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Smoking, Income and Subjective Well-Being: Evidence from Smoking Bans

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ABSTRACT

Smoking, Income and Subjective Well-Being: Evidence from Smoking Bans*

This paper investigates the effects of local smoking bans on different out-comes using county and time variation over the last 20 years in the US. First, I find no evidence that local smoking bans in bars, restaurants and workplaces decrease the prevalence of smoking. The estimates are very small and not statistically significant. Well-being is also affected by these policies: public smoking bans make smokers who do not quit more satisfied with their life. I verify the robustness of this result throughout, and validate my findings with two distinct data sources. I discuss and test the mechanisms behind this seemingly paradoxical relationship. The evidence suggests that smokers adapt to this policy since the impact on satisfaction is negative just before the implementation and positive afterward. Last, I find evidence that smokers do not favor the implementation of smoking bans. Yet, once they are exposed to a public smoking ban, they are less-opposed to those policies. Together the evidence suggests that current smokers are time-inconsistent and benefit from smoking policies.

JEL Classification: D62, H51, I18, I38

Keywords: adaptation, addiction, smoking policies, subjective well-being, time-inconsistency

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The questions of whether tax changes, smoke-free workplaces and public bans may cause a change in smokers' utility are basic concerns for policy makers. Following the implication of a basic rational addiction model, smoking bans should decrease smokers' well-being which explains why they are relatively more resistant to these policies. Becker and Murphy (1988) explained that smoking policies create a dead-weight loss by changing consumers' consumption choices. Even with addictive goods like cigarettes, taxes and smoking bans would cause a decrease in utility for smokers. Individuals decide to smoke based on the long-run cost and immediate benefit of such a decision. A ban would thus decrease their direct pleasure by decreasing the number of places in which they are allowed to smoke. Boyes and Marlow (1996) pointed out another issue related to the Coase Theorem. Owners of restaurants or bars allocate airspace to the consumers (smokers and nonsmokers) in order to maximize expected profits. They argue that smoking bans, by reallocating the ownership of scarce resources (from the owners to the government), transfer income from smokers to nonsmokers. Nonsmokers receive an income transfer since they are not required to compensate smokers nor breathe smoke-filled air.

The timing and geographical variation of smoking bans provide useful tools to analyze their consequences. This study relies on smoking bans implemented at a smaller geographical area than previous papers using US data. The chronological table of the *American Nonsmokers' Rights Foundation* indicates the list of all smoke-free provision at the municipality, county and State-levels for bars, restaurants and workplaces. My main objective is the examination of the impacts of smoking bans using more than 350 smoking bans implemented at different times over the last 20 years. This study relies on millions of Americans answering questions from two datasets, the Behavioral Risk Factor Surveillance System (BRFSS) and the DDB Needham Life Style Survey (LSS).

In order to understand the mechanisms and the effects of smoking bans, this paper investigates three different issues. First, it deals with the literature on smoking policies and smoking behavior by verifying if smoking bans at the municipality, county and State-levels decrease the prevalence of smoking. Previous estimates relying on smoking bans at the State-level potentially underestimated the true effects

of smoking bans. Many bans at the county-level were implemented before State smoking bans. Nonetheless, I find no evidence that smoking bans in bars, restaurants and workplaces decrease the prevalence of smoking. The estimates are very small and not statistically significant. Moreover, the size of the impact of public bans does not seem to be larger when restricting the sample to specific demographic groups such as young respondents.

Secondly, this paper seeks to illustrate certain links between smokers' well-being and smoking bans. It looks at the effect of the bans on self-reported life satisfaction. The central finding of this paper is that there is a positive effect of public smoking bans on life satisfaction of smokers who do not quit.[1] I verify the robustness of this result throughout, and validate my findings with two distinct data sources. I pursue different strategies to verify that the results are not driven by selection and discuss the mechanisms behind this seemingly paradoxical relationship. In this context, smoking bans are not a commitment device since agents do not stop smoking. The evidence suggests that smokers adapt to this policy since the impact on satisfaction is negative just before the implementation (during the discussion and the adoption of the law) and positive afterward. This suggests that smoking bans may help smokers to view themselves in a less negative way: it allows them to commit not to annoy others.

Surprisingly, the association between public smoking bans and satisfaction of smokers who tried to quit smoking during the past year is not statistically significant. This indicates that the positive effect of public bans on current smokers' well-being is not related to trying to quit. Additionally, nonsmokers do not benefit from smoking policies and are slightly worse off after the introduction of the ban. It is possible that smoking bans can intensify the exposure of nonsmokers to tobacco smoke by displacing smokers to private places (Adda and Cornaglia (2010)).

Last, this study tests theories of addiction and looks at whether smoking bans affect the preferences of smokers for those policies. A number of theories are proposed

[1]Due to the absence of information on the specific date when smokers stopped smoking, it is not possible to check that smoking policies have a positive impact on smokers who stopped smoking. Cross-section data does not allow me to establish the evolution of well-being from current to ex-smokers. Unfortunately, virtually no progress can be made without panel data in which there are repeated observations on individuals who quit smoking.

to explain these results. The paper's preferred explanation is time-inconsistency. A question on whether smoking should not be allowed in public places allows me to verify this theory. *Ex ante*, smokers do not favor the implementation of smoke-free provision of smoking in restaurants or bars. However, these smoking policies make themselves better off *ex post* which might explain why they are more likely to agree that smoking should not be allowed in public places.[2]

My findings are quite striking since smokers who do not quit are positively affected by public bans and are less-opposed to the bans *ex post* indicating adaptation and time-inconsistency. It was emphasized by Gruber and Mullainathan (2005) that higher cigarette taxes could make predicted smokers less unhappy. They argued that predicted smokers are better off because taxes provide a self-control device and allow smokers to do something they were not able to do, stop smoking. My analysis builds on the study by Gruber and Mullainathan (2005) but extends their work in several directions, including a different methodology. I do not rely on predicting whether respondents are likely to be smokers since I am interested at the effect of smoking policies on smokers who do not quit.[3] Overall, this paper shows that addicted agents are able to adapt to new policies and may change their preferences over time without quitting.

The remainder of this article is structured as follows. The next section is devoted to the description of the data with detailed information on the questions used. Section 2 presents estimates of the impact of smoking policies on smoking behavior. The third section presents estimates of the effect of smoking bans on subjective well-being. Section 4 explores the socioeconomic determinants of preferences in the context of smoking policies. The last section discusses the validity of the results and concludes.

[2]A 2007 survey by Gallup indicates that about 40 percent of respondents (smokers and non-smokers) agree that smoking in all public places should be made "totally illegal".

[3]Nonetheless, I verify and confirm in the appendix the results of Gruber and Mullainathan (2005) using a measure of propensity to smoke and smoking bans. Those who are predicted to be smokers report higher levels of well-being when a smoking ban is implemented. I explain the issues related to this strategy in Appendix B.

I. Data

A. The Behavioral Risk Factor Surveillance System and the Life Style Survey

The first data set is the Behavioral Risk Factor Surveillance System (BRFSS). The time period covered with the BRFSS is 1988-2010/10 since county-level data are not available for 1984-1987. County of residence[4] is a key variable in this study since it is possible to assess the impact of county-level smoking policies on the residents of these counties. The BRFSS is repeated cross-section and covers more than two thirds of the counties in the US. It has a total sample of more than 3,750,000 and contains information on county of residence, smoking behavior and life satisfaction.[5]

Another data set is used to investigate the impacts of smoking bans.[6] This allows me to check the robustness of my findings and verify time-inconsistency. The DDB Needham Life Style Survey (LSS) is a proprietary data archive that is freely available for the period 1975-1998 on Robert Putnam's *Bowling Alone* website[7]. The Life Style Survey started when the advertising agency DDB Needham commissioned the polling firm Market Facts to conduct an annual survey of Americans' behaviors. This data set is repeated cross-section and includes questions about well-being and whether smoking should not be allowed in public places. The time period covered with this survey is 1985-1998 (except 1990) since county-level data are not available for 1990 and only married people were interviewed over the period 1975-1984. The LSS is nationally representative in the United States and contains information on smoking behavior (except for the year 1998) and socioeconomic characteristics of

[4]In the United States, a county is a subdivision of a State. The average number of counties per State is 62 (3 for Delaware and 254 for Texas).

[5]Over the period covered in this analysis, data on smoking is collected in 1988-2010 for the BRFSS. Unfortunately, the BRFSS did not include a life satisfaction question before 2005. County codes are suppressed for counties with fewer than 10,000 residents for confidentiality reasons.

[6]A third data set that could have been used here is the General Social Survey, but this was excluded for three reasons. The first reason is simply space consideration. Second, the public use version does not identify the State and the county of residence. Lastly, data on smoking behavior is not available after 1994 even in the restricted use version of the data. This is problematic since few smoking bans were implemented in 1993-1994.

[7]http://bowlingalone.com/

the respondents. The LSS is an annual questionnaire which has a sample of around 3,500 American per annum. The analysis is based on a total sample of about 50,000 respondents.

The following question is asked over the period 2005-2010 in the BRFSS: "In general, how satisfied are you with your life?" where respondents have 4 choices (4=very satisfied, 3=satisfied, 2=dissatisfied and 1=very dissatisfied).[8] Similarly, the LSS includes a question on life satisfaction each year: "I am very satisfied with the way things are going in my life these days" where respondents have 6 possible choices (6=definitely agree, 5=generally agree, 4=moderately agree, 3=moderately disagree, 2=generally disagree and 1=definitely disagree). Over the period covered, 45.6% of the respondents reported that they were very satisfied with their life in the BRFSS and 16.2% reported "Definitely Agree" in the LSS. On the other hand, 1.1% answered that they were very dissatisfied and 8.2% reported "Definitely Disagree" (see Appendix, Tables 2 and 3).

These surveys also include questions on smoking behavior: "Do you now smoke cigarettes every day, some days, or not at all?" in the BRFSS and "How often you, yourself, use cigarettes at home or elsewhere?" in the LSS. Respondents who answer 52 or more times a year to the previous question are considered as smokers. In the LSS, 22% of the respondents (weighted) report themselves as smokers over the period 1985-1998 compared to 18 % in the BRFSS over the period 2005-2010 (see Appendix, Tables 2 and 3). This rate is falling which is consistent with prevalence rates in other surveys. Table 1 shows the mean and standard deviation of the variables in the BRFSS over the period 2005-2010 (see Appendix, Table 1 for the LSS). Columns 2 and 3 present these statistics for respectively smokers and nonsmokers. Smokers are, on average, less educated, younger, less likely to attend churches or place of worship, more likely to be unemployed, divorced, and to have children.

