



Published in final edited form as:

*Am J Health Stud.* 2008 January 1; 23(4): 162–172.

## Diffusion of Philadelphia's No-Smoking Policy to Chinese Businesses

**Grace X. Ma, PhD,**

Professor of Department of Public Health, Director of Center for Asian Health, College of Health Professions, Temple University

**Adrienne N. Poon, MPH, and**

Research Assistant at Center for Asian Health, College of Health Professions, Temple University

**Jamil I. Toubbeh, PhD**

Senior Researcher of Center for Asian Health, Adjunct Professor at Department of Public Health, College of Health Professions, Temple University

### Abstract

The study assessed the extent that Philadelphia's smoking ordinance diffused to Chinatown businesses and identified attitudinal and other barriers to implementation. Guided by constructs from Diffusion of Innovations and Theory of Planned Behavior, a cross-sectional study was conducted. The majority of business owners and employees lacked in-depth knowledge of relevant details of the policy, suggesting that the extent of its diffusion was limited. Retail businesses were more likely to witness smoking post-enactment than restaurants and had more difficulty with implementation. A multi-faceted diffusion strategy through communication channels familiar to the Chinatown community is needed to improve implementation and compliance.

### INTRODUCTION

Driven by the motive force of worker and public protection from secondhand smoke, states and cities across the U.S. have increasingly shifted toward enactment of smoking bans (Chang et al., 2004; Farrelly et al., 2005; Repace et al., 2006). New York City and Boston, two major northeastern cities, have enacted comprehensive bans that were later followed by state bans (Chang et al., 2004; Clarke et al., 1999; Boston Public Health Commission [BPHC], 2003a; New York State Public Health Laws, §1399-n, 2003; Hyland, Cummings, & Nauenberg, 1999; BPHC, 2003b; Mass. Gen. Laws ch.270, §22, 2004; NYC Administrative Code, ch.5, §17–501, 2002). These state bans have subsequently been strengthened by more restrictive bans that allowed fewer exemptions than their respective major cities' bans (Table 1). Following these trends, the City of Philadelphia, PA, passed its own smoking ban, The Clean Indoor Air Worker Protection Law, in September 2006, amended it in November 2006, and enforced it in January 2007 (Philadelphia Code, ch.10–600, 2006a; Philadelphia Code, ch.10–600, 2006b).

Bans have been shown to be generally self-enforcing with high levels of compliance as well as short- and long-term public and business support. Additionally, it has been shown that costs associated with their implementation have been low, and their impact on restaurant

employment and income has been minimal (Bartosch & Pope, 1999; Hyland & Cummings, 1999b, 1999c; Hyland, Cummings, & Nauenberg, 1999; Hyland, Cummings, & Wilson, 1999; Skeer et al., 2004; Tang et al., 2003; Weber et al., 2003). While proponents of the smoking industry have often cited loss of restaurant patronage as an argument against smoking bans, studies have shown that patronage have either remained constant or have increased as a consequence of bans (Biener & Siegel, 1997; Hyland & Cummings, 1999a). Other studies have shown that adults and youth experience less exposure to secondhand smoke in relation to the bans' gradients of strength, supporting the high levels of restaurant compliance (Albers et al., 2004; Hyland & Cummings, 1999a; Siegel et al., 2004).

Studies have also revealed that compliance rates can be enhanced by institutional health education, visits by public health officials to business establishments, and the provision of free "no smoking" signs and other related materials to merchants (Hyland, Cummings, & Wilson, 1999; Skeer et al., 2004; Weber et al., 2003). Since enacting its 2002 Smoke Free Air Act, for example, New York City has initiated a multidimensional tobacco control strategy that ensured high rates of compliance with the law. In support of its media campaigns, New York City increased its cigarette tax, sent physicians nicotine-dependence treatment information, and provided 6-week smoking intervention programs. Evaluation of New York City's strategy revealed a significant decrease (11%) in smoking prevalence over a 12-month period. The decrease was attributed primarily to higher taxes on tobacco and the smoking ban (Frieden et al., 2005). In Philadelphia, the Department of Public Health mailed out no-smoking signs to businesses as well as directed them towards its "SmokeFree Philly" website that includes information about the ban (Paris, 2007; PDPH, 2007).

According to the U.S. 2000 Census, the Asian American community in Philadelphia is 4.5% of the overall or 67,654 people. The Chinese American community with 17,783 people is the largest Asian ethnic group in Philadelphia or 26.3% of the Asian population (U.S. Census Bureau, 2000). The prevalence of smoking among Asian-Americans is exceptionally high and varies by gender, age, length of residence in the U.S., education, occupation, and employment, marital status, and immigration status (Fu et al., 2003; Ma et al., 2002). For example, among the four major ethnic Asian groups, namely Chinese, Koreans, Vietnamese and Cambodians, the prevalence of smoking ranges between 24.1% and 42.4% versus 20.9% in the population at large. Prevalence among males in the same groups ranges between 75% and 87% versus 23.9% in the general population, while among females, it is 13% to 25% versus 18.1% (Centers for Disease Control and Prevention, 2006; Ma et al., 2002). A significant proportion of Asian-Americans have permanent residency status (31.8%) or are noncitizens (16.3%), and have emigrated from countries where smoking is considered a social norm and where tolerance for secondhand smoke, especially among the less educated, is high (Ma et al., 2002). Ma and colleagues (2005b) found that worksite secondhand smoke exposure among various Asian-American subgroups was 40.3% and rates of existing worksite smoke-free policies were low. The high level of exposure found was likely due to the preponderance of study respondents who worked in less regulated small businesses, the authors noted.

The Philadelphia Chinatown business community is comprised largely of recent immigrants, many of whom have been occupationally exposed to secondhand smoke (Ma et al., 2005b). Unlike other equivalent mainstream business communities, Chinatown's would be expected to experience a greater impact from Philadelphia's recently enacted no-smoking ordinance. Because of culturally accepted smoking norms and a high tolerance for secondhand smoke, one would assume that a smoking ban would have a negative impact on small businesses that employ ethnic Asian employees and cater primarily to clients who either smoke or who have developed a high tolerance for smoking and secondhand smoke.

