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Outdoor smoking behaviour and support for outdoor smoking restrictions before and after France's national smoking ban

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Background: On January 1, 2008, the French government implemented a national ban on indoor smoking in hospitality venues. Survey results indicate the indoor ban has been successful at dramatically reducing indoor smoking; however, there are reports of an increased number of outdoor hospitality spaces (patios) where smoking can take place. This study sought to understand if the indoor ban simply moved smoking to the outdoors, and to assess levels of support for smoking restrictions in outdoor hospitality settings after the smoke-free law. **Methods:** Telephone interviews were conducted among 1067 adult smokers before and after the 2008 indoor ban as part of the International Tobacco Control (ITC) France Survey. Among other topics, this survey measures how the smoking ban has influenced smoking behaviour relevant to outdoor sections of hospitality venues. In addition, 414 non-smoking adults and 164 respondents who had quit smoking between waves were also asked about support for outdoor smoking restrictions. **Results:** Reported smoking outdoors at cafés/pubs/bars increased from 33.6% of smokers at Wave 1 to 75.9% at Wave 2. At restaurants, smoking outdoors increased from 28.9% to 59.0%. There was also an increase in reported non-smoking for both visits to cafés/pubs/bars, and restaurants from 13.4% to 24.7%, and 30.4% to 40.8% respectively. The majority of smokers (74.5%), non-smokers (89.4%) and quitters (74.0%) support a partial or complete ban on smoking in outdoor areas of restaurants. **Conclusion:** The indoor smoking ban moved smoking to outdoor spaces; however, the ban is also associated with increased non-smoking behaviour. The majority of respondents support outdoor smoking restrictions in patio environments.

Introduction

Smoke-free laws protect people from exposure to tobacco smoke pollution (TSP).^{1,2} This is important for public health because there is no risk-free level of exposure to TSP,^{3,4,5} and TSP exposure is causally associated with the development of numerous diseases, including lung cancer and cardiovascular disease in adults.^{6,7,8}

France was the first European nation to ratify the World Health Organization's Framework Convention on Tobacco Control (FCTC) on October 19, 2004. Article 8 of the FCTC requires the adoption of effective measures to provide protection from TSP. France enacted a nearly comprehensive ban on smoking in work and public places.⁹ This smoke-free law was introduced in two phases. In February 2007, all companies, transport, public administration buildings, educational and health care facilities went 100% smoke-free. In January 2008, so did all other public places, including cafés, bars, hotels, restaurants, discotheques, and casinos. The ban permits smoking in separately ventilated smoking rooms, except on health premises and premises for use by minors, but these rooms are subject to expensive technical requirements. Smoking rooms should not occupy more than 20% of the overall surface of the establishment and should not exceed 35 m², and no service is permitted within. According to the law, smoking is permitted in open-air terraces or if the main side of the terrace is open, and if the terrace is separated from the inside of the bar. Smoking is not permitted in covered or enclosed terraces.

The International Tobacco Control Policy Evaluation Project in France (the ITC France Survey) surveyed a randomly selected cohort of 1735 adult smokers and 525 adult non-smokers in

France before (2006–07) the implementation of France's smoke-free policies and retained 1,231 smokers and 414 non-smokers in the survey conducted after (2008) the law was in place.¹⁰ The survey results demonstrated dramatic reductions in indoor smoking in cafés, bars, and restaurants, and increases in complete smoking bans in the workplace, after the smoke-free policies were implemented.¹¹ Before the ban in hospitality venues, smoking was observed by nearly all visitors to cafés, pubs, and bars — 97% of smokers and 93% of non-smokers reported the presence of smoking indoors on their most recent visit.¹⁰ Less than one year after the ban, smoking was rarely observed inside these venues — only 4% of smokers and 5% of nonsmokers reported that people were smoking on their most recent visit.¹⁰ The same was true in restaurants, with 71% of smokers and 57% of non-smokers reporting that people were smoking indoors on their most recent visit before the ban, and just 2% and 3% respectively, after the ban.