The timing and geographical variation provide, arguably, exogenous variation to estimate the effects of smoking bans. I also match the county of residence in both datasets to county-level characteristics from the U.S. Census Bureau, USA

[8]Life satisfaction questions are argued to elicit answers that are more reflective of life circumstances, and less reflective of ephemeral events, than happiness questions (e.g. Deaton and Kahneman (2010)).

Counties. USA Counties provides data items such as the unemployment rate, the percentage of high school graduates and the percentage of owner-occupied housing. More details about these variables are available in Appendix A. Last, I include in the analysis cigarette taxes and tobacco control programs/funding at the State-level (from the American Lung Association: State of Tobacco Control). The latter measure is available over the period 2004-2010. Each State's total funding for these programs (including federal funding provided by the Centers of Disease Control and Prevention) is calculated for a variety of specific factors such as State and community interventions, health communication interventions, cessation interventions, surveillance and evaluation and administration and management

B. American Nonsmokers' Rights Foundation

Data on smoking policies come from the *American Nonsmokers' Rights Foundation*. The chronological table of the *American Nonsmokers' Rights Foundation* indicates the effective date of smoke-free provision at the municipality, county and State-level for workplaces, bars and restaurants. It is then possible to know exactly which county has at least one municipality which implemented a smoking ban. In many counties, however, smoking was prohibited by county-level laws.

Since my goal is to capture the impacts of smoking bans, pre-smoking ban periods are defined as the years/months/days before the law was effective. A variable for whether the county of residence was affected by a complete interdiction of smoking is constructed. A complete smoking ban does not allow for smoking on the premises at any time, with no exemptions. This indicator called "Smoking Ban" is then equal to one for all respondents living in the county that is affected by the smoking ban in all subsequent year/month/day, since the law is still in force. Date of interview is available in the BRFSS but not in the LSS. For the latter, post-smoking ban periods are defined as the years during and after the implementation of the bans.

The first 100 percent smoke-free provision[9] of smoking in a restaurant or a bar was the municipality of San Luis Obispo in 1990. Since the municipality of San

[9]Only municipalities, counties and States with ordinances or laws that do not allow smoking in attached bars or separately ventilated rooms are considered as being 100 percent smoke-free.

Luis Obispo is located in the county of San Luis Obispo, all residents of this county are considered to be affected by the smoking ban. The effective date of this ban is 5/20/2010 for workplaces, 8/2/1990 for bars and 8/2/1990 for restaurants. This means that respondents living in the county of San Louis Obispo after 8/2/1990 are considered as being affected by a smoking ban (only for the indicator "Smoking Ban in Bars and/or Restaurants"). The first workplace smoking ban was implemented by the county of Sacramento. Once again, all residents of this county are considered to be affected after November 1st, 1990.

Using this methodology, respondents of 363 counties have been affected by smoking bans over the period 1990-2010/10. In addition, more than 30 States (Utah was the first in 1995) have implemented smoking bans. All the respondents in these States are thus affected by these smoking policies. It may happen that a State introduced a smoking ban only in either restaurants, bars or workplaces. Currently 75 percent of the U.S. population is covered by a smoking ban in either bars or restaurants.

II. Smoking Behavior and Smoking Bans

This section investigates the impact of smoking bans on smoking behavior over the period 1988-2010. A considerable literature exists on the effect of smoking bans on smoking behavior. A meta-analysis of more than 20 studies in Australia, Canada, Germany and US found that workplace smoking bans reduce active smoking by 3.8 percentage points (Fichtenberg and Glantz (2002)). Callinan et al. (2010) reviewed 50 studies in 13 countries and concluded that there is some evidence that smoking bans reduce smoking prevalence. Origo and Lucifora (2010) estimated that European countries who introduced comprehensive smoking bans have been able to reduce the probability of exposure to smoke and the presence of respiratory problems for workers by 1.6 percent.

In the US, Adda and Cornaglia (2010) used State and time variation in smoking policies to look at the effects of smoking bans in workplace, bars and restaurants.[10]

[10]Bernheim and Rangel (2004) explain that smoking bans could encourage use of cigarettes

They found a decrease in prevalence only for bars and restaurants, but which vanishes when controlling for State specific trends. One caveat of their paper is that many bans at the municipality and county-levels were implemented before State-level bans. For instance, 23 municipalities and counties in California implemented a 100 percent smoke-free public ban (in bars or restaurants) before the State did in 1998.

I will first start by showing the impacts of the different types of bans using more geographical variation than previous work. My equation is the following:

$$SMOKING_{ijt} = \alpha + \beta_j + \eta_t + \delta SB_{jt} + \theta WSB_{jt} + \zeta X_{ijt} + \lambda Z_{jt} + \varepsilon_{ijt} \qquad (1)$$

where smoking prevalence is the outcome variable for respondent i in county j in year t, SB is an indicator for smoking bans (either for bars or restaurants), WSB is an indicator of workplace smoking bans and X is a set of socioeconomic characteristics. County and year fixed effects are included in my model. These fixed effects completely control for any fixed differences between counties and between years.

I also include in some models the log of cigarette taxes at the State-level and the log of tobacco control programs/funding at the State-level. Controlling for taxes and tobacco control programs gives more credibility to the impacts of smoking bans. The assumption here is that there is no other time-varying factors which would affect smoking behavior other than the introduction of the bans. Z includes the following list of time-varying county-level characteristics: median household income, the unemployment rate and the percentage of high-school graduates. I also verified that using other county-level variables such as criminality and local government direct expenditures per capita had no effect on my main findings.

For all the equations in this paper, the personal sampling weights from each cycle are re-scaled to sum up to one for each year.[11] Standard errors are robust to clustering at the county-level (Bertrand et al. (2004)).[12]

among nonsmokers since smoking looks less harmful.

[11] See Pfeffermann (1993) and Angrist and Pischke (2009) for a discussion on the role of sampling weights. Sampling weights are used in this study to have nationally representatives sample. The number of observations varies from wave to wave which explains my choice to re-scale equally each year. Also, my choice to include sampling weights has no impact on the analysis. Similar findings are obtained when sampling weights are not included.

[12] Clustering at the county-waves level yields very similar findings (not shown for space consid-

Table 2 reports the coefficients of the variables "Smoking Ban (restaurants and bars)" and "Smoking Ban (workplaces)" from OLS of smoking cessation. Relying on linear probability models yields somewhat similar results. The dependent variable is whether the respondent is a smoker.[13] Socioeconomic characteristics and time-varying county-level variables are included. Negative results suggest that smoking bans reduce the number of smokers in the county. In column 1, the estimates are very small and not statistically significant for both indicators indicating that smoking bans are not associated with smoking prevalence. A total ban in bars or restaurants leads to a decrease in prevalence of 0.15 percentage points whereas a workplace ban increases smoking prevalence by 0.08 percentage points. Note that these estimates do not capture the fact that some smokers could also decrease their cigarette consumption but still continue to smoke.

Subsequent columns in Table 2 include State linear time trends. In column 2, the coefficient associated with the variable "Smoking Ban (restaurants and bars)" is even smaller and still insignificant. Column 3 restricts the sample to workers since the largest impact of workplace smoking bans should be on this socioeconomic group. One drawback of restricting the sample to workers is that smoking bans could be related to the economic activity. The estimates suggest that there is no association between smoking prevalence and workplace bans for workers. One of the issues with this specific type of ban is that many workplaces within a county prohibit smoking before the introduction of smoke-free ban. In the next two columns I add other smoking policies to the model. Columns 4 and 5 introduce respectively State-level taxes and tobacco control programs/funding to the model. This does not affect the significance and the size of the effect of smoking bans.

The BRFSS includes information on whether the respondent is a former smoker and the number of attempted quits over the last year. Columns 6 and 7 look at the effect of smoking policies on those two variables instead of smoking prevalence. In column 6, I find that the number of former smokers in a county is not statistically

eration).

[13] Appendix Table 4 repeats the exercise of Table 2 but replaces the dependent variable "Being a Smoker" by "Being a Daily Smoker". In the first column, the association is positive and statistically insignificant for public smoking bans and negative and insignificant for workplace smoking bans.

related to having a public or a workplace smoking ban. The coefficients are very low and even negative for public smoking bans. The following question from the BRFSS is the dependent variable for column 7: "During the past 12 months, have you stopped smoking for one day or longer because you were trying to quit smoking?". The estimated coefficients are positive but not statistically significant for both types of bans.

I also check if the impact of smoking bans is larger for some demographic groups. Table 3 shows the estimated coefficients of the same variables as before but restrict respectively the sample to female, male, married (and couples), unmarried (couple, divorced, single, separated and widowed), parents, non-parents, older (more than 50 years old), and younger (less than 50 years old) respondents. Jehiel and Lilico (2010) proposed a model in which agents have limited foresight. They argued that young people have limited foresight (a short horizon) and stop smoking when they get older as a result of having better foresight. Smoking bans would thus affect differently young and old smokers. There is no robust statistical relationship between smoking bans and smoking prevalence for any of those groups.

Overall, I find no evidence that local smoking bans in bars, restaurants and workplaces decrease the prevalence of smoking. The estimates are small and statistically insignificant. Nonetheless, I believe using bans at the municipality and county-levels in addition to State bans is essential. Studies relying on State-level bans may show spurious associations for the reason mentioned above. One concern with the findings presented in this section is that it is very likely that less stringent smoking policies were already in place before the implementation of the 100% smoke-free ban. Moreover, smoking laws sometimes cover only one city within a county.

Section III and IV test empirically the hypothesis that smoking bans are important tools for increasing the utility of current smokers.

