

Business Policies Affecting Secondhand Smoke Exposure

Siobhan E. Colgan, MPH; Bron Skinner, PhD; Caroline Mage; Adam O. Goldstein, MD, MPH; Kathryn Kramer, PhD; Julea Steiner, MPH; Ann H. Staples, CHES

Abstract

Background: Despite recent legislative and voluntary policy changes, a significant number of workplaces, recreational venues, and public facilities do not offer the public full protection from secondhand smoke exposure. The current study assessed smoking policies, attitudes toward smoke-free policies, and support for policy change among business owners and managers of businesses open to the public in North Carolina.

Methods: Business owners and managers were interviewed over the phone. Businesses included all airports, arcades, malls, bowling alleys, and arenas (seating more than 500) in the state as well as a random sample of grocery and convenience stores.

Results: A 100% smoke-free policy was reported in 53% of businesses, ranging from 12% in bowling alleys to 97% in arenas. A large majority of business owners and managers understand the health risks of secondhand smoke exposure (82% - 89%) and support restrictions on smoking in their businesses (84% - 91%). Barriers to voluntary policy change included the lack of legal requirement (39%) and fear of the loss of business (53%).

Limitations: This study used self-report data from business owners and managers; the accuracy of the business smoking policy, customer and employee exposure time, and number of complaints may vary across respondents. It is also possible some participants were influenced by factors of social desirability of responses.

Conclusions: Continued progress in establishing 100% smoke-free indoor environments may depend on successful advocacy in instituting legislation mandating the elimination of secondhand smoke in all public places. Advocacy efforts should include education around addressing economic concerns of businesses.

Key Words: tobacco; policy; smoking; public places; employee

Scientific research conclusively shows that exposure to secondhand smoke causes cardiovascular disease, respiratory illness, and lung cancer.¹⁻⁴ The 2006 Surgeon General's Report on secondhand smoke exposure concluded that it causes short and long term risks, that no safe level of exposure to tobacco smoke exist, and that secondhand smoke exposure should be eliminated in all public places.⁵

Public health policy objectives related to eliminating secondhand smoke exposure include increasing to 100% the public and private workplaces that have policies prohibiting or restricting smoking, reducing the proportion of nonsmokers exposed to secondhand smoke, and establishing laws prohibiting smoking in public places including restaurants, schools, daycares, public transportation, and retail stores.⁶ The Centers

Siobhan E. Colgan, MPH, is a graduate student in the School of Education at the University of North Carolina at Chapel Hill. She can be reached at scolgan (at) email.unc.edu.

Bron Skinner, PhD, is retired faculty in the Department of Family Medicine at the University of North Carolina at Chapel Hill School of Medicine.

Caroline Mage is a graduate student in the School of Social Work at the University of North Carolina at Chapel Hill.

Adam O. Goldstein, MD, MPH, is a professor and the director of the Tobacco Prevention and Evaluation Program (TPEP) in the Department of Family Medicine at the University of North Carolina at Chapel Hill School of Medicine.

Kathryn Kramer, PhD, is an associate professor and the associate director of the Tobacco Prevention and Evaluation Program (TPEP) in the Department of Family Medicine at the University of North Carolina at Chapel Hill School of Medicine.

Julea Steiner, MPH, is a research associate in the Department of Family Medicine at the University of North Carolina at Chapel Hill School of Medicine.

Ann H. Staples, CHES, is the director of public education and communication at the Tobacco Prevention and Control Branch in the Division of Public Health of the North Carolina Department of Health and Human Services.

for Disease Control and Prevention (CDC) has provided national recommendations for establishing comprehensive tobacco policy, including state programs and legislation.⁵

Despite these priorities, workplace exposure to secondhand smoke is not regulated at the national level but instead by states, local communities, and voluntary policy change. In 1999, only 70% of indoor workplaces were covered by workplace policies on smoking.⁷ Actual exposure among employees is affected by both workers' compliance with policies and exposure through designated indoor smoking areas. Employees working at sites with designated smoking areas have 2.9 times the odds of being exposed to secondhand smoke and 1.7 times greater exposure time than smoke-free worksites; employees at worksites with no restrictions on smoking have even more exposure with 10.3 times the odds of being exposed to secondhand smoke at work and 6.3 times greater duration of exposure.⁸ Service and blue-collar workers, especially males, are less likely to report a smoke-free workplace (61.2% and 55.6%, respectively) than white-collar workers.⁹

In the absence of national legislation, some states have taken the lead in establishing smoke-free policies in public places. As of January 1, 2008, comprehensive state laws have been passed eliminating smoking in workplaces (18 states plus Washington, DC), restaurants (24 states plus Washington, DC), and bars (18 states plus Washington, DC); several additional states have enacted policies not yet in effect, and hundreds of local municipalities have enacted 100% smoke-free policies in some or all of these venues.¹⁰ Despite this progress, 12 states have preemptive state laws prohibiting local smoke-free regulations and preventing strong state legislation from being passed.¹⁰ Such laws continue to present considerable barriers to broad policy change at the state level.

