Compliance with the New York City Smoke-Free Air Act

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This study's objective was to determine the level of compliance with the New York City Smoke-Free Air Act. Three data sources were used: (1) a populationbased telephone survey of 251 New York City restaurant owners/managers; (2) independent inspections of the 251 surveyed restaurants; and (3) complaint records from the New York City Department of Health from April 1995 to March 1997. Ninety percent of restaurant owners/managers reported their indoor dining area was smoke-free in compliance with the law. Most New York City restaurants were able to comply with the smoke-free law with relative ease and little expense.

Key words: environmental tobacco smoke, policy, smoking

OMPLIANCE with smoke-free legislation is a critical part of implementation. Noncompliance with existing laws minimizes its intended purpose and inhibits future reform. Despite the importance of compliance, there have been only a few studies that examine business owner compliance with smoke-free legislation and none specifically examining restaurant owner/manager compliance with 100 percent smoke-free indoor dining policies. While rules about smoking are generally felt to be self-enforcing, one study found that at least some enforcement is useful to promote awareness and compliance with the law. Two studies of business owner compliance with a public nonsmoking law found that most noncompliance was due to the lack of appropriate signage and not due to smoking in smoke-free areas.2.3 Based on a lack of complaints, other studies have concluded that compliance with clean indoor air policies in work sites is generally good.4.5 However, some researchers have questioned the utility of complaints as a measure of compliance

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with smoke-free legislation because most complaints go unreported to authorities.²

On April 10, 1995, New York City's Smoke-Free Air Act took effect. This legislation restricts smoking in most indoor public places including work sites, sports and recreational facilities, schools, and restaurants in the five boroughs of New York City. Specifically with regard to restaurants, smoking is prohibited in the indoor dining area of restaurants with more than 35 indoor dining seats. Restaurants with 35 or fewer indoor dining area seats and standalone bars or taverns whose revenue from the sale of alcoholic beverages is at least 40 percent of their total revenue are exempt from this law. Smoking is permitted in the bar areas of restaurants; however, there must be at least six feet between the bar and the dining areas or a ceiling-to-floor partition or wall between the two areas. The bar area cannot exceed 25 percent of the total square footage of the bar and dining areas, and no more than 15 percent of the first 100 seats in the entire facility and 10 percent of any seats more than 100 can be situated in the bar area. Smoking is permitted in the outdoor seating area of a restaurant provided the section is contiguous and does not exceed 25 percent of the total outdoor seating capacity. Rooms in which smoking is allowed are permitted provided that food service is not offered in those areas and it is not the sole indoor patron waiting area. Restaurant owners/managers are responsible for enforcing the law, and the New York City Department of Health performs compliance inspections as part of the routine health department check administered to all licensed restaurants. Penalties for violation of the law range from \$200 (first offense) to \$1,000 (third offense) for restaurant owners/managers, and \$100 for smokers.6

The goal of this study was to use data from multiple sources in order to assess restaurateur compliance with New York City's recently enacted smokefree dining law. Three data sources were utilized to evaluate restaurant compliance with the law. These include (1) a telephone survey of New York City restaurants owners/managers; (2) inspections by health department officials in the restaurants with more than 35 seats identified from the survey; and (3) records of complaints regarding smoking in restaurants and other businesses reported to the New York City Department of Health. The following two study questions guided the analysis:

- 1. How compliant are restaurateurs with the law?
- 2. What measures have restaurateurs taken in order to comply with the law?

Methods

Data sources

Restaurateur survey

Details on the sampling methodology of the restaurateur survey are described elsewhere. (See p. 37, "Restaurateur Reports of the Economic Impact of the New York City Smoke-Free Air Act," by Hyland and Cummings, this issue.) Briefly, a cross-sectional, population-based random sample survey of 126 small (≤ 35 seats) and 308 large (≥ 36 seats) New York City restaurant owners/managers who have been in business at least two years was conducted by an independent survey firm using a five-minute telephone interview during November and December, 1996. Telephone numbers were obtained from the Dun & Bradstreet database of the 7,310 restaurants with the Specific Industry Code 58.12 (eating places) that were located in the five-county area that comprises New York City (there are approximately 10,000 restaurants in New York City). The interviewer asked each owner or manager about his or her restaurant smoking policy and perceptions about how business has performed since the smoke-free law took effect.

