THE HEALTH AND ECONOMIC IMPACT OF NEW YORK'S CLEAN INDOOR AIR ACT

NEW YORK STATE DEPARTMENT OF HEALTH

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Executive Summary

One of the central programmatic goals for the New York Tobacco Control Program (NYTCP) is to eliminate nonsmokers' exposure to secondhand smoke (SHS). A key step toward achieving this goal was the enactment of the comprehensive Clean Indoor Air Act (CIAA) (Public Health Law, Article 13-E)—prohibiting smoking in virtually all workplaces, including bars, restaurants, bowling facilities, taverns, and bingo halls—on March 26, 2003.

Exposure to SHS among nonsmokers statewide declined in the year following CIAA.

This report describes the health and economic impact of the CIAA, as well as indicators of compliance with and public support for the law, and attitudes toward SHS.

The report presents the following key findings:

- Exposure to SHS among nonsmokers statewide declined in the year following CIAA.
- Exposure to SHS declined markedly among hospitality workers as did self-reported sensory irritation (eye, nose, and throat).
- Surveys of New Yorkers and direct observations indicate declines in smoking in hospitality venues.
- Exposure to SHS in worksites more broadly has not changed.
- Compliance with the law is high in hospitality venues.
- Public support for the law is strong and has increased steadily over time.
- The law has not had an adverse financial impact on bars and restaurants.

1. Introduction

Protecting nonsmokers from the effects of secondhand smoke (SHS) is a central goal of state and national tobacco control efforts. The focus on reducing SHS, which is defined as the combination of smoke exhaled by a smoker and the smoke generated from the burning end of a cigarette (or other tobacco product), has stemmed from overwhelming evidence that SHS is detrimental to the health and well-being of all individuals who are exposed to it. SHS, which is also known as environmental tobacco smoke (ETS), is a mixture of more than 4,000 chemical compounds that are released into the air as gases and fine particles. Of the 4,000 compounds, 69 have been identified as carcinogens or cancer-causing agents. Of these 69, 11 have been specifically identified as human carcinogens, and others are classified as probable human carcinogens or animal carcinogens (USDHHS, 2001). In 1986, the U.S. Surgeon General and the National Research Council reported that SHS was a major health risk to nonsmokers (USDHHS, 1986). In 1992, the U.S. Environmental Protection Agency (EPA) officially listed SHS as a Class A carcinogen. In 2004, California initiated steps to classify ETS as a toxic air contaminant, which under California law is defined as "an air pollutant which may cause or contribute to an increase in mortality, in serious illness, or which may pose a present or potential hazard to human health" (Assembly Bill 1807: Health and Safety Code §39655). These measures are based on an initial report published in 1997 (California EPA, 1997) and updated in 2005 (California EPA, 2005) that identified SHS as a major health risk for a significant portion of the population. These reports, which provide an in-depth look at the specific health implications of SHS, are briefly summarized below.

In 1992, the U.S. Environmental Protection Agency officially listed SHS as a Class A carcinogen.

1.1 Secondhand Smoke and Health Implications

Exposure to SHS is a health concern for people of all ages, affecting adults, children, and pregnancies. Studies have shown that SHS exposure detrimentally affects fetal growth, leading to low birth weight in infants, sudden infant death syndrome (SIDS), and preterm deliveries. There is also evidence that exposure to SHS has adverse neurological effects on infants exposed in utero, can lead to intrauterine growth retardation, and decreases pulmonary function. SHS has been definitively linked to cancers of the lung, nasal sinus, and cervix; and there is increasing evidence that SHS leads to other cancers, including breast and brain cancer, and lymphomas in children.

Some of the most widespread health effects of SHS include respiratory illnesses among children and adults. For children, exposure to SHS can lead to increased risk of bronchitis, pneumonia, and ear infections and can induce and exacerbate asthma. Among adults, exposure to SHS can lead to many chronic respiratory conditions, including asthma, and to an elevated risk for stroke, acute and chronic coronary disease, altered vascular properties, and increased risk of heart disease mortality (California EPA, 2005).

Recent studies have shown that the risk of acute myocardial infarction and coronary heart disease is elevated at low levels of exposure to tobacco smoke, like those associated with SHS, or daily consumption of one to two cigarettes.

Exposure to SHS has been shown to increase the risk of fatal and nonfatal coronary heart disease (CHD) in nonsmokers by about 30% (Pechacek and Babb, 2004). Recent studies have shown that the risk of acute myocardial infarction (AMI) and CHD is elevated at low levels of exposure to tobacco smoke, like those associated with SHS, or daily consumption of one to two cigarettes (Benowitz, 2003; Howard and Thun, 1999; Law and Wald, 2003). These studies have consistently shown that the bio-indicators of nonsmokers exposed to SHS resemble those of active smokers (Panagiotakos et al., 2004; Otsuka et al., 2001).

1.2 The Impact of Comprehensive Smoking Bans

In light of the acute and chronic health effects that result from exposure to SHS, studies have assessed how banning smoking in public places can positively affect health outcomes related to exposure to SHS. For example, researchers examined the impact of a law that banned smoking in public places and workplaces on the incidence of AMI, in the geographically isolated community of Helena, Montana (Sargent et al., 2004). The study monitored hospital admission for AMI over a period that spanned implementation (June 2002) and subsequent suspension (December 2002) of the law. The authors found that, during the 6 months in which the law was implemented, the number of admissions for AMI decreased significantly compared with levels before the law was implemented and after the law was suspended (about 40%). Although no other peer-reviewed studies have yet replicated this finding, the study suggests the potential impact that clean indoor air laws can have on public health.

For adults who live in towns with complete smoking bans in restaurants and bars, the odds of exposure to SHS are 2.7 (restaurants) and 7 (bars) times less than for adults who do not live in towns with smoking bans.

Although unique in its design, the Helena study (Sargent et al., 2004) is part of a growing body of literature documenting the impact of restrictions on smoking in public places. For adults who live in towns with complete smoking bans in restaurants and bars, the odds of exposure to SHS are 2.7 (restaurants) and 7 (bars) times less than for adults who do not live in towns with smoking bans (Albers et al., 2004). Likewise, for employees whose workplaces have comprehensive smoking bans, the odds of exposure to SHS are 10 times less than for employees whose workplaces do not have comprehensive smoking bans (Skeer et al., 2005). The benefits of smoke-free workplaces are not limited to nonsmokers, however; a 2002 review of 26 studies concluded that a complete smoking ban in the workplace reduced the prevalence of smoking by 3.8% among current smokers (Fichtenberg and Glantz, 2002). It is further estimated that if all workplaces in the United States were to become smoke-free, per capita cigarette consumption could drop by as much as 4.5% (Fichtenberg and Glantz, 2002) with daily cigarette consumption falling by 7% (Farrelly et al., 1999). Workplace smoking bans have also been found to facilitate smoking cessation, with smokers who work in smoke-free workplaces being 21% more likely to succeed in their attempt to quit smoking (Farkas et al., 1999).

1.3 Impact on Hospitality Businesses

One of the central arguments for opponents of clean indoor air policies is the potential adverse effect on revenues and profits of businesses directly affected by the law. Scollo et al. (2003) reported that smoke-free restaurant and bar laws had no impact or a positive impact on sales and employment in their review of all studies pertaining to the impact of clean indoor air policies on the hospitality industry. Mandel et al. (2005) concluded that smoke-free laws were associated with no change in gaming revenue from their study conducted in Delaware. Also, there is evidence that significantly more bar patrons (Tang et al., 2003) and bar owners and staff (Tang et al., 2004) now favor California's ban on indoor smoking than did when it initially went into effect in 1998.

2. Data and Methods

This report is based on data collected from a number of existing surveillance systems and analyses from studies that have been designed specifically to address the impact of the NYTCP. Specifically, we used the New York Adult Tobacco Surveys (ATS), New York Youth Tobacco Surveys (YTS), CIAA and New York City's Smoke Free Air Act (NYC SFAA) compliance and waiver data collected by the New York State Department of Health's (NYSDOH) Center for Environmental Health (CEH), and tax statistics collected by New York's Office of Tax Policy Analysis in the Department of Taxation and Finance. The primary analysis technique used in this report is to contrast outcomes before and after CIAA implementation. Additional information on sampling methods, statistical analyses, and survey specifications can be found in the 2004 and 2005 Independent Evaluation Reports of the NYTCP, which are available on NYSDOH's Web site: http://www.health.state.ny.us/nysdoh/smoking/main.htm.

3. Results

3.1 Compliance with the CIAA

To eliminate exposure to SHS in public places and workplaces and to ensure the success of clean indoor air policies, high levels of compliance must be achieved and maintained. To determine the level of compliance with the CIAA and to gauge its success in reducing overall exposure to SHS, we examined compliance data collected from an observational study of bars, restaurants, and bowling facilities; self-reported exposure to SHS in bars, restaurants, and workplaces, collected through the ATS; enforcement and compliance data collected by the state Department of Health; and results from a recent study that monitored cotinine levels[1] among hospitality workers before and after the law was enacted.

Prior to implementation, no smoking was observed in 31% of venues, including almost half of restaurants and 11% of bars. This percentage jumped to 93% 1 month after the law took effect and has remained stable over the study period.

The observational study of bars, restaurants, and bowling facilities was conducted by the Center for Tobacco Free New York and NYSDOH. The study monitored smoking in these venues in the month before CIAA implementation and 1, 3, 6, 9, and 12 months after the law took effect. Prior to implementation, no smoking was observed in 31% of venues, including almost half of restaurants and 11% of bars. This percentage jumped to 93% 1 month after the law took effect and has remained stable over the study period, with compliance at 93% at the 12-month assessment. Over the study period, compliance in bars consistently lagged behind compliance in restaurants and bowling facilities (Exhibit 3-1).