III. Smoking Bans and Well-Being

A. Theoretical Discussion

The question of whether smoking policies affect agents' well-being was investigated by Gruber and Mullainathan (2005). Their paper shows some evidence that tax hikes are positively associated with predicted smokers' happiness in the US.[14] Gruber and Mullainathan (2005) explain their findings via time-inconsistency. In the model of Gruber and Koszegi (2001), smokers would be better off with excise taxes since this provides a self-control device. Individuals would like to stop smoking but they cannot because cigarettes are addictive. Gruber and Koszegi (2001) report that approximately eight out of ten smokers express a desire to quit. In this formulation, agents are patient about the future but impatient about the present. The findings of Gruber and Mullainathan (2005) have been challenged by Adda and Cornaglia (2006) who point out that smokers compensate for taxes by extracting more nicotine per cigarette.

This paper's main objective is to verify whether smoking bans are related to smokers' well-being. Since smoking bans are not associated with smoking behavior, I cannot confirm the model of Gruber and Koszegi (2001). It may well be the case that smoking policies provide a self-control device for smokers but this is not the case for US smoking bans.[15] The models of Becker and Murphy (1988) and Boyes and Marlow (1996) are still valid in this setting since smokers are forced to smoke in other locations. The prediction is that smoking bans decrease smokers' welfare.

On the other hand, the introduction of a smoking ban may have changed smokers' self-perception. If smokers report lower levels of well-being because they think that they annoy nonsmokers, then smoking bans would increase their life satisfaction. Smokers feel more justified in their behavior now that nonsmokers may go in public places without being exposed to secondhand smoke. One way to test this theory is

[14] Appendix B replicates their findings for public smoking bans in the US and explains some weaknesses in their methodology.

[15] While smoking bans are not related to smoking prevalence in the US, it is possible that smokers think that bans will help them to quit.

to look at the relationship between bans and well-being for different demographic groups. Arguably, younger respondents should be more affected by social norms than older smokers. In addition, a social norm theory predicts that smokers' perceptions of smoking policies should change once the policy is implemented. This will be tested via preferences toward smoking bans in public places.

There is no consensus among researchers whether unhappiness affects on smoking behavior. Cigarette consumption and quality of life are to a large extent endogenous. It is therefore difficult to measure the impact of cigarettes on well-being. Veenhoven (2008) explains that happiness does not cure illness but could prevent it. Happy people tend to do more activities, and are more reasonable with drinking and smoking. On the other hand, many people enjoy smoking and there is no clear evidence that happiness predicts starting or stopping smoking (Graham et al. (2004)). Much research has shown that daily smokers report lower levels of well-being (Jurges (2004); Shahab and West (2009); Veenhoven (2008)).[16] Unfortunately, these studies do not tackle the causality issue which is one of the weaknesses of this literature.[17] Using longitudinal data (British Household Panel Survey), Moore (2009) showed that there is a robust relationship between change in daily cigarette consumption and well-being: a reduction of cigarette consumption improves self-reported happiness. Once again, this could mask reverse causality since smokers could feel better and then smoke less (Lillard (2008)).

Hinks and Katsaros (2010) and Odermatt and Stutzer (2013) also examined the relationship between well-being and smoking policies using respectively the BHPS and the Eurobarometer. Hinks and Katsaros (2010) analyzed the effect of the 2007 smoking ban in England, Wales and Northern Ireland and found a negative effect on the well-being of smokers who reduced their daily consumption of cigarettes. Preliminary findings from Odermatt and Stutzer (2013) suggest that smoking bans have no effect on life satisfaction of predicted smokers and that cigarette taxes are negatively

[16] A study by psychologists (Acaster et al. (2007)) revealed that abstinent smokers reported relatively lower levels of happiness than satiated smokers (recent smoked) when viewing pleasurable film clips. By contrast, sadness ratings weren't affected by having smoked recently.

[17] The literature on subjective well-being in economics has grown rapidly over the last decades Kahneman and Krueger (2006). See Clark et al. (2008), DiTella and MacCulloch (2006) and Frey and Stutzer (2002) for literature reviews.

associated with predicted smokers' satisfaction. This study covers the period 1990-2011. Another important difference with these studies is the cultural differences of the countries analyzed. Cigarette consumption is more socially accepted in many European countries and the prevalence of smoking is higher (Cutler and Glaeser (2009)). I discuss the drawbacks of predicting whether respondents are smokers in the appendix and replicate the results of Gruber and Mullainathan (2005) for US smoking bans.

B. Empirical Strategy

Since this study focuses on current smokers' well-being, I rely on the following econometric model:

$$SWB_{ijt} = \alpha + \beta_s + \eta_t + \delta SB_{jt} + \theta Smoker_{ijt} + \gamma SB_{jt} * Smoker_{ijt} + \zeta X_{ijt} + \varepsilon_{ijt} \quad (2)$$

where SWB is the outcome variable (for instance: life satisfaction) for respondent i in county j in year t, β_c and η_t are county and year fixed effects, SB is an indicator for smoking bans (either for bars or restaurants) and WSB is an indicator for workplace smoking bans. Smoker is a variable which takes the value of 1 if the respondent is a smoker (daily smoker when mentioned). Last, SB*Smoker is an interaction between being a smoker and living in a county with a public smoking ban.

I estimate OLS on a standardized variable (life satisfaction answers are standardized for all respondents within each wave to have a mean of zero and a standard deviation of one), but also alternative specifications such as ordered probit and linear probability models to explore whether the results are robust. My choice to present OLS estimates is based on Ai and Norton (2003), who point out that the interpretation of interaction terms in a nonlinear model is not straightforward. As before, the personal sampling weights from each wave are re-scaled to sum up to one for each year. Standard errors are clustered at the county-level (T-statistics in parentheses). Clustering instead at the county-waves level yields similar findings (not shown for space consideration).

I examine the association between public smoking bans and smokers' well-being in Table 4. The first two columns report estimates of equation (2) for the BRFSS and the LSS with a public smoking ban indicator only. The relationship between being in a county having a public smoking ban (in bars and/or restaurants) and life satisfaction is not statistically significant in both specifications. The coefficients are close to zero indicating that public smoking bans are not related to life satisfaction for the whole population.

In the third and fourth columns, I also include the variable being a smoker and the interaction between public smoking ban and being a smoker. I find that smokers report relatively lower levels of life satisfaction which is consistent with the literature (Jurges (2004); Shahab and West (2009); Veenhoven (2008)). The variable of interest, SB*Smoker, is in the third row. Surprisingly, the association is positive for both columns and statistically significant. The size of the estimate is very large for the LSS indicating that smokers exposed to a public smoking ban saw an increase in self-reported life satisfaction of 0.168 of a standard deviation. The evidence from the BRFSS suggests that smokers expose to a public smoking ban saw an increase in self-reported life satisfaction of 0.027 of a standard deviation. Overall, the estimates point out that current smokers benefit from smoking bans in bars and restaurants. Many explanations could be proposed to explain the difference in the size of the coefficients of interest between the two datasets. First of all, the period covered is different. Second, more smoking bans have been implemented during the period 2005-2010. Third, the definition of being a smoker is not the same (see Section I). Lastly, the distribution of answers are proposed as an explanation.

The above findings suggest that current smokers are positively affected by smoking bans but that the global effect is close to zero. This means that nonsmokers do not benefit from smoking policies and are slightly worse off after the introduction of the ban. The estimates on smoking bans (first row) are thus driven by two opposing forces. It might seem surprising that the impact of smoking bans is very small and insignificant for the whole population. But, as shown by Adda and Cornaglia (2010), smoking bans can intensify the exposure of nonsmokers to tobacco smoke by displacing smokers to private places. Note that the large majority of the population

is not smoking and that the effect of bans on nonsmokers is then very small.

In the last column of Table 4, I replace the variable being a smoker by an indicator of whether the respondent tried to quit smoking over the past 12 months. This information is available solely in the BRFSS. The association between being a smoker who tried to quit and life satisfaction is negative and statistically significant but the size of the estimate is smaller than the negative association for being a smoker and satisfaction shown in the other columns. This means that smokers who tried to quit are somewhat more satisfied than those who did not try. Moreover, the interaction between being a smoker who tried to quit and public smoking bans is positive but insignificant. This result suggests that the positive impact of bans on current smokers' well-being is not related to the fact that they tried or not to quit.

The findings presented in this section are not confirmed when turning to workplace smoking bans and cigarette taxes. Table 5 replicates the structure of Table 4 but replaces the indicator public smoking bans by workplace smoking bans. The first two columns verify the impact of workplace bans on smokers. The first row of Table 5 presents the effect of workplace smoking bans (WSB) on the whole sample. Then, the next row shows the effect of workplace smoking bans on smokers' life satisfaction. The interaction between WSB*Smoker is on the third row. The interaction is positive in the BRFSS and negative in the LSS but not statistically significant. The evidence that workplace smoking bans have an effect on current smokers' well-being is very weak since only the estimates in one of the specifications are significant. Moreover, the estimates are negative when relying on the LSS. Like it has been explained previously, many workplace smoking bans were implemented by firms before the ban was introduced. This may explain why the findings are different to those for public smoking bans. The remainder of this paper will thus focus on public smoking bans (bars or restaurants).

Columns 3 and 4 analyze the relationship between smoking and the log of State cigarette taxes (constant dollars). This is the variable of interest in Gruber and Mullainathan (2005). One obvious difference with their study is that I am interested in the impact of cigarette taxes on current smokers' well-being and not on the well-being of predicted smokers. The interaction between the log of State cigarette taxes

and smokers' life satisfaction is insignificant in the two specifications and there is no evidence that cigarette taxes have an effect on smokers who do not quit. One obvious issue when relying on cigarette taxes is that it captures only the short term impact on well-being. This paper will show that the association between public smoking bans and well-being changes over time.

Overall, the estimated effect of the relationship between smoking policies and current smokers' life satisfaction depends on the type of smoking policies. The evidence suggests that the relationship is positive for public smoking bans. On the other hand, the association is not statistically significant for cigarette taxes. The long-term effect and the implementation of previous bans have been proposed to explain these findings. The positive outcome for current smokers is quite surprising because this group does not favor the implementation of smoking bans (see section IV). The absence of positive effects for nonsmokers is unexpected since the only reason why smoking bans may cause a welfare improvement, in the model of Becker and Murphy (1988), is externalities. A complication in interpreting the consequences of bans on nonsmokers' well-being is the evolution of life satisfaction. Nonsmokers could benefit in the long-run from smoking bans if they reduce the exposure to second-hand smoke and improve their health. For instance, the number of nonsmokers having a lung cancer could be decreased.

