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Thank you for not smoking: evidence from the Italian smoking ban*

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Abstract

By 2030, tobacco is expected to be the cause of about 10 million deaths per year worldwide. In Italy tobacco smoking is still a pervasive and relevant phenomenon. Using data from a national health survey, we investigate how individuals react to the introduction of a public smoking ban in Italy. Our estimates suggest that the Italian smoking ban in private places open to the public reduced smoking prevalence by 1.3% and daily cigarettes consumption by 8%. We find heterogeneous effects by gender, marital status, and region of residence.

Keywords: smoking, public smoking ban, quasi-natural experiment, individual behaviour.
JEL codes: I18, K32.

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1 Introduction

Smoking represents the main cause of preventable death worldwide, with more than 5 million smoking-related deaths each year (WHO, 2008, 2009). Smoking is responsible for many common health problems ranging from heart attacks, stroke, emphysema to cancer and impotence. This evidence has led both international organizations and several industrialized countries to design and implement tobacco control policies such as comprehensive and public smoking bans. Despite the policy relevance of public smoking bans, a limited amount of research has been carried on to evaluate the effect of the introduction of smoking bans on smoking behaviour. For instance, Adda and Cornaglia (2010) do not find evidence that smoking bans have an effect on individual smoking behaviour in the US. Similarly, Anger et al. (2010) show that the introduction of a public ban in Germany did not change the average smoking behaviour within the population, even if some heterogeneous effects exist for different socio-demographic groups.

In this paper, exploiting a quasi-natural experiment, we study the short-term effect of the introduction of a public smoking ban on individual smoking behaviour in Italy and we explore the heterogeneous effects of the ban by gender, marital status, and geographical area. In January 2005 Italy adopted a comprehensive smoking ban, regulating smoking in all public and private indoor areas open to the public including bar and restaurants, to protect the health of non-smokers. In our analysis we consider individual-level data taken from the survey "*Condizioni di salute*" conducted by the Italian Statistics Office (ISTAT) between December 2004 and September 2005. We use a before/after approach to compare individual interviewed in 2004 and not affected by the ban with those interviewed in 2005, thus affected. Although we do not observe the same individuals in both states at different times, we show how similar these individuals are with respect to a number of demographic and socioeconomic characteristics

since the survey was meant to have four representative samples of Italian residents in order to smooth over the seasonal pattern of health conditions and use of health care.

Our results show that the effect of the introduction of the smoking ban on smoking behaviour modifies individual smoking habits. On average smoking participation decreased by 1.3 percentage points, while smoking intensity, measured by the daily consumption of cigarettes, dropped by 0.27 cigarettes per day, roughy 8% of average daily consumption. Some important differences emerge when we consider heterogeneous effects. Specifically, we find that females, unmarried individuals and individuals living in southern Italian regions are more affected by the introduction of the public smoking ban.

We contribute to the literature that studies the effects of smoking bans on individual smoking behaviour providing additional evidence for a large European country. As widely discussed in Anger et al. (2010), previous contributions in this area mainly focused on the US where smoking prevalence is significantly lower than in European countries, such as Germany, Italy, and Spain. The economic literature has mainly examined the effect of prices or taxes on cigarette consumption and individual smoking behaviour (Becker and Murphy, 1988; Wasserman et al., 1991; Chaloupka, 1991; Becker et al., 1994) providing evidence of a negative effect of prices and taxes on smoking. Although, more recent contributions show that cigarette price does not affect initiation to smoking (DeCicca et al., 2002) and smoking intensity (Adda and Cornaglia, 2006).

Another strand of the empirical literature explores the effect of workplace smoking ban. Evans et al. (1999) show that workplace bans decrease the prevalence for smoking among workers.

More closely related to our contribution is the literature on the effects of public smoking bans on individual smoking behaviour. As previously discussed, almost all these studies focus on the US experience and, despite their quasi-experimental setting, provide inconclusive evidence that clean indoor air laws reduce smoking in the whole

population or among smokers (Yurekli and Zhang, 2000; Tauras, 2006; Bitler et al., 2010; Adda and Cornaglia, 2010). More recently, Anger et al. (2010) investigates the short-term effects of the introduction of public smoking bans in Germany in 2007-2008. Exploiting a quasi-experimental setting, similar to the one used in our paper, and a rich longitudinal dataset they find that smoking prohibition law did not change average smoking behaviour within the population. However, important differences emerge by socio-demographic groups, namely young, unmarried individuals, and males.