Whereas the acceptance and efficacy of smoking bans has been demonstrated across the U.S. (Frieden et al., 2005; Repace et al., 2006; Skeer et al., 2004; Weber et al., 2003), their acceptance and efficacy has not been demonstrated in insular ethnic communities in which smoking is considered a social norm and where business establishments tolerate employees who smoke and serve clients who smoke or tolerate secondhand smoke. This study, focused on Chinatown's businesses, addressed two interrelated broad issues: (1) the channels through which ethnic communities with deep-rooted social norms receive information on policies that affect their health, and (2) how this information is interpreted, understood and implemented by these communities. The study was guided by constructs from two theoretical models: Rogers' (1995) Diffusion of Innovations Theory as well as Ajzen's (1991) theory of Planned Behavior. The specific aims of the study were: (a) to determine the effectiveness of policy dissemination including information sources in an ethnic subgroup with a high prevalence of smoking; (b) assess perceptions and attitudes of businesses toward the law and its implementation as a measure of adoption; and (c) provide suggestions for policy makers to improve dissemination of information to Chinatown communities and possibly other Asian ethnic communities with social norms that contradict established health-related policies. To our knowledge, no published study has previously explored how a no-smoking policy may be disseminated to a largely immigrant and culturally isolated Asian population.

## METHODS

### SAMPLE

A cross-sectional design was used in the study. The method provides common advantages such as collecting information from many diversified participants in a short period of time (Faul & Erdfelder, 1992; Federer, 1991; Fink & Kosecoff, 1985; Fowler, 1988; Sudman & Bradburn, 1986). The study determined the levels of knowledge and implementation of Philadelphia's no-smoking ban by proprietors of and those employed in Chinatown's businesses. Eighty-six (86) business establishments, with a potential 120 participants, were recruited for the study. The businesses, a majority of which are Chinese owned, were located and evenly distributed across Chinatown and its environs. The number of businesses identified and recruited was determined by the time frame available for data collection and, therefore, can only be considered a sample of convenience.

The final study sample comprised n=66 participants or 55% of those recruited for the study and consisted of proprietors, managers, employees, and others associated directly with local businesses in the target study area. These participants represented 55 business establishments and included restaurants (n=24) and retail businesses (n=31). The distribution of the sample was as follows: 44.6% were owners or managers, 29.2% food service employees, and 26.2% retail or office employees. Over half of worker/employee respondents (52.3%) had worked 5 years or less in their respective business establishment, a fifth (20%) between 5 to 10 years, and a quarter (27.7%) for 10 or more years. The remaining worker/employee (n=1) did not provide data on longevity of employment.

The 55 business establishments included retail businesses (clothing, food, offices, etc.) (56.4%) and restaurants (43.6%) consisting of both small fast food (<50 seats) and medium/large restaurants (>50 seats). More than a third of the businesses (38.9%) had been in operation 5 years or less, and the remaining (61.1%), 5 or more years. One business did not provide data on longevity of operation.

### INSTRUMENT

The survey instrument was developed based on constructs from the Diffusion of Innovations model (22 questions) and theory of Planned Behavior model (9 questions) (Ajzen, 1991;

Fishbein, 1967; Rogers, 1995). The instrument was designed to assess various diffusion stages (dissemination, adoption, implementation, and maintenance), sources of policy information, attitudes and perceptions toward adoption, and potential improvements for policy diffusion to the Chinese business community. Survey questions included: “How did you hear or learn about the Philadelphia No-Smoking Law?”; “Does the smoking law apply equally to all businesses?”; “What businesses are exempt from the law?”; “What steps has your business taken to implement the law?”; “How has the city assisted you in implementing the law?”; “What do you do if customers/workers smoke in your business?”; and “Do you think the law needs to be improved?” the instrument also used 11 questions (Tables 3 and 4), based on a Likert scale of 1–7 (Likert, 1932), to measure levels of responses to Philadelphia’s no-smoking ordinance, including: “If the law affected your business income, how strongly would you favor the law?” (1=strongly oppose, 7=strongly favor); “Most people I know support a no-smoking policy” and “I am confident that my business will be able to fully implement the law” (1=strongly disagree, 7=strongly agree); “Please rate your familiarity with the law” (1=very unfamiliar, 7=very familiar); “How often have you witnessed smoking since implementation of the no-smoking law?” (1=very rarely, 7=quite often); “How much time did it take for you to implement the policy?” (1=very little, 7=very much); “What was the cost of implementing the no-smoking law?” (1=very cheap, 7=very expensive); “Do you think the policy will affect your business income?” (1=lose; 7=gain), and “Please rate your English level (speaking/reading/writing)” (1=very low, 7=very high).

The survey used a combination of traditional (primarily used in Hong Kong, Taiwan, and a majority of overseas Chinese communities) and simplified forms (primarily used in mainland China) of Chinese script as well as English to enhance comprehension and to elicit accurate responses to questions. A pilot test was conducted to establish face validity of the questionnaire and verify data collection methods. Specifically, the appropriateness of the questionnaire format, validity of content, difficulty level, and length of time to complete the survey were assessed. The questionnaire was then revised and finalized.

## DATA COLLECTION AND STATISTICAL ANALYSES

Trained bilingual volunteers (administrators and observers) collected data and conducted observation to note discrepancies between respondents’ stated and actual compliance. Observations were made during any time point of the survey period. Observers recorded visible evidence of compliance/non-compliance with Philadelphia’s no-smoking ordinance. Administrators, accompanied by observers, reviewed the surveys on site for completeness and observed signs of compliance/non-compliance. Surveys targeted primarily proprietors and managers of businesses. When these were unavailable, employees in the business completed the questionnaire in their behalf.

Results were analyzed using SPSS statistical software. Descriptive statistics characterized the sample with regard to variables for demographics including type of business, length of time the business has been in operation, time employed in the business, position within the business, and smoking status. Additionally, source of information, extent of knowledge about the law, and institutional implementation assistance and improvements were analyzed. Other statistical tests used included Fisher’s exact test to analyze implementation characteristics as well as an analysis of variance (one-way ANOVA) to analyze behavioral intentions.