This paper focuses on the impact of the indoor smoking ban on smoking on the outdoor environments of hospitality venues. Outdoor smoking restrictions, particularly in hospitality settings such as the patios/terraces of restaurants or bars, are increasingly being regulated in jurisdictions that have already implemented comprehensive indoor smoke-free laws.¹² Regulating smoking in outdoor hospitality spaces is important as there is evidence to indicate that both employees and the public continue to be exposed to TSP, either from direct exposure outdoors or from TSP drifting to adjacent indoor spaces. For example, researchers in Ireland measured the airborne nicotine levels in bars before and after their national smoking ban. Bars with outside smoking areas had a higher level of indoor airborne nicotine (13 µg/m³) after the

ban, compared to locations without outdoor environments that permitted smoking (mean $8.2 \mu\text{g}/\text{m}^3$), suggesting that TSP was drifting inside.¹³ As governments increasingly adopt policies to make indoor spaces smoke-free, outdoor exposure becomes an increasingly likely source of TSP exposure. A study in California, a jurisdiction with a long history of smoke-free regulations, reported that the most frequent place non-smokers were exposed to TSP was outdoor areas.¹⁴ Prior to partial smoking restrictions in outdoor hospitality environments in Ontario, Canada it is estimated that only 5% of venues with a patio were voluntarily smoke-free.¹⁵

The French association DNF (Droits des Non-Fumeurs – Rights for Non-Smokers) has drawn attention to the proliferation of smoking on café terraces in France leading up to and after the indoor ban.¹⁶ The January 2008 smoking ban coincides with an estimated 50% increase in the number of hospitality terraces from 30,000 to 45,000 between 2007 and 2009.¹⁵ Further, it has been determined that after the smoke-free law was in place in France a great number of establishments partially or entirely closed these outside terraces.¹⁷

This paper presents findings from two waves of the ITC France Survey to understand how reported smoking behaviour in hospitality settings, specifically restaurants and bars, changed after the smoke-free policy. The objective is to understand whether reported smoking in these venues decreased or was simply moved from indoor to outdoor spaces. The paper also examines reported levels of support for smoking restrictions in outdoor hospitality environments after the smoke-free law.

Methods

Survey design

The ITC France Survey is a large national longitudinal cohort survey conducted by telephone interview. Sampling was conducted by random digit dialing (RDD) and covered continental France (i.e., excluding the four overseas departments of Guadeloupe, Martinique, French Guiana, and Bourbon Island). Both smokers and non-smokers are included in the survey which is conducted via telephone interviewer-administered questioning (T-IAQ). Survey weights were applied to account for the sample design of the survey, such as that the weighted descriptive statistics

are estimates pertaining to smokers and non-smokers residing in continental France. Wave 1 was conducted between December 2006 and February 2007 and Wave 2 was conducted during September – November 2008. The cooperation rate for Wave 1 of the ITC France Survey was 75.3%. For the Wave 2 replenishment sample, the cooperation rate was 80.5% (smokers and non-smokers combined). The complete survey methodology for the ITC France Survey, including construction of sampling weights for smokers and non-smokers, has been reported previously.^{10,18}

Sample

A total of 2260 respondents completed the first wave of the ITC France survey, and 1645 respondents completed both Wave 1 and Wave 2, including smokers ($n = 1067$), non-smokers ($n = 414$) and respondents who had been smokers during Wave 1 and were abstinent at the time of Wave 2 (quitters, $n = 164$). The retention rate for Wave 1 cohort smokers was 71%.¹⁰ Those retained and those not retained did not differ on baseline measures of gender or education. Those not retained ($M = 38.3$ years) were younger than those retained ($M = 40.2$ years), $t = -2.8$, $p = .0024$ and were more likely than those retained to be of the lowest household income group, earning <1500 Euros a month ($\chi^2 = 10.2$, $p = .006$). Population weights were used to extrapolate sample frequencies to the national French population.¹⁷

Demographics

Respondent demographics of interest included categorized age (18–24, 25–34, 35–44, 45–54, 55–64, 65+), level of education (<Baccalaureate, Bac-Bac + 2, >Bac + 2), monthly household income in Euros (<1500, 1500–3000, >3000) and gender. Sample characteristics and population estimates of respondents completing both waves can be found in Table 1.

Measures of smoking behaviour

The ITC France Survey contains questions covering a vast range of domains, including smoking behaviour, purchasing behaviour, and cessation and quitting behaviour. A number of items assess detailed smoking behaviour and attitudes towards smoking in

Table 1 Description of survey sample weighted population estimates for respondents participating in both Wave 1 (2006/2007) and Wave 2 (2008) of the ITC France Survey