The remainder of the paper is structured as follows. Section 2 presents the institutional setting, the implementation, and the timing of the Italian smoking ban. Section 3 describes the data and the identification strategy. The main results and robustness checks are discussed in Section 4. Finally, section 5 concludes and discusses the implication of our results.

2 Institutional setting and stylized facts

With about 25% of the Italian population smoking daily, tobacco smoking is still a pervasive and relevant phenomenon. Moreover, smoking is the primary cause of preventable death in Italy. Indeed, some 85,000 smoking-related deaths occur every year (Russo and Scafato, 2006), over 25% among individuals aged between 35 and 65. Thus, tobacco smoking is a major concern for public health also because of its economic implications. The analysis conducted by Russo and Scafato (2006) showed that 14.9% of total hospitalizations can be attributed to smoking-related causes, implying an economic cost for the health system of 3 billion euros (6.7% of national health costs). Obviously, tobacco smoking has many other indirect costs such as loss of productivity and working days.

Over the last decade an increase in the awareness of the detrimental effect of smoking coupled with the recommendations from the World Health Organization (WHO)

and the European Union has led many countries across the globe to adopt laws banning smoking in all indoor public places and workplaces. Italy was one of the first European countries to introduce a comprehensive smoking ban in January 2005. Indeed, on 16 January 2003 Italy passed the so-called "*Legge Sirchia*"[1], which regulates smoking in public and private premises open to the public in order to protect the health of non-smokers and extends the prohibition on smoking that already applied to public venues (hospitals, cinemas, theaters, and Public Administration offices open to the public) to all premises open to the public (bars, restaurants) with the exception of private premises that are not open to the public, and premises reserved for smokers. In the latter, areas reserved for smokers can be provided, but they must be physically separated from the non-smoking areas, fitted with suitable ventilation systems that guarantee sufficient air change, and appropriately signaled. The prohibition came into effect on 10 January 2005. Even if the primary aim of such anti-smoking provision has been to protect workers and users from the negative consequence of environmental smoking, smoking restrictions might also affect smoking behaviour by reducing opportunities to smoke. In the following section we test whether the introduction of the comprehensive smoking ban has affected the average smoking behaviour in the population.

3 Data and Empirical Strategy

3.1 Data description

We use data from the survey on health conditions and health care (*Condizioni di Salute e Ricorso ai Servizi Sanitari*[2]) that started in 1993 and is carried out every five years by ISTAT. Since the Italian public smoking ban came into effect in January 2005, for the purpose of our analysis, we use the 2004-05 round that collects information

[1]Named after the Minister of Health who proposed and signed the law.

[2]This survey is part of a broader survey framework known as *Indagine Statistica Multiscopo sulle Famiglie.*

on health conditions for a nationally representative sample of 50,474 households and 128,040 individuals (about 1/4 each quarter). The survey provides detailed information on demographic and socio-economic characteristics such as age, gender, marital status, household size, number of children, employment status, education, health status, and chronic disease. In order to limit seasonal effects on health conditions and use of health care, the survey was carried out every three months between December 2004 and September 2005. We exploit this feature of the survey for the identification of the causal effect of the smoking ban on smoking behaviour. In the main analysis we restrict our attention to individuals between 15 and 65 years of age interviewed in December 2004 (right before the ban) and in March 2005 (after the smoking ban came into effect in January 2005). In order to provide evidence of the absence of any seasonal effect on smoking[3], we also use data from the 1999/2000 round of the survey on health conditions and health care[4].

We focus on three different measures in our empirical analysis: i) whether an individual is a current smoker (*smoker*); ii) the daily average consumption of cigarettes (*daily cons*) and iii) whether an individual is a regular smoker who smokes on average ten or more cigarettes per day (*smoker 10+*).