Exhibit 3-2 shows the percentage of venues where indicators of smoking (other than actual smoking [e.g., ash trays, visibility within the venue, odor]) and tobacco promotions (e.g., signs, other promotional items) were observed. These trends demonstrate a similar pattern to that identified in the observations of smoking—namely, overall impressive reductions in smoking-related indicators, with bars consistently lagging behind other venues in complying with the CIAA. Tobacco promotions have not decreased as rapidly as smoking and smoking-related indicators.

[1]Cotinine is a metabolite of nicotine that is present at detectable levels in saliva samples.

Exhibit 3-1. Percentage of Bars, Restaurants, and Bowling Facilities That Were Smoke-Free Before and After Implementation of the CIAA, Observational CIAA Compliance Study

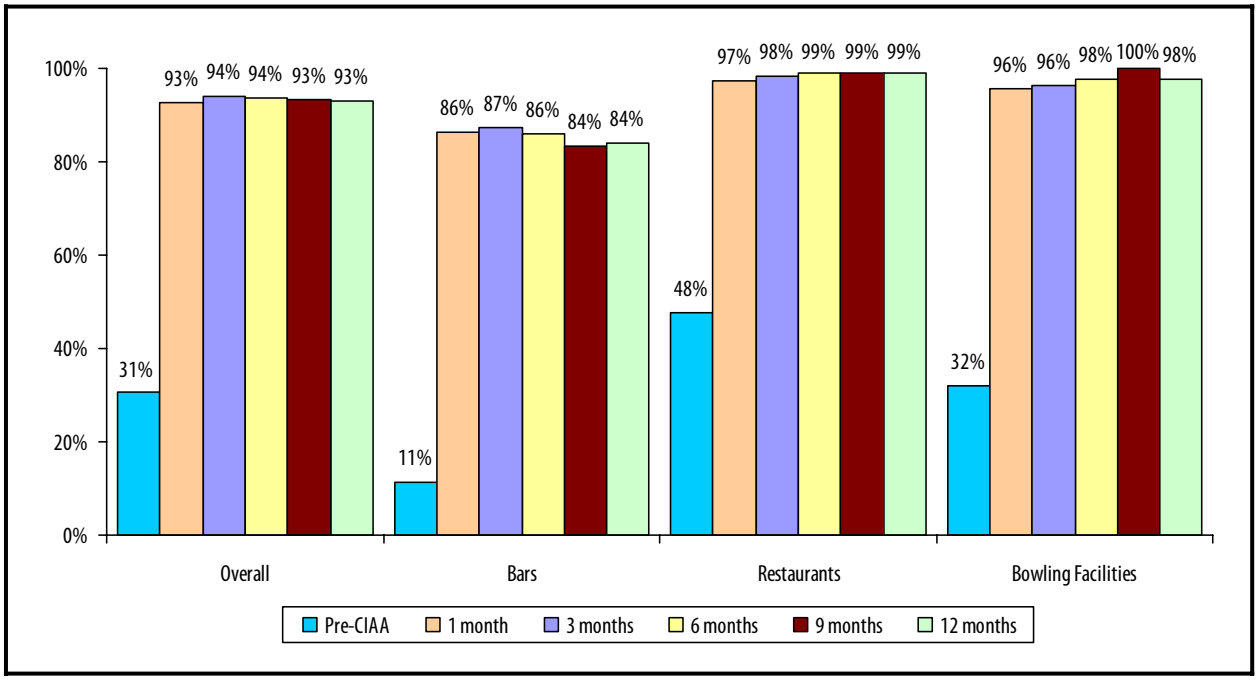


Exhibit 3-2. Percentage of Bars, Restaurants, and Bowling Facilities with Indicators of Smoking or Tobacco Promotion Before and After Implementation of the CIAA, Observational CIAA Compliance Study

	Baseline	1 Month	3 Months	6 Months	9 Months	12 Months
Bars						
Ashtrays	86.2	3.9	8.5	10.8	14.3	9.1
Visibility	75.9	11.8	12.8	12.9	17.6	14.8
Odor	82.8	27.5	25.5	24.7	26.4	25.0
Promotional items	20.7	13.7	8.5	8.6	9.9	9.1
Signs	6.9	38.2	36.2	26.9	31.9	31.8
Restaurants						
Ashtrays	60.2	1.8	0.9	2.1	1.0	1.1
Visibility	48.4	0.9	1.7	1.0	3.0	1.1
Odor	53.9	3.5	2.6	2.1	6.1	1.1
Promotional items	8.6	3.5	3.5	4.1	4.0	5.3
Signs	34.4	43.0	37.1	41.2	40.4	38.3
Bowling Facilities						
Ashtrays	69.6	2.1	7.4	2.2	0.0	2.3
Visibility	44.6	4.2	1.9	2.2	0.0	2.3
Odor	66.1	16.7	11.1	6.5	8.2	9.1
Promotional items	7.1	6.3	7.4	10.9	8.2	9.1
Signs	41.1	54.2	51.9	58.7	61.2	47.7

Indoor smoking is highly seasonal, and enforcement activities should be focused on reducing rates during colder months when smokers may be less inclined to venture outdoors.

Compliance with the CIAA was also monitored by examining trends in CIAA-related complaints to state and local health departments. The state collects data from all counties, including New York City, on complaints, violations, enforcement actions, and waiver activity. Exhibit 3-3 shows the pattern of reported complaints pertaining to the CIAA for all indoor workplaces quarterly from Q2 2003, before the law was implemented statewide, to Q2 2005. Complaints spiked in Q3 2003 after the law went into effect, peaking in Q1 2004 at 2,983 complaints statewide. During the next two quarters, complaints decreased by about 65%, then rose again, spiking at 1,978 complaints in Q1 2005; and then decreased again. These results indicate that, although the numbers of complaints have fallen from their initial peak 9 months after the law went into effect, indoor smoking is highly seasonal and enforcement activities should be focused on reducing rates during colder months when smokers may be less inclined to venture outdoors.

Exhibit 3-3 also displays the number of investigations stemming from complaints,[2] number of violations, and level of enforcement actions. The number of investigations stemming from complaints mirrors the number of complaints closely. However, the number of investigations not stemming from complaints spiked in Q2 2004 at 22,774 investigations statewide (Exhibit 3-4). Investigations fell steadily in all subsequent quarters.

The trend in CIAA violations over time (see Exhibit 3-3) indicates that violations first begin to drop in Q1 2004, with a 45% decline from the first to the second quarter of 2004, after which the number of violations remains stable, averaging about 400 in subsequent quarters.

The CIAA contains a waiver provision, allowing businesses that can demonstrate "hardship" to implement alternative remedies to an outright ban to protect workers from SHS. Exhibit 3-5 shows the trends in completed waiver applications received and in the number of requests granted and denied from Q2 2003 through Q2 2005. Overall, the number of waiver requests granted is very low, with a total of 212 waivers granted since the CIAA was implemented in July 2003. Requests for waivers spiked in Q1 2004, when the Department of Health issued guidelines for applying for a waiver. The number of waiver applications has dropped significantly since that period and continues to decline. Given that so few applications have been submitted to state and local health departments and relatively few of those requests have been granted relative to the number of establishments subject to the CIAA, the overall effect of waivers on exposure to SHS is likely to be trivial at the population level.

[2]Note: There are also investigations independent of complaints.

Exhibit 3-3. CIAA Complaints, Investigations, Violations, and Enforcement Actions, NYSDOH Q2 2003–Q2 2005

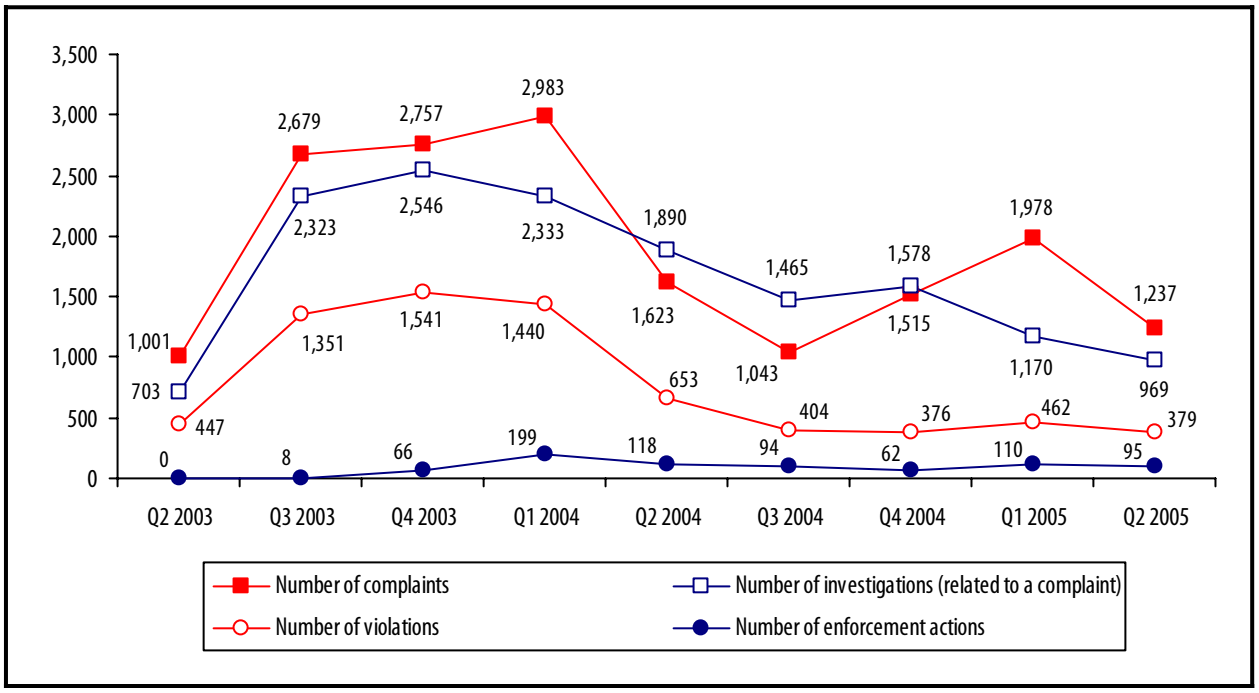


Exhibit 3-4. CIAA Investigations Not Related to Complaints, NYSDOH Q2 2003–Q2 2005