The response rate for the survey was 60 percent. For this analysis, restaurants with 35 or fewer seats were excluded because the smoke-free law does not apply to them. Among the 269 restaurants with more than 35 seats that were inspected (see next section), 18 (7%) were excluded because the respondent reported he or she was unaware of the smoke-free law and therefore was unable to answer questions about compliance with the law. Therefore, the results presented for the restaurateur survey and the independent inspections by Health Department officials are based on data collected on the 251 restaurants that completed the survey whose owner or manager was aware of the smoke-free restaurant law and were inspected.

Independent inspections

Trained New York City Health Department inspectors conducted unannounced inspections in 269 of the 308 (87%) large restaurants surveyed between

February and April 1997 from 9 AM to 5 PM on week-days to identify areas of noncompliance. The distribution of checks over time throughout the day was uniform. Inspections were not carried out in the remaining 39 (13%) restaurants because: the inspector found 35 or fewer indoor dining area seats (n = 11, 4%), the restaurant was out of business (n = 10, 3%), the inspector could not locate the address (n = 5, 2%), the restaurant was under renovation and access was denied (n = 2, 1%), or some other unspecified reason (n = 11, 4%). Items under observation were the absence of adequate signage, flagrant evidence of smoking, and restaurant configuration violations.

Central complaint and information unit files

Official complaints registered with the Central Complaint and Information Unit were collected for each of the following categorizations of indoor public places as determined by the New York City Department of Health: restaurants, employment, retail, and other (such as billiard halls, bowling alleys, and movie theaters). A complaint is logged when a person contacts the complaint unit and alleges a business has violated some provision of the Smoke-Free Air Act.

Restaurant owners/managers are responsible for enforcing the law, and inspections of compliance are performed by the New York City Department of Health as part of the routine health department check administered to all licensed restaurants. Additionally, the health department inspects facilities for compliance when at least two complaints from citizens about a given facility are received (verbal communication, Michael Wilson, New York City Department of Health, January 1998). The number and type of complaint for each classification of business were counted for each month from April 1995 to March 1997. For purposes of comparison, data were obtained on the average number of monthly complaints received from 1990 to 1994 about the smoking regulations that existed during that period. The previous nonsmoking legislation mandated that restaurants with 50 or more indoor dining area seats must allocate a nonsmoking section of up to 70 percent of the indoor seating capacity as consumer demand dictated.

Outcome measures

Restaurant compliance was measured in two ways: the first from the restaurateur survey and the second from the independent inspections. Numbers of official complaints were obtained from the Central Complaint and Information Unit at the New York City Department of Health.

Restaurateur survey measure

Restaurant owners/managers were questioned about their smoking policy in various parts of their restaurant. For each location (indoor and outdoor dining areas, waiting and bar areas, restrooms, kitchen, and employee break area), allowable responses of where smoking was allowed included: without restriction, designated areas only, not allowed at all, or not part of restaurant. A restaurant was considered in violation with some provision of the law if the respondent reported that smoking was allowed in any of the indoor dining area, restrooms, kitchen, or employee break area, or allowed without restriction in the outdoor dining or waiting areas. A restaurant was deemed to be 100 percent smoke-free if smoking was not allowed in any portion of the facility.

Independent inspection compliance measure

Based on results from the independent inspections, restaurants were deemed fully compliant (for example, no visible smoking or ashtrays in smokefree areas of the restaurant and the bar area and the portions of the outdoor dining area and smoking lounge where smoking was permitted met the specifications of the law) or not fully compliant. Presence of adequate signage informing customers where smoking was and was not permitted was also assessed during the inspections and evaluated separately.

Complaint files

A complaint is logged at the Central Complaint and Information Unit at the New York City Department of Health when an individual informs the Bureau of a potential violation of the smoke-free law. The types of complaints logged for all facilities under jurisdiction of the law are for visible smoking or ashtrays present in smoke-free areas. Specifically for restaurants, additional types of complaints are also noted. These include inadequate signage posted or an illegal restaurant configuration such as the bar being too close to the dining area or too many seats in the bar area. These data were available monthly from

The types of complaints logged for all facilities under jurisdiction of the law are for visible smoking or ashtrays present in smoke-free areas.

the time the new law took effect in April 1995 until March 1997.