C. Specification Checks

A further set of robustness checks explores issues of political economy and omitted factors that could explain the findings. County dummies allow me to control for any time-invariant county effects, but time-varying omitted variables could bias the results. A way to partially address this concern is to include time-varying county-level variables and State-specific trends in the specification:

$$SWB_{ijt} = \alpha + \beta_s + \eta_t + \delta SB_{jt} + \theta Smoker_{ijt} + \gamma SB_{jt} * Smoker_{ijt} + \zeta X_{ijt} + \lambda Z_{jt} + \varepsilon_{ijt} \quad (3)$$

where Z includes the following list of county-level characteristics: median household income (2005-2009), unemployment rate (2005-10) and the percentage of high school graduates (2005-09). Table 6 presents results of equation (3) for the BRFSS and the LSS. The coefficients of interest in the LSS and the BRFSS are very similar those presented for the basic model.

I also test whether including the log of cigarette taxes at the State-level and the log of tobacco control programs/funding at the State-level (only for the BRFSS) affect the finding that local smoking bans are positively associated with smokers' life satisfaction. This is very unlikely since the majority of the bans are at the municipality or county-level. This is confirmed in columns 3 and 4. The estimates are very similar and statistically significant. Last, including smoking prevalence rate at the county-level[18] in the model has very little effect on the coefficients of interest (not shown).

Although my previous findings indicate that there is a relationship between current smokers' well-being and smoking bans, it remains unclear whether their effect may not reflect selection. An alternative explanation for the association is that smokers who were really unsatisfied with their life quit smoking because of the ban, and that the remaining smokers are simply less unhappy than former smokers. Therefore, I observe a positive relationship between smoking bans and satisfaction, even though the bans had no effect on current smokers.

I pursue different strategies in this paper to verify that selection is not driving the results. First, in section I, I found no evidence that public smoking bans are actually correlated with smoking prevalence. This is a first hint that selection is not very important. Second, as I will show in the next section, current smokers' preferences toward public smoking bans change after the implementation of the ban. Smokers are not in favor of public smoking bans *ex ante*, but are more likely to agree that public smoking bans should be allowed once a ban is implemented in their place of residence. This finding shows evidence that current smokers adapt to the smoking policy *ex post* and casts serious doubts on the fact that only selection explains the

[18]The BRFSS was used to estimate county adult smoking prevalence. Smokers were defined as adults who reported having smoked more than 100 cigarettes in their lifetime and now smoke every day or some days.

association between current smokers' well-being and public smoking bans.

D. Effects by Demographic Groups

One way to understand the mechanisms that explain why current smokers are more satisfied with their lives when they are exposed to a smoking ban is to evaluate the impact of smoking policies on different demographic groups. For instance, any evidence that smoking bans affect differently younger and older smokers would suggest that the two groups are differently affected by social pressure and smoking policies. For instance, younger smokers spend more time in bars and restaurants than old smokers and are likely to be more affected by public bans.

Estimating separately for young (less than 50 years old) and old respondents (more than 50 years old) the impact of public smoking bans on life satisfaction confirms this intuition. The relationship is only significant for younger individuals in the BRFSS and the coefficient is much larger than that for older agents (not shown). There is also evidence that only male smokers' satisfaction is affected by smoking bans. The association is only statistically significant when the sample is restricted to males both in the LSS and BRFSS (not shown). These findings could show that social pressure affects more males and younger individuals.

The question of whether within-interpersonal externalities may explain previous findings can be answered by looking separately at married and single respondents. If smoking bans make smokers' family members more satisfied with their lives, then the impact could be larger on married people. Table 7 separately estimates the baseline model for married, unmarried, parents and respondents without a child using the BRFSS (columns 1-4) and the LSS (columns 5-8). Columns 1, 2, 5 and 6 present the estimates of an OLS for unmarried and married people. There is some evidence in the LSS that the impact of smoking bans is larger for the married relative to the unmarried (being either single, divorced, separated or widowed). The coefficient is larger and only statistically significant for married smokers in the LSS. For the BRFSS, public smoking bans have a positive effect on both married and unmarried agents' life satisfaction. The size of the estimates is quite similar. This is a very weak piece of evidence that within-family externalities might drive the results.

Columns 3, 4, 7 and 8 separately estimate the basic model for parents and non-parents. If the impacts are due to intra-family externalities, there are reasons to believe that the impact of smoking bans would be greater for parents than for non-parents. If relatives are better off with smoking bans, then smokers are more likely to report higher levels of utility. As argued by Adda and Cornaglia (2010), public smoking bans increase nonsmokers' exposure by displacing smokers to private places where they contaminate nonsmokers. This responsibility effect is found solely in the BRFSS since the estimated coefficients on the interaction between smoking bans and being a smoker are statistically significant and positive when the sample is restricted to parents and negative for non-parents. However, the estimated coefficient is larger and positive for non-parents in the LSS. Overall, there is no evidence that parents and married respondents are differently affected by public smoking bans.

IV. Adaptation, Preferences and Time-Inconsistency

A. Adaptation

In this section, I see if smokers are time-inconsistent by analyzing whether smokers are more likely to be in favor of public smoking bans after implementation of such a smoking policy. Before turning to this question, I provide estimates of the effect of public smoking bans on smokers' well-being at yearly intervals before and after the bans are effective.

My econometric model is now as follows:

$$\begin{aligned} LS_{ijt} = \alpha + \beta_1 Smokers_{ijt} + \beta_2 SB3YL_{jt} + \beta_3 SB2YL_{jt} + ...+ \\ \beta_6 SB2Y_{jt} + \beta_7 SB3Y_{jt} + \beta_8 SB3YL_{jt} * Smokers_{ijt} + ...+ \\ \beta_{13} SB3Y_{jt} * Smokers_{ijt} + \beta_{14} X_{ijt} + \varepsilon_{ijt} \quad (4) \end{aligned}$$

where SB2YL and SB1YL are indicators for public smoking bans which are set to 1 respectively from 13 to 24 months and 0 to 12 months prior to being effective, SB3YL is an indicator for months prior the 24th month before being effective, SB2Y

and SB1Y are indications for respectively the period 13 through 24 months and 0 through 12 months, and SB3Y is an indicator for the period after 24 months following the ban. All estimates include county and years dummies and the usual set of covariates.

This design allows me to disentangle the short- and long-term impacts of smoking bans. Following the common trend assumption, smoking policies should not have any effect prior to implementation. On the other hand, the enactment date and the effective date are usually not the same. For instance, the State of Utah enacted their smoking bans on March 1st, 1994 while the effective date was January 1st, 1995. Recall that the date used in this analysis is the effective date. In addition, the proposition and the discussion about the enactment of the smoking policy takes time. If smokers are time-inconsistent, it is expected that smokers' life satisfaction should be negatively affected by the smoking ban in the months just before being effective and positive afterward.

Table 8 shows estimates of equation (4) for the BRFSS and the LSS. What emerges clearly from the two data sources is that smokers are negatively affected by smoking policies in the year prior to the implementation and positively afterward. The estimates are large and statistically significant for the 12 months prior to implementation potentially indicating that smokers are not satisfied with their life when publicly discussing the proposition and adopting the law. Note that the estimates for the period 13 to 24 months prior being effective and the years before are not statistically significant and are very small indicating that the common trend assumption is respected.

In the LSS, the effect of the smoking ban is very large the first year after the implementation. This may indicate that smokers change their perception quickly and realize that the policy is not as harmful as they expected. In the BRFSS, the association is very small for the first two years and not statistically significant and positive and statistically significant after the first two years. Overall, the effect of the policy is positive for the years after the implementation which confirms that smokers adapt to the new policy. Do these estimates support the model of Becker and Murphy (1988) and Boyes and Marlow (1996)? The answer appears to be a

qualified no. In the year immediately before the introduction of the smoking ban, life satisfaction appears to diminish, followed in years after the policy by a significant increase of life satisfaction. These estimates imply that current smokers benefit from smoking policies. Figure I plots estimated coefficients of smokers' life satisfaction at yearly intervals in the 3 years before and after the introduction of the ban. This is a visual summary of Table 8.

B. Smoking should not be allowed in public places?

This subsection tests whether smokers who are exposed to a smoking ban are less-opposed to these policies. In 2002, a large telephone survey conducted only on smokers (in Australia, Canada, United States and United Kingdom) reported that support for smoke-free environments is stronger when individuals have experienced bans (restaurants or bars). Gender and age are also good predictors of support: men and older smokers were in a greater proportion in favor of public smoking bans (Anderson et al. (2006)). Using data from a 1992 survey of 764 individuals in San Luis Obispo (CA), Boyes and Marlow (1996) found that the probability of supporting a ban in bars and restaurants is lower for smokers than for nonsmokers. Being an ex-smoker only influences negatively support for a ban in bars.

Two questions on smoking in public places allow me to verify the findings of Boyes and Marlow (1996). In the BRFSS, respondents are asked the following question in 1998, 1999, 2000 and 2008: "In restaurants, do you THINK smoking should be allowed in all areas, some areas or not allowed at all?". In the LSS, respondents are asked over the period 1985-1995 if: "Smoking should not be allowed in public places". This is a 6-point scale question which goes from "Definitely Disagree" to "Definitely Agree".

The results of estimating regressions that relate being in favor of smoking (BRFSS) and smoking bans (LSS) in public places to a variety of socioeconomic determinants like being a smoker are presented in Table 9. For the BRFSS, I create an indicator which equals one for respondents answering that smoking should be allowed in all or some areas in restaurants and equals zero otherwise. In the LSS, the answers of the dependent variable are standardized for all respondents within each wave to

have a mean of zero and a standard deviation of one. County and year fixed effects completely control for any fixed differences between counties and between years. Determinants of supporting or not smoking in public places include sex, age, marital status, household income, education, dwelling (only for the LSS), attending church or other place of worship (only for the LSS), children, working status and being a smoker.