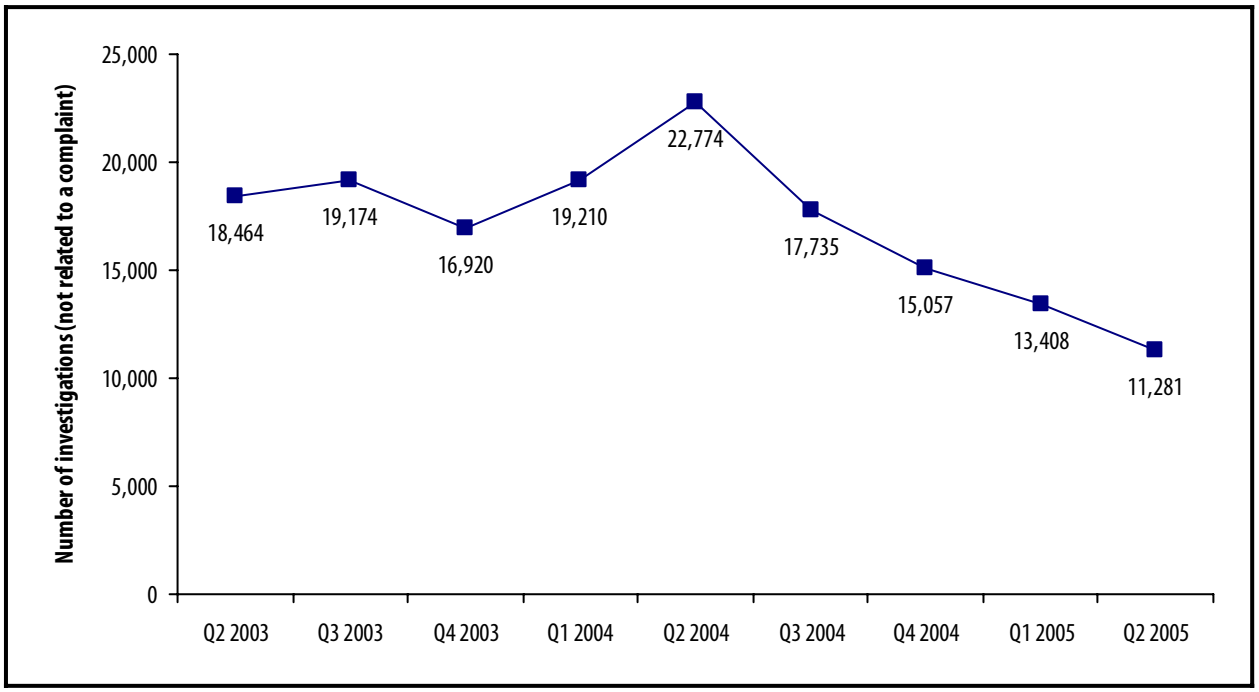
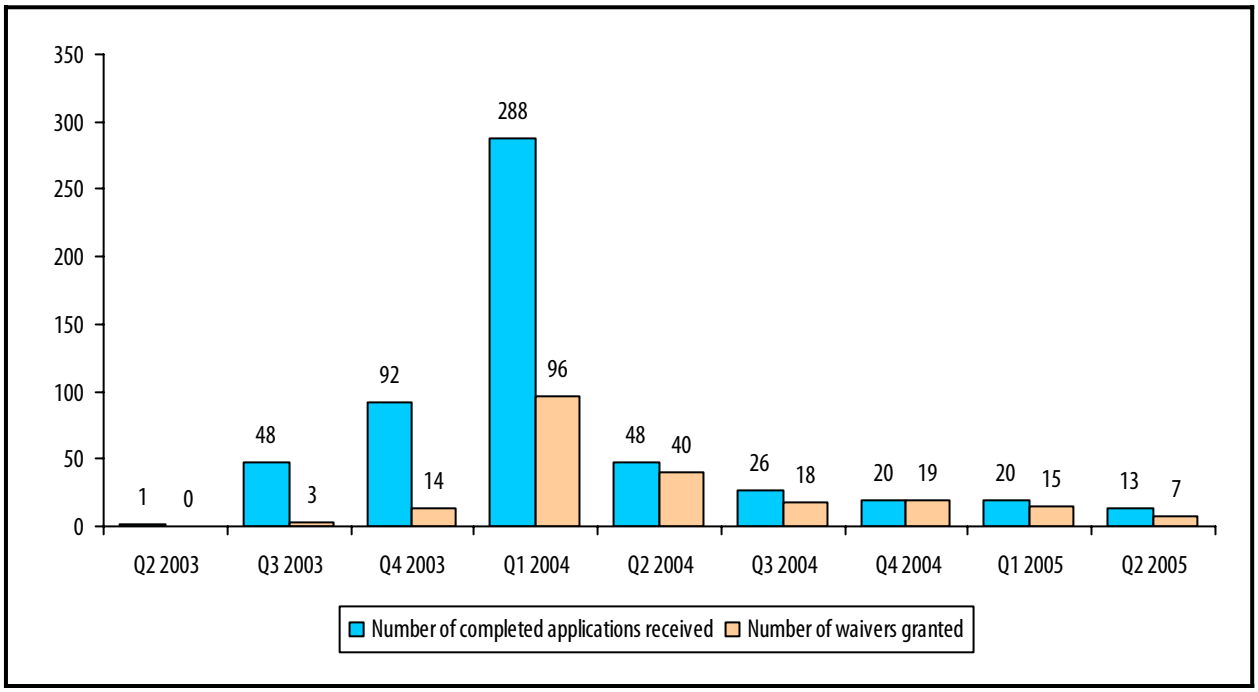


Exhibit 3-5. Number of CIAA Waiver Applications Received and Granted, NYSDOH Q2 2003–Q2 2005



3.2 Changes in Exposure to SHS

Using the ATS, we found that overall levels of self-reported exposure to SHS in bars decreased significantly from 52% in Q3 2003 to 18% in Q3 2005 (Exhibit 3-6). Implementation of the CIAA on July 24, 2003, was followed by a decline in self-reported exposure levels from 52% to 38% during Q3 2003. Levels dipped to 13% in Q2 2004 during the summer months and then peaked at 28% during Q1 2005, before again falling to 18% in Q3 2005. Self-reported exposure to SHS in restaurants decreased significantly from 2003 to 2005 (Exhibit 3-7). As in bars, self-reported exposure to SHS fell by about 50% immediately after the law went into effect. Exposure to SHS in restaurants exhibits similar seasonal patterns to exposure in bars, although these changes are very small.

Additional questions included in the ATS ask about smoking and smoking policies at work. Self-reported exposure to SHS in all workplaces remained largely unchanged from Q3 2003 through Q3 2005, at between 7.6% and 13.6% (Exhibit 3-8). Similarly, percentages of indoor workers whose workplaces prohibited smoking also remained stable during the time period. However, clean indoor air laws were implemented in New York City and in Nassau and Westchester Counties (covering almost half of New York State's population) prior to the first collected wave of ATS data, with a number of other counties restricting

Exhibit 3-6. Percentage of New Yorkers Who Visited a Bar in the Past 30 Days and Saw Someone Smoking Indoors, ATS Q3 2003–Q3 2005

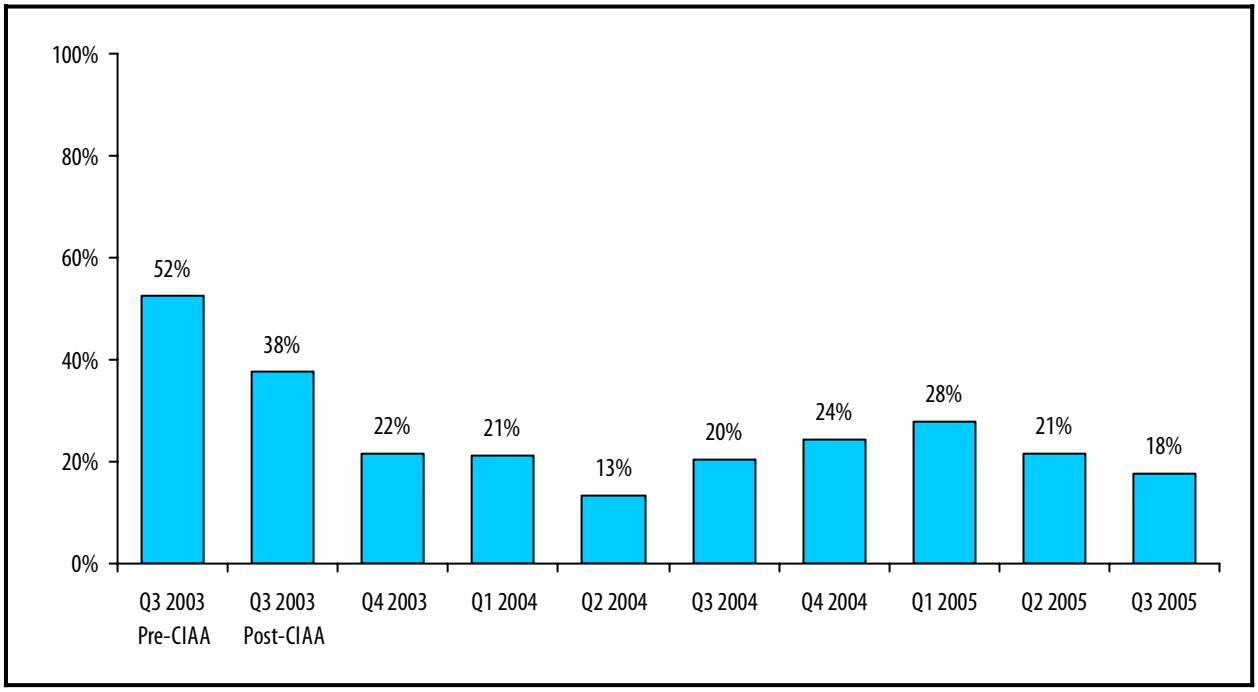


Exhibit 3-7. Percentage of New Yorkers Who Visited a Restaurant in the Past 30 Days and Saw Someone Smoking Indoors, ATS Q3 2003–Q3 2005