Table 1 provides summary statistics for both treated and untreated individuals, together with t-ratio for difference in sample mean (column (5)). We find significant differences in mean outcomes between untreated and treated individuals: the smoking participation rate defined as the share of smokers in the total population aged 15-65, decreases by 1.3%, the number of daily cigarettes smoked in the population drops from 3.5 to 3.2, the share of heavy smokers decreases by 1.3%. The picture which emerges from these raw figures is that the smoking behaviour of the Italian population changed significantly after the ban.

[3]For instance, many smokers make New Years resolutions to quit smoking.

[4]The structure of the survey is similar to that of the 2004-05 survey. It covers 140,011 individuals and 52,332 households about 1/4 each quarter).

The same individuals are very similar in terms of non smoking-related characteristics. In order to check whether the smoking ban assignment was random, we compare the mean values of demographic characteristics such as age, gender, marital status, household characteristics (size, presence of children), employment status (employed, unemployed, inactive), education, self-reported health, economic condition, and presence of chronic or long/term diseases (asthma, hypertension, heart attack, other heart problems, ictus, bronchitis, and cancer).

3.2 Identification strategy

The legislation on smoking in enclosed private places open to the public is an example of natural experiment (Meyer (1994)). In our analysis, we estimate the effect of the introduction of the ban on individuals' smoking behaviour by comparing three different outcomes, which capture smoking prevalence and smoking intensity, before and after the implementation of the ban. The public smoking ban is the treatment, and we have information on both treated and control individuals. The control group consists of individuals interviewed in December 2004, before the ban took place, and the treated are all the individuals interviewed in March 2005. We are interested in identifying the average effect of the smoking ban. The change in the law assigns individual to the treatment in a random way, that is in a way unrelated to unobservables. In fact, every individual is exposed to the law that prohibits smoking in enclosed private places open to the public, and the survey provides two representative samples of Italian residents before and after the smoking ban. We can compare the characteristics of the treated with those of the randomized-out controls, in other words with the characteristics of all the individuals observed in December 2004. To get the average effect we have first looked at the raw difference in means of different outcome between treated and control individuals (see section 3.1), then we compare the two groups while controlling for individual characteristics (equation 1).

$$Y_{it} = \mu' X_{it} + bD_t + u_{it} \tag{1}$$

The variable D is a dichotomous variable that captures the smoking ban and is the key parameter of interest. It takes value 0 if the ban is not in force and value 1 after the ban comes into effect. Thus, D equals 0 for all individuals in the sample interviewed in December 2004, and value 1 for those interviewed in March 2005.

$$Y_{i0} = \mu' X_{i0} + u_{i0} \qquad if \quad D_0 = 0 \tag{2}$$

$$Y_{i1} = b + \mu' X_{i1} + u_{i1} \qquad if \quad D_1 = 1 \tag{3}$$

The advantage of this approach is that we can focus on individuals interviewed right before and right after the introduction of the smoking ban. The key identifying assumption of the model is that in the absence of the treatment, b would be zero, in other words there would be no difference in the mean of those in group 0 and group 1. This condition is written as $E[u_{it}|D_t, X_{it}]$=$E[u_{it}|X_{it}] = 0$, i.e. the conditional mean of the error term does not depend on the value of the treatment dummy. Since there is no reason to suppose that smoking behaviour among these two groups would have differed in the absence of the ban, any difference can be plausibly attributed to the causal effect of the ban itself.

A possible concern in the interpretation of our results could be represented by the existence of an overall downward trend in smoking participation. To this extent we need to provide some external evidence supporting that this is not the case in the Italian context. Given that the survey we are considering for our analysis is conducted every 5 years, we need to rely on official statistics at aggregate and national level on the percentage of smokers aged 14 or more provided by ISTAT. As suggested by Figure 1 prior to 2004 smoking participation fluctuated around 24% without exhibiting a clear

negative trend, while we observe a dramatic drop in smoking participation in 2005 after the ban and a modest increase in the subsequent years. This evidence seems to suggest that pre-existing downward trend in smoking behaviour does not represent a concern and that the sizable reduction in smoking behaviour is mainly attributable to the introduction of the smoking ban.