Sample	Smokers		Non-Smokers		Quitters	
	n	Percent (95% CI)	n	Percent (95% CI)	n	Percent (95% CI)
Total	1067		414		164	
Sex						
Male	490	54.5 (51.1–57.8)	135	45.0 (39.4–50.7)	91	63.3 (54.8–71.0)
Female	577	45.5 (42.2–49.0)	279	55.0 (49.3–60.6)	73	36.7 (29.0–45.2)
Age (years)						
18–24	137	18.6 (15.7–21.9)	39	9.5 (6.8–13.1)	14	10.4 (5.9–17.6)
25–34	232	23.4 (20.6–26.4)	52	14.3 (10.8–18.7)	46	31.4 (23.8–40.1)
35–44	314	23.9 (21.3–26.7)	96	16.3 (13.0–20.2)	44	18.5 (13.2–25.2)
45–54	249	20.6 (18.1–23.4)	96	20.0 (16.1–24.7)	34	19.7 (13.8–27.4)
55–64	104	10.1 (8.2–12.5)	71	19.6 (15.1–24.9)	18	14.3 (8.8–22.5)
65+	31	3.4 (2.3–4.8)	60	20.3 (15.9–25.6)	8	5.7 (2.8–11.3)
Income (Euros per month)						
<1500	296	24.3 (21.6–27.2)	93	21.1 (17.0–25.9)	28	16.2 (11.0–23.3)
1500–3000	483	45.4 (42.0–48.9)	201	47.7 (42.2–53.3)	86	49.8 (41.2–58.5)
>3000	265	28.0 (24.8–32.3)	104	26.8 (22.0–32.1)	47	32.9 (25.0–41.9)
Not stated	23	2.4 (1.5–3.8)	16	4.4 (2.5–7.7)	3	1.1 (0.3–3.5)
Education						
<Bac	463	43.5 (40.1–47.0)	193	46.6 (41.0–52.2)	66	38.0 (30.1–46.7)
Bac – Bac + 2	384	36.8 (33.5–40.2)	131	33.3 (28.2–38.9)	54	34.6 (26.7–43.3)
>Bac + 2	219	19.7 (17.2–22.5)	90	20.1 (16.2–24.7)	44	27.4 (20.3–35.9)

Note: The survey sample size (n) figures are unweighted while the population estimate percents and corresponding 95% confidence intervals are weighted.

public places.¹⁰ The survey addresses two distinct public venue types, café/pub/bars and restaurants.

At Wave 1, smokers were asked whether they had visited a café/pub/bar or restaurant in the previous 6 months. At Wave 2, smokers were asked whether they had visited the same venues after the January 1st 2008 smoking ban. Only those who responded that they had visited during the specified timeframes were prompted to report their smoking behaviour during their last visit, resulting in the inclusion of 79% of respondents in the subsequent analysis.

The question of interest was as follows: *Did you smoke at all at the (restaurant) or (café, pub, or bar) during your last visit, either inside or outside?*, and the response options were 'yes', 'no', or 'don't know'. Respondents answering in the affirmative were asked further about where they smoked. The measure was worded, *Did you smoke inside, outside, or both?*, and the response options were 'inside', 'outside', or 'both inside and outside'. Respondents who reported that they smoked outside were further asked to clarify the location of their smoking. Respondents were asked, *Was that in an outdoor area on the premises or did you have to leave the premises altogether?*

Measures of support for outdoor smoking restrictions

In Wave 2, smokers, non-smokers and respondents who had quit smoking were asked about their support for outdoor smoking laws. Respondents were asked, *And now thinking about the OUTDOOR eating areas of restaurants – do you think that smoking should be allowed in all outdoor eating areas, in designated outdoor eating areas such as smoking terraces, or not allowed in outdoor eating areas at all?*

Analyses

Generalized Estimating Equation (GEE) modeling was used to analyze differences in smoking behaviour in hospitality venues across waves, where exponentiated GEE model coefficients take the form of odds ratios (ORs). The dependent variable of interest was smoking behaviour during a respondent's last visit to a hospitality venue. To account for survey response options, GEE models categorized smokers responding that they 'smoked both inside and outside' in Wave 1 as smoking outside, and in Wave 2 as smoking inside. Coding the smoking behaviour in this way conservatively captures behaviour change in the positive direction. Separate models were run for each dependent variable behaviour: did not smoke, smoked inside, smoked outside on premises, and smoked outside off premises, across both venue types (café/pub/bar and restaurant). Modeling utilized the following characteristics: logit link function, binary family distribution of the dependent variable, and an unstructured

within-group correlation structure. In the tests for differences between waves, all GEE models simultaneously controlled for age, education, income, and sex. In addition, all models were run both weighted and unweighted, yielding similar ORs demonstrating robustness of the present results. Weighted models utilized the longitudinal weights which were re-scaled to account for respondents who were present in both waves. The weighted GEE model ORs are presented in this paper. All analyses were run in STATA 10.0 SE.