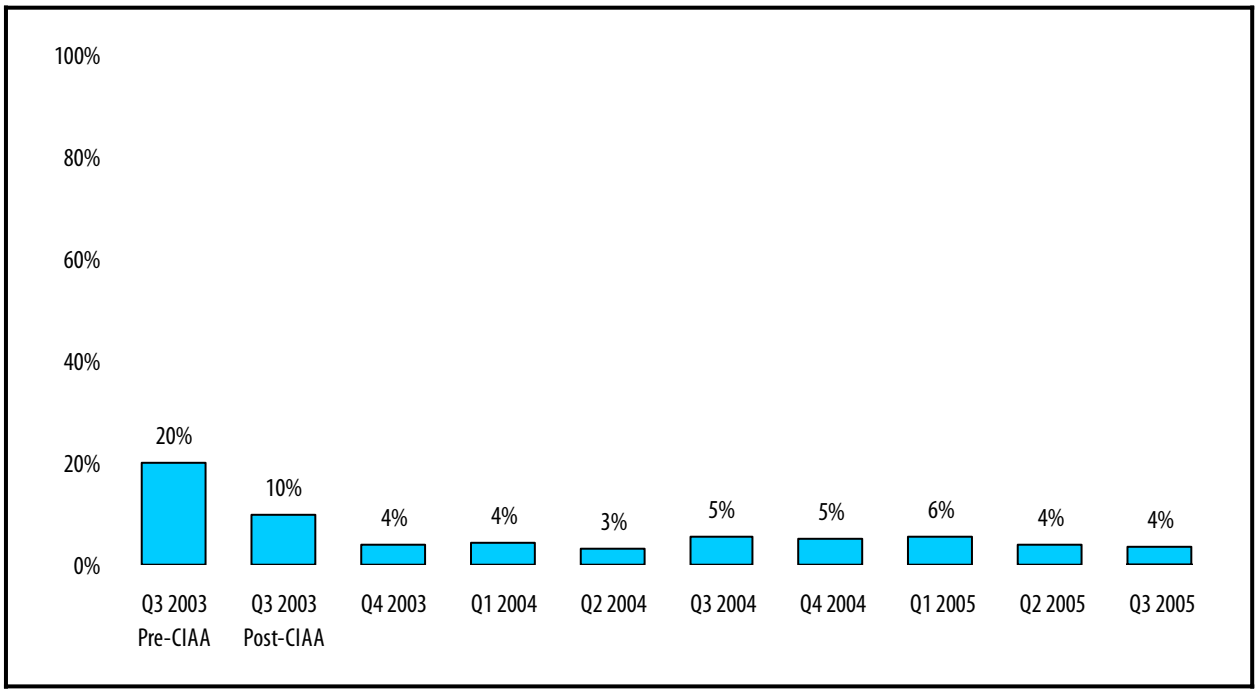
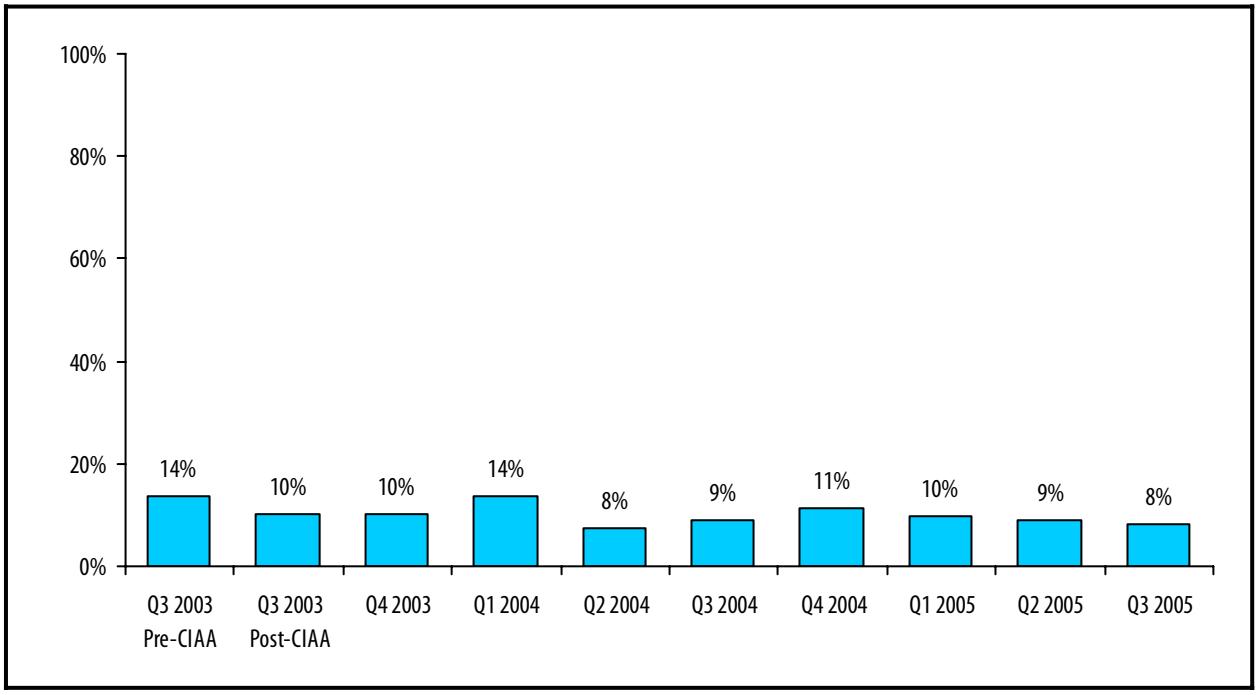


Exhibit 3-8. Percentage of Indoor Workers Who Saw Someone Smoking in their Work Area in the Past Week, ATS Q3 2003–Q3 2005



smoking in a variety of settings other than restaurants and bars. These policies are likely responsible for the low percentage of workers who reported having seen someone smoking in their work area. This generally high coverage of smoking bans across the state likely muted the impact of the CIAA. Furthermore, many businesses had smoke-free workplace policies in place independent of any state or county law. In these venues, smoking and exposure to SHS would be largely unaffected by the CIAA. The importance of a comprehensive statewide law is in ensuring that all workers, regardless of worksite policy, geographic location, or type of work, are protected from the toxins in SHS.

From the baseline measurement before the CIAA was implemented to the 12-month follow-up, exposure from all sources of SHS declined by 94%.

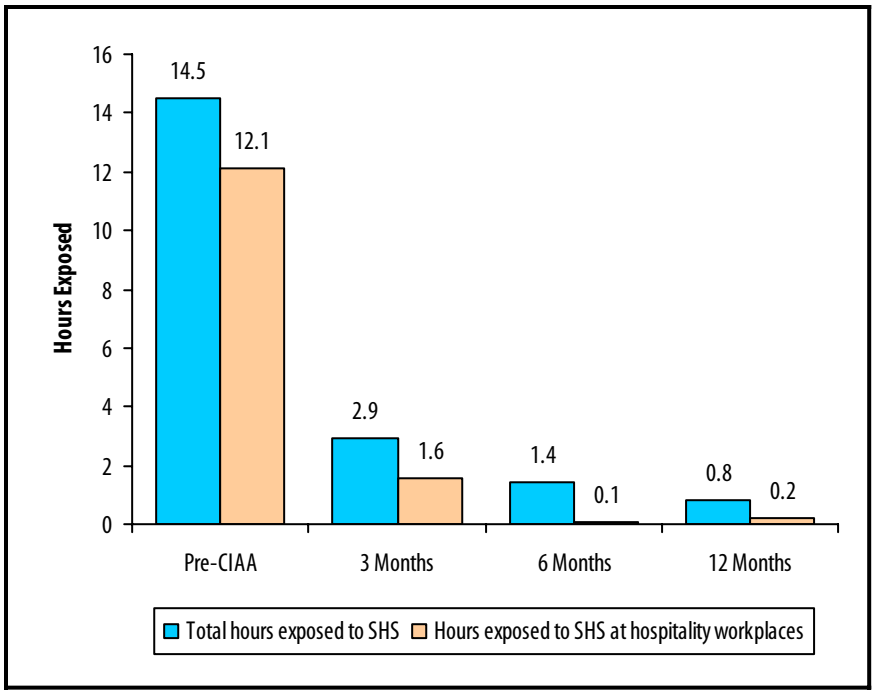
Prior to implementation of the CIAA, individuals working in hospitality venues, especially those in bars and restaurants, were particularly susceptible to SHS exposure. As such, a study of nonsmoking hospitality industry workers was conducted to further examine the impact of the CIAA on SHS exposure within these venues (Farrelly et al., 2005; RTI, 2005). The main findings from this study are as follows:

- From the baseline measurement before the CIAA was implemented to the 12-month follow-up, exposure from all sources of SHS declined by 94% from 14.5 hours to 0.8 hours (Exhibit 3-9).
- The cotinine levels determined from saliva samples also significantly decreased from 3.6 ng/ml before the CIAA to 0.78 ng/ml after the 12-month follow-up, representing a decrease of about 78% (Exhibit 3-10).
- Between the baseline survey and the 12-month follow-up, the percentage of workers reporting any sensory symptoms decreased from 88% to 38% (Exhibit 3-11). There was no significant change in the proportion of workers who reported respiratory symptoms.

More detailed results, including the sum totals of sensory and respiratory symptoms, are presented in Farrelly et al. (2005).