As illustrated above, the two groups of individuals do not differ along non-smoking-related dimensions. Note that this approach assumes that there where no other discontinuous jump in unobserved characteristics in the year when the ban was implemented. Since the assignment to treatment occurred in a random way, selection was not on unobservables, and because of the nature of the treatment itself (the law change) selection was not related to observables either.

For the outcome *smoker*, the coefficient b measures the change in the probability that an individual smokes given the adoption of the smoking ban. For the outcome *daily cons*, b indicates the average change in the number of cigarettes smoked per day because of the smoking ban[5]. For the third outcome *smoker 10+*, the key coefficient captures the average change in the probability of smoking (ten or more cigarettes) due to the introduction of a smoking ban in enclosed private places open to the public.

4 Results

4.1 Main results

Table 2 shows our baseline estimates of the average impact of the smoking ban on our outcome variables[6]. The first model accounts for region fixed effects, the second also

[5]We do not define the outcome daily consumption of cigarettes for smokers only because if a smoking ban has a large effect on the individual probability of smoking, estimates from the cigarettes consumption equation for smokers needs to be interpreted with caution. For example, if low consuming smokers are the first to quit when exposed to a ban, the composition of the pool of smokers after the ban might be different than before the ban.

[6]We use a linear probability model for the outcome *smoker* and *smoker 10+*, and ordinary least square regression for the outcome *daily cons*.

controls for a set of demographic characteristics (a second degree polynomial in age, a dummy for being a female, household size, a dummy for the presence of children below 8 years of age, and marital status). In addition to these covariates the full specification includes a dummy for whether an individual holds a high school diploma, three indicators for employment status (employed, unemployed, and inactive), a dummy for whether the household has adequate/good economic resources, and an indicator of self-reported health. In every specification standard errors are clustered at household level.

Our findings show that the introduction of the public smoking ban has significantly reduced smoking prevalence in the population. Indeed, the probability of smoking[7] after the implementation of the ban decreases by 1.3%. Smoking intensity, measured by the daily consumption of cigarettes, drops by 0.27 cigarettes per day, roughy 8% of average daily consumption. Moreover, when we consider heavy smokers (i.e. individuals who smoke 10 cigarettes or more daily), the smoking ban determines a reduction by 1.3%. Differently from Anger et al. (2010) and Adda and Cornaglia (2006) our estimates show a significant and sizable effect of the introduction of the smoking ban on smoking behaviors.

The fact that the total number of smokers decreased little comes as no surprise. The new smoking ban refers to enclosed private places of public use where smoking was not yet prohibited by previous laws: it basically applies to enclosed places like bars and restaurants, whereas smoking on public transport means, in hospitals, schools, etc., and in public administration facilities was not allowed since 1975 and 1995 respectively. Therefore, we expect to find a larger effect in terms of number of cigarettes rather than in terms of number of smokers: on the one hand, individuals using private places open to the public, interested by the smoking ban, do not spend a long time therein[8], on the

[7]The effect on the likelihood amongst daily smokers is a little higher (1.3%) across specifications relative to the same probability amongst all smokers.

[8]Think about individuals in a bar for a drink, in a restaurant for dinner, etc.

other hand workers affected by the ban are a minority of the workers who were already interested by previous legislative provisions.

If it is likely that marginal smokers, that is individuals use to smoke few cigarettes per day, are the first to quit smoking as a consequence of bans, the composition of the rest of the smokers might be different before and after a ban is imposed. Therefore, to estimate the average effect of the ban on the intensive and extensive margins, we have among the outcome variables the daily consumption of cigarettes which is set to zero for non-smokers.

An additional concern in the interpretation of the effect of the smoking ban might be the existence of a seasonal effect, whereby individuals, who do not regularly smoke, may smoke few cigarettes during Christmas holidays or on the other hand, regular smokers may make New Year's resolution to quit after the Christmas break. In order to test for seasonality we employ the previous round of the survey on health conditions and health care conducted in 1999/2000. We exclude the existence of any such effect by comparing smoking prevalence and intensity in December 1999 and in March 2000. Table 3 illustrates that there is no seasonal effect on any outcome of interest.