RESULTS

At Wave 2, after implementation of the smoke-free indoor air law, indoor smoking nearly completely ceased in venues frequented by the respondents; of the smokers present in Wave 1 and 2, 2.9% reported smoking inside the venue during their last visit to a café/pub/bar and 0.9% during their last visit to a restaurant - see Table 2 below. There was an increase in reported smoking outdoors across all hospitality venues following the ban. Reported smoking outdoors (on or off the premises) at cafés/pubs/bars increased from 33.5% of smokers at Wave 1 to 74.8% at Wave 2. At restaurants, smoking outdoors increased from 28.9% to 59.0%. In Wave 2, the majority of outdoor smokers reported that they left the premises to smoke (see Table 2). There was also an increase in reported non-smoking for both visits to cafés/pubs/bars, and restaurants from 13.9% to 24.6%, and from 30.4% to 40.8% respectively.

Reported changes in smoking behaviour in public hospitality venues

Figures 1a and 1b depict reported changes in smoking behaviour in hospitality venues across France. Odds ratios resulting from longitudinal modeling characterize changes from Wave 1 to Wave 2. In cafés/bars/pubs smokers were 2.08 times as likely to report not smoking during their last visit in Wave 2 as compared with Wave 1 (95% CI: 1.6-2.7), and smokers were 1.60 times as likely to report not smoking when visiting a restaurant, relative to Wave 1 (95% CI: 1.3-1.9). Of those that did smoke on their last visit in a bar, smoking indoors decreased significantly ($p < .001$) while smoking in outdoor spaces both on and off the premises increased significantly ($p < .001$ for both). Smokers were 1.63 (95% CI: 1.3-2.1) times as likely to report smoking outdoors on the premises and 4.4 times as likely (95% CI: 3.4-5.7) to report smoking outdoors off the premises during their last visit to a café/pub/bar [Figure 1a]. Of those that did smoke on their last visit in a restaurant, smoking indoors decreased significantly ($p < .001$) while smoking in outdoor spaces off the premises increased significantly (OR = 3.1, 95% CI: 2.4-3.9). However, smoking outdoors on the premises did not significantly increase [Figure 1b].

Table 2 Smoking behaviour during last visit to hospitality venue (weighed population estimates)

Smoking Behaviour During Last Visit	Cafés/Pubs/Bars				Restaurants			
	Wave 1		Wave 2		Wave 1		Wave 2	
	n	Percent (95% CI)	n	Percent (95% CI)	n	Percent (95% CI)	n	Percent (95% CI)
<i>Did not smoke at venue</i>	118	13.9 (11.5,16.7)	214	24.6 (21.5,28.1)	300	30.4 (27.2,33.8)	413	40.8 (37.3,44.4)
<i>Smoked inside</i>	690	82.9 (79.9,85.5)	19	2.9 (1.7,4.9)	494	53.6 (49.9,57.3)	6	0.9 (0.4,2.2)
<i>Smoke outdoors on premises</i>	161	17.3 (14.6,20.2)	216	26.5 (23.1,30.1)	86	9.8 (7.8,12.3)	162	16.8 (14.3,19.7)
<i>Smoke outdoors off premises</i>	120	16.2 (13.4,19.4)	385	48.3 (44.4,52.3)	164	19.1 (16.3,22.4)	387	42.1 (38.6,45.8)
<i>Smoked both inside and outside</i>	248	35.6 (31.6,39.7)	16	3.3 (1.8,5.8)	111	18.5 (15.2,22.4)	4	1.0 (0.3,3.1)

Note: The survey sample size (n) figures are unweighted while the population estimate percents and corresponding 95% confidence intervals are weighted. Column percentages do not sum to 100% due to smokers reporting smoking both inside and outside of venues. Smokers reporting never having frequented a hospitality venue during the specified time-frame are excluded from the estimates.