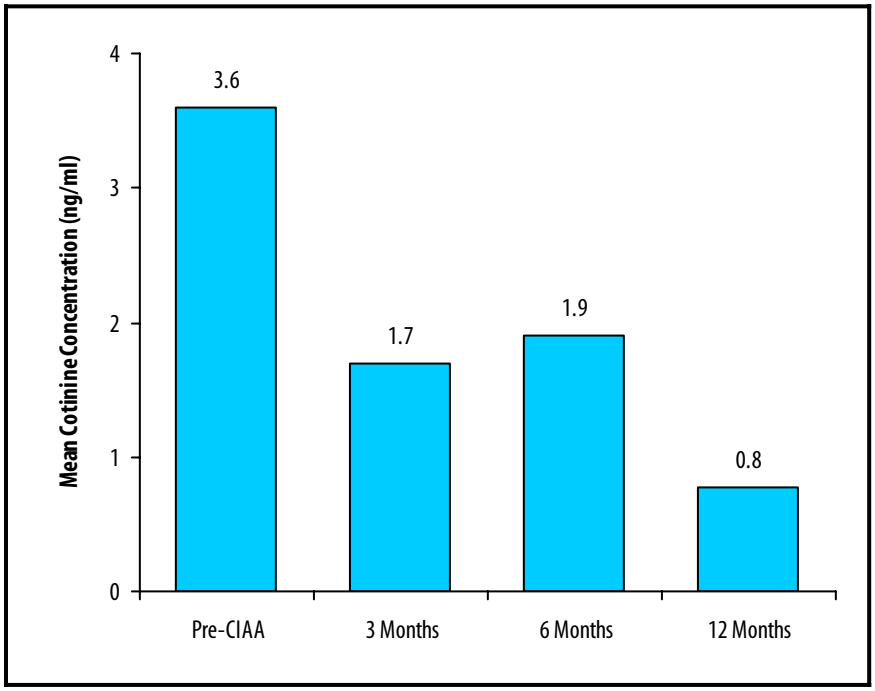
To gauge the population impact of the CIAA on SHS exposure, all nonsmoking ATS respondents were invited to submit a saliva sample to assess cotinine levels. Between July 2003 and October 2004, 2,028 nonsmokers returned "saliva kits." The analysis for this report excludes 383 respondents with samples without enough detectable saliva to perform a cotinine analysis or without a signed consent form from the respondent for a total of 1,645 cases. The data collection procedures were similar to those used in the study of hospitality workers described above. Before the law in Q3 2003, nonsmoking ATS participants' mean cotinine levels were 0.35 ng/ml. In Q2 2004, average levels fell to 0.17 ng/ml, representing a decrease of about 50% (Exhibit 3-12).

Exhibit 3-9. Mean Hours of Exposure to SHS Among Hospitality Workers Before and After Implementation of CIAA



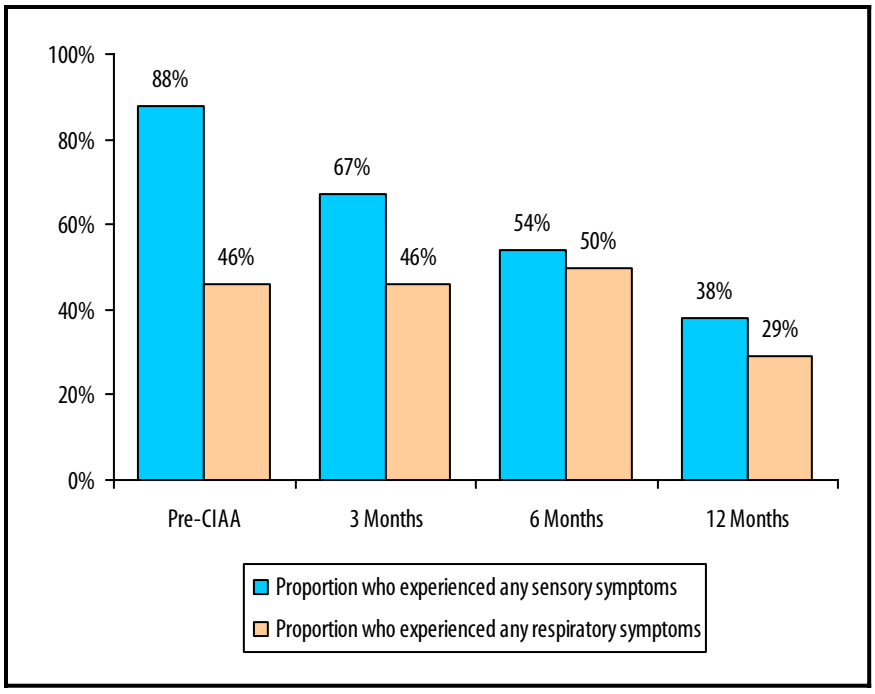
Source: Farrelly et al., 2005.

Exhibit 3-10. Mean Cotinine Concentrations Among Hospitality Workers Before and After Implementation of CIAA



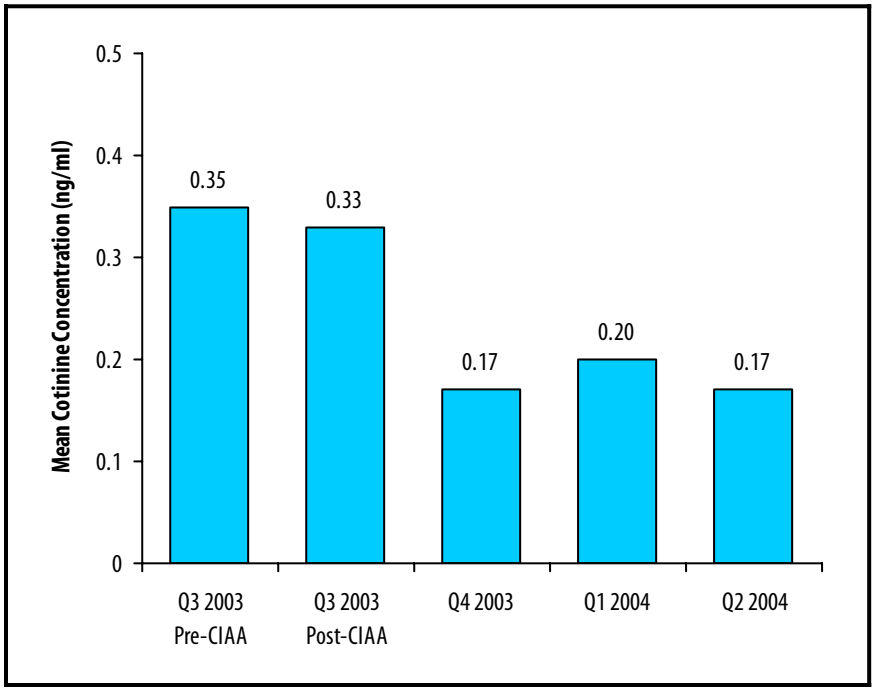
Source: Farrelly et al., 2005.

Exhibit 3-11. Percentage of Hospitality Workers Who Reported Experiencing Any Sensory or Respiratory Symptom Before and After Implementation of CIAA



Source: Farrelly et al., 2005

Exhibit 3-12. Mean Cotinine Concentrations Among Nonsmoking Adults Before and After CIAA Implementation



Linking individual saliva results to the responses provided in the ATS, we determined that mean cotinine levels decreased significantly over time ($p < 0.01$), controlling for sociodemographic characteristics. Using the same analysis, we found that SHS exposure was significantly higher among

- men,
- young adults aged 18 to 24 compared with adults aged 25 and older,
- African-Americans relative to non-Hispanic Whites, and
- those with relatively lower household incomes (less than $30,000).

The results also indicated that SHS exposure was significantly lower among

- Hispanics relative to non-Hispanic Whites, and
- those with some college education compared to those with only a high school degree.

Details of all regression results are presented in Appendix A.

3.3 Attitudes About SHS and Support for the CIAA

Public support for the CIAA is vital to its long-term success. Support will depend on the public's experience with the law, awareness of the health risks associated with SHS, and the public's understanding of the relative costs and benefits of the law. In this section, we report findings from the ATS and YTS on overall support for the CIAA among New York adults, knowledge of the health risks associated with SHS, and whether support and knowledge have changed since the CIAA was implemented.

In 2005, support for the CIAA was at its highest level, with 80% of all New York adults favoring the policy.

Overall, there has been a significant increase in the level of support for the CIAA over time among all New Yorkers (Exhibit 3-13), nonsmokers, and smokers (Exhibit 3-14). In 2005, support for the CIAA was at its highest level, with 80% of all New York adults favoring the policy (Exhibit 3-14), including between one-third and one-half of all smokers.