Our baseline estimates show some other interesting effect of control variables on smoking behaviours. Age has a positive and non-linear effect on the probability of smoking (overall and for heavy smokers) and on the daily consumption of cigarettes, while females are less likely to smoke than males and moreover their smoking intensity is lower. These results are consistent with Anger et al. (2010) e Tauras (2006). Household characteristics affect both smoking prevalence and intensity. Household size has a negative effect on smoking behaviour, unmarried individuals show both a higher smoking propensity and intensity, while the presence of children in the family does not exert any effect on the probability of being a heavy smoker. Turning to socio-economic characteristics, more educated individuals tend to smoke less, while employment status does not seem to affect smoking participation. The existence of significant differences

in smoking behaviour across groups suggests the possibility that the ban may affect certain groups of individuals more than others. In the following sections we compare the impact of the smoking ban across a number of socio-economic groups in order to reveal any heterogeneous effect.

4.2 Gender and marital status

To investigate whether the effects under analysis are different by gender, we split the sample between males and females. Columns 1 and 2 of table 4 show that the average effect of the smoking ban are broadly similar for both genders. However, females seem to be more respondent to the introduction of the ban. Indeed, the introduction of the ban has led to a reduction in the average number of cigarettes by .33 for males and .22 for females. This implies a reduction in daily cigarettes consumption by 7% for males and 10% for females.

As suggested in Anger et al. (2010) the effect of the introduction of the smoking ban may vary by marital status. In particular, Anger et al. (2010) find that unmarried individuals appear to be more respondent in adjusting their smoking behaviours. Our estimates, presented in columns 3 and 4 of table 4, show that the smoking ban has a stronger effect on unmarried individuals. However, married individuals adapt their smoking behaviour reducing the daily number of cigarettes.

4.3 Geographical area

Economic literature on Italy has always stressed significantly differences in individual behaviours across Italian regions due to the existence of relevant socio-economic and cultural differences. Thus, in line with this strand of literature, columns 5 to 7 of table 4 illustrate the estimated impacts of the public smoking ban by macro-regional area (north, center and south). We find a drop in the propensity to smoke by 1.6%

in the South, while smoking behaviour has not been affected by the ban in the North and Center of the country. When we consider the effect of the ban on daily smoking intensity we find a drop by .24 and .33 cigarettes, respectively in the North and in the South, while no significant effect in the Center. The effect of the smoking ban on heavy smokers is higher in northern regions (1.8%) than in southern ones (1.5%).

5 Robustness checks

In this section we perform a set of robustness checks to provide further evidence the results presented are not just a chance occurrence and are not driven by factors other that the introduction of the public smoking ban.

First, we estimates a medium-term effect of the smoking ban on smoking behaviour. Precisely, we include all individuals aged 15-65 interviewed in 2005 (March, June, and September) after the implementation of the ban. Results, presented in Table 5, are qualitatively similar to our main findings. Point estimates both for smoking propensity and intensity are lower in magnitude.

Second, we perform a falsification exercise. We create a fictitious dummy for the smoking ban assuming that the introduction of the ban came into effect in a different date. We assume that the ban is effective starting on 1 July 2005 or on 1 September 2005. Thus, in the first case we compare smoking behaviour of individuals interviewed in March 2005 with those interviewed in June 2005, while in the latter we compare individuals interviewed in June 2005 with those interviewed in September 2005. The aim of this robustness test is to provide additional elements that no other factors are driving the main results. Our claim is that if the research design is correctly specified, we should not observe a negative effect of fictitious smoking ban on smoking behaviours. Results, presented in Table 6, show that the effect of fictitious dummies for the introduction of the smoking ban is not statistically different from zero for every

fictitious dummies considered, giving support to our main results. We conclude that the findings of the previous section are unlikely to be driven by factors others than the introduction of the public smoking ban.