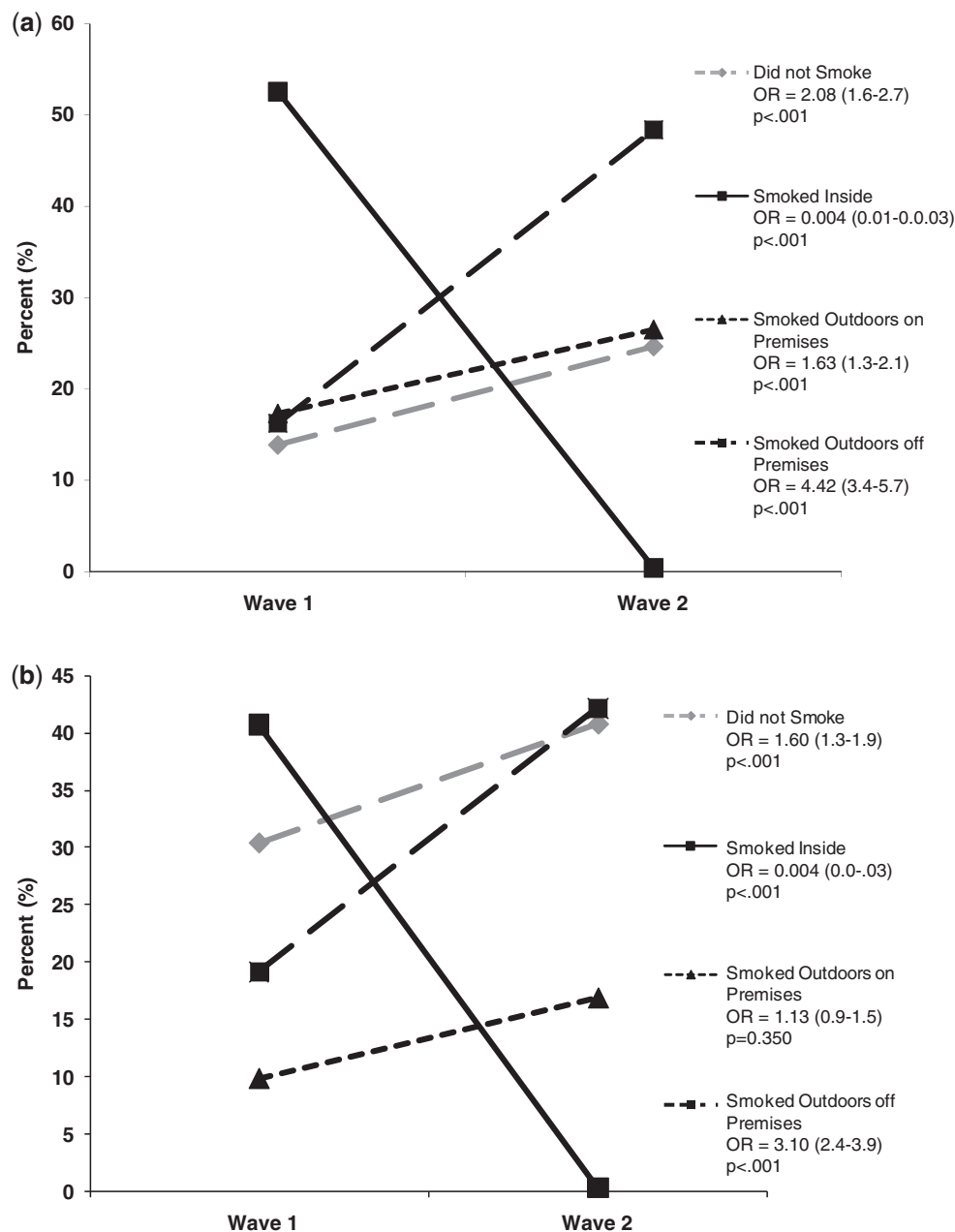


Figure 1 (a) Changes in smoking behaviour in cafés/bars/pubs – France ITC Waves 1 & 2 (b) Changes in smoking behaviour in restaurants – France ITC Waves 1 & 2

Support for outdoor restrictions at restaurants

Nearly one-quarter (24.4%) of non-smokers (95% CI: 19.8 - 29.7) supported a complete ban on smoking in outdoor eating areas while 10.2% (95% CI: 8.3 - 12.5) of smokers supported a complete ban. The proportion of respondents amenable to some sort of restriction (including either complete or partial bans) was greater than a majority for all three respondent types including 89.4% of non-smokers (95% CI: 85.6 - 92.3), 73.5% of quitters (95% CI: 65.6 - 80.9) and 74.6% of smokers (95% CI: 71.4 - 77.5). Only 10.6% (95% CI: 7.7 - 14.4) of non-smokers were in support of maintaining the status quo of no restriction on smoking in outdoor eating areas [Figure 2].