Exhibit 3-13. Percentage of Adults Who Favor the CIAA, ATS Q3 2003–Q3 2005

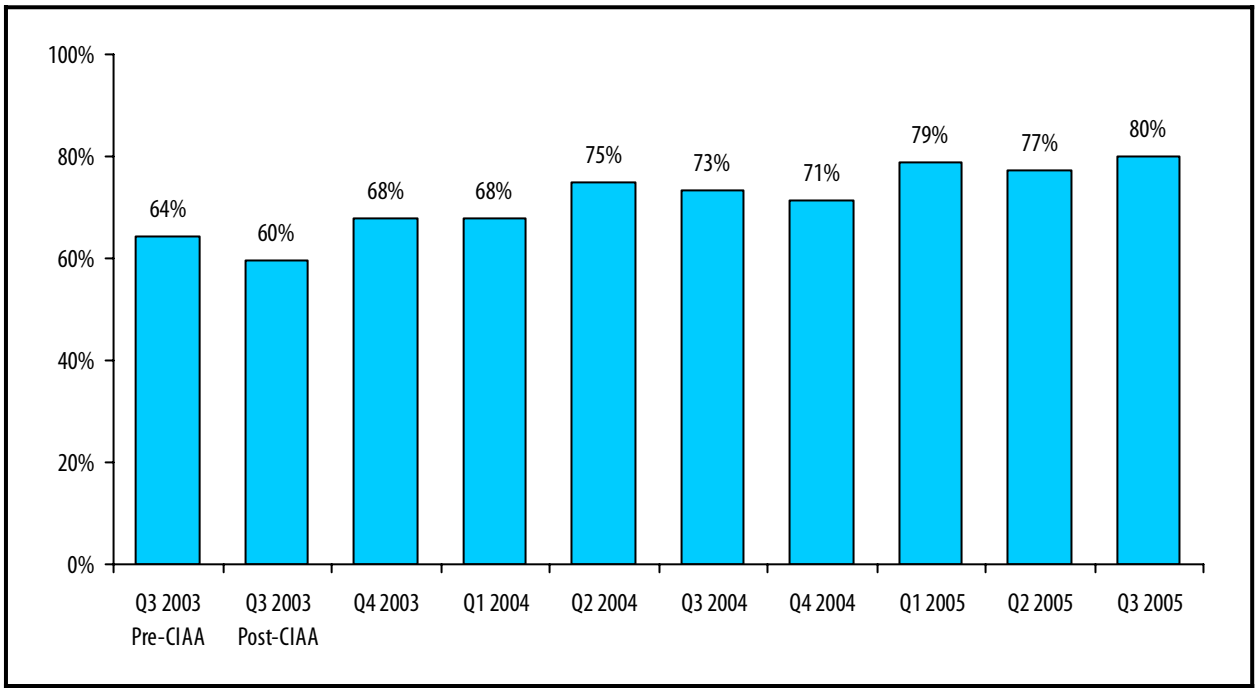
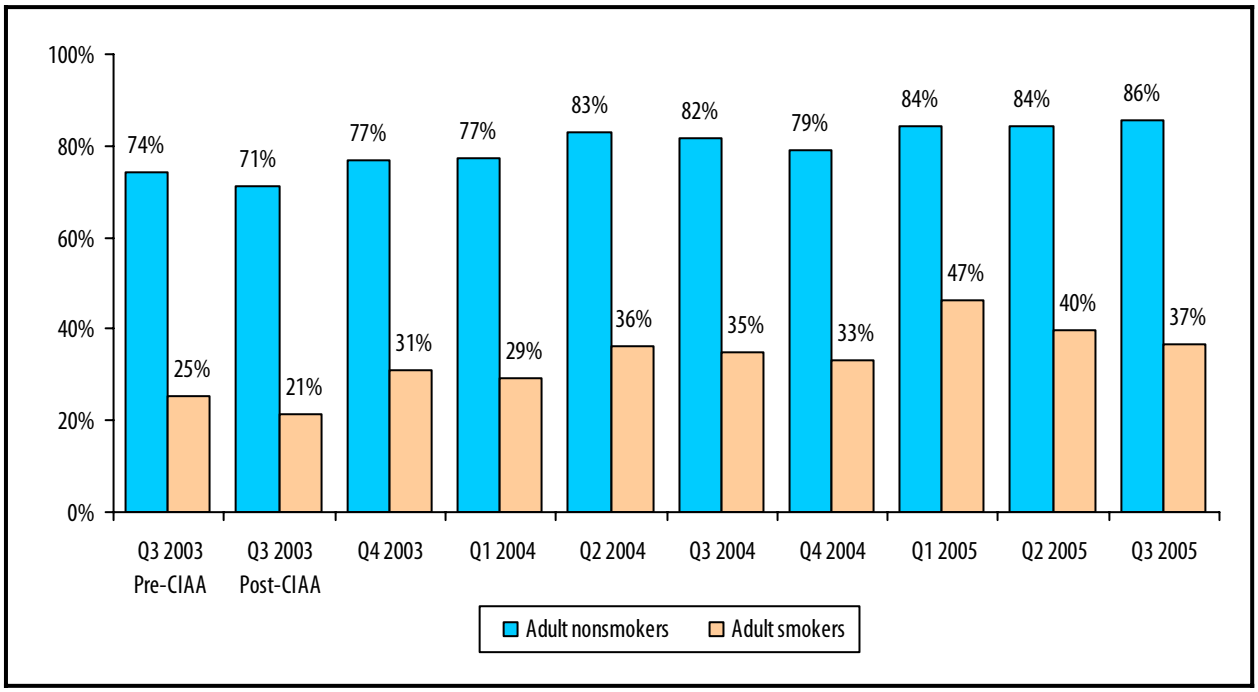


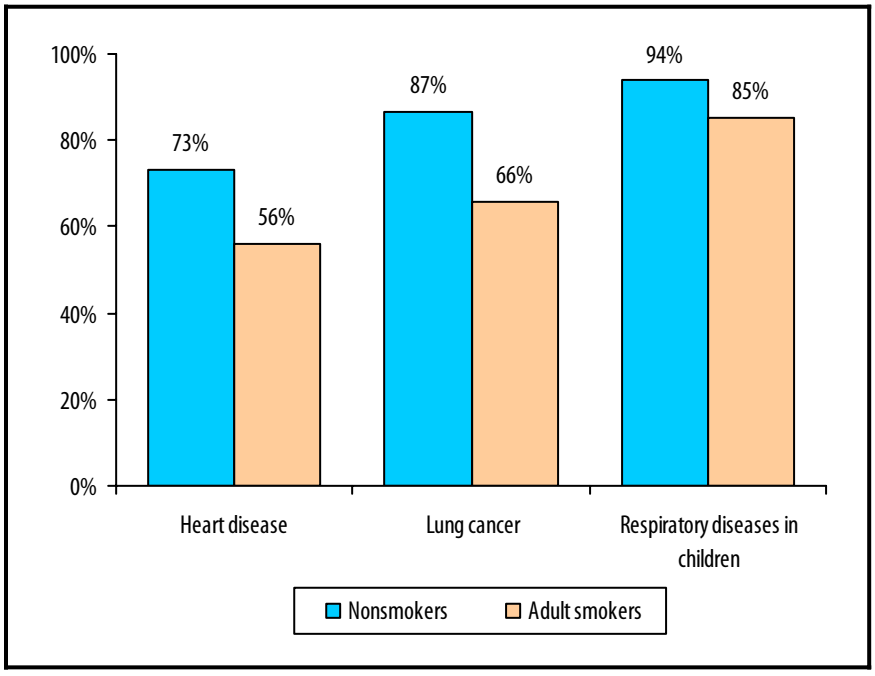
Exhibit 3-14. Percentage of Adult Nonsmokers and Adult Smokers Who Favor the CIAA, ATS Q3 2003–Q3 2005



Overall, 83% of adults agreed that SHS causes lung cancer and about 70% agreed that SHS causes heart disease.

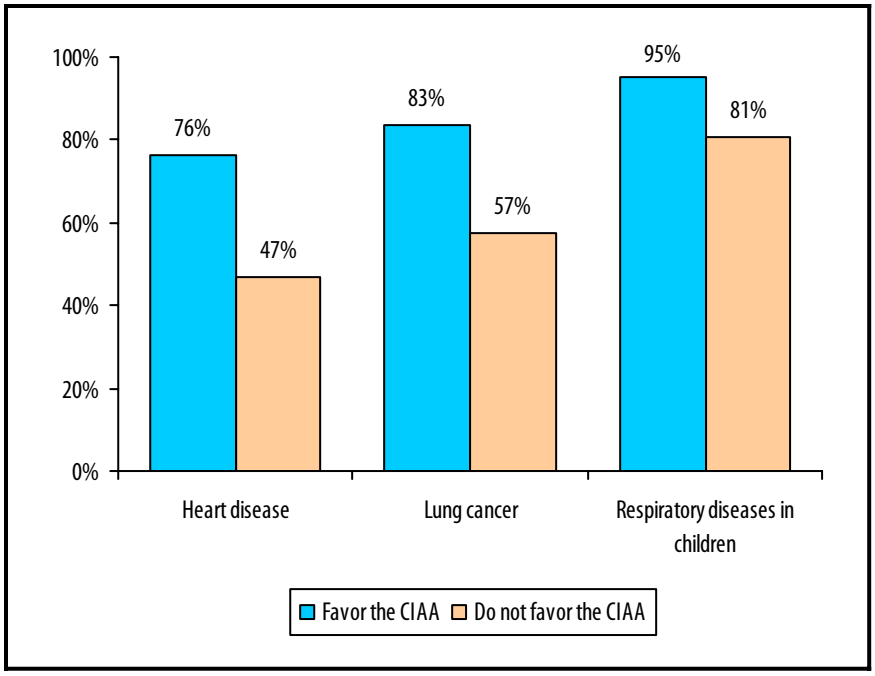
In addition to their opinions regarding the CIAA, New York adults were also asked if they believed SHS caused any of several diseases, including heart disease, lung cancer, and respiratory problems in children. Overall, 87% of adults agreed that SHS causes lung cancer and about 73% agreed that SHS causes heart disease. Over the study period, these values changed very little (results not shown). However, the percentage of adult smokers who identify these diseases with exposure to SHS consistently lags behind nonsmokers (Exhibit 3-15). Specifically, when averaged over the study period, the percentage of adult nonsmokers and adult smokers who believe SHS can cause lung cancer differs by 21 percentage points. Likewise, the percentage of adult nonsmokers and adult smokers who believe SHS can cause heart disease differs by 17 percentage points, and the percentage who believe SHS can cause respiratory problems to children differs by 9 percentage points. These differences between smokers and nonsmokers are consistent with differences between the two groups in their support for the CIAA. Educating smokers about the dangers of SHS is important not only to increase their awareness of associated health problems but also to increase their support for the CIAA.