For purposes of comparison, the number of complaints for all businesses with the previous statewide clean indoor air law was obtained annually for each year between 1990 and 1994. Monthly data and data specific to restaurants were not available during this period. The average number of monthly complaints was estimated from these data by summing the total number of complaints between 1990 and 1994 and dividing by 60.

Actions performed to comply with the law

Specific actions taken to comply with the law were obtained from responses to the question, "I am going to read a list of things some restaurants have done in order to comply with the smoke-free law. For each item I mention, tell me whether your restaurant has done this to comply. How about . . .". Enumerated items were posting signs, installing ceiling-to-floor wall dividers, beginning to serve food in bar area, adding more seats to bar area, building a smoking room, adding seats for outdoor dining, installing air filters or a ventilation system, placing a cigarette butt receptacle outside, and building a shelter for smokers outside.

Some restaurants elected to become 100 percent smoke-free after the law took effect. Such restaurants were defined as places that did not permit smoking in any portion of the restaurant and also reported implementing their smoking policy within the last two years.

Independent Variables

Data on the following variables hypothesized to be potentially related to compliance were collected from the self-reported survey data: presence of a restaurant bar on the premises (yes or no); the borough in which the restaurant was located (Manhattan,

Bronx, Queens, Staten Island, or Brooklyn); the type of restaurant (takeout/fast food, casual/family dining, or fine dining); length of time in business at the current location (2–5 years, 6–10 years, ≥ 11 years); the restaurant owner's/manager's support of the smoke-free ordinance (yes, no, or no opinion); whether any money was spent to implement the law (yes or no); and the job title of the respondent (restaurant owner, restaurant manager, or someone else).

Analysis

Bivariate analysis examined cross-tabulations of each independent variable by each of the three measures of compliance; a p-value of 0.05 was used to determine significant associations for Pearson's chisquare test of independence. Frequencies were calculated to identify measures taken among large restaurants to comply with the law. To simultaneously control for the identified independent variables related to compliance, two logistic regression models were constructed to correspond to each outcome measure of compliance. Predictor variables included all independent variables noted previously. Raw data were used for all analyses. The number of complaints about restaurants violating the law were tracked by month for the two-year period after the law took effect. Furthermore, the number of complaints logged for all business types after the law became effective was compared with the average number logged with the New York State Clean Indoor Air law that existed before the more stringent city ordinance became effective from 1990 to 1994.

Results

Table 1 displays the percentage of restaurants that were fully compliant with the law as judged by the two compliance measures by various characteristics. When asked where smoking was and was not allowed in the restaurant, about two-thirds were graded to be fully compliant with all of the smoking-related requirements of the law. Independent inspections found that 77 percent of restaurants were fully compliant with the smoking regulations of the law. Nearly all (55/59 = 93%) instances of noncompliance from the inspections were due to illegal restaurant configurations (for example, too many seats in the bar area) rather than from evidence of smoking in the facility. Both measures reveal that restaurants with

Table 1Full compliance with the smoke-free restaurant law among large restaurant owners/managers for each of two measures by various independent variables (n = 251)

Restaurant characteristics	Sample size	Percent fully compliant measured from:	
		Detailed survey*	Independent inspections
Overall	251	68	77
Restaurant bar			
No	120	83 [‡]	89*
Yes	128	54	64
Borough			
Manhattan	139	59 [‡]	76
Bronx	19	74	79
Queens	50	82	78
Staten Island	11	91	100
Brooklyn	29	76	66
Type of restaurant			
Takeout/fast-food	35	87*	92*
Casual	149	70	<i>7</i> 9
Fine dining	63	55	61
Duration at current location			
2-5 years	44	62	71
6–10 years	53	72	74
≥ 11 years	139	68	78
Respondent			
Owner	86	74	73
Manager	148	66	79
Other	14	50	79
Spent money to comply			
No	178	745	78
Yes	60	53	72
Support law			
Favor	81	<i>7</i> 5	84‡
Oppose	110	62	67
No difference	55	68	86

^{*}Detailed assessment from survey responses of where smoking is allowed in various locations throughout the restaurant. Full compliance is achieved by reports of smoking being prohibited in the indoor dining area, restrooms, kitchen, and employee break area and by smoking being restricted to designated areas for the outdoor dining and waiting areas.

bar areas and fine dining places were less likely to be compliant.