## RESULTS

### LEVELS OF FAMILIARITY, EXTENT OF KNOWLEDGE, AND INFORMATION SOURCES

Sixty-four respondents (92.2%) indicated awareness of the Philadelphia no-smoking ordinance’s existence and 54.4% had heard of the earlier bill before it became law. Extent of

knowledge about the law, however, appeared minimal: 79.0% of respondents inaccurately believed in the equal application of the law to various businesses or did not know specific exemptions or provisions in the law such as smoking at least 20 feet away from entrance (Table 1). Television (38.7%), Chinese language newspapers (37.1%), and word of mouth (21.0%) were the most prevalent sources of information on the law for respondents. The Internet accounted for only 6.5% of responses (Table 2).

A third of businesses (28.3%) permitted smoking before implementation of the law. Nearly half of businesses surveyed (41.9%) had not been officially notified by city authorities about the law nearly 2 months post enactment. Another portion (46.5%) had been notified by mail and had been offered free “no smoking” signs to post in their establishments. Provision of no-smoking signs and mailed information were favored by 32.6% and 23.9% of businesses respectively (Table 2).

Responses to potential improvements in the no-smoking law were evenly divided among those who supported law improvement and those who favored its maintenance in the current form. Creating a statewide ban (54.8%) and covering all businesses equally (38.7%) were the most popular improvements (Table 2).

## POLICY IMPLEMENTATION AND ATTITUDES TOWARD THE SMOKING BAN

Retail businesses witnessed significantly more smoking since the law’s enactment in 2007 than restaurants ( $p=0.020$ ). Employees in restaurants, however, were more willing to participate than those in retail businesses. Businesses that did not permit smoking before the law were significantly more in favor of the law ( $p=0.029$ ) (Table 3). Though not significant, there was a trend for businesses in operation 10 years or more to have more favorable attitudes toward the law, perceive the law as more socially acceptable, and have greater control over implementation (Tables 3 and 4). Similarly, businesses that did not permit smoking before the law appeared to have more favorable attitudes toward the law, perceived support of the law by others, and had higher confidence levels for implementation of the law, although the amount of smoking witnessed since the law was implemented was higher (Table 3). Overall, the cost of implementation and the length of time to initiate implementation was low, with restaurants requiring significantly less time ( $p=0.046$ ). Additionally, businesses in operation 5 years or more were less likely to perceive negative effects on business income ( $p=0.022$ ) (Table 4). There was no significant difference for different business types and length of time in operation regarding whether smoking was permitted before the law, when the law was implemented, or if steps were taken to implement the law.

There were at least 13 smokers (21%) and observer evidence of secondhand smoke in 5 establishments (9.1%). On an individual level, smokers were significantly less in favor of the ban ( $p=0.005$ ) and showed a trend toward less favorable attitudes toward the law. Though not significant, those employed in the business for less than 10 years exhibited a trend toward less favorable behavioral intentions toward the law. Position (owner/manager vs. employee) within the business and English level did not show any trends toward more favorable attitudes (Table 3).

## DISCUSSION

The aims of this study were to determine the effectiveness of Philadelphia’s no-smoking policy diffusion to the city’s Chinese business community, to assess perceptions of and attitudes toward implementation and adoption of the law and formulate suggestions for improved policy dissemination in a predominantly Asian business community that serves the public at large. Results have indicated that while a significant percentage of business owners and their

respective employees were aware of the law, most lacked in-depth knowledge of relevant details suggesting poor diffusion.

A significant majority of respondents believed the law applied to all businesses without exceptions. Most were unaware of the specific details of the no-smoking ordinance such as the provision that bans smoking within 20 feet of business entrances. Although the high level of awareness (92%) of the law may indicate a high level of diffusion, data have revealed that the extent of diffusion is limited. Specifically, some information known to businesses about the law is inaccurate, for example, which businesses were included in the ordinance. Mainstream media may be partly responsible for improper diffusion of the law. Public attention may have been focused on restaurants to the exclusion of other businesses (e.g., food markets, retail store, and offices), leading to some misperceptions of the intent of the law. Most Chinese businesses (and other Asian businesses) in the study target area are small- or medium-sized businesses, located proximal to the communities they serve. Due to their relative invisibility, these businesses tend to be given little or no attention by the mainstream media.

This study has provided a number of insights into the diffusion and enforcement of public policy in Chinese business establishments. While previous studies have shown the high prevalence of smoking in Chinese and other Asian-American communities, other studies have shown that business establishments and their respective employees in Chinatown have higher rates of smoking and higher tolerance for secondhand smoke than the general Asian population (Fu et al., 2003; Ma et al., 2002; Ma et al., 2005a). Our study corroborated these findings. The study, however, did not stratify smokers according to gender, which would likely have shown significantly higher rates in males as has previously been demonstrated (Ma et al., 2002).

One specific aim of our study was to understand attitudes and perceptions toward sustainable enforcement of the law. Data revealed some ambivalence about implementation despite the fact that the majority of respondents were cognizant of its merits. This ambivalence may be attributed to fears associated with the law's negative impact on business income and a perceived conflict between social norms -- namely smoking -- and an ordinance that bans smoking, or between serving customers' needs and enforcement of the law. For example, while most respondents indicated a relatively strong confidence regarding implementation of the law, there was a discrepancy with actual enforcement because observed smoking levels did not decrease as significantly as anticipated due to implementation of the law. Furthermore, businesses that had been in operation for only a few years may be operated by more recent immigrants who are more likely to consider smoking as a social norm. In combination with low levels of diffused information, this conflict between confidence and enforcement may continue despite high levels of expressed favorability for the law.

While previous studies have suggested that smoking bans are easily implemented, self-enforcing, and have a beneficial health impact (Albers et al., 2004; Hyland & Cummings, 1999a; Hyland, Cummings, & Nauenberg, 1999; Siegel et al., 2004; Skeer et al., 2004), these studies were not implemented in an ethnic community of different cultural and social context from that of the mainstream (Fu et al., 2003; Ma et al., 2002). Despite the presence of no-smoking signs, study administrators and observers witnessed forms of smoke in at least 5 businesses including an instance of a worker attempting to hide cigarettes in a cardboard box, a clear hazard. In Asian-American communities, smoking bans should not automatically be considered self-enforcing as behaviors may not always match the law's requirements.

