects. In the sample of private sector workers in Column 1, we fail to find a significant relationship between reports of official smoking restrictions at work and the venue-specific restriction that should have mattered most to those workers – restrictions on smoking in private workplaces. Column 2 of Table III reports the results for government workers. We find no effect of SCIALs for government workplaces, which should be particularly salient for these workers if the SCIALs truly affect official smoking policies. Column 3 of Table III reports results for individuals employed at K-12 schools. Restrictions on smoking at schools should be particularly relevant for these individuals if the laws truly change worksite policies. We find little evidence, however, that individuals employed at schools are more likely to report the presence of an official worksite restriction when tougher SCIALs covering either public or private schools are adopted. Both coefficients are small and statistically indistinguishable from zero.[17] Results for all

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[17]About 84% of the school workers in the CPS TUS work in public schools.

workers in eating and drinking places are listed in Column 4. SCIALs covering restaurants should have particularly strong effects on reported worksite restrictions for these workers, but the relevant coefficient is small and statistically insignificant.

The one venue where we do find evidence of compliance effects is bars. Results for bartenders in eating and drinking places are listed in Column 5; as noted above, SCIALs covering bars should be the most relevant for these workers. There is a significant positive association between bar SCIALs and the probability a bartender reports his/her workplace has an official smoking restriction.[18] Specifically, a one unit increase in a state law restricting smoking in bars significantly increases the likelihood that a bartender reports an official workplace restriction by 11.3 percentage points.[19] Given that the average strength-weighted SCIAL variable for bars increased by about 1.17 units over our sample period, we estimate that SCIALs covering bars increased official workplace smoking restrictions by about 13.2 percentage points (1.17*11.3), which is approximately 31% relative to the sample mean (13.2/42.6).

We further examine the robustness of the compliance effect for bartenders as listed in Table IV. Column 1 of Table IV simply reproduces the baseline estimate on the bar SCIAL from Column 5 of Table III (the model also includes separate controls for each of the 11 other venue-specific SCIALs). In Columns 2 and 3, we show that the compliance effect for bartenders is robust to addressing concerns about policy collinearity (i.e. states sometimes include SCIALs covering multiple venues within the same piece of legislation) among the venue-specific SCIALs. Specifically, in Column 2 we simply exclude the controls for the 11 other venue-specific SCIALs and assume that the bar SCIAL is the only one that should directly affect compliance among bartenders. This model returns an estimate very close to that in the main specification of Column 1. In Column 3, we control for the bar SCIAL but include a summary measure that is equal to the sum of the strength-weighted SCIALs in the 11 other venues (instead of measuring them separately, as in Column 1, or excluding them, as in Column 2). This is an alternative way to control for the broader clean indoor air policy environment while at the same time alleviating the challenge of estimating 12 distinct SCIAL coefficients. Importantly, we continue to find a strong compliance effect of bar SCIALs on bartenders, and the coefficient on the summary index variable for the 11 other SCIALs is small and statistically insignificant. In Column 4 of Table IV, we return to the baseline specification with each of the 12 SCIALs entered separately, but we add controls for linear state-specific time trends. Again, we find that the compliance effect of SCIALs covering bars is robust. Finally, in Columns 5 and 6 of Table IV, we estimate the baseline specification as in Column 1 but with different dependent varibles to consider alternative measures of compliance. In Column 5, the outcome is an indicator equal to 1 if the bartender reports that there is a complete ban on smoking in work areas at the workplace. In Column 6, the outcome is an indicator equal to 1 if the bartender reports that there is a complete ban on smoking in public areas at the workplace (such as lobbies, restrooms, and lunch rooms).[20] These alternative measures of compliance show strong evidence that SCIALs covering bars increased a variety of measures of workplace smoking restrictions among bartenders. These additional results increase our confidence in the compliance effects for bartenders.

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[18]In results not reported here but available upon request, this compliance effect for bartenders is robust to using a probit regression to model the dichotomous outcome reflecting the presence of any workplace policy. The compliance effect for bartenders is also robust to controlling for state preemption of SCIALs covering bars as coded in the ImpacTeen database. State preemption laws generally restrict the ability of localities to adopt clean indoor air policies that are more stringent than the state law. Finally, the compliance effect for bartenders is robust to controlling for anti-smoking sentiment (DeCicca et al., 2008) for the period through 2003 (when that variable is available).