Exhibit 3-15. Percentage of Adult Nonsmokers and Adult Smokers Who Believe SHS Can Cause Heart Disease, Lung Cancer, and Respiratory Problems in Children, ATS Q3 2003–Q3 2005



This point is clearly illustrated in Exhibit 3-16, where the differences in opinions regarding the health effects of SHS between smokers who favor the CIAA and smokers who do not favor the CIAA are dramatic. Averaged over the study period, 76% of smokers who favor the CIAA agreed that SHS caused heart disease. On the other hand, only 47% of smokers who do not support the CIAA agreed that SHS causes heart disease. Similarly, smokers who favor the CIAA are more likely to believe that SHS causes lung cancer and respiratory diseases in children.

Exhibit 3-16. Percentage of Adult Smokers Who Believe SHS Can Cause Heart Disease, Lung Cancer, and Respiratory Problems in Children, by Support for the CIAA, ATS Q3 2003—Q3 2005



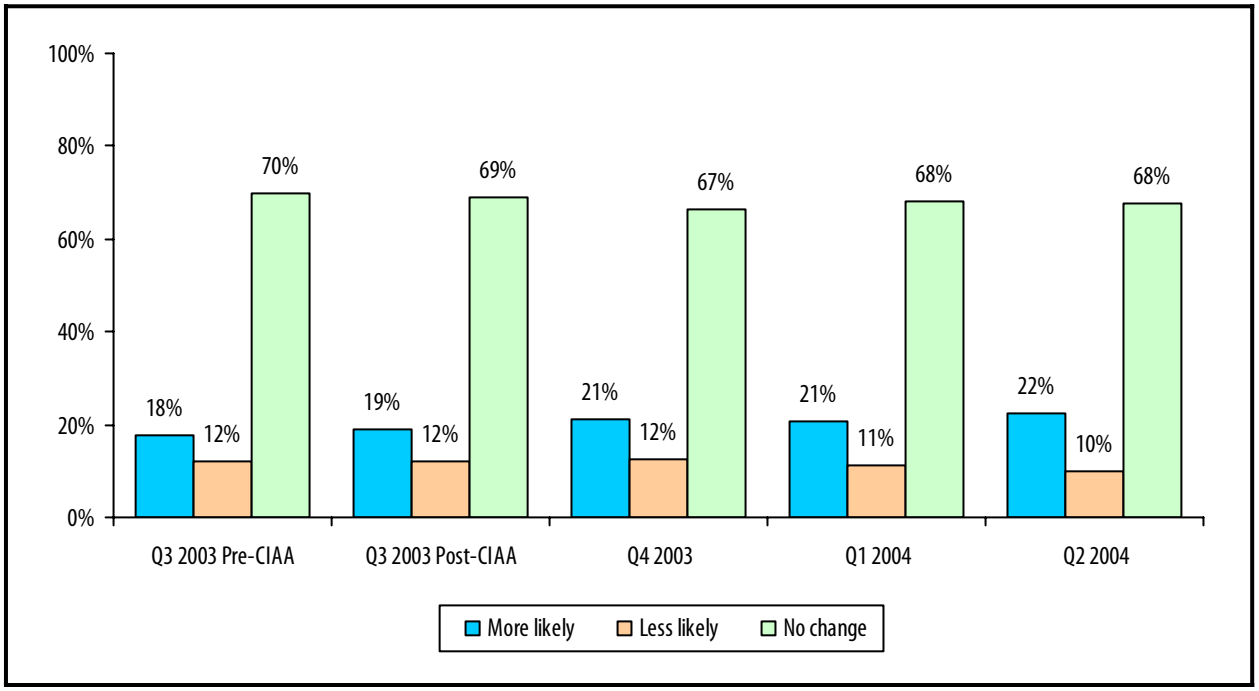
3.4 The Economic Impact of the CIAA on Restaurants and Bars

A key concern of opponents to smoking bans is the potential of such bans to adversely affect the financial health of businesses. At the time the CIAA was going into effect and just after it was implemented, New Yorkers who visited restaurants and bars indicated they would do so more often as a result of the law, suggesting that the law would actually have a positive impact on business health. Specifically, the percentage of New York adults who report being more likely to visit a bar as a result of the CIAA increased slightly from 17.9% before the law in Q3 2003 to 22.4% in Q2 2004 (Exhibit 3-17). A similar trend is seen with respect to restaurant patrons, with 35.3% of adults in Q2 2004 (up from 26% before

the law) reporting that they were more likely to eat at restaurants as a result of the law (Exhibit 3-18).

Despite these increases, a detailed examination of New York sales tax receipts for bars and restaurants revealed that self-reported intentions did not translate into actual behavior change. Specifically, sales tax receipts were collected quarterly from Q2 1999 to Q3 2004 from a sample of vendors who had filed a tax return for each quarter. Exhibit 3-19 shows that the CIAA had no apparent effect on sales tax receipts for bars or full service restaurants or on totals from all retailers in New York City or New York State.[3] Additional statistical analyses were conducted (see the 2005 Independent Evaluation Report, page 4-43, for more details), which confirm that the CIAA had no significant impact on bar and restaurant sales.

Exhibit 3-17. Self-Reported Likelihood of Adults to Patronize Bars in Response to CIAA, ATS Q3 2003–Q2 2004



[3]Tax totals for full service restaurants and all retailers were divided by 10 and 100, respectively, to facilitate comparison with bars.

Exhibit 3-18. Self-Reported Likelihood of Adults to Patronize Restaurants in Response to CIAA, ATS Q3 2003–Q2 2004

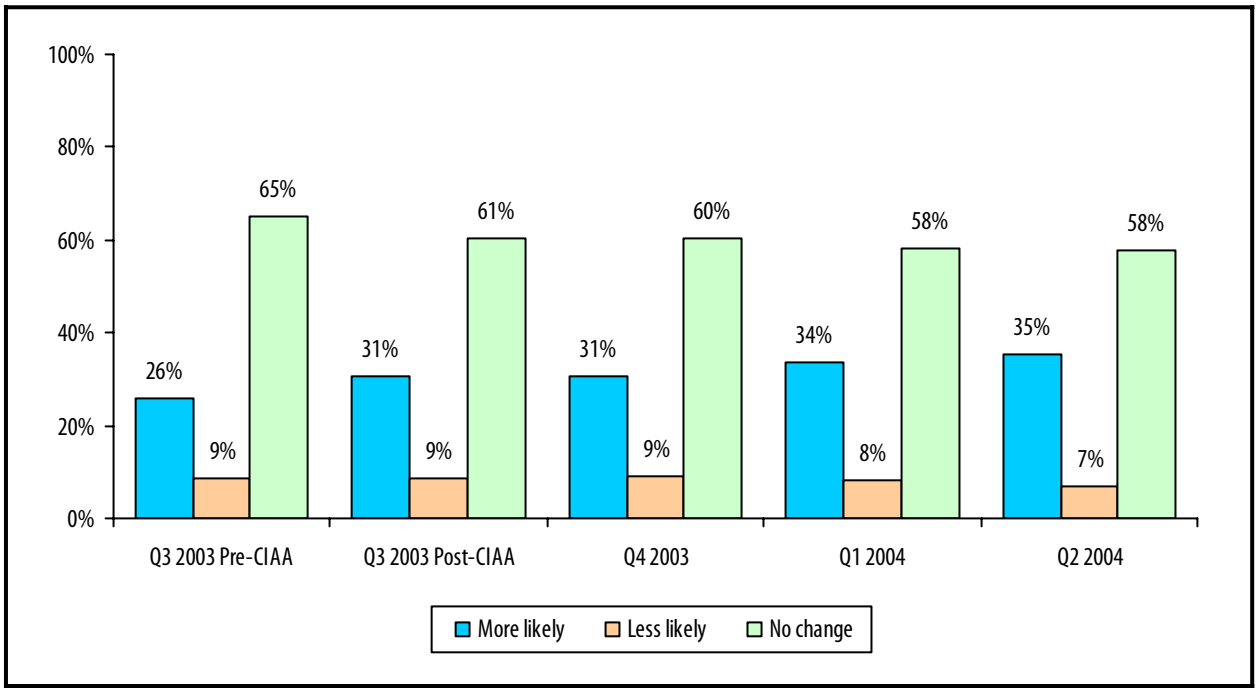
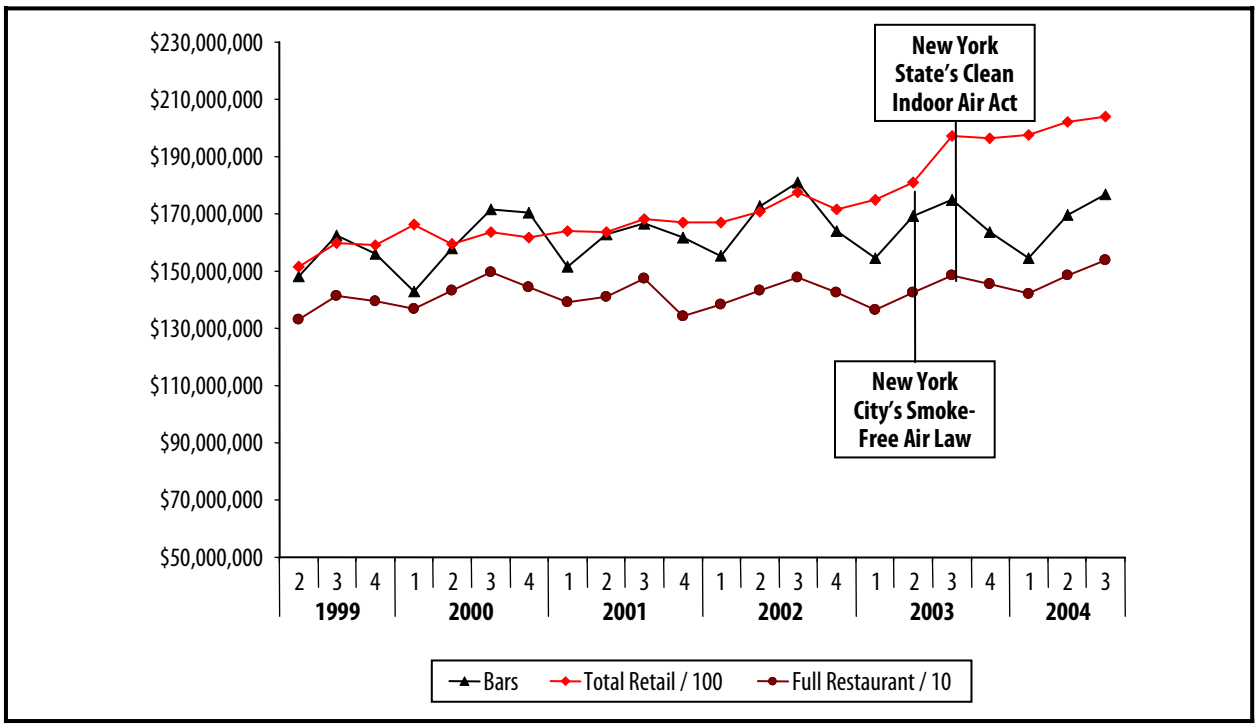


Exhibit 3-19. Trends in New York Sales Tax Receipts for Bars, Full Service Restaurants, and Total Retail Establishments, NYDTF Q2 1999–Q3 2004



Note: Tax totals for full service restaurants and all retailers were divided by 10 and 100, respectively, to facilitate comparison with bars.