Our findings clearly indicate that only a small percentage of respondents were aware of important details of the law, suggesting that combined television and ethnic print media efforts were insufficient to diffuse policy to the Chinese business community. The low ranking of the Internet and the high ranking of word of mouth diffusion of the tobacco policy suggest vertical

transmission of information within the Chinese community. This type of transmission is vulnerable to misinterpretation of messages, especially legal jargon. In addition, as there were no significantly varied attitudes or perceptions across positions within businesses or levels of English, the law diffused relatively evenly across these subgroups. Philadelphia authorities in the future should consider more direct means of communication with Chinese businesses in order to improve policy diffusion.

The Philadelphia Chinatown, like Chinatowns in other U.S. cities, is a business hub and contributes substantially to the tax base of the city. Where there is a large business community in which English is not the primary language, one would assume greater sensitivity by the local government to language barriers, particularly to diffusion of policies that affect the population at large. Many of these businesses have limited longevity (<5 years) and are operated by low-income, relatively recent immigrants with low levels of acculturation. Given the socio-cultural and economic context of owners and employees of these businesses, one cannot assume that policy information that diffuses in mainstream establishments will, in fact, diffuse in Chinese or other Asian American businesses. For example, a month after enforcement of the no-smoking ordinance, the Philadelphia Department of Public Health (PDPH) mailed an English language letter in which it informed business owners of the law and listed an Internet Web site as a source of further information (Paris, 2007; PDPH, 2007). Active efforts to alert businesses about the ban are courtesies to the relevant parties as well as a benefit to the local public health department to improve policy implementation. Lack of personal communication with business owners may have reinforced gaps in knowledge dissemination to Chinese businesses.

Improvements in no-smoking policy should address effective dissemination to all communities affected, particularly ethnic communities that face communication barriers, be they technological, linguistic or cultural. A multifaceted diffusion strategy that includes direct mailings in appropriate languages, televised news on frequently accessed channels, translated and adapted literature that addresses important aspects of the policy, radio announcements on popular Asian stations, print media articles in appropriate languages, and official face-to-face meetings with affected businesses would ensure proper diffusion, hence wider compliance with the law. Countering social norms in the interest of public health requires extra effort to reach business and other community leaders and engage them as change-agents in the overall implementation strategy. The high levels of success in implementation models adopted by both Boston and New York City can be largely attributed to multidimensional educational programs targeted at businesses and patrons (Frieden et al., 2005; Hyland et al., 1999; Skeer et al., 2004; Weber et al., 2003). No-smoking policies are generally assumed to be enforced through the actions of businesses and little attention is given toward the responsibilities of customers to refrain from smoking. Business patrons who receive no formal notification of laws should therefore not be expected to automatically comply. Much smoking witnessed by administrators and observers, for example, was from patrons and bystanders suggesting that bans should not automatically be considered self-enforcing on the behaviors of those with limited knowledge of the law.

Several limitations to this study should be noted. First, the self-reporting nature of the study and social norms of 'saving face' may have led participants to provide some socially desired responses. Second, smoking behavior observations were limited by the random collection times during the study period. Third, the sample of businesses approached did not include all businesses in Chinatown, but did constitute the majority. Fourth, there is no data available for comparison before the ban was enacted. Fifth, the sample size was small, limiting generalizability beyond Chinatown Philadelphia. Sixth, owners/managers may have differences in law knowledge in comparison to employees. Seventh, there may be some recall bias since the study was conducted a month after the law was implemented. Eighth, because diffusion data for Philadelphia at large as well as for specific racial and ethnic groups are

unavailable, Chinese businesses may not be the only group to have experienced low levels of diffusion. There may also be variations according to the specific group assessed. Finally, the Chinese community as noted earlier has exceptionally high rates of smoking. Full and effective implementation of a smoking policy may not necessarily alter smoking behaviors or if it does then may not to the extent of other communities with a lower prevalence of smoking.

This study contributes to the growing amount of literature on the effectiveness of smoking bans. To the best of our knowledge, this is the first study to consider diffusion of policies to an Asian-American ethnic subpopulation and community. Based on our findings, we have concluded that the Philadelphia's no-smoking law has not effectively diffused to the Chinese business community in Philadelphia's Chinatown. In order to reach a wider segment of this community, dissemination efforts should take into consideration language barriers, social acceptability of smoking, effective diffusion streams for the target community, and implementation of an anti-smoking campaign to outreach to both businesses and patrons alike. Future studies may utilize such methods as physiological measures or particulate sensors to gauge the levels of compliance and investigate top-down mechanisms of communication to businesses, explore dissemination streams to a larger population that includes business patrons, and assess whether bans affect smoking behaviors in Asian communities at large.

## References

- Ajzen I. *The Theory of Planned Behavior*. Organizational Behavior and Human Decision Processes 1991;50:179–211.
- Albers AB, Siegel M, Cheng DM, Rigotti NA, Biener L. Effects of restaurant and bar smoking regulations on exposure to environmental tobacco smoke among Massachusetts adults. *American Journal of Public Health* 2004;94(11):1959–1964. [PubMed: 15514237]
- Bartosch WJ, Pope GC. The economic effect of smoke-free restaurant policies on restaurant business in Massachusetts. *Journal of Public Health Management and Practice* 1999;5(1):53–62. [PubMed: 10345513]
- Biener L, Siegel M. Behavior intentions of the public after bans on smoking in restaurants and bars. *American Journal of Public Health* 1997;87(12):2042–2044. [PubMed: 9431301]
- Boston Public Health Commission. *Clean Air Works: Workplace Smoking Restrictions*. 2003a.
- Boston Public Health Commission. *Revised Guidelines for the Implementation and Enforcement of Boston Public Health Commission's Clean Air Works Workplace Smoking Restrictions Regulation*. 2003b.
- Centers for Disease Control and Prevention. *Tobacco Use Among Adults -- United States, 2005*. *Morbidity and Mortality Weekly Report* 2006;55(42):1145–1148. [PubMed: 17065979]
- Chang C, Leighton J, Mostashari F, McCord C, Frieden TR. The New York City Smoke-Free Air Act: second-hand smoke as a worker health and safety issue. *American Journal of Industrial Medicine* 2004;46(2):188–195. [PubMed: 15273972]
- Clarke H, Wilson MP, Cummings KM, Hyland A. The campaign to enact New York City's Smoke-Free Air Act. *Journal of Public Health Management and Practice* 1999;5(1):1–13. [PubMed: 10345507]
- Farrelly MC, Nonnemaker JM, Chou R, Hyland A, Peterson KK, Bauer UE. Changes in hospitality workers' exposure to secondhand smoke following the implementation of New York's smoke-free law. *Tobacco Control* 2005;14(4):236–241. [PubMed: 16046685]
- Faul, F.; Erdfelder, E. *GPOWER: A priori-, post hoc-, and compromise power analyses for MS-DOS* [computer program]. Bonn, Germany: Bonn University; 1992.
- Federer, W. *Statistics and Society: Data Collection and Interpretation*. Vol. 2. New York, NY: Marcel Dekker Inc; 1991.
- Fink, A.; Kosecoff, J. *How to conduct surveys: A step-by-step guide*. Newbury Park, CA: Sage Publications; 1985.
- Fishbein, M. *Readings in Attitude Theory and Measurement*. New York: Wiley; 1967.
- Fowler, FJ. *Survey research methods*. Newbury Park, CA: Sage Publications; 1988.