[19]Over our sample period, 17 states passed or strengthened SCIALs covering bars, 14 during the period 2003–2007.

[20]Specifically, individuals who report an official policy are asked about the workplace smoking policy pertaining to public or common areas 'such as lobbies, rest rooms, and lunch rooms.' Individuals are then asked about the workplace smoking policy pertaining to 'work areas.' The CPS TUS also contain questions about secondhand smoke (SHS) exposure. We do not report those results here because, until the 2006 wave, these questions were only asked of individuals who reported the presence of a workplace smoking restriction. As such, there may be composition bias to the sample with valid responses, which makes interpreting any relationship between SCIALs and SHS exposure difficult.

Table IV. Robustness of estimated effects of bar SCIALs on workplace smoking restrictions, as reported by bartenders

Outcome is:	(1) Baseline specification, Column 5 of Table III	(2) (1), but drop all SCIALs except SCIALs covering bars	(3) (1), but instead of controlling for all other SCIALs separately control for the sum of the other SCIALs	(4) (1)+state-specific linear time trends	(5) (1), outcome is ban on smoking in work areas at workplace	(6) (1), outcome is ban on smoking in public areas at workplace
	Any smoking restriction	Any smoking restriction	Any smoking restriction	Any smoking restriction	Work area smoking ban at workplace	Public area smoking ban at workplace
Bars SCIAL	0.113** (0.041)	0.132** (0.019)	0.118** (0.026)	0.165** (0.060)	0.170** (0.031)	0.141** (0.028)
Sum of SCIALs in other venues	—	—	0.003 (0.003)	—	—	—
N	1380	1380	1380	1380	1380	1380

Notes: *Significant at 5%; **significant at 1%. Shown are estimated coefficients from OLS regressions (each column is a separate model). The dependent variable in Columns 1–4 is an indicator variable equal to one if the individual reports that her workplace has an official policy on workplace smoking; in Column 5, an indicator for a ban on smoking in work areas; in Column 6, an indicator for a ban on smoking in public areas at the workplace. Robust standard errors clustered at the state level are in parentheses. Observations are weighted with the CPS TUS self-response supplement weight. All samples include only indoor workers. Bartenders are identified by occupation codes in the CPS; only bartenders in eating and drinking places are included here. Coefficients on additional controls not reported (but available upon request) include the following: survey month, year, and state fixed effects; the real excise tax on a pack of cigarettes; and the individual and state demographic characteristics described in the text.

We also performed a similar set of robustness checks for the other groups of workers, since multicollinearity in the venue-specific SCIALs is a more general concern. First, we performed a factor analysis similar to DeCicca *et al.* (2008) to isolate the true policy variation in the SCIALs. We found evidence that a single factor described the majority of the variation in the SCIALs. When we controlled directly for this single factor along with the own-venue SCIAL (i.e. excluding the controls for SCIALs in other venues), we continued to find no compliance effects for any group of workers except bartenders (results not shown but available upon request). Second, we estimated the same specifications as in Columns 2 and 3 of Table IV for the other groups of workers (e.g. excluding all other SCIALs not applying directly to that group and summarizing the other SCIALs into a single summary index measure). When we controlled only for the own-venue SCIAL (as in Column 2 of Table IV), we continued to find no significant compliance effects of own-venue SCIALs for government workers or school workers. We did, however, find that private workplace SCIALs were estimated to significantly increase workplace smoking restrictions among private sector workers and that restaurant SCIALs were estimated to significantly increase workplace smoking restrictions among the sample of eating and drinking place workers. When we controlled for the sum of strength-weighted SCIALs in the 11 other venues, however, the own-venue compliance relationship was not robust for either private sector workers or restaurant workers. This suggests that omitted variable bias contaminates the observed positive association between private workplace SCIALs and reports of official smoking restrictions among private sector workers and between restaurant SCIALs and reports of official smoking restrictions among eating and drinking place workers when no other SCIALs are included. Thus, we conclude that that there is no meaningful compliance effect of SCIALs covering private workplaces or restaurants (in addition to the consistently null findings for government workplace and school SCIALs).