The first two columns rely on the BRFSS and verify whether smokers think smoking should be allowed in restaurants. Columns 3 and 4 analyze answers from the LSS on whether smoking bans should be allowed. Columns 1 and 3 corroborate the finding of Boyes and Marlow (1996) that smokers are more resistant to the implementation of smoking bans. The estimates are large and statistically significant in both columns. The evidence suggests that smokers think that smoking should be allowed in restaurants and that smoking bans should not be allowed in public places. Being educated, married, not living in a trailer, attending church or other place of worship and not having children increase significantly the probability to agree that smoking should not be allowed in public places (not shown). Working full-time and being retired are negatively associated with support for smoking bans. This could be explained by the fact that smoke-free workplaces are not mentioned in the question. Additionally, it seems that there is not a monotonic relationship between the dependent variable and household income. Last, there is an inverted U-shaped relationship between age and being in favor of smoking bans in public places.

The first and third columns pointed out that smokers are in favor of smoking in restaurants and public places. Columns 2 and 4 look at a different issue by investigating whether smokers who have been exposed to a smoking ban are more in favor of these policies *ex post*. The second column adds to the previous specification a dummy indicating if the respondent's county of residence has a smoking ban in restaurants. Then an interaction between "Smoking Ban in Restaurants" and "Being a Smoker" is added to capture the effect for smokers of being in a county with a smoking ban. The OLS shows a negative coefficient for the interaction, suggesting that smokers who are exposed to a smoking ban in restaurants are less likely to say that smoking in restaurants should be allowed. The estimate is statistically

significant solely at the 10% level.

The fourth column repeats the exercise but includes instead the variable "Smoking Ban in Bars or Restaurants". The OLS shows a positive coefficient for the interaction between "Being a Smoker" and "Smoking Ban in Bars or Restaurants". The interaction is economically and statistically significant at the 5% level, but the coefficient is much lower than the estimated coefficient of "Being a Smoker". This suggests that smokers who are exposed to a public smoking ban are less-opposed to these smoking policies.

Overall, there is evidence that smokers change their preferences over time and are more likely to favor public smoking bans once they are implemented. The results show that smokers do not recognize *ex ante* that smoking bans could help them to improve their utility.[19] The estimates suggest that smoking bans have a positive impact on current smokers' life satisfaction and change their preferences regarding smoking bans. An explanation of these findings not considered yet is that current smokers may change their time spent in bars and restaurants. Adda and Cornaglia (2010) found that State-level bans in bars and restaurants decrease the time spent by smokers in those locations. While I cannot test whether there is a causal impact of time spent in bars and restaurants on well-being, a time use explanation remains possible.

V. Conclusion

This paper has attempted to provide an analysis of the consequences of local smoking bans on smoking behavior and smokers' well-being. Relying on more than 350 smoking bans, I find no evidence that smoking bans in bars and restaurants decrease the prevalence of smoking. The estimates are very small and insignificant. On the other hand, smoking bans increase life satisfaction of current smokers. I verify the robustness of this result throughout, and validate my findings with two distinct data sources. The evidence suggests that smokers adapt to smoking policies since

[19] O'Donoghue and Rabin (1999) propose an alternative model in which individuals do not recognize their self-control problems.

the impact on satisfaction is negative just before the implementation and positive afterward. Another finding of this research is that smokers do not, *ex ante*, favor the implementation of smoking bans. It is only when they are affected by these policies that they do start to agree that smoking should not be allowed in public places. The findings are striking since smokers are addicted to cigarettes and confirm the important role of adaptation.

Under the rational addiction model of Becker and Murphy (1988), smoking policies make time-consistent smokers worse off. Besides, Gruber and Koszegi (2001) explain that smoking policies provide a self-control device for smokers. Since most smokers wish to quit, smoking bans do increase their well-being. The findings of this paper do not confirm either model since I find a positive impact of smoking bans on smokers who do not quit. The results lend support to theories that agents adapt to policies and change their preferences over time. In this context, it would be interesting to verify in future research whether agents change their voting behavior for laws having a sunset provision. Unfortunately, finding a large number of policies with sunset clauses may not be the easiest task.

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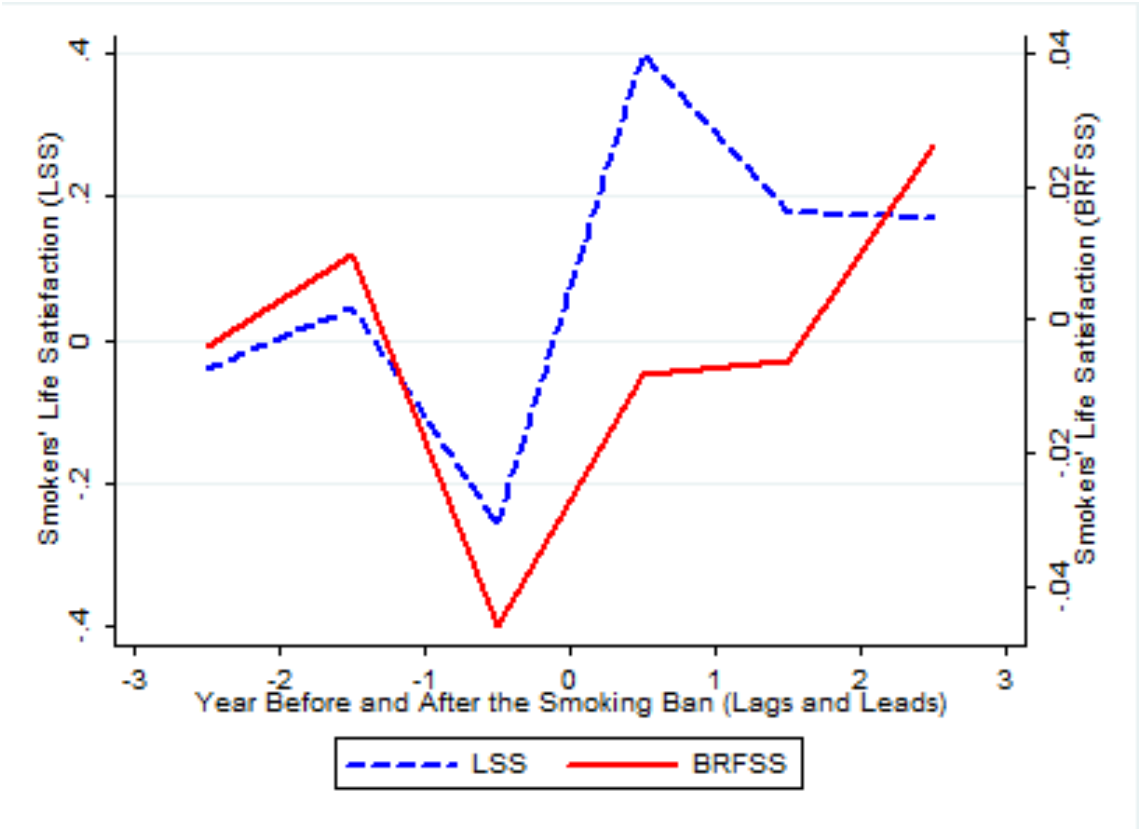
VI. Figures

Figure 1: Smokers' Life Satisfaction Before and After Smoking Ban



VII. Tables

Table 1: Summary Statistics, Behavioral Risk Factor Surveillance System

	Smokers	**NonSmokers**	**Difference**
Reported Life Satisfaction [1] Very Dissatisfied [4] Very Satisfied	3.19 (0.68)	3.43 (0.60)	-0.248 (-212.66)
Very Satisfied	0.32 (0.47)	0.48 (0.50)	-0.162 (-174.25)
Very Dissatisfied	0.02 (0.15)	0.01 (0.09)	0.016 (83.70)
Male	0.54 (0.50)	0.47 (0.50)	0.068 (75.15)
Age	42.08 (14.56)	46.82 (17.22)	-5.14 (-164.95)
Elementary School	0.04 (0.19)	0.04 (0.19)	0.001 (2.98)
Att. High School	0.12 (0.32)	0.52 (0.22)	0.073 (158.83)
Grad. High School	0.36 (0.48)	0.25 (0.43)	0.127 (155.17)
Att. College	0.29 (0.45)	0.26 (0.44)	0.025 (30.89)
Grad. College	0.18 (0.39)	0.40 (0.49)	-0.228 (-262.61)
Married	0.48 (0.50)	0.65 (0.48)	-0.180 (-201.64)
Divorced	0.14 (0.35)	0.08 (0.27)	0.061 (115.40)
Single	0.29 (0.46)	0.20 (0.40)	0.110 (144.28)
Separated	0.04 (0.19)	0.02 (0.13)	0.019 (71.99)
Widowed	0.04 (0.21)	0.06 (0.24)	-0.014 (-31.70)
No Child	0.54 (0.50)	0.56 (0.50)	-0.007 (-8.14)
One Child	0.19 (0.39)	0.17 (0.38)	0.020 (27.88)
Two Children	0.16 (0.37)	0.17 (0.38)	-0.015 (-21.43)
Three Children or more	0.11 (0.31)	0.10 (0.30)	0.003 (4.80)
Employed	0.54 (0.50)	0.54 (0.50)	-0.017 (-18.36)
Unemployed	0.04 (0.21)	0.02 (0.14)	0.027 (91.17)
Self-Employment	0.09 (0.28)	0.09 (0.28)	-0.002 (-3.02)
Retired	0.08 (0.28)	0.16 (0.37)	-0.077 (-117.45)
Disabled or Student	0.19 (0.39)	0.11 (0.31)	0.087 (140.27)
Full-Time Homemaker	0.06 (0.23)	0.08 (0.27)	-0.021 (-42.47)
Observations	297,676	1,385,328	

Note: Sample means are weighted using the final weight associated to each respondent. The personal sampling weights from each wave are re-scaled to sum up to one for each year. The period covered is 2005-2010. Columns 1 and 2 restrict the sample to smokers and nonsmokers respectively. Standard deviations are in parentheses (T-stats for the last column).

Table 2: Smoking Bans and Smoking Behavior, BRFSS.