- Frieden TR, Mostashari F, Kerker BD, Miller N, Hajat A, Frankel M. Adult tobacco use levels after intensive tobacco control measures: New York City, 2002–2003. *American Journal of Public Health* 2005;95(6):1016–1023. [PubMed: 15914827]
- Fu SS, Ma GX, Tu XM, Siu PT, Metlay JP. Cigarette smoking among Chinese Americans and the influence of linguistic acculturation. *Nicotine Tob Res* 2003;5(6):803–811. [PubMed: 14668064]
- Hyland A, Cummings KM. Consumer response to the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice* 1999a;5(1):28–36. [PubMed: 10345510]
- Hyland A, Cummings KM. Restaurant employment before and after the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice* 1999b;5(1):22–27. [PubMed: 10345509]
- Hyland A, Cummings KM. Restaurateur reports of the economic impact of the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice* 1999c;5(1):37–42. [PubMed: 10345511]
- Hyland A, Cummings KM, Nauenberg E. Analysis of taxable sales receipts: was New York City's Smoke-Free Air Act bad for restaurant business? *Journal of Public Health Management and Practice* 1999;5(1):14–21. [PubMed: 10345508]
- Hyland A, Cummings KM, Wilson MP. Compliance with the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice* 1999;5(1):43–52. [PubMed: 10345512]
- Likert R. A technique for the measurement of attitudes. *Archives of Psychology* 1932;140:1–55.
- Ma GX, Shive S, Tan Y, Toubbeh J. Prevalence and predictors of tobacco use among Asian Americans in the Delaware Valley region. *American Journal of Public Health* 2002;92(6):1013–1020. [PubMed: 12036798]
- Ma GX, Shive SE, Tan Y, Toubbeh JI, Fang CY, Edwards RL. Tobacco use, secondhand smoke exposure and their related knowledge, attitudes and behaviors among Asian Americans. *Addictive Behaviors* 2005a;30(4):725–740. [PubMed: 15833577]
- Ma GX, Tan Y, Fang CY, Toubbeh JI, Shive SE. Knowledge, attitudes and behavior regarding secondhand smoke among Asian Americans. *Preventive Medicine* 2005b;41(2):446–453. [PubMed: 15917040]
- Massachusetts General Laws. ch.270, §22. Smoke-Free Workplace Law: An Act Improving Public Health in the Commonwealth, (2004).
- New York City Administrative Code. ch.5, §17–501, Smoke Free Air Act of 2002, (2002).
- New York State Public Health Laws. §1399-n. Clean Indoor Air Act, (2003).
- Paris, CI. Philadelphia: Department of Public Health; 2007.
- Philadelphia Code. ch.10–600. Clean Indoor Air Worker Protection Law, (2006a).
- Philadelphia Code. ch.10–600. Amending the Clean Indoor Air Worker Protection Law, (2006b).
- Philadelphia Department of Public Health. Smoke Free Philly. 2007. Retrieved March, 2007, from [www.smokefreephilly.org](http://www.smokefreephilly.org)
- Repace JL, Hyde JN, Brugge D. Air pollution in Boston bars before and after a smoking ban. *BMC Public Health* 2006;6:266. [PubMed: 17069654]
- Rogers, EM. Diffusion of Innovations. Vol. 4. New York: Free Press; 1995.
- Siegel M, Albers AB, Cheng DM, Biener L, Rigotti NA. Effect of local restaurant smoking regulations on environmental tobacco smoke exposure among youths. *American Journal of Public Health* 2004;94(2):321–325. [PubMed: 14759949]
- Skeer M, Land ML, Cheng DM, Siegel MB. Smoking in Boston bars before and after a 100% smoke-free regulation: an assessment of early compliance. *Journal of Public Health Management and Practice* 2004;10(6):501–507. [PubMed: 15643372]
- Sudman, S.; Bradburn, NM. Asking questions. San Francisco, CA: Jossey; 1986.
- Tang H, Cowling DW, Lloyd JC, Rogers T, Koumjian KL, Stevens CM, et al. Changes of attitudes and patronage behaviors in response to a smoke-free bar law. *American Journal of Public Health* 2003;93(4):611–617. [PubMed: 12660206]
- U.S. Census Bureau. Census 2000 Summary File 1, 100-Percent Data. Philadelphia city, Pennsylvania: 2000.