4. Discussion

The data compiled in this report demonstrate that the statewide CIAA has been successful in reducing SHS exposure among nonsmokers in New York. In addition, the CIAA has dramatically and significantly reduced exposure to SHS in bars, restaurants, and bowling facilities in New York State. Furthermore, the CIAA has not had any significant negative financial effect on restaurants and bars in either the short or the long term.

Overall, exposure to SHS in bars and restaurants, although susceptible to seasonal patterns, has continually decreased since the CIAA was implemented in July 2003.

Overall, exposure to SHS in bars and restaurants, although susceptible to seasonal patterns, has continually decreased since the law was implemented in July 2003. Compliance with the law has been high, with the number of CIAA-related complaints and violations falling in spite of a continued large number of investigations. In addition to an overall decrease in self-reported exposure to SHS, we were able to document improved health among hospitality workers, seeing reductions especially in sensory symptoms, such as eye, nose, and throat irritation. The reductions in SHS exposure were also corroborated by decreases in mean saliva cotinine levels documented by both the employee health study and the ATS saliva cotinine study.

Perceptions regarding the CIAA and of the health risks associated with SHS have also changed since the law was implemented. A growing percentage of New Yorkers support the CIAA, with approximately 80% of adults currently favoring the policy, including between one-third and one-half of all smokers. Although a significant percentage of adults identified that SHS was associated with increased risks for lung cancer and heart disease, there has been no change in perceptions regarding other important diseases shown to be associated with exposure to SHS, such as respiratory illnesses in children. Furthermore, there are significant differences between nonsmokers and current smokers with regard to understanding the health risks associated with SHS. Given this, further emphasis should be placed on educating the general public about the risks associated with SHS. This education will help maintain support for the CIAA among nonsmokers and increase support among current smokers. As a result of the CIAA and its successful implementation, New Yorkers are protected from exposure to SHS in virtually all public places.

References

Albers, A.B., M. Siegel, D.M. Cheng, N.A. Rigotti, and L. Biener. 2004. "Effects of Restaurant and Bar Smoking Regulations on Exposure to Environmental Tobacco Smoke Among Massachusetts Adults." *American Journal of Public Health* 94(11):1959–1964.

Benowitz, N.L. 2003. "Cigarette Smoking and Cardiovascular Disease: Pathophysiology and Implications for Treatment." *Progress in Cardiovascular Diseases* 46(1):91–111.

California Environmental Protection Agency. September 1997. *Health Effects of Exposure to Environmental Tobacco Smoke—Final Report and Appendices*. California EPA, Office of Environmental Health Hazard Assessment.

California Environmental Protection Agency. June 2005. *Proposed Identification of Environmental Tobacco Smoke as a Toxic Air Contaminant.* California EPA, Office of Environmental Health Hazard Assessment.

Farkas, A.J., E.A. Gilpin, J.M. Distefan, and J.P. Pierce. 1999. "The Effects of Household and Workplace Smoking Restrictions on Quitting Behaviors." *Tobacco Control* 8(3):261–265.

Farrelly, M.C., W.N. Evans, and A.E. Sfekas. 1999. "The Impact of Workplace Smoking Bans: Results from a National Survey." *Tobacco Control* 8(3):272–277.

Farrelly, M.C., J.M. Nonnemaker, R. Chou, A. Hyland, K.K. Peterson, and U.E. Bauer. 2005. "Changes in Hospitality Workers' Exposure to Secondhand Smoke Following the Implementation of New York's Smoke-Free Law." *Tobacco Control* 14(4):236–241.

Fichtenberg, C.M., and S.A. Glantz. 2002. "Effect of Smoke-free Workplaces on Smoking Behaviour: Systematic Review." *British Medical Journal* 325(7357):188–194.

Howard, G., and M.J. Thun. 1999. "Why is Environmental Tobacco Smoke More Strongly Associated with Coronary Heart Disease than Expected? A Review of Potential Biases and Experimental Data." *Environmental Health Perspectives* 107(suppl 6):853–858.

Law, M.R., and N.J. Wald. 2003. "Environmental Tobacco Smoke and Ischemic Heart Disease." *Progress in Cardiovascular Diseases* 46(1):31–38.

Mandel, L.L., B.C. Alamar, and S.A. Glantz. 2005. "Smoke-Free Law Did Not Affect Revenue from Gaming in Delaware." *Tobacco Control* 14(1):10–12.

Otsuka, R., H. Watanabe, K. Hirata, K. Tokai, T. Muro, M. Yoshiyama, K. Takeuchi, and J. Yoshikawa. 2001. "Acute Effects of Passive Smoking on the Coronary Circulation in Healthy Young Adults." *Journal of the American Medical Association* 286(4):436–441.

Panagiotakos, D.B., C. Pitsavos, C. Chrysohoou, J. Skoumas, C. Masoura, P. Toutouzas, and C. Stefanadis. 2004. "Effect of Exposure to Secondhand Smoke on Markers of Inflammation: The ATTICA Study." *American Journal of Medicine* 116(3):145–150.

Pechacek, T.F., and S. Babb. 2004. "How Acute and Reversible are the Cardiovascular Risks of Secondhand Smoke?" *British Medical Journal* 328(7446):980–983.

RTI International (RTI). November 2004. *First Annual Independent Evaluation of New York's Tobacco Control Program*. Final Report prepared for the New York State Department of Health.

RTI International (RTI). August 2005. *Second Annual Independent Evaluation of New York's Tobacco Control Program*. Final Report prepared for the New York State Department of Health.

Sargent, R.P., R.M. Shepard, and S.A. Glantz. 2004. "Reduced Incidence of Admissions for Myocardial Infarction Associated with Public Smoking Ban: Before and After Study." *British Medical Journal* 328(7446):977–980.

Scollo, M., A. Lal, A. Hyland, and S. Glantz. 2003. "Review of the Quality of Studies on the Economic Effects of Smoke-Free Policies on the Hospitality Industry." *Tobacco Control* 12(1):13–20.

Skeer, M., D.M. Cheng, N.A. Rigotti, and M. Siegel. 2005. "Secondhand Smoke Exposure in the Workplace." *American Journal of Preventive Medicine* 28(4):331–337.

Tang, H., D.W. Cowling, J.C. Lloyd, T. Rogers, K.L. Koumjian, C.M. Stevens, and D.G. Bal. 2003. "Changes of Attitudes and Patronage Behaviors in Response to a Smoke-Free Bar Law." *American Journal of Public Health* 93(4):611–617.

Tang, H., D.W. Cowling, C.M. Stevens, and J.C. Lloyd. 2004. "Changes of Knowledge, Attitudes, Beliefs, and Preference of Bar Owner and Staff in Response to a Smoke-Free Bar Law." *Tobacco Control* 13(1):87–89.

U.S. Department of Health and Human Services (USDHHS). 1986. *The Health Consequences of Involuntary Smoking. A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services.

U.S. Department of Health and Human Services (USDHHS). 2001. *Risks Associated with Smoking Cigarettes with Low-Machine Measured Yields of Tar and Nicotine: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services.

Appendix A: Results of ATS Cotinine Regression Models

As discussed in Section 3.2, linking cotinine saliva sample results to the New York Adult Tobacco Survey (ATS) affords a number of opportunities for further analysis. Given this, an additional ordinary least squares regression model was estimated. This model examined the trend in cotinine concentration over time while controlling for changes in certain demographic characteristics, including age, income, education, race ethnicity, gender, and physical health status (Exhibit A–1).

Exhibit A-1. ATS Cotinine Concentration by Selected Sociodemographic Characteristics, ATS Q3 2003–Q2 2004

Variable	Coefficient
Time	–0.07***
Age	
Ages 18-24	REF
Ages 25-39	–0.485***
Ages 40-64	–0.541***
Ages 65+	–0.564***
Income	
Household incomes less than $30,000	REF
Household income between $30,000 & $59,999	–0.191***
Household income between $60,000 & $89,999	–0.273***
Household incomes greater than $90,000	–0.259***
Missing household income	–0.211**
Education	
Less than a high school degree	0.121
High school graduate	REF
Some college	–0.181**
College graduate	–0.012
Race/Ethnicity	
White	REF
Black	0.183**
Hispanic	–0.165*
Other race	–0.073
Gender	
Female	REF
Male	0.102**
Overall Health	
Excellent physical health	–0.177
Very good physical health	–0.06
Good physical health	0.069
Fair physical health	–0.253
Poor physical health	REF
Diagnostic Statistics	
Adjusted R2	.055
Observations	1,594

*p<.10; **p<.05; ***p<.01

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