DISCUSSION

Smokers reported an increase in non-smoking behaviour at both restaurants and cafés/pubs/bars after the smoking ban was in place, suggesting the indoor ban is associated with overall reduced smoking behaviour at hospitality venues. However, reported

outdoor smoking at hospitality venues increased at both restaurants and cafés/pubs/bars, suggesting that the majority of smokers simply re-located their smoking behaviour to outdoor environments. It should be noted that smoking behaviour was self-reported by respondents and not validated by any biological means. During Wave 2, smoking inside hospitality venues was against the law, and therefore it is possible that reported indoor smoking is underestimated.

This study asked respondents if their outdoor smoking was on or off the premises. It is interesting that of the smokers who reported outdoor smoking during their last visit to a hospitality venue, more smoked off the premises. However, it is unknown whether or not the venues they were visiting had patios/terraces, or whether the outdoor hospitality environments were smoke-free by policy of the venue. Therefore, this study is limited in what can be concluded about outdoor smoking. It has been reported that leading up to and after the indoor smoking ban, the number of terraces/patios in France increased by 50%; however, it is unknown what proportion of venues currently have an outdoor space. The findings of this study indicate that many patrons who smoke when

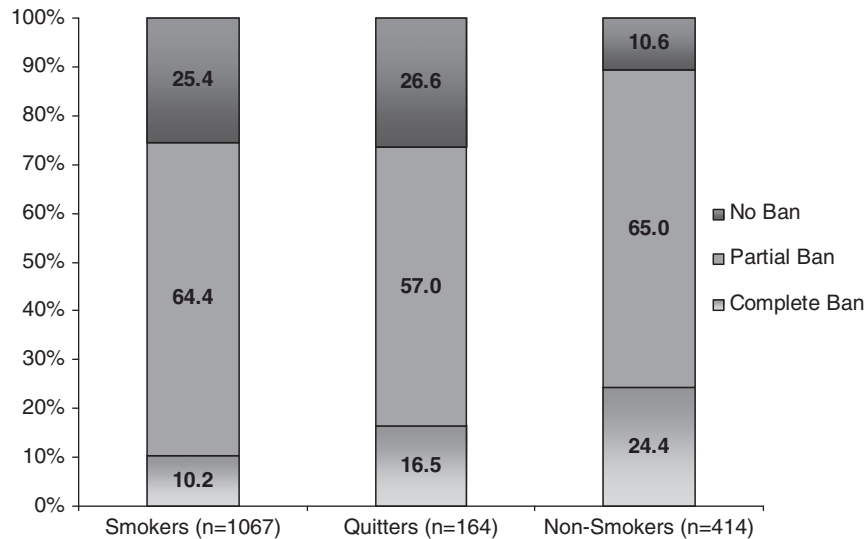


Figure 2 Support for outdoor smoking bans in eating areas – France ITC Survey Wave 2

visiting a venue reported they leave the premises to have a cigarette, suggesting that regulating outdoor hospitality environments may be realistic.

Approximately 90% of non-smokers and 75% of smokers support either a complete or partial smoking ban in outdoor eating areas. Support for 100% smoke-free outdoor eating areas comes from approximately 25% of non-smokers and 10% for smokers. These levels of support are lower than in jurisdictions like Ontario, Canada that had approximately 65% population support at the time the province went 100% smoke-free for hospitality venues in 2006. Public support for smoke-free patios subsequently increased to 80% in 2009 in this province.^{19, 20} This could suggest an increase in support for smoke-free patios (at least partially) in France if a smoking ban in these venues was implemented, as the support for smoke-free bars and restaurants increased after the 2008 smoking ban in all indoor hospitality venues.²¹

It is noted that the ITC France Surveys were conducted in colder months (winter and autumn), and both outdoor smoking behaviour and the size of the open side of the terrace may change based on weather. However, many terraces have been equipped with special outside heating, especially in urban areas, so the season effect could be rather low, as in winter such terraces offer an new opportunity to go outdoors (with or without a cigarette).

Data from the recent INPES 2010 Health Barometer showed a decrease in the number of cigarettes smoked among smokers between 2005 and 2010 in spite of an increase in tobacco smoking prevalence.²² This decrease could be partly due to the two-stage smoking ban implemented in 2007 and 2008, more likely due to the smoking ban in workplaces. However, a reduction of quantities smoked among smokers who regularly visit bars or restaurants cannot be excluded. Beyond this relative success, it is important to continue to monitor smoking on outdoor terraces and patios, particularly to assess second-hand smoke exposure among employees and the public and to understand how indoor smoking restrictions influence smoking behaviour. Making outdoor hospitality environments smoke-free will likely reduce worker and patron exposure to dangerous TSP.

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