Weber MD, Bagwell DA, Fielding JE, Glantz SA. Long term compliance with California's Smoke-Free Workplace Law among bars and restaurants in Los Angeles County. *Tobacco Control* 2003;12(3): 269–273. [PubMed: 12958386]

**Table 1**

Exemptions listed in smoking laws of New York City (NYC), State of New York (NY), Boston, Commonwealth of Massachusetts (MA), and City of Philadelphia.

| NYC: Smoke-Free Air Act (1995)  | NYC: Smoke-Free Air Act (2002)   | NY: Clean Indoor Air Act (2003)   |
|---|--|---|
| <p>Exemptions Include:</p> <ul style="list-style-type: none"> <li>• Restaurants seating &lt; 35</li> <li>• Bars with at least 40% revenue from alcoholic beverages</li> <li>• Partitioned bar area for indoor dining establishment</li> <li>• Private, enclosed offices with ≤ 3 people</li> <li>• &lt;25% of separately ventilated lounges/boxes in sports arenas/recreational areas</li> <li>• Separately ventilated smoking rooms in some higher level schools</li> <li>• Fines: \$100 individual \$200, \$400, \$1000 managers, owners, etc.</li> </ul> | <p>Exemptions Include:</p> <ul style="list-style-type: none"> <li>• Tobacco bars in existence on Dec. 31, 2001</li> <li>• Owner-operated bars without no employees</li> <li>• Non-profit membership associations without employees</li> <li>• Bars: separate smoking rooms with separate ventilation; workers prohibited when in use</li> <li>• Up to 25% of unenclosed outdoor dining areas</li> <li>• Smoking rooms in residential, some health care facilities, hotels/motels</li> <li>• Private automobiles</li> <li>• Public areas in use for tobacco promoting and sampling functions</li> </ul> | <p>Exemptions Include:</p> <ul style="list-style-type: none"> <li>• Private homes, residences, and automobiles</li> <li>• Hotel/motel rooms</li> <li>• Retail tobacco establishments</li> <li>• On-premise membership association events that do not offer compensation for services</li> <li>• Cigar bars in existence before Jan. 1, 2003 with ≥10% revenue from sales</li> <li>• Up to 25% of Unenclosed outdoor dining 3 feet from non-smoking areas</li> <li>• Public areas in use for tobacco promoting and sampling functions</li> </ul> |
| <p><b>Boston:</b> Clean Air Works Workplace Smoking Restrictions (2003)</p>   | <p><b>MA:</b> Smoke-Free Workplace Law (2004)</p>  | <p><b>Philadelphia:</b> Clean Indoor Air Worker Protection Law (2007)</p>   |
| <p>Exemptions Include:</p> <ul style="list-style-type: none"> <li>• Private residences</li> <li>• Designated smoking rooms in lodging establishments</li> <li>• Retail tobacco stores</li> <li>• Smoking bars ≥60% income from tobacco sales</li> <li>• Unenclosed outdoor spaces with overhead covering</li> <li>• Theatrical productions</li> <li>• Religious ceremonies</li> <li>• Business office space under City of Boston</li> </ul>   | <p>Exemptions Include:</p> <ul style="list-style-type: none"> <li>• Private residences</li> <li>• Premises of membership associations</li> <li>• Designated smoking rooms in lodging establishments</li> <li>• Retail tobacco stores</li> <li>• Smoking bars</li> <li>• Theatrical stage or film performers</li> <li>• Medical/scientific research</li> <li>• Religious ceremonies</li> <li>• Tobacco industries</li> </ul>  | <p>Exemptions Include:</p> <ul style="list-style-type: none"> <li>• Tobacco products distribution business with ≥15% revenue from sales</li> <li>• Specialty Tobacco Establishment</li> <li>• Up to 25% of rooms in lodging establishments</li> <li>• Private clubs</li> <li>• Drinking establishments with &lt;20% revenue from food</li> <li>• Smoking outdoors at least 20 feet away from entrances</li> </ul>   |

| NYC: Smoke-Free Air Act (1995)   | NYC: Smoke-Free Air Act (2002)   | NY: Clean Indoor Air Act (2003) |
|--|--|---------------------------------|
| <p>Code Ordinance 16-35</p> <ul style="list-style-type: none"> <li>• Banks and financial service institutions</li> </ul> | <ul style="list-style-type: none"> <li>• Completely unenclosed outdoor space</li> <li>• Areas of nursing homes designated as residences</li> </ul> |                                 |

**Table 2**

Individual level and business level characteristics for dissemination and diffusion of Philadelphia's no-smoking law.

| <b>Individual Level</b>                               | <b>N</b> | <b>%</b> |
|---|----------|----------|
| <b>Aware of Philadelphia No-Smoking Law</b>           | 64       | 92.2     |
| <b>First Heard About Law</b>                          | 57       |          |
| 2000-August 2006 as a bill                            | 31       | 54.4     |
| September–December 2006 (transition period)           | 24       | 42.1     |
| January 2007 (officially enforced)                    | 2        | 3.5      |
| <b>Information Source*</b>                            | 62       |          |
| TV  | 24       | 38.7     |
| Chinese Language Newspapers                           | 23       | 37.1     |
| Word of Mouth   | 13       | 21.0     |
| English Language Newspapers                           | 8        | 12.9     |
| Radio   | 7        | 11.3     |
| Official Government Notification                      | 6        | 9.7      |
| Internet  | 4        | 6.5      |
| <b>Knowledge of Exemptions</b>                        | 62       |          |
| Do Not Know Exemptions or Believe Law Applies Equally | 49       | 79.0     |
| Know Some Exemptions                                  | 13       | 21.0     |
| <b>Believe Law Needs Improvement</b>                  | 56       |          |
| Yes   | 28       | 50.0     |
| <b>Potential Improvements Favored*</b>                | 31       |          |
| Create a Statewide Law                                | 17       | 54.8     |
| Cover All Businesses Equally                          | 12       | 38.7     |
| <hr/>   |          |          |
| <i>Business Level</i>                                 | <i>N</i> | <i>%</i> |
| <hr/>   |          |          |
| <b>Permitted Smoking Before Law</b>                   | 15       | 28.3     |
| <b>City Assistance in Implementation</b>              | 43       |          |
| No Assistance   | 18       | 41.9     |
| Mailed Information/Provided No-Smoking Signs          | 20       | 46.5     |
| Sent a Representative                                 | 3        | 7.0      |
| <b>City Assistance Desired*</b>                       | 46       |          |
| Do Not Need Assistance                                | 19       | 41.3     |
| Provide No-Smoking Signs                              | 15       | 32.6     |
| Send Information in the Mail                          | 11       | 23.9     |

\* Note: Multiple Choices

**Table 3**

Perceptions and Attitudes stratified according to business and individual characteristics.