6 Conclusions

Using data from a large nationally representative sample, we find a significant reduction in smoking prevalence and smoking intensity as a consequence of the smoking ban in public and private indoor places open to the public such as bars and restaurants. As expected, the effect of the ban on cigarettes consumption is larger than the impact on smoking participation rate. The probability of being a smoker (lumping together occasional and regular smokers) dropped by 1.3%, whereas the daily consumption of cigarettes in the whole population reduced by some 0.3 cigarettes per day, equivalent to a reduction in consumption by 8%. It is interesting that the smoking prevalence among heavy smokers dropped by about the same percentage as the smoking participation rate did overall. We also find heterogeneous effects for several subgroups of the population. In particular, females, unmarried individuals and those living in southern regions are more respondent to the introduction of the public smoking ban.

Although smoking bans have a one-time effect, we have proved they are an effective tool to reduce smoking participation rates as well as smoking intensity in the medium term.

To put our results in perspective, we calculate how much of an increase in cigarettes price and excise is required to generate a comparable reduction in smoking prevalence. Considering a price elasticity for demand of cigarettes of -0.3 (Gallus et al. (2003)), a reduction in smoking behaviour similar to the one induced by the ban would require respectively a 17% and 30% increase in cigarettes price and average tax per pack. Translated to prices, that would require a price increase of 80 cents per pack or an

equivalent increase of excise of 82 cents.[9] Reminding that smoking kills 5 million individuals worldwide and World Bank estimates that by 2030 the proportion will be one in six (WB, 1999), or 10 million deaths per year (more than any other single cause), our results indicate that a smoking ban can have enormous benefits on both smokers' and non-smokers' health and that they go well beyond the reduction in the exposure of non-smokers to second-hand smoke.

[9] A Marlboro pack costs 4.70 euros and the excise is 2.75 euros per pack.

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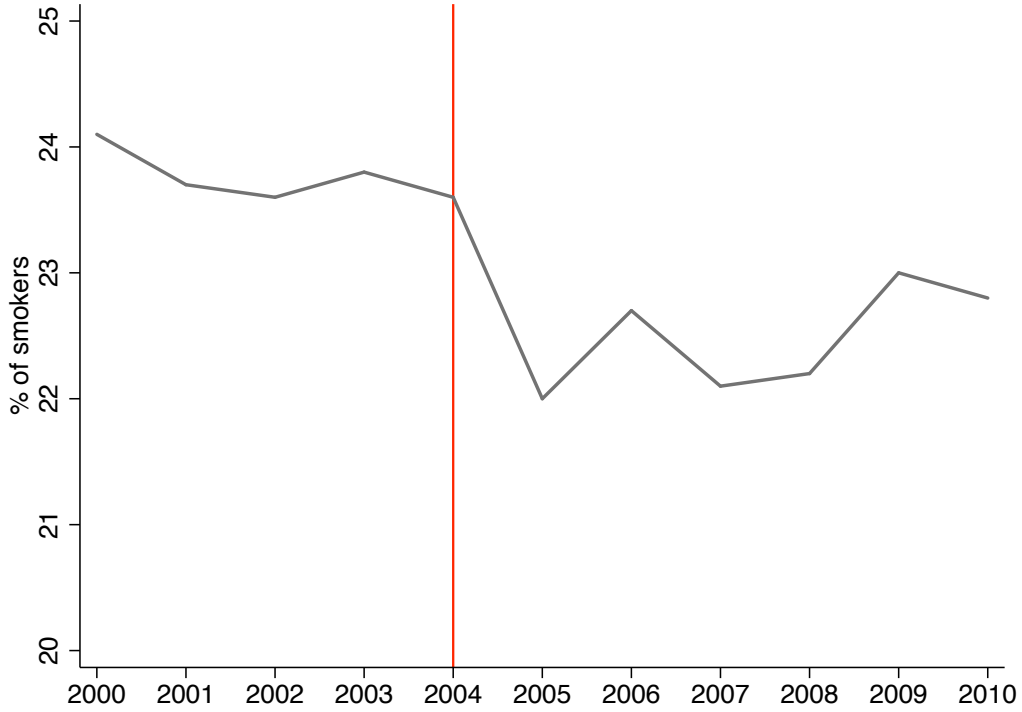
Figure 1: Trend in the percentage of smokers aged 14 or more



Source: Italian Statistics Office (ISTAT).