OLS	All Smokers (1)	All Smokers (2)	Workers (3)	All Smokers (4)	All Smokers (5)	% Former Smokers (6)	Attempted Quits (7)
Smoking Ban	-0.0016	-0.0001	-0.0007	-0.0004	-0.0044	-0.0003	0.0009
(Bars/Restaurants)	(-0.58)	(-0.03)	(-0.23)	(-0.14)	(-1.27)	(-0.08)	(0.12)
Smoking Ban	0.0008	0.0010	0.0026	0.0012	0.0007	0.0026	0.0028
(Workplaces)	(0.31)	(0.36)	(0.82)	(0.42)	(0.21)	(0.61)	(0.29)
Control Variables							
Socioeconomic Controls	✓	✓	✓	✓	✓	✓	✓
County Characteristics	✓	✓	✓	✓	✓	✓	✓
Trends State Dummies		✓	✓	✓	✓	✓	✓
Log Cigarette Taxes				✓	✓		
Log Tobacco Control Prog.					✓		
County Dummies	✓	✓	✓	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓	✓	✓	✓
Years	1988-2010	1988-2010	1988-2010	1988-2010	2004-2010	1988-2010	1990-2010
Cluster	County	County	County	County	County	County	County
Observations	3,751,652	3,617,675	1,769,840	3,617,675	2,084,936	1,721,621	671,499
R-squared	0.083	0.085	0.075	0.085	0.100	0.173	0.041

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. TThe dependent variable is being a smoker for columns 1-5. Column 3 restricts the sample to workers. Column 6 uses the percentage of former smokers (smoked at least 100 cigarettes in their lifetime). The dependent variable is attempted quits (within the last year) for column 7. "State Dummies*Trend" means that each State was allowed to have its own linear time trend.

Table 3: Smoking Bans and Smoking Behavior, BRFSS.

OLS	Female	Male	Married	Unmarried	Over 50 Years Old	Under 50 Years Old
	(1)	(2)	(3)	(4)	(5)	(6)
Smoking Ban	0.0034	-0.0042	0.0021	-0.0028	-0.0034	0.0011
(Bars/Restaurants)	(0.89)	(-1.33)	(0.71)	(-0.64)	(-0.97)	(0.33)
Smoking Ban	-0.0054	0.0079	-0.0027	0.0058	0.0010	0.0015
(Workplaces)	(-1.02)	(2.16)	(-0.75)	(1.40)	(0.21)	(0.52)
Control Variables						
Socioeconomic Controls	✓	✓	✓	✓	✓	✓
County Characteristics	✓	✓	✓	✓	✓	✓
Trends State Dummies	✓	✓	✓	✓	✓	✓
County Dummies	✓	✓	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓	✓	✓
Years	1988-2010	1988-2010	1988-2010	1988-2010	1988-2010	1988-2010
Cluster	County	County	County	County	County	County
Observations	2,199,109	1,418,566	1,981,645	1,636,030	1,871,301	1,746,374
R-squared	0.080	0.091	0.069	0.084	0.070	0.089

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The dependent variable is smoking prevalence(current smokers). "State Dummies*Trend" means that each State was allowed to have its own linear time trend. The sample is restricted to female in column 1 and male in column 2. Columns 3 and 4 restrict the sample to respectively married and unmarried (couple, divorced, single, separated and widowed). The last two columns restrict the sample to old and young respondents.

Table 4: Smoking Bans and Subjective Well-Being

OLS **z-score**	Life Satisfaction BRFSS (1)	Life Satisfaction LSS (2)	Life Satisfaction BRFSS (3)	Life Satisfaction LSS (4)	Life Satisfaction BRFSS (5)
Smoking Ban	0.004	-0.001	-0.002	-0.032	0.002
Bars and Restaurants (SB)	(0.58)	(-0.03)	(-0.30)	(-0.74)	(0.36)
Smoker			-0.233	-0.056	
			(-37.94)	(-4.84)	
SB * Smoker			0.027	0.168	
			(2.79)	(2.30)	
Tried to Stop Smoking					-0.208
					(-26.24)
SB * Tried to Stop Smoking					0.012
					(1.02)
Controls (see Table 1)					
Socioeconomic Controls	✓	✓	✓	✓	✓
County Dummies	✓	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓	✓
F Stat: (SB-(SB*Smoker)=0)			4.94	4.38	
F Stat: (SB-(SB*Stopped)=0)					0.43
R-squared	0.112	0.168	0.118	0.169	0.116
Observations	1,683,004	41,448	1,683,004	41,448	1,682,352

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The period covered is 2005-2010 for the BRFSS and 1985-1997 for the LSS (except 1990). The third column presents estimates of the variable "Smoking Bans", "Being a Smoker", and an interaction between these two variables using the BRFSS. Column 4 does the same using the LSS. In column 5, I replace the variable being a smoker by an indicator of whether the respondent tried to quit smoking over the past 12 months.

Table 5: Workplaces, Taxes and Subjective Well-Being

OLS **z-score**	Life Satisfaction BRFSS (1)	Life Satisfaction LSS (2)	Life Satisfaction BRFSS (3)	Life Satisfaction LSS (4)
Smoking Ban	-0.010	-0.070		
Workplaces (WSB)	(-1.44)	(-2.15)		
Smoker	-0.229	-0.051	-0.222	-0.056
	(-36.10)	(-4.34)	(-11.15)	(-1.25)
WSB * Smoker	0.018	-0.062		
	(1.92)	(-1.19)		
Log Cig. Tax			-0.024	-0.024
			(-4.04)	(-1.00)
Log Cig. Tax *			-0.001	0.001
Smoker			(0.14)	(0.51)
Controls (see Table 1)				
Socioeconomic Controls	✓	✓	✓	✓
County Dummies	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓
F Stat: (WSB-(WSB*Smoker)=0)	4.69	0.02		
R-squared	0.118	0.169	0.119	0.168
Observations	1,683,004	41,448	1,655,550	41,448

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The period covered is 2005-2010 for the BRFSS and 1985-1998 (except 1990) for the LSS. The first two columns present basic estimates of the impact of workplace smoking bans. The last two columns analyze the effects of state cigarette taxes.

Table 6: Robustness Checks, Public Smoking Bans

OLS **z-scores**	Life Satisfaction (1) BRFSS	Life Satisfaction (2) LSS	Life Satisfaction (3) BRFSS	Life Satisfaction (4) LSS
Smoking Ban (SB)	-0.003	0.006	-0.000	-0.025
	(-0.41)	(0.12)	-0.08	(-0.56)
Smoker	-0.234	-0.056	-0.234	-0.056
	(-37.77)	(-4.78)	(-37.71)	(-4.84)
SB * Smoker	0.027	0.167	0.026	0.168
	(2.77)	(2.29)	(2.75)	(2.30)
Controls (see Table 1)				
Socioeconomic Controls	✓	✓	✓	✓
County-Level Variables	✓	✓		
Log Real State Cig. Tax			✓	✓
Log Real State Tob. Prev.			✓	
County Dummies	✓	✓	✓	✓
State Dummies * Trend	✓	✓		
Year Dummies	✓	✓	✓	✓
F Stat: (SB-(SB*Smoker)=0)	5.76	2.36	5.78	4.08
R-squared	0.119	0.171	0.119	0.169
Observations	1,653,721	41,285	1,655,550	41,448

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The period covered is 2005-2010 for the BRFSS and 1985-1997 for the LSS (except 1990). "State Dummies*Trend" means that each State was allowed to have its own linear time trend.

Table 7: Smoking Bans and Subjective Well-Being by Demographic Group

OLS **(z-score)**	Unmarried (1) BRFSS	Married (2) BRFSS	Parents (3) BRFSS	No Child (4) BRFSS	Unmarried (5) LSS	Married (6) LSS	Parents (7) LSS	No Child (8) LSS
Smoking Ban (SB)	-0.008	0.002	-0.021	0.013	-0.098	-0.011	-0.057	-0.007
	(-0.67)	(0.23)	(-2.08)	(1.79)	(-1.04)	(-0.22)	(-1.03)	(-0.10)
Smoker	-0.258	-0.208	-0.238	-0.230	-0.078	-0.045	-0.046	-0.058
	(-29.04)	(-28.79)	(-25.08)	(-29.06)	(-2.48)	(-3.09)	(-2.76)	(-2.96)
SB * Smoker	0.031	0.028	0.035	-0.021	0.090	0.182	0.130	0.240
	(2.38)	(2.56)	(2.18)	(1.84)	(0.067)	(1.92)	(1.42)	(2.24)
Controls (see Table 1)								
Socioeconomic Controls	✓	✓	✓	✓	✓	✓	✓	✓
County Dummies	✓	✓	✓	✓	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓	✓	✓	✓	✓
F Stat: (SB-(SB*Smoker)=0)	4.24	3.36	6.83	0.30	0.96	3.37	2.30	2.78
R-Squared	0.093	0.082	0.122	0.122	0.266	0.171	0.205	0.212
Observations	731,421	951,583	536,684	1,146,320	11,300	30,148	21,229	20,219

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The period covered is 2005-2010 for the BRFSS and 1985-1998 for the LSS (except 1990). The first column restricts the sample to couple, divorced, single, separated and widowed. Columns 2, 3 and 4 restrict the sample respectively to married, parents, and non-parents. Columns 5 to 8 repeat the same exercise with the LSS.

Table 8: Lags and Leads

OLS **z-score**	Life Satisfaction BRFSS (1)	Life Satisfaction LSS (2)
Smoking Ban Before Second Year Lag (SB3YL)	0.014 (1.49)	0.018 (0.34)
Smoking Ban Second Year Lag (SB2YL)	0.014 (1.93)	-0.019 (-0.44)
Smoking Ban One Year Lag (SB1YL)	0.018 (2.48)	-0.042 (-0.80)
Smoking Ban First Year (SB1Y)	0.006 (1.02)	-0.062 (-1.01)
Smoking Ban Second Year (SB2Y)	0.001 (0.22)	-0.158 (-2.03)
Smoking Ban After Second Year (SB3Y)	-0.009 (-1.24)	0.075 (1.35)
Smoker	-0.223 (-28.78)	-0.051 (-4.17)
SB3YL * Smoker	-0.004 (-0.27)	-0.041 (-1.01)
SB2YL * Smoker	0.010 (0.70)	0.045 (0.45)
SB1YL * Smoker	-0.046 (-2.95)	-0.257 (-2.50)
SB1Y * Smoker	-0.008 (-0.73)	0.398 (4.27)
SB2Y * Smoker	-0.006 (-0.40)	0.178 (1.06)
SB3Y * Smoker	0.026 (2.15)	0.170 (1.43)
Controls (see Table 1)		
Socioeconomic Controls	✓	✓
County Dummies	✓	✓
Year Dummies	✓	✓
F Stat: (SB3YL-(SB3YL*Smoker)=0)	1.02	0.90
F Stat: (SB2YL-(SB2YL*Smoker)=0)	0.06	0.26
F Stat: (SB1YL-(SB1YL*Smoker)=0)	10.61	2.63
F Stat: (SB1Y-(SB1Y*Smoker)=0)	0.98	10.99
F Stat: (SB2Y-(SB2Y*Smoker)=0)	0.16	2.34
F Stat: (SB3Y-(SB3Y*Smoker)=0)	4.97	0.80
R-squared	0.119	0.169
Observations	1,683,004	41,448

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The period covered is 2005-2010 for the BRFSS and 1985-1998 for the LSS (except 1990).