4.3. Venue-specific SCIAL effects on smoking

We now turn to the effects of venue-specific SCIALs on smoking participation and smoking intensity, respectively, for the relevant groups of workers.[21] If there is a direct causal relationship between SCIALs and smoking behaviors, then we would expect that smoking should fall most in the same venue and for the same group for which the compliance effect is most clear. That is, we would expect bartenders to reduce smoking in response to SCIALs covering bars. More generally, we would expect smoking reductions among workers directly affected by venue-specific worksite smoking restrictions. We therefore look at smoking participation in Table V and smoking intensity conditional on smoking in Table VI. Both tables take the same format as Table III: each column represents a separate group of workers, and we show coefficient estimates for each venue-specific SCIAL. The samples in Table V for smoking are the same as those in Tables III: nonself-employed individuals who work indoors and reported their workplace smoking policies. The samples in Table VI further condition on being a smoker.

The results provide some limited evidence that venue-specific SCIALs directly reduced smoking. Specifically, we find a significant negative relationship between SCIALs covering bars and smoking among bartenders in Column 5 of Table V. A one unit increase in the bar SCIAL variable is estimated to reduce smoking participation by 5.8 percentage points. This suggests that SCIALs covering bars reduced the fraction of bartenders who smoke by about 6.7 percentage points (5.8*1.17) or by about 13% relative to the sample mean (6.7/51). These findings for bartenders – whose worksites were directly affected by the relevant venue-specific SCIALs – are consistent with a direct role for SCIAL-induced worksite smoking policies to significantly reduce smoking.

A broader evaluation of Tables V and VI provides little other evidence that venue-specific SCIALs affect smoking in a predictable way. When venue-specific SCIALs are estimated to have statistically significant relationships with smoking, those relationships are about as likely to indicate harmful effects of SCIALs as they are to indicate reductions in smoking related to SCIALs. Overall, the results do not provide strong evidence that SCIALs reduced smoking through the mechanism of direct exposure to stronger worksite restrictions.

5. CONCLUSION

Previous research examining the effects of SCIALs has generally examined the effects of laws in an aggregated or 'strength-weighted index' form despite the fact that there is a great deal of variation with respect to the specific venues covered by SCIALs. Moreover, most existing research focuses only on smoking outcomes, largely ignoring worksite compliance – a key mechanism through which the laws would be expected (and usually are presumed) to affect smoking. We used detailed labor market information from the CPS TUS to identify groups of workers who should have been directly affected by venue-specific restrictions because they work at locations covered by those laws and to directly test for compliance effects.

Our results uncover very limited evidence that venue-specific SCIALs adopted by the US states over 1992–2007 actually changed the worksite smoking policies of workers who should have been directly affected because they worked in locations covered by the SCIALs. SCIALs covering private workplaces, government workplaces, schools, and restaurants are not estimated to have significantly increased reports of worksite smoking restrictions by private sector workers, government sector workers, school

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[21]Further robustness tests are described in an Appendix posted on the authors' websites. In results not shown but available upon request, we also estimated models of smoking for the full sample of individuals who gave valid responses to the question about official workplace smoking restrictions. In this sample, none of the 12 venue-specific SCIALs were significantly related to smoking participation. We did find a negative and statistically significant relationship between state excise taxes on cigarettes and the probability an individual reports being a current smoker. Specifically, we estimate that a one dollar increase in the state cigarette tax reduces smoking probability by 1.08 percentage points ($|t| = 2.42$). This basic result has also been found in earlier work using the CPS TUS (Tauras, 2004).