| <i>Business Level</i>                          | Favorability Level of Law <sup>a</sup> |      |      | Perceived Support of Law by Others <sup>b</sup> |    |      | Confidence Level for Implementation <sup>b</sup> |       |    | Familiarity with Law <sup>c</sup> |      |       | Amount of Smoking Witnessed Since Law <sup>d</sup> |      |      |       |    |      |      |       |
|--|--|------|------|---|----|------|--|-------|----|-----------------------------------|------|-------|--|------|------|-------|----|------|------|-------|
|  | N                                      | Mean | SD   | p   | N  | Mean | SD   | p     | N  | Mean                              | SD   | p     | N  | Mean | SD   | p     |    |      |      |       |
| <b>Type of Business</b>                        |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <i>Totals</i>                                  | 55                                     | 6.18 | 1.70 | 0.491   | 54 | 5.44 | 1.94   | 0.515 | 53 | 6.11                              | 1.49 | 0.798 | 53   | 5.28 | 1.47 | 0.225 | 52 | 3.48 | 1.98 | 0.020 |
| Retail Business (Clothing, Food)               | 31                                     | 6.32 | 1.33 |   | 30 | 5.60 | 1.63   |       | 30 | 6.07                              | 1.26 |       | 30   | 5.07 | 1.28 |       | 31 | 4.00 | 1.79 |       |
| Restaurants                                    | 24                                     | 6.00 | 2.11 |   | 24 | 5.25 | 2.29   |       | 23 | 6.17                              | 1.77 |       | 23   | 5.57 | 1.67 |       | 21 | 2.71 | 2.03 |       |
| <b>Length of Time Business in Operation</b>    |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <i>Totals</i>                                  | 54                                     | 6.17 | 1.71 | 0.225   | 53 | 5.42 | 1.95   | 0.091 | 53 | 6.11                              | 1.49 | 0.115 | 53   | 5.28 | 1.47 | 0.261 | 51 | 3.53 | 1.96 | 0.525 |
| 5 years or less                                | 21                                     | 5.81 | 2.06 |   | 21 | 4.86 | 2.20   |       | 21 | 5.71                              | 1.82 |       | 21   | 5.00 | 1.45 |       | 20 | 3.75 | 2.12 |       |
| 5 years or more                                | 33                                     | 6.39 | 1.43 |   | 32 | 5.78 | 1.70   |       | 32 | 6.38                              | 1.18 |       | 32   | 5.47 | 1.48 |       | 31 | 3.39 | 1.87 |       |
| <b>Business Smoking Policy Before Law</b>      |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <i>Totals</i>                                  | 53                                     | 6.15 | 1.73 | 0.029   | 52 | 5.44 | 1.95   | 0.133 | 51 | 6.08                              | 1.51 | 0.400 | 51   | 5.25 | 1.49 | 0.519 | 50 | 3.58 | 1.95 | 0.293 |
| Smoking Not Permitted Before Law               | 38                                     | 6.47 | 1.33 |   | 37 | 5.70 | 1.87   |       | 36 | 6.19                              | 1.39 |       | 36   | 5.17 | 1.64 |       | 35 | 3.77 | 1.86 |       |
| Smoking Permitted Before Law                   | 15                                     | 5.33 | 2.32 |   | 15 | 4.80 | 2.08   |       | 15 | 5.80                              | 1.78 |       | 15   | 5.47 | 1.44 |       | 15 | 3.13 | 2.13 |       |
| <b>Individual Level</b>                        |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <b>Time Employed in Surveyed Business</b>      |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <i>Totals</i>                                  | 65                                     | 6.06 | 1.70 | 0.531   | 64 | 5.34 | 1.90   | 0.085 | 63 | 5.94                              | 1.51 | 0.088 | 63   | 5.14 | 1.56 | 0.411 | 62 | 3.47 | 1.92 | 0.142 |
| <10 years                                      | 47                                     | 5.98 | 1.75 |   | 46 | 5.09 | 2.01   |       | 46 | 5.74                              | 1.61 |       | 46   | 5.04 | 1.58 |       | 45 | 3.69 | 1.89 |       |
| >10 years                                      | 18                                     | 6.28 | 1.60 |   | 18 | 6.00 | 1.46   |       | 17 | 6.47                              | 1.07 |       | 17   | 5.41 | 1.54 |       | 17 | 2.88 | 1.93 |       |
| <b>Position Within Business</b>                |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <i>Totals</i>                                  | 65                                     | 6.06 | 1.70 | 0.910   | 64 | 5.34 | 1.90   | 0.857 | 63 | 5.94                              | 1.51 | 0.259 | 63   | 5.14 | 1.56 | 0.106 | 62 | 3.47 | 1.92 | 0.503 |
| Owner/Manager                                  | 29                                     | 6.03 | 1.88 |   | 28 | 5.39 | 1.93   |       | 28 | 6.18                              | 1.47 |       | 28   | 5.50 | 1.55 |       | 28 | 3.29 | 2.23 |       |
| Employee                                       | 36                                     | 6.08 | 1.57 |   | 36 | 5.31 | 1.91   |       | 35 | 5.74                              | 1.54 |       | 35   | 4.86 | 1.54 |       | 34 | 3.62 | 1.65 |       |
| <b>Awareness of Philadelphia's Smoking Ban</b> |  |      |      |   |    |      |  |       |    |                                   |      |       |  |      |      |       |    |      |      |       |
| <i>Totals</i>                                  | 64                                     | 6.05 | 1.71 | 0.253   | 63 | 5.32 | 1.91   | 0.845 | 63 | 5.94                              | 1.51 | 0.555 | 62   | 5.11 | 1.56 | 0.857 | 61 | 3.51 | 1.30 | 0.116 |