Figure 1 displays the percentage of restaurateurs who reported full compliance with the law in various locations throughout the restaurant with data obtained from the survey. As noted previously, 68

percent were fully compliant in all areas in question. However, 89 percent reported they offered smokefree indoor dining areas. Compliance rates for other areas within restaurants were also high, ranging from 76 percent for outdoor dining areas to 99 percent for the kitchen area.

[†] Assessment from independent inspections. Full compliance is achieved if there is no evidence of smoking and the bar, outdoor dining, and waiting areas are configured under the provisions of the law.

^{*} Denotes the p-value is < 0.05 for Pearson's Chi-square test of independence between the independent and outcome variable.

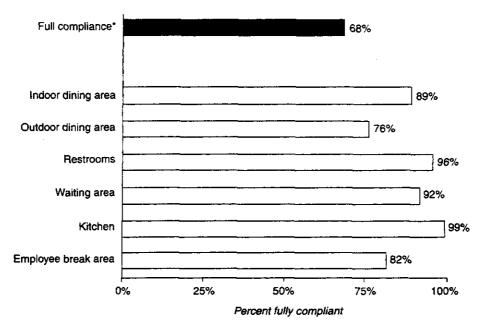


Figure 1 Percentage of restaurant owners/managers who reported full compliance with the law in various locations found in restaurants with data obtained from the detailed survey questions (n = 251). *Detailed assessment from survey responses of where smoking is allowed in various locations throughout the restaurant. Full compliance is achieved by reports of smoking being prohibited in the indoor dining area, restrooms, kitchen, and employee break area and by smoking being restricted to designated areas for the outdoor dining and waiting areas.

Table 2 displays the results of the multivariate logistic regression equations modeling each measure of full compliance with the law. Confirming the bivariate results, there is general agreement between the two measures of compliance. The most consistent association found was that restaurants with bars were significantly less likely to be fully compliant. Owners/managers of takeout/fast-food places and those who favored the law were more likely to report being compliant, though these results were not statistically significant at the p = 0.05 level.

Table 3 outlines actions taken by large restaurant owners/managers to comply with the law. Fifty-four of the 251 (22%) large restaurants already had a smoke-free policy when the legislation went into effect. Thirty-nine percent of the large restaurants that previously permitted smoking went completely smoke-free when the law took effect. Seventy-five percent of restaurant owners/managers reported they did not spend any money to achieve compliance. Among those that did spend money, the median

amount spent was \$200. The most common tasks performed to comply with the law included posting signs stating where smoking is and is not permitted (82%), starting to serve food in the bar area (26%), installing air filters (21%), and placing a cigarette butt receptacle outside (20%). Few respondents reported undertaking any major construction such as building a special room (5%) or shelter for smokers (3%).

The trend in the number of complaints for restaurants and all businesses over time is displayed in Figure 2. Between 1990 and 1994, there were an average of 122 complaints for all businesses per month with the existing clean indoor air law. During the two months after the more stringent city law took effect, the number of complaints for both restaurants and all businesses increased sharply to an average of 287 complaints per month. The number of complaints declined in the summer months, but increased slightly during the colder winter months. The average number of complaints per month during the 13-to 24-month post-implementation period was 116 for

Table 2

Odds ratios from logistic regressions modeling each measure of compliance (n = 251)

	Outcome measure		
Characteristic	Detailed survey*	Independent inspections	
Restaurant bar			
No	1.0	1.0	
Yes	<u>0.4</u>	<u>0.2</u>	
Borough			
Manhattan	1.0	1.0	
Bronx	0.7	0.4	
Queens	<u>2.9</u>	0.6	
Staten Island	5.8	> 10	
Brooklyn	2.6	0.4	
Type of restaurant			
Takeout/fast-food	1.0	1.0	
Casual	0.5	0.5	
Fine dining	0.5	0.2	
Duration at current location			
2-5 years	1.0	1.0	
6-10 years	1.9	0.6	
≥ 11 years	1.5	1.8	
Respondent			
Owner	1.0	1.0	
Manager	0.6	1.7	
Other	0.3	1.5	
Spent money to comply	٠		
No	1.0	1.0	
Yes	0.4	1.1	
Support law			
Favor	1.0	1.0	
Oppose	0.6	0.5	
No difference	0.6	1.2	

^{*}Assessment from responses of where smoking is allowed. Full compliance is achieved by reports of smoking being prohibited in the indoor dining area, restrooms, kitchen, and employee break area and by smoking being restricted to designated areas for the outdoor dining and waiting areas.