Table V. Estimated effects of venue-specific SCIALs on smoking participation, various groups of workers

	(1) Private sector workers	(2) Government workers	(3) School workers	(4) Eating/drinking places All workers	(5) Eating/drinking places Bartenders
Private workplaces SCIAL	0.001	−0.004	−0.008	0.002	0.055
	(0.003)	(0.006)	(0.008)	(0.008)	(0.008)
Government workplaces SCIAL	−0.005*	0.011	0.013	0.004	0.014
	(0.002)	(0.009)	(0.009)	(0.012)	(0.012)
Public schools SCIAL	0.001	0.001	−0.001	0.006	0.037
	(0.001)	(0.002)	(0.003)	(0.005)	(0.022)
Private schools SCIAL	−0.002	−0.001	−0.004	−0.004	−0.072**
	(0.001)	(0.002)	(0.004)	(0.004)	(0.020)
Restaurants SCIAL	0.002	0.002	0.005	0.013	0.111
	(0.003)	(0.005)	(0.007)	(0.014)	(0.060)
Bars SCIAL	0.0004	0.001	0.003	−0.014	−0.058**
	(0.0013)	(0.002)	(0.003)	(0.008)	(0.021)
Child-care centers SCIAL	0.001	0.002	0.005	−0.010	0.013
	(0.002)	(0.002)	(0.003)	(0.005)	(0.030)
Health-care facilities SCIAL	0.004	−0.011	−0.005	0.033	−0.035
	(0.004)	(0.007)	(0.007)	(0.024)	(0.068)
Recreational facilities SCIAL	0.002	−0.002	0.002	0.023*	−0.082*
	(0.003)	(0.004)	(0.005)	(0.010)	(0.035)
Cultural facilities SCIAL	−0.006	0.002	−0.006	−0.028*	0.060
	(0.003)	(0.005)	(0.005)	(0.013)	(0.038)
Public transit SCIAL	0.002	−0.003	−0.005	0.002	0.045
	(0.002)	(0.003)	(0.004)	(0.004)	(0.051)
Shopping malls SCIAL	−0.00005	0.002	0.002	−0.023	−0.046
	(0.00248)	(0.007)	(0.006)	(0.016)	(0.057)
N	404 989	96 807	43 207	25 085	1380

Notes: *Significant at 5%; **significant at 1%. Shown are estimated coefficients from OLS regressions (each column is a separate model). The dependent variable is an indicator variable equal to one if the individual is a current smoker (i.e. she reports she smokes every day or some days). Robust standard errors clustered at the state level are in parentheses. Observations are weighted with the CPS TUS self-response supplement weight. All samples include only indoor workers. Private sector workers and government workers are defined by respective class of worker codes in the CPS. School workers and eating and drinking place workers are defined by industry codes in the CPS. Bartenders are identified by occupation codes in the CPS; only bartenders in eating and drinking places are included here. Coefficients on additional controls not reported (but available upon request) include the following: survey month, year, and state fixed effects; the real excise tax on a pack of cigarettes; and the individual and state demographic characteristics described in the text.

workers, and eating/drinking place workers, respectively. We similarly found no evidence that venue-specific SCIALs reduced smoking for these groups of workers. This is not surprising given the lack of evidence that these SCIALs changed actual worksite smoking policies.

The one exception to these results is the case of bartenders in eating and drinking places. We consistently find that SCIALs covering bars are estimated to significantly increase reports of official workplace smoking restrictions and reduce smoking among bartenders. These effects of SCIALs covering bars are unique to bartenders and are robust to a variety of alternative specifications, increasing our confidence that these effects are real. Our finding that bars differ from other workplaces is perhaps not surprising. Bars are one of the last indoor workplaces to be covered by clean indoor air laws in most states. In 1992, only 2 states had laws restricting smoking in bars, compared with 19 states with laws restricting smoking in private workplaces. Bar owners and managers are likely to have been much more reluctant than other workplaces to voluntarily restrict smoking because of concerns about losing customers and profits, giving more scope for SCIALS to affect actual practices. Indeed, at the start of our sample period in 1992–1993, only 38% of bartenders reported that their workplace had any official policy restricting smoking; the comparable figure for private sector workers was 80%.