| Business Level                                  | Favorability Level of Law <sup>a</sup> |      |      | Perceived Support of Law by Others <sup>b</sup> |      |      | Confidence Level for Implementation <sup>b</sup> |      |      | Familiarity with Law <sup>c</sup> |      |      | Amount of Smoking Witnessed Since Law <sup>d</sup> |      |      |       |
|---|--|------|------|---|------|------|--|------|------|-----------------------------------|------|------|--|------|------|-------|
|   | N                                      | Mean | SD   | N   | Mean | SD   | N  | Mean | SD   | N                                 | Mean | SD   | N  | Mean | SD   | P     |
| No  | 5                                      | 5.20 | 2.17 | 4   | 5.50 | 0.58 | 4  | 5.50 | 0.58 | 4                                 | 5.25 | 1.71 | 5  | 4.80 | 1.92 |       |
| Yes   | 59                                     | 6.12 | 1.67 | 59  | 5.31 | 1.97 | 59   | 5.97 | 1.55 | 58                                | 5.10 | 1.56 | 56   | 3.39 | 1.91 |       |
| <b>Smoking Status</b>                           |  |      |      |   |      |      |  |      |      |                                   |      |      |  |      |      |       |
| Totals  | 62                                     | 6.10 | 1.72 | 61  | 5.39 | 1.91 | 60   | 5.98 | 1.50 | 59                                | 5.14 | 1.60 | 58   | 3.50 | 1.90 | 0.614 |
| No  | 49                                     | 6.41 | 1.44 | 48  | 5.60 | 1.89 | 47   | 6.06 | 1.39 | 46                                | 5.28 | 1.47 | 46   | 3.57 | 1.92 |       |
| Yes   | 13                                     | 4.92 | 2.18 | 13  | 4.62 | 1.93 | 13   | 5.69 | 1.89 | 13                                | 4.62 | 1.98 | 12   | 3.25 | 1.91 |       |
| <b>English Level (Reading, Verbal, Written)</b> |  |      |      |   |      |      |  |      |      |                                   |      |      |  |      |      |       |
| Totals  | 66                                     | 6.08 | 1.69 | 65  | 5.37 | 2.43 | 64   | 5.95 | 1.91 | 63                                | 5.14 | 1.56 | 62   | 3.47 | 2.25 | 0.285 |
| Low   | 16                                     | 6.06 | 1.95 | 15  | 5.20 | 1.68 | 14   | 5.20 | 1.25 | 14                                | 5.64 | 1.82 | 13   | 5.15 | 1.70 |       |
| Intermediate                                    | 31                                     | 5.97 | 1.64 | 31  | 5.35 | 1.87 | 31   | 5.35 | 1.61 | 31                                | 6.03 | 1.24 | 31   | 5.06 | 1.97 |       |
| High  | 19                                     | 6.26 | 1.63 | 19  | 5.53 | 1.90 | 19   | 5.53 | 1.51 | 19                                | 6.05 | 1.91 | 19   | 5.26 | 1.92 |       |

<sup>a</sup>Note: Mean responses are on a seven-point scale: 1 (strongly oppose) to 7 (strongly favor).

<sup>b</sup>Mean responses are on a seven-point scale: 1 (strongly disagree) to 7 (strongly agree).

<sup>c</sup>Mean responses are on a seven-point scale: 1 (very unfamiliar) to 7 (very familiar).

<sup>d</sup>Mean responses are on a seven-point scale: 1 (very rarely) to 7 (quite often).

p<0.05

Table 4

Perceptions and Attitudes for implementation stratified according to business characteristics.

| Business Level                              | Length of Time to Initiate Law Implementation <sup>a</sup> |      |      | Cost of Implementation <sup>b</sup> |    |      | Perceived Effects on Business Income <sup>c</sup> |       |    | Favorability if Income Affected <sup>d</sup> |      |       | Preference of Customers/ Employees for Smoke-free Environment <sup>e</sup> |      |      |       |    |      |      |       |
|---|--|------|------|-------------------------------------|----|------|---|-------|----|--|------|-------|--|------|------|-------|----|------|------|-------|
|   | N  | Mean | SD   | p                                   | N  | Mean | SD  | p     | N  | Mean   | SD   | p     | N  | Mean | SD   | p     |    |      |      |       |
| <b>Type of Business</b>                     |  |      |      |                                     |    |      |   |       |    |  |      |       |  |      |      |       |    |      |      |       |
| Totals                                      | 46   | 3.07 | 1.99 | 0.046                               | 45 | 2.58 | 1.54  | 0.496 | 51 | 5.96   | 1.80 | 0.261 | 46   | 4.89 | 1.98 | 0.29  | 52 | 5.40 | 2.00 | 0.415 |
| Retail Business (Clothing, Food)            | 26   | 3.58 | 1.98 |                                     | 25 | 2.72 | 1.34  |       | 30 | 6.20   | 1.81 |       | 26   | 5.08 | 1.74 |       | 30 | 5.60 | 1.75 |       |
| Restaurants                                 | 20   | 2.40 | 1.85 |                                     | 20 | 2.40 | 1.79  |       | 21 | 5.62   | 1.77 |       | 20   | 4.65 | 2.28 |       | 22 | 5.14 | 2.32 |       |
| <b>Length of Time Business in Operation</b> |  |      |      |                                     |    |      |   |       |    |  |      |       |  |      |      |       |    |      |      |       |
| Totals                                      | 46   | 3.07 | 1.99 | 0.282                               | 45 | 2.58 | 1.54  | 0.997 | 51 | 5.96   | 1.80 | 0.022 | 46   | 4.89 | 1.98 | 0.903 | 52 | 5.40 | 2.00 | 0.254 |
| 5 years or less                             | 19   | 2.68 | 1.57 |                                     | 19 | 2.58 | 1.68  |       | 20 | 5.25   | 1.89 |       | 20   | 4.85 | 2.11 |       | 20 | 5.00 | 1.92 |       |
| 5 years or more                             | 27   | 3.33 | 2.24 |                                     | 26 | 2.58 | 1.47  |       | 31 | 6.42   | 1.61 |       | 26   | 4.92 | 1.92 |       | 32 | 5.66 | 2.04 |       |

<sup>a</sup>Note: Mean responses are on a seven-point scale: 1 (very little) to 7 (very much).

<sup>b</sup>Mean responses are on a seven-point scale: 1 (very cheap) to 7 (very expensive).

<sup>c</sup>Mean responses are on a seven-point scale: 1 (lose) to 7 (gain).

<sup>d</sup>Mean responses are on a seven-point scale: 1 (strongly oppose) to 7 (strongly favor).

<sup>e</sup>Mean responses are on a seven-point scale: 1 (strongly disagree) to 7 (strongly agree).

p<0.05