

# Employee and Public Responses to Simulated Violations of No-Smoking Regulations in Spain

## ABSTRACT

**Objectives.** This study evaluated compliance with regulations prohibiting smoking in public places by using a new method of smoking simulation.

**Methods.** Sites in Sabadell, Spain, were visited by observers who lit a cigarette, simulating the act of smoking, and noted the placement and content of signs indicating smoking restrictions.

**Results.** A warning was given in only 17% of sites. A significant association was observed between the presence of signs banning smoking and the elicitation of a warning from people present.

**Conclusions.** Simulating the violation of smoking restrictions may be used as an efficient method of assessing enforcement of the prohibition of public smoking. (*Am J Public Health*. 1997;87:1035-1037)

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## Introduction

There is growing scientific evidence that exposure to cigarette smoke has a detrimental effect on the health of non-smokers.<sup>1,2</sup> Accordingly, the majority of developed countries have passed laws that regulate smoking in closed areas frequented by the public.<sup>3,4</sup> Nevertheless, smoking restrictions do not guarantee compliance.<sup>5,6</sup> This aspect of regulation has not been sufficiently evaluated; therefore, we designed a study to evaluate signs and enforcement, using a new method, in a midsized Spanish city.

## Methods

The specific objective of the study was to evaluate reactions to a simulated violation of no-smoking rules in sites where smoking is prohibited.<sup>7,8</sup> The study was carried out in 1994 in the city of Sabadell, a town of 200 000 inhabitants near Barcelona, Spain. We grouped the study sites into 11 categories of publicly accessible establishments and facilities covered by the law and present in this city, which were obtained from a comprehensive list provided by the local government. Two categories (theaters and cinemas and religious buildings) were excluded because a high level of compliance is customary, and one (cafeterias and restaurants) was excluded because of the different regulations governing it. For another category (waiting areas), only banks and hotels were included because it was impossible to define the sampling universe for the category as a whole. The sampling frame consisted of 414 sites in 8 categories.

Categories with smaller numbers of sites were oversampled, with sampling fractions (shown in parentheses) as follows: 5 or fewer sites (100%), 6 to 20 sites (50%), 21 to 100 sites (25%), 101 to 200 sites (25%), and more than 200 sites (5%). Places that were excluded for some reason (impossible to locate because of registry errors or because they were closed on the day of observation) were replaced by random selection of a substitute (in total,

10% of the sample). Overall, the total number of sites eligible for study was 414 and the final number selected for the trial was 158, or 38.2% (Table 1).

In every place studied, the existence and quality of signs or notices prohibiting smoking were recorded. Each sign was evaluated by its visibility and whether it contained a written message and a symbol. A sign was considered correct when it complied with both of the above requirements, or partially correct when at least one characteristic was absent. A simulation of smoking was conducted to assess the reaction of employees and members of the public present in each location as an indicator of attitudes toward enforcement. Although employers are ultimately responsible for instructing employees to enforce the law, this study did not attempt to determine why this does not happen or is ineffective. The test consisted of lighting a cigarette and allowing it to burn for a standardized period of 5 minutes or until a first warning was given by anyone present. The tests were carried out in the presence of at least one employee and one client, and a record was made of the type of reaction produced, who reacted (any employee or client), and the period of time between lighting the cigarette and the first warning. The tests were performed by three observers who were neither smokers nor recent ex-smokers and who gave their written consent to burn a cigarette during the experiment. The observers were two middle-aged women and one young man who were unobtrusively dressed and of average size and appearance. Each site was visited by one observer. A pilot study had been carried out to ensure the viability and standardization of the method. All the test sites were visited without notification,

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**TABLE 1—Distribution of Sites Selected for a Simulated Violation of No-Smoking Regulations, Sabadell, Spain, September 1994**

	No. Sites Studied (No. Available)
Health centers	9 (14)
Sport centers	21 (70)
Social and recreational centers	15 (44)
Government offices	31 (85)
Large commercial and shopping centers	6 (6)
Public transport facilities	5 (6)
Markets and food stores <sup>a</sup>	51 (162)
Banks and hotels <sup>b</sup>	20 (27)
Total	158 (414)

<sup>a</sup>Includes butcher shops, delicatessens, fish markets, and fruit and vegetable stores. Since a baseline list of these kinds of shops was not available, they were randomly selected en route to other sites.

<sup>b</sup>Numbers refer to the number of organizations, not branches.

during normal hours and at a time of significant public use.

Analysis of the data included the calculation and comparison of the proportion of sites where a warning was given (a positive response). To account for the different probability of selection across different categories, the sample was weighted by the inverse of the sampling proportion of sites in each category. A comparison, using the chi-square test with the unweighted sample, was also made of the number of sites where the response was positive or negative in relation to the presence and quality of the signs at the locations.