Overall, the patterns of null findings for all groups of workers except bartenders suggest that any estimated smoking reductions in previous research associated with SCIALs were unlikely to have been

Table VI. Estimated effects of venue-specific SCIALs on smoking intensity, various groups of workers

	(1) Private sector workers	(2) Government workers	(3) School workers	(4) Eating/drinking places All workers	(5) Eating/drinking places Bartenders
Private workplaces SCIAL	−0.027	0.016	0.046	−0.057	−0.484
	(0.031)	(0.044)	(0.102)	(0.088)	(0.291)
Government workplaces SCIAL	0.041*	0.027	0.012	0.060	0.080
	(0.016)	(0.032)	(0.095)	(0.034)	(0.149)
Public schools SCIAL	0.003	0.010	−0.040	0.034	0.021
	(0.007)	(0.010)	(0.042)	(0.022)	(0.090)
Private schools SCIAL	−0.001	−0.003	−0.089	0.005	0.156
	(0.009)	(0.013)	(0.048)	(0.030)	(0.095)
Restaurants SCIAL	0.032	0.042	−0.021	−0.077	−0.104
	(0.025)	(0.049)	(0.102)	(0.054)	(0.190)
Bars SCIAL	−0.026*	−0.092**	−0.127*	−0.010	0.038
	(0.010)	(0.018)	(0.051)	(0.024)	(0.097)
Child-care centers SCIAL	0.002	0.006	0.008	0.016	−0.007
	(0.006)	(0.015)	(0.030)	(0.020)	(0.061)
Health-care facilities SCIAL	0.014	0.023	0.216	0.097	−0.320
	(0.026)	(0.048)	(0.108)	(0.069)	(0.381)
Recreational facilities SCIAL	−0.002	0.105**	0.195*	0.024	−0.057
	(0.017)	(0.029)	(0.078)	(0.039)	(0.144)
Cultural facilities SCIAL	−0.016	−0.082*	−0.173*	−0.028	0.177
	(0.021)	(0.034)	(0.085)	(0.055)	(0.178)
Public transit SCIAL	0.015	−0.033	−0.053	0.026	−0.058
	(0.013)	(0.020)	(0.056)	(0.021)	(0.100)
Shopping malls SCIAL	−0.027	−0.080	−0.127	−0.039	0.437
	(0.024)	(0.040)	(0.093)	(0.077)	(0.312)
N	93 375	14 330	4507	8958	717

Notes: *Significant at 5%; **significant at 1%. Shown are estimated coefficients from OLS regressions (each column is a separate model). The dependent variable is the log of the number of cigarettes an individual reports she smoked in the past 30 days, and the sample is restricted to current smokers. Robust standard errors clustered at the state level are in parentheses. Observations are weighted with the CPS TUS self-response supplement weight. All samples include only indoor workers. Private sector workers and government workers are defined by respective class of worker codes in the CPS. School workers and eating and drinking place workers are defined by industry codes in the CPS. Bartenders are identified by occupation codes in the CPS; only bartenders in eating and drinking places are included here. Coefficients on additional controls not reported (but available upon request) include the following: survey month, year, and state fixed effects; the real excise tax on a pack of cigarettes; and the individual and state demographic characteristics described in the text.

brought about by workers' direct exposure to stronger worksite smoking restrictions. Other mechanisms (e.g. unobserved heterogeneity, peer effects, customer effects, or changes in social norms) are more likely to be responsible for the smoking reductions associated with adoption of SCIALs reported in previous research. Regardless of the exact mechanism, any interpretation that attributes observed smoking reductions to SCIALs requires that the laws actually changed smoking restrictions in that state. Among the venues for which we can identify groups of workers who should have been directly affected, our results suggest this was the case only for SCIALs covering bars.

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APPENDIX A

Our analysis uses data from all available rounds of the CPS Tobacco Use Supplement (CPS TUS) that include questions about whether an individual's workplace has a policy restricting smoking. This includes data from six cycles of the CPS TUS, 1992–1993 (September 1992, January 1993, and May 1993); 1995–1996 (September 1995, January 1996, and May 1996); 1998–1999 (September 1998, January 1999, and May 1999): 2001–2002 (June 2001, November 2001, and February 2002); 2003 (February 2003, June 2003, and November 2003); and 2006–2007 (May 2006, August 2006, and January 2007). Although there was an abbreviated version of the CPS TUS done in January 2000 and May 2000, no questions were asked about workplace smoking restrictions.