The first category listed is the reference category. Underlined entries denote statistically significant differences between that category and the reference category at the p=0.05 level.

all businesses (below the historical average of 122 complaints per month from the previous clean indoor air legislation) and 31 for restaurants. The percentage of complaints from restaurants out of all

businesses decreased over time from about 50 percent initially to about 20 percent after two years.

Discussion

The first goal of this study was to assess the level of restaurant compliance with the new law and to identify factors that are related to restaurateur compliance. Based on both results from the survey questions on where smoking is allowed in a given facility and on the independent inspections, it is estimated that full compliance with the smoke-free restaurant law is between 65 percent and 80 percent. However, the vast majority of restaurateurs reported they had a smoke-free indoor dining area (89%) and independent inspections revealed evidence of smoking in only 4 of the 251 (2%) restaurants visited. This finding supports data from a recently conducted survey of New York City area consumers that found that only 8 percent of respondents admitted to violating the law by smoking in a smoke-free dining area. (See

Table 3

Actions taken by owners/managers of large restaurants to comply with the smoke-free law (n = 251)

Action	Percent
Spent any money to comply with the law Median amount spent among those who	25
did spend money Put signs up to display where smoking is and	\$200
is not permitted	82
Became 100% smoke-free*	39
Began serving food in the bar ⁺	26
Installed air filters	21
Placed a cigarette butt receptacle outside	20
Installed wall dividers	15
Installed new ventilation system	14
Added seats to the bar areat	10
Added seats to the outdoor dining area	7
Built a smoking room	5
Built an outdoor shelter for smokers	3

Percentages do not add to 100 percent because respondents were permitted to cite multiple actions.

[†] Assessment from independent inspections. Full compliance is achieved if the proper signage is displayed, there is no evidence of smoking, and the bar, outdoor dining, and waiting areas are configured under the provisions of the law.

^{*}Among the 197 large restaurants that permitted smoking before the law took effect.

[†] Among the 159 large restaurants with bar areas.

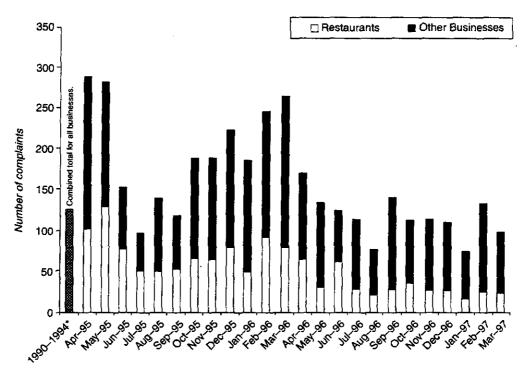


Figure 2. The number of registered complaints with the New York City Smoke-Free Air Act among restaurants only and all businesses from April 1995 to March 1997 and the monthly average number of complaints during 1990 to 1994 for all businesses from the previously existing statewide clean indoor air policy. *Average number of monthly complaints from all businesses, including restaurants, from the existing statewide clean indoor air law, 1990 to 1994.

p. 28, "Consumer Response to the New York City Smoke-Free Air Act," by Hyland and Cummings, this issue.) In other words, compliance with the law appears to be generally high with relatively few instances of blatant violation. This finding supports the suggestion that the laws are self-enforcing.

Lack of compliance with the smoking requirements of the smoke-free law primarily was found in restaurants with bar areas. It is unclear if this was due to the owner/manager actively flouting the law or confusion over specific aspects of the law. Noncompliance by restaurants may be due to inadequate information or understanding of the law; 25 percent of restaurant owners/managers reported they would have liked more information about the law, and other research indicates many business owners are not aware or do not understand all the provisions of smoke-free ordinances.³ The New York City law is an

example of a relatively complicated law. For example, bars are exempted and restaurants with bars can permit smoking in the bar area. However, questions such as how a business owner determines whether he or she operates a bar or a restaurant complicate the matter. Additionally, only a percentage of seats can be placed in the bar area and there are limits on the square footage that the bar area can occupy. Therefore, less complex smoke-free legislation or increased restaurateur education likely would improve compliance.