Table 1: Descriptive statistics

	Mean	Std. Dev.	Pre-ban	Post-ban	T-ratio for Δ in means
	(1)	(2)	(3)	(4)	(5)
Current Smoker	0.253	0.435	0.261	0.248	2.93
Cigarettes per day	3.375	7.391	3.544	3.260	3.70
Smoker 10+	0.179	0.383	0.187	0.174	3.44
Age	40.103	14.157	40.059	39.963	-0.64
Female	0.505	0.500	0.499	0.505	1.11
Household size	3.342	1.226	3.314	3.305	-0.66
Dummy for children aged less than 8	0.192	0.394	0.195	0.201	1.40
Married	0.581	0.493	0.581	0.584	0.50
High-school diploma	0.361	0.480	0.361	0.359	-0.25
Employed	0.560	0.496	0.569	0.566	-0.56
Unemployed	0.073	0.259	0.070	0.072	0.62
Inactive	0.367	0.482	0.361	0.362	0.24
Household has adequate economic resources	0.714	0.452	0.708	0.710	0.52
Self-reported health	0.969	0.173	0.969	0.972	1.92
Asthma	0.045	0.208	0.047	0.045	-1.14
Hypertension	0.105	0.306	0.107	0.102	-1.59
Heart attack	0.009	0.092	0.009	0.008	-1.04
Heart problem	0.025	0.155	0.025	0.024	-0.81
Ictus	0.004	0.063	0.0040	0.0038	-0.29
Bronchitis	0.026	0.159	0.028	0.023	-3.15
Cancer	0.014	0.118	0.0140	0.0145	0.36
Sample size	42,786		21,434	21,442	

Table 2: Impact of enclosed public place smoking ban on smoking

	Smoker	Daily Cons	Smoker 10+
	(1)	(2)	(3)
OLS with region fixed effects	-.013***	-.270***	-.013***
	(.005)	(.080)	(.004)
OLS with demographics	-.013***	-.271***	-.013***
	(.005)	(.079)	(.004)
OLS with full-set of controls	-.013***	-.271***	-.013***
	(.005)	(.078)	(.004)
	Full set of controls specification		
Age	.014***	.328***	.017***
	(.001)	(.018)	(.001)
Age squared	-.0002***	-.004***	-.0002***
	(1.00e-05)	(.0002)	(1.00e-05)
Female	-.102***	-2.280***	-.108***
	(.004)	(.069)	(.004)
Household size	-.013***	-.178***	-.011***
	(.002)	(.037)	(.002)
Presence of children below 8 years of age	-.009	-.075	-.004
	(.007)	(.117)	(.006)
Married	-.027***	-.419***	-.026***
	(.007)	(.112)	(.006)
High school diploma	-.023***	-.573***	-.031***
	(.005)	(.077)	(.004)
Employed	-.020**	-.553***	-.023***
	(.009)	(.168)	(.008)
Inactive	-.082***	-1.462***	-.072***
	(.009)	(.164)	(.008)
Household economic conditions (=1 if adequate or excellent)	-.074***	-1.363***	-.067***
	(.005)	(.095)	(.005)
Self-reported health status (=1 if discrete, good or very good)	-.001	-.220	-.007
	(.012)	(.230)	(.011)
Region fixed effects	Y	Y	Y
N.Obs.	42,255	42,255	42,255

Notes: Standard errors (in parenthesis) are clustered at household level.). $***$ significant at 1%, $**$ significant at 5%, + significant at 10%.

Table 3: Seasonal effect on smoking, December 1999 - March 2000

	Smoker	Daily Cons	Smoker 10+
	(1)	(2)	(3)
OLS with region fixed effects	.005	.107	.003
	(.005)	(.082)	(.004)
OLS with demographics	.005	.125	.004
	(.005)	(.081)	(.004)
OLS with full-set of controls	.005	.114	.003
	(.005)	(.082)	(.004)
N.Obs.	47,877	47,877	47,877

Notes: Standard errors (in parenthesis) are clustered at household level. Variables in the OLS estimate with demographics are: age, age squared, gender, household size, presence of children below 8 years of age, an indicator for whether an individual is married or lives with a partner, and region fixed effects. Variables in the OLS estimate with a full-set of controls, in addition to the variables in the OLS estimate with demographics, are: a dummy for whether an individual holds a high school diploma, three indicators for employment status (employed, unemployed, and inactive), a dummy for whether the household has adequate/good economic resources and an indicator of self-reported health. $***$ significant at 1%, $**$ significant at 5%, + significant at 10%.