Our specifications restrict the sample to self-respondents (because the questions about workplace smoking policies and the number of cigarettes smoked were only asked of self-respondents, while the smoking questions were asked of proxy respondents) and use the supplement self-response weights. We use the self-response weights to obtain population representative results. This yields a maximum of 1 133 546 observations for adults 18 and older with a valid nonzero self-response weight. All of our samples exclude individuals who have an invalid response for smoking status (unknown or indeterminate), which reduces our sample by 3312 observations. We drop a further 417 536 observations for individuals not in the labor force or unemployed and a further 85 911 for individuals who are self-employed or not working for pay (neither group was asked about workplace smoking policies). A further 7682 answered refused/do not know or had no response to the questions about working indoors. The workplace smoking policy questions were only asked of those who work indoors (and not at home); we lose another 111 665 observations because the individuals work outdoors/in a vehicle/at a home/or at varied locations. Finally, we lose 5643 observations among people who answered refused/do not know or had no answer recorded for the workplace smoking policies, and we lose one observation for an individual who is neither currently working nor has a job and is on layoff but has a valid workplace policy variable, yielding a final sample of 501 796 workers (404 989 private sector workers + 96 807 government workers) with responses to the workplace smoking policies.

Groups of workers were created as follows:

- Private sector: class of worker equals 4 or 5.
- Government (state/local/federal): class of worker equals 1, 2, or 3.
- School workers (elementary or secondary school): detailed industry classification 842 'elementary and secondary schools' for the 2002 and earlier surveys, and 7860 'elementary and secondary schools' for the 2003 and later surveys.
- Eating or drinking place workers: detailed industry code 641 ('eating and drinking places') for the 2002 and earlier surveys, and detailed industry classifications 8680 ('restaurants and other food services') and 8690 ('drinking places, alcoholic beverages') for the 2003 and later surveys.
- Bartenders in eating or drinking places: eating and drinking place workers combined with detailed occupation code 434 ('bartenders') for the 2002 and earlier surveys, and 4040 ('bartenders') for the 2003 and later surveys.

For some robustness specifications (the bulk of which are not reported in the article), we also looked separately at a work area ban variable and a public area ban variable. The work area ban variable is equal to 1 for those who report their workplace had a policy completely banning smoking in work areas; 0 for those who report their workplace had a policy allowing smoking in some or all work areas;

and 0 for those not asked about the smoking policy for work areas (i.e. those whose workplace had no official policy restricting smoking). The public area ban variable is equal to 1 for those who report their workplace had a policy completely banning smoking in public or common areas such as lobbies, restrooms, and lunch rooms; 0 for those who report their workplace had a policy allowing smoking in some or all work areas; and 0 for those not asked about the smoking policy for work areas (i.e. those who have no official policy restricting smoking). The smoking models are estimated on the set of workers who answered the any official policy variable. We also restricted the sample to be at least 18 years old (in later years of the CPS TUS only those 18 and older are asked about smoking behavior).

Controls in all specifications included state, year, and month of survey fixed effects. Additional individual controls are age and age squared; dummies for male; marital status (never married and widowed/divorced/separated); race (black, Asian, and other non-white); ethnicity (Hispanic); educational attainment (high-school dropout, exactly a high-school degree or GED, some college but not a 4-year degree, and a 4-year degree but no graduate work); dummies for family income being in 1 of 15 categories (this includes a missing category; in the later years, several high income categories are collapsed to maintain consistency with the earlier period); and a dummy for not living in an MSA. In addition to the ban variables; other controls varying at the state and year level include the following: the real state excise tax for cigarettes for the survey month (from Orzechowski and Walker's 2004 edition of *The Tax Burden on Tobacco*: *Historical Compilation*, and updated for the later period with *Cigarette Tax Increases by State per Year 2000–2009* from the Campaign for Tobacco Free Kids, deflated by the personal consumption expenditure deflator); the unemployment rate (statewide annual numbers from the Bureau of Labor Statistics); the employment growth rate (constructed from statewide total employment numbers from the Bureau of Economic Statistics); and the percent of the state population that is in poverty by state (from the Census Bureau). Standard errors are clustered at the state level and self-response weights are used throughout.

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