Data from the New York City Central Complaint and Information Unit confirm anecdotal reports of an initial backlash to smoke-free legislation. Based on the surge of complaints immediately after the law took effect, this lasted for about two months. The number of complaints decreased during the summer months and then increased again in the winter

months. One reason for this is the fact that smokers are more willing to smoke outdoors in the warmer months, while inclement weather may induce more smokers to light up indoors in violation of the law. A second reason is that the New York City Department of Health spent thousands of dollars in paid advertising in the printed media and on subway advertisements to educate people about the law and to inform them of where to call to file a complaint. The majority of this advertising was conducted around the time the law took effect; although the campaign has been ongoing. Lastly, the law received much media attention as it approached its one-year anniversary; at least 20 newspaper articles appeared in New York's major newspapers near this time. In fact, the number of monthly complaints about the law in restaurants was highly correlated with the number of articles about the smoke-free law that appeared in the New York City print media each month (r = 0.74, p < 0.01). The current level of complaints in all businesses in New York City is actually lower now than it was before the citywide ordinance became effective. To put these data in perspective, about one complaint per day is registered in a city with about 10,000 restaurants in which at least 1 million meals are served per day.

It should be noted that the number of complaints logged at the Complaint Bureau does not adequately reflect the true level of compliance because most people who witness a violation will not confront the violator or lodge a complaint with the Department of Health. However, it is likely that higher levels of registered complaints are associated with higher levels of true compliance with the law. The sampling methods used to identify the sample of restaurant owners/ managers and the moderate response rate raise questions about how representative the achieved sample is of the population of affected restaurants. The number of restaurants in the Dun and Bradstreet database was about 70 percent of the total number based on figures from the New York State Department of Labor.9 However, many of the restaurants not included in the Dun & Bradstreet list are new restaurants that had not been added yet to the database. Because these restaurants would have been excluded in this analysis because they were not in operation when the smoke-free ordinance became effective, the database coverage of the population is actually much higher than 70 percent. Therefore, the Dun & Bradstreet database appears to provide an adequate

enumeration of all restaurants that were eligible for this study.

A survey response rate of 60 percent is moderate. The results could be biased if the non-respondents differed significantly from those who completed the telephone interview. While data were not collected on those who refused the survey, there is no existing evidence to support this argument. Seven percent of respondents reported they were unaware of the smoke-free law and were excluded from the analysis. It remains in question how compliant these facilities were with the law; however, inclusion of these locations would not alter the results considerably because there were so few. Additionally, 13 percent of large restaurants were surveyed but not inspected. The most cited reason for not performing the check was because the inspector found 35 or fewer indoor dining area seats; therefore, the law does not apply to those places, and they were excluded from the analysis. Therefore, it is likely that the achieved sample is representative of the population of all New York City restaurants with more than 35 indoor dining area seats that were in operation when the law took effect.

A unique aspect of this research is that there were multiple measures of compliance. However, the measures were not strongly correlated, which suggests that each may be measuring something different. A third measure of compliance was also obtained from the restaurateur survey when owners/managers were asked how compliant they were with the law, fully, partially, or not at all. This measure was not correlated with either of the other two measures. These data are not shown.

The majority of discrepancies found between the two measures were establishments that were not fully compliant when measured by the detailed survey questions but were found to be compliant from the inspections. Discrepancy between these two outcomes is not unexpected because they are measuring slightly different items. The detailed survey compliance measure uses self-reports to determine where smoking is and is not permitted in different areas of the restaurant. The independent inspections were conducted through unannounced personal visits to each facility and only on reports of what was observed at the time of the inspection. The former measure is probably preferable for determining true compliance with the law because it better reflects the prevailing policy than the inspection measure. Results from inspections may overestimate compliance because results are time-dependent and the inspections for this study were conducted in the morning and afternoon on weekdays when consumer activity in restaurants is generally less than that found on the weekends or in the evening. However, the extent to which compliance is overestimated from the inspection measure is uncertain. While each measure of compliance is subject to limitations and is measuring slightly different constructs, the aggregate evidence from these results indicates that the majority of restaurants in New York City have complied with the smoke-free law.

In summary, the findings from this study reveal that the majority of restaurateurs were able to comply with the new smoking law with relative ease. More than 80 percent said compliance took only a little or moderate amount of effort to comply and 75 percent did not spend any money to achieve compliance. The most commonly reported actions taken to comply with the law were posting signs stating where smoking is permitted. Major construction such as installing a new ventilation system or building a special smoking room was reported by only a small number of restaurant owners/managers.

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