Table 9: Should Smoking in Restaurants be Allowed? BRFSS,
Should Smoking Bans in Public Places be Allowed? LSS

OLS	BRFSS	BRFSS	LSS z-score	LSS z-score
	(1)	(2)	(3)	(4)
Smoking Ban Restaurants (RSB)		-0.024		
		(-0.79)		
Smoking Ban Bars and Restaurants (SB)				-0.137
				(-1.15)
Smoker	0.422	0.425	-1.557	-1.560
	(9.34)	(9.30)	(-87.78)	(-87.99)
RSB * Smoker		-0.072		
		(-1.66)		
SB * Smoker				0.187
				(2.01)
Controls (see Table 1)				
Socioeconomic Controls	✓	✓	✓	✓
County Dummies	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓
F Stat: (RSB-(RSB*Smoker)=0)		0.69		
F Stat: (SB-(SB*Smoker)=0)				3.76
Observations	96,516	96,516	34,922	34,922

Note: In columns 1 and 2, the dependent variable is: "In restaurants, do you THINK smoking should be allowed in all areas, some areas or not allowed at all?: [1] All or some areas [0] Not at all". In columns 3 and 4, the dependent variable is: "Smoking should not be allowed in public places: [1] Definitely Disagree to [6] Definitely Agree?". All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The period covered is 2005-2010 for the BRFSS and 1985-1998 for the LSS (except 1990).

VIII. Appendix A

A. County-Level Variables: USA Counties

- County Unemployment Rate (2005-10) U.S. Bureau of Labor Statistics
- County Median Household Income (2005-09) U.S. Census Bureau (e.g. IPE010209D)
- Percentage of High School Graduate or Higher, 25 years old and over (2005-09) U.S. Census Bureau (EDU635209D)

IX. Appendix B

A. Replication of Gruber and Mullainathan (2005) using Smoking Bans

This appendix simply replicates the result of Gruber and Mullainathan (2005) that smoking policies have a positive effect on predicted smokers' well-being. I use the same methodology and include similar demographic variables to predict whether respondents are smokers. The only differences are that I rely on public smoking bans instead of cigarette taxes and on the BRFSS and the LSS and not on the General Social Surveys (US and Canada).

I test the hypothesis that smoking bans affect many types of agents: for former smokers, smoking bans helped them to realize their intentions to quit which are often not achieved; for current smokers, since cigarettes are addictive substances, any policies that reduce the frequencies of smoking might make them better off; and even for potential smokers, who could be discouraged to start to smoke. Many surveys pointed out that smokers want to quit. However, smokers do not want to cease smoking in the present because they are impatient. Their long term objective is unreachable unless they are pushed to stop.

The methodology is the following: compare the subjective well-being of people likely to smoke to people unlikely to smoke after the implementation of smoking bans. Since much of the second-hand tobacco smoke effect on health occurs in the long-run, predicted nonsmokers are the control group. Many of the socioeconomic determinants in our data sets differ between smokers and nonsmokers (see Table 1 and Appendix Table 1). These characteristics help us to predict if the respondent is a daily smoker or a smoker. Regressions that relate smoking behavior to the following list of variables are estimated: age, age-squared, sex, interaction between age and sex, household income categories[20], education categories, marital status, number of children, dwelling (only in the LSS), attend place of worship (only in the

[20]Income is available only categorically in the LSS. I created a variable representing the log real family income per equivalent = 1 + 0.5 [other adults] + 0.3 kids. Using this measure or the income categories does not affect the results of this paper.

LSS), working status, and State dummies. Also, the State-level changes in tobacco control programs/funding and the State-level changes in excise taxes were used in some specifications (not shown) to predict smoking.

Regressions are estimated for each year that has smoking behavior information[21] in order to give to each respondent a predicted probability of smoking (PSMOKE). An example of this equation is shown in Appendix Table 5. The R-squared goes from 0.10 to 0.14 for the BRFSS (0.14 for the LSS). Some variables like age, education, and attend place of worship are clearly important determinants of smoking. The correlation coefficient between PSMOKE and being a daily smoker is 0.42 (0.32 to 0.35 for the LSS).

My basic specification does not include an exclusion restriction in the equation that predicts smoking. I simply repeat the exercise of Gruber and Mullainathan (2005) for smoking bans in the US. This is the first concern with such a methodology. A second concern is that there is no information on whether smokers really quit smoking. Gruber and Mullainathan (2005) do not rely on panel data and predict whether respondents are smoker in order to solve this issue.

The specification is:

$$SWB_{ijt} = \alpha + \beta_s + \eta_t + \delta SB_{jt} + \theta PSMOKE_{ijt} + \gamma SB_{jt} * PSMOKE_{ijt} + \zeta X_{ijt} + \varepsilon_{ijt} \quad (5)$$

where PSMOKE is the predicted probability of smoking, and X is a set of covariates that were used to predict smoking. In this setting, γ is the coefficient of interest. It captures the impact of public smoking bans on predicted smokers. If the coefficient is positive, this would mean that bans have a positive effect on respondents having a high propensity to smoke or a negative impact on individuals having a low propensity.

One problem of this setting is that the variables from the first step (the prediction of smoking participation) are the same variables as the ones used in the well-being

[21] Since there is no question on smoking behavior in 1998 in the LSS, the last year available (1997) is used to predict smoking for respondents of the wave 1998. Also, the methodology that is used to predict smoking does not affect the findings of this paper. Predicting smoking with a regression for each year or with the first year in which there is a smoking ban or with all the years do not change the main estimates.

equation. Identification of the impact of smoking policies on predicted smokers is hence difficult. Moreover, there is no clear evidence that smoking policies (taxes or smoking bans) decrease the prevalence of smoking. Even if this is the case, I doubt doing such an exercise would lead to identifying the true effect of smoking bans on former smokers and current smokers.

B. Results: Predicted Smoking

Appendix Table 6 shows my basic findings of equation (5) using the BRFSS (columns 1 and 3) and the LSS (columns 2 and 4). The first row of Appendix Table 6 presents the effect of smoking bans (only bars and restaurants) on the whole sample. Then, the next row shows the effect of being a predicted smoker on self-reported well-being. The interaction between public smoking ban and predicted smoking is in the third row.

The estimates suggest that predicted smokers exposed to a smoking ban saw an increase in self-reported life satisfaction which goes from 0.204 to 0.262 of a standard deviation. The estimated coefficient is positive and statistically significant at the 1 percent level for the BRFSS and not statistically significant for the LSS.

These findings advocate that bans in bars and restaurants result in a welfare improvement for three types of individuals: former smokers, current smokers, and potential smokers. In order to verify the effect on nonsmokers, a dummy indicating if the respondent has a low propensity to smoke (below the 25th percentile) is generated. I then regress on the same covariates as before but the variable PSMOKE is replaced by the dummy "Low Propensity to Smoke". Estimating the model with low propensity to smoke gives a negative coefficient on the interaction of interest but it is small and insignificant (not shown for space consideration).

It is conceivable that people who smoke less than once a day (before or after the smoking bans) are negatively/positively affected by smoking bans. If they were occasional smokers before the ban but weren't able to stop to smoke, then one could possibly imagine that they are better or worse off. To verify this hypothesis, a predicted probability of smoking (PSMOKE) is re-estimated for each respondent by considering people who smoked at least once over the last year as smokers (in

the previous analysis, only daily smokers were considered as smokers). Once again, smoking bans have large, positive, and statistically significant effects on predicted smokers for the BRFSS (Appendix Table 6, column 3). The impact is positive and not statistically significant for the LSS (Appendix Table 6, column 4). This suggests that both predicted daily and occasional smokers benefit from smoking bans.

The findings would suggest *a priori* that the time-inconsistent model is well suited to explain why current smokers are better off with smoking bans. As pointed out by Gruber and Koszegi (2001), most smokers want to quit but are not able. This self-control problem is problematic because smokers are impatient about the present. They desire to smoke less in the future but are incapable of doing so in the short term. Because of this time-inconsistency, any smoking policies that would help smokers to quit would increase their well-being. The first problem with this interpretation of the result is that smoking bans do not reduce smoking prevalence. Second, this paper shows that even smokers who do not quit are positively affected by smoking bans. Last, the lack of panel data and exclusion restrictions may lead to biased estimates.