## Results

The general characteristics of all the sites included in the study are shown in Table 2. The 158 sites visited correspond to 198 locations, with an average of 1.3 locations per site.

Table 3 shows the results of the test for each group of sites. Positive responses occurred in only 17% of the sites. Health care centers presented the highest positive results (76%), followed by train and bus waiting rooms or vehicles (60%). A warning was given in only 26% of the

government offices studied, and the proportion was even lower (7%) in markets and food stores. No warning was given in any of the six large commercial areas or shopping centers visited, or in any of the waiting areas of the 20 banks and hotels. The warnings were given by an employee in 54% of the cases, and this proportion was very similar across the different categories of sites. The response of clients was very variable (from 8% to 50%).

The proportion of cases in which a warning was given was significantly higher ( $P < .01$ ) whenever there were no-smoking signs, and this proportion increased with the quality of the sign.

## Discussion

Strategies to fight smoking range from health education and counseling to more coercive measures such as sales taxes and smoking regulations in public places.<sup>4,9,10</sup> As is the case with other regulations, the government entities responsible for enforcing smoking restrictions should provide supervision. Public health researchers can assess compliance in order to provide data that reinforce the awareness of smoking controls among authorities and the public. Although rare, previous investigations have been conducted in other countries,<sup>11-14</sup> and these investigations inspired the present study.

Our study was carried out in Spain, where smoking regulations are equivalent to those mandated in Western countries.<sup>4,15</sup> The observations were based on a test consisting of lighting a cigarette to determine reactions provoked by this apparent disrespect for smoking restrictions. Simulation tests, widely used in medicine, may also be useful in studies of this kind, as they minimize bias that might occur if the people being observed have knowledge of the study. Another advantage of this approach is that it ensures an external, simple, and consistent audit. The main limitation of this design is the inability to get access to certain sites included under the legislation, such as work areas, educational centers, and other spaces not open to the public; neither does the design provide knowledge of the reasons for noncompliance with the law.

The results of our study show that in the majority of categories of sites there is a very low degree of compliance with anti-smoking regulations. Health care centers showed the best results, but in this case respect for the legislation should be absolute. It is equally deplorable that government offices, with the exception of

health departments, are among the sites with the worst results. The low enforcement rates for smoking prohibitions in all the large commercial areas and shopping centers emphasize an additional danger due to the flammable material present in many commercial settings.

The presence of signs prohibiting smoking is associated with a much higher likelihood of a positive response from employees as well as from clients. Therefore, complying with this single, simple aspect of the law could be an important first step toward full compliance. Logically, other actions are also required, such as education or persuasive advertising, not the least of which would be a certain degree of social mobilization to influence the government to enforce compliance with existing laws in its own facilities. □

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TABLE 2—Characteristics of Each Category of Site Included in the Study

	Health Centers (n = 9)	Sport Centers (n = 21)	Social and Recreational Centers (n = 15)	Government Offices (n = 31)	Large Commercial and Shopping Centers (n = 6)	Public Transport Facilities (n = 5)	Markets and Food Stores (n = 51)	Banks and Hotels (n = 20)
No. establishments by size								
Small (<50 m <sup>2</sup> )	0	11	5	14	0	0	28	4
Medium (51–100 m <sup>2</sup> )	7	4	8	13	0	2	11	16
Large (>100 m <sup>2</sup> )	2	6	2	3	6	3	10	0
No. persons present								
Employees								
Mean	4	2	2	5	27	2	11	4
Median	3	2	1	3	16	2	2	3
Customers								
Mean	54	11	17	14	62	67	19	5
Median	22	8	6	6	17	79	7	4

Note. For sites with more than one location included, the observed values of the variables in each location have been summed. For three locales the size was unknown and for one the number of employees was not recorded.

TABLE 3—Responses to Simulated Violations of No-Smoking Regulations, by Site Category

	Health Centers (n = 9)	Sport Centers (n = 21)	Social and Recreational Centers (n = 15)	Government Offices (n = 31)	Large Commercial and Shopping Centers (n = 6)	Public Transport Facilities (n = 5)	Markets and Food Stores (n = 51)	Banks and Hotels (n = 20)	All Sites (n = 158)
Warning, %									
Immediate	68.4	42.9	42.9	19.4	...	20.0	2.5	...	13.1
1–5 min	...	...	7.1	3.2	...	20.0	4.9	...	2.4
No warning	24.5	52.4	50.0	74.2	100.0	40.0	92.7	100.0	83.1
Variable <sup>a</sup>	7.1	4.8	...	3.2	...	20.0	...	...	1.4
Who gave the warning, %									
Employee	64.3	30.8	50.0	60.0	...	50.0	100.0	...	53.8
Customer	35.7	7.7	33.3	40.0	...	50.0	...	...	28.8
Not recorded	...	61.5	16.7	...	...	...	...	...	17.3

<sup>a</sup>Only for sites with more than one location included.

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