Table 4: Effect of smoking ban by categories

	Males	Females	Married	Not Married	North	Center	South
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Smoker	-.013^{+}	-.012**	-.017**	-.009	-.013	-.006	-.016**
	(.007)	(.006)	(.007)	(.006)	(.008)	(.010)	(.007)
Daily cons	-.330***	-.214***	-.291***	-.252**	-.240^{+}	-.190	-.335***
	(.122)	(.079)	(.110)	(.103)	(.131)	(.166)	(.120)
Smoker 10+	-.016***	-.011**	-.014**	-.012**	-.018**	-.004	-.015**
	(.006)	(.005)	(.006)	(.005)	(.007)	(.009)	(.006)
N.Obs.	20,893	21,362	17,355	24,900	14,074	10,209	18,280

Notes: Standard errors (in parenthesis) are clustered at household level. All estimates includes: age, age squared, gender, household size, presence of children below 8 years of age, an indicator for whether an individual is married or lives with a partner, a dummy for whether an individual holds a high school diploma, three indicators for employment status (employed, unemployed, and inactive), a dummy for whether the household has adequate/good economic resources, an indicator of self-reported health and region fixed effects. $***$ significant at 1%, $**$ significant at 5%, $+$ significant at 10%.

Table 5: Impact of enclosed public place smoking ban on smoking - Medium-term effect

	Smoker	Daily Cons	Smoker 10+
	(1)	(2)	(3)
OLS with region fixed effects	-.008**	-.143**	-.008**
	(.004)	(.066)	(.003)
OLS with demographics	-.009**	-.154**	-.009***
	(.004)	(.065)	(.003)
OLS with full-set of controls	-.010***	-.178***	-.010***
	(.004)	(.065)	(.003)
N.Obs.	84,619	84,619	84,619

Notes: Standard errors (in parenthesis) are clustered at household level. Variables in the OLS estimate with demographics are: age, age squared, gender, household size, presence of children below 8 years of age, an indicator for whether an individual is married or lives with a partner, and region fixed effects. Variables in the OLS estimate with a full-set of controls, in addition to the variables in the OLS estimate with demographics, are: a dummy for whether an individual holds a high school diploma, three indicators for employment status (employed, unemployed, and inactive), a dummy for whether the household has adequate/good economic resources, an indicator of self-reported health in column (3).). $***$ significant at 1%, $**$ significant at 5%, $+$ significant at 10%.

Table 6: Impact of enclosed public place smoking ban on smoking - Falsification exercise

	Smoker	Daily Cons	Smoker 10+
	(1)	(2)	(3)
	ban effective June 1		
OLS with region fixed effects	.005	.110	.004
	(.005)	(.078)	(.004)
OLS with demographics	.004	.089	.003
	(.005)	(.077)	(.004)
OLS with full-set of controls	.002	.057	.002
	(.005)	(.076)	(.004)
N.Obs.	42,876	42,876	42,876
	ban effective September 1		
OLS with region fixed effects	.001	.141^{+}	.005
	(.005)	(.080)	(.004)
OLS with demographics	.002	.155^{+}	.005
	(.005)	(.079)	(.004)
OLS with full-set of controls	.002	.149^{+}	.005
	(.005)	(.078)	(.004)
N.Obs.	43,044	43,044	43,044

Notes: Standard errors (in parenthesis) are clustered at household level. Variables in the OLS estimate with demographics are: age, age squared, gender, household size, presence of children below 8 years of age, an indicator for whether an individual is married or lives with a partner, and region fixed effects. Variables in the OLS estimate with a full-set of controls, in addition to the variables in the OLS estimate with demographics, are: a dummy for whether an individual holds a high school diploma, three indicators for employment status (employed, unemployed, and inactive), a dummy for whether the household has adequate/good economic resources, an indicator of self-reported health in column (3).). $***$ significant at 1%, $**$ significant at 5%, $+$ significant at 10%.