X. Appendix Tables

Table A.1: Summary Statistics, Life Style Survey

	Smokers	**NonSmokers**	**Difference**
Reported Life Satisfaction [1] Def. Disagree [6] Def. Agree	3.790 (1.518)	4.084 (1.446)	-0.301 (-17.99)
Satisfied: Def. Agree	0.134 (0.340)	0.167 (0.373)	-0.037 (-8.75)
Satisfied: Def. Disagree	0.108 (0.310)	0.073 (0.260)	0.033 (10.64)
Male	0.482 (0.500)	0.441 (0.497)	0.039 (6.99)
Age	43.53 (14.07)	46.76 (16.28)	-3.33 (-18.43)
Elementary School	0.034 (0.181)	0.027 (0.161)	0.006 (3.14)
Att. High School	0.115 (0.319)	0.059 (0.235)	0.055 (18.73)
Grad. High School	0.425 (0.494)	0.336 (0.471)	0.088 (16.25)
Att. College	0.283 (0.450)	0.286 (0.452)	0.000 (0.00)
Grad. College	0.079 (0.270)	0.147 (0.354)	-0.067 (-17.54)
Post-Grad. Educ.	0.064 (0.245)	0.146 (0.353)	-0.082 (-21.79)
Never Att. Church	0.373 (0.484)	0.220 (0.414)	0.147 (30.37)
Att. Church 1-4 a Year	0.207 (0.405)	0.143 (0.350)	0.060 (14.694)
Att. Church 5-8 a Year	0.080 (0.271)	0.064 (0.244)	0.017 (6.11)
Att. Church 9-11 a Year	0.050 (0.218)	0.046 (0.209)	0.005 (1.91)
Att. Church 12-24 a Year	0.070 (0.255)	0.074 (0.261)	-0.003 (-1.12)
Att. Church 25-51 a Year	0.103 (0.304)	0.157 (0.364)	-0.052 (-12.26)
Att. Church 52+ a Year	0.118 (0.322)	0.296 (0.457)	-0.175 (-36.10)
Married	0.699 (0.459)	0.734 (0.442)	-0.033 (-6.36)
Divorced	0.116 (0.321)	0.072 (0.258)	0.043 (13.92)
Single	0.103 (0.304)	0.108 (0.310)	-0.004 (-1.07)
Separated	0.022 (0.148)	0.010 (0.101)	0.011 (9.06)
Widowed	0.059 (0.236)	0.076 (0.265)	-0.016 (-5.56)
No Child	0.438 (0.496)	0.497 (0.500)	-0.058 (-10.21)
One Child	0.217 (0.412)	0.199 (0.399)	0.020 (4.35)
Two Children	0.215 (0.411)	0.191 (0.393)	0.021 (4.80)
Three Children or more	0.131 (0.337)	0.113 (0.316)	0.018 (5.06)
Full-Time Worker	0.523 (0.500)	0.478 (0.500)	0.040 (7.15)
Unemployed	0.042 (0.200)	0.023 (0.151)	0.020 (10.65)
Self-Employment	0.087 (0.282)	0.087 (0.282)	0.001 (0.30)
Part-Time Worker	0.080 (0.271)	0.092 (0.290)	-0.012 (-3.58)
Retired	0.108 (0.311)	0.166 (0.372)	-0.059 (-14.40)
Disabled or Student	0.043 (0.202)	0.028 (0.166)	0.016 (7.85)
Full-Time Homemaker	0.118 (0.322)	0.126 (0.331)	-0.007 (-1.75)
Observations	9,055	32,396	

Note: Sample means are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. The period covered is 1985-1998, except the year 1990. Columns 2 and 3 restrict the sample to smokers and nonsmokers respectively. Standard deviations are in parentheses (T-Statistics for the last column).

Table A.2: Distribution of Well-Being and Smoking Variables, BRFSS

Life		Very Dis.	Dissatisfied	Satisfied	Very Sat.	
Satisfaction	Freq.	18,737	77,077	820,414	766,776	
	%	1,11	4,58	48,75	45,56	
Smoking		Everyday	Some Days	Not at all		
Cigarettes	Freq.	230,289	77,898	1,420, 355		
	%	13,28	4,49	81,92		
PSMOKE		<0.2	]0.2,0.4]	]0.4,0.6]	]0.6,0.8]	<0.8
	Freq.	1,230,316	446,139	17,311	381	32
	%	72,62	26,33	1,02	0,00	0,00

Note: Weighted using the final weight associated to each respondent. The personal sampling weights from each wave are re-scaled to sum up to one for each year. The period covered is 2005-2010.

Table A.3: Distribution of Well-Being and Smoking Variables, LSS

Life		Def. Dis.	Gen. Dis.	Mod. Dis.	Mod. Agree	Gen. Agree	Def. Dis.
Satisfaction	Freq.	4,022	4,388	7,432	11,785	13,488	7,973
	%	8,19	8,94	15,14	24,01	27,48	16,24
# Times Smoked		NonSmoker	1 to 51	52 More			
Cigarettes	Freq.	33,826	1,949	9,953			
Last Year	%	73,97	4,25	21,77			
Smoking in Public		Def. Dis.	Gen. Dis.	Mod. Dis.	Mod. Agree	Gen. Agree	Def. Dis.
Places Should	Freq.	6,221	2,845	3,349	4,308	4,847	17,164
not be Allowed	%	16,06	7,34	8,65	11,12	12,51	44,31
PSMOKE		<0.2	]0.2,0.4]	]0.4,0.6]	]0.6,0.8]	>0.8	
	Freq.	27,649	12,206	5,800	1,482	2,317	
	%	55,91	24,68	11,73	3,00	4,69	

Note: Weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year.

Table A.4: Smoking Bans and Smoking Behavior, BRFSS.

OLS	Daily Smokers (1)	Daily Smokers (2)	Workers (3)	Daily Smokers (4)	Daily Smokers (5)
Smoking Ban	0.0020	0.0020	0.0047	0.0018	-0.0055
(Bars/Restaurants)	(0.44)	(0.44)	(0.96)	(0.39)	(-2.15)
Smoking Ban	-0.0030	-0.0030	-0.0052	-0.0028	0.0030
(Workplaces)	(-0.47)	(-0.47)	(-0.77)	(-0.44)	(1.25)
Control Variables					
Socioeconomic Controls	✓	✓	✓	✓	✓
County Characteristics	✓	✓	✓	✓	✓
Trends State Dummies		✓	✓	✓	✓
Log Cigarette Taxes				✓	✓
Log Tobacco Control Prog.					✓
County Dummies	✓	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓	✓
Years	1988-2010	1988-2010	1988-2010	1988-2010	2004-2010
Cluster	County	County	County	County	County
Observations	3,617,675	3,617,675	1,769,840	3,617,675	2,084,936
R-squared	0.081	0.081	0.078	0.081	0.084

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The dependent variable is being a smoker for columns 1-5. Column 3 restricts the sample to workers.

Table A.5: Smoking Prediction Equation (Daily Smoker)

OLS	**LSS** (1993)	**BRFSS** (2005)
Male	-0.160 (0.307)	-0.253 (0.094)
Age	0.112 (0.024)	0.070 (0.008)
Age-Squared/100	-0.140 (0.026)	-0.109 (0.008)
Age*Male	0.005 (0.006)	0.004 (0.002)
Less than 10,000	0.221 (0.246)	
[10000, 15000]	0.254 (0.252)	
[15000, 20000]	0.107 (0.234)	
[20000, 25000]	0.467 (0.216)	
[25000, 30000]	-0.232 (0.226)	
[30000, 35000]	0.163 (0.209)	
[35000, 40000]	Omitted	
[40000, 45000]	-0.267 (0.256)	
[45000, 50000]	0.263 (0.231)	
[50000, 60000]	-0.276 (0.215)	
[60000, 70000]	-0.194 (0.255)	
More than 70,000	-0.283 (0.216)	
Less than 10,000		0.555 (0.089)
[10000, 15000]		0.421 (0.097)
[15000, 20000]		0.434 (0.059)
[20000, 25000]		0.429 (0.056)
[25000, 35000]		0.432 (0.046)
[35000, 50000]		0.371 (0.041)
[50000, 75000]		0.201 (0.041)
More than 75,000		Omitted
Elementary School	-0.380 (0.313)	-0.137 (0.126)
Att. High School	0.698 (0.175)	0.212 (0.049)
Grad. High School	Omitted	
Att. College	-0.387 (0.112)	-0.281 (0.036)
Grad. College	-1.078 (0.163)	-0.798 (0.042)
Post-Grad. Educ.	-0.906 (0.180)	
Mobile HM	0.587 (0.270)	
1-Family Detached	0.104 (0.223)	
1-Family Attached to House	Omitted	
Building for 2 Families	0.099 (0.287)	
Building for 3+ Families	0.275 (0.248)	
Never Att. Church	1.412 (0.147)	
Att. Church 1-4 a Year	1.398 (0.169)	
Att. Church 5-8 a Year	1.239 (0.186)	
Att. Church 9-11 a Year	1.253 (0.245)	
Att. Church 12-24 a Year	0.763 (0.220)	
Att. Church 25-51 a Year	0.599 (0.166)	
Att. Church 52+ a Year	Omitted	
Married	0.123 (0.179)	-0.393 (0.048)
Divorced	0.590 (0.207)	0.086 (0.048)
Single	Omitted	Omitted
Separated	0.479 (0.365)	0.172 (0.117)
Widowed	0.294 (0.275)	0.127 (0.065)
No Child	Omitted	Omitted
One Child	0.078 (0.125)	-0.143 (0.044)
Two Children	-0.018 (0.138)	-0.186 (0.044)
Three and More Children	0.360 (0.158)	-0.106 (0.052)
Full-Time Worker	-0.060 (0.170)	-0.099 (0.103)
Unemployed	0.349 (0.265)	Omitted
Self-Employed	0.008 (0.226)	-0.145 (0.129)
Part-Time Worker	Omitted	
Retired	0.350 (0.247)	-0.226 (0.105)
School and Disabled	-0.012 (0.304)	0.036 (0.116)
Full-Time Homemaker	-0.189 (0.214)	-0.121 (0.101)
County Dummies	✓	✓
Observations	3,374	125,561
R-Squared	0.1407	0.1029

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. The dependent variable is being a daily smoker.

Table A.6: Smoking Bans and Predicted Smokers' Well-Being

OLS	BRFSS	LSS	BRFSS	LSS
(z-score)	(1)	(2)	(3)	(4)
Smoking Ban	-0.025	-0.048	-0.029	-0.048
Bars and Restaurants (SB)	(-2.25)	(-0.73)	(-2.39)	(-0.74)
Predicted Smoking	-0.300	-0.056		
	(-6.18)	(-2.43)		
(SB) * Predicted Smoking	0.204	0.262		
	(3.58)	(1.11)		
Predicted Smoking			-0.292	-0.044
(Occasional Smokers Included)			(-6.12)	(-2.04)
(SB) * Predicted Smoking			0.166	0.210
(Occasional Smokers Included)			(3.54)	(1.18)
Controls (see Table 1)				
Socioeconomic Controls	✓	✓	✓	✓
County Dummies	✓	✓	✓	✓
Year Dummies	✓	✓	✓	✓
F Stat: (SB-(SB*PS)=0)	11.89	1.12	11.48	1.23
R-squared	0.112	0.168	0.112	0.168
Observations	1,683,004	41,448	1,683,004	41,448

Note: All estimates are weighted using the final weight associated to each respondent and the personal sampling weights from each wave are re-scaled to sum up to one for each year. T-stats are in parentheses, clustered by county. See Appendix B for more details and Appendix Table 5 for the predicting smoking equation.