As of 2006, North Carolina had a preemptive law preventing 100% smoke-free policies from being enacted. Currently a minority of North Carolina's population is covered by any mandated smoke-free workplace law.¹⁰ North Carolina and other states with economic and agricultural dependence on tobacco have historically remained behind the rest of the nation with respect to worker protection,⁷ and support for statewide smoke-free indoor air regulations has also been weaker in these states. For instance, a CDC report assessing policies and attitudes towards a ban on smoking in restaurants in 20 states found North Carolina to have the lowest level of support for policy change.¹¹

Advocates have worked with employees, business owners, and managers to promote voluntary policy changes and the need to overturn preemption. Advocacy efforts in North Carolina have shown some progress. Although North Carolina ranks 35th nationally in the proportion of employees with a smoke-free workplace, the proportion of employees working under voluntary smoke-free policies in North Carolina doubled between 1992 and 2002.⁹ North Carolina has also shown significant progress in establishing tobacco-free schools. Efforts of tobacco control coalitions, working in concert with local school districts, have resulted in over three-quarters of school districts voluntarily becoming smoke-free in the last 10 years. While successful voluntary policy changes clearly occur, both

through advocacy and spontaneous decisions, this strategy has drawbacks from a public policy perspective as it is time-intensive, inefficient, and may not ultimately convince many establishments to eliminate secondhand smoke exposure for employees or visitors.

Two public policy questions relating to secondhand smoke have received insufficient attention in the scientific literature: (1) what kinds of voluntary advocacy are supported by businesses? and (2) what is the willingness of owners and managers of businesses in states with preemptive clean indoor air laws to consider overturning preemption and passing more comprehensive smoke-free laws?

North Carolina provides an ideal environment in which to address these questions. It is a tobacco-producing state that currently mandates little protection against secondhand smoke exposure, has preemptive language in its state law that limits local communities' ability to pass a stronger state law, and has relied heavily on voluntary policy change in the absence of legislation. A statewide study was conducted in North Carolina of employer beliefs and opinions about tobacco policy and secondhand smoke exposure as they relate to effective strategies for policy change. The data from this study provide insight into employer attitudes toward smoke-free policies and their support for policy change at a range of venues in North Carolina.

Methods

Sample

The sample for this study was North Carolina businesses that serve a high volume of customers and which thereby have a large potential for public exposure to secondhand smoke. The venues included malls, grocery stores, convenience stores, arenas, arcades, bowling alleys, and airports.

Searches for these businesses were undertaken by identifying web-based versions of a variety of phone books providing listings throughout the state. All arcades, malls, arenas, bowling alleys, and airports that could be identified in North Carolina were included. Due to the large number of convenience stores and grocery stores, a random sample of 75 of each type was selected from statewide listings.

Questionnaire

Business owners and managers participated in a telephone survey assessing smoking policies, perceptions of indoor air quality, beliefs about secondhand smoke exposure and health risks, personal exposure at work, and prompts and barriers to the adoption of smoke-free policies. Survey questions required open-ended, scale, or categorized responses. Questions regarding characteristics of the business were predominantly open-ended (e.g., number of patrons served, percentage of customers who smoke). A 4-point scale was used to assess air quality and compliance with policy, and health effects of smoking were assessed using "strongly agree, agree, disagree, or strongly disagree" responses. Forced choice responses categories were used to assess the businesses' smoking policy (100% smoke-free, no restrictions on smoking, or some limitations). Limitations included having separate smoking areas (whether or not they

were separately ventilated or enclosed) and having designated smoke-free days or times (seen only in bowling alleys). Prompts and barriers to adopting a 100% smoke-free policy were assessed through both open-ended (e.g. “what one reason would prompt your businesses to adopt a 100% smoke-free policy?”) and yes/no categorized responses (e.g. “would [patron petitions, complaints] influence adoption of a 100% smoke-free policy?”).

Interviews

Interviews took place via telephone during May and June, 2006. Only owners, managers, and assistant managers of the businesses were considered eligible to participate. Research assistants contacted businesses by phone a minimum of 10 times in attempts to reach an owner or manager. After contact was made, the study was briefly explained and consent to participate requested. The interviews lasted approximately 3-10 minutes depending upon the smoking policy of the business (the interview was shorter if the business was 100% smoke-free).

Analysis

Data was entered and checked by 2 researchers. All statistical analyses were conducted by authors Colgan and Goldstein using SPSS 12.0 (SPSS Inc., Chicago, IL). Analyses included frequency tabulation for all variables, bivariate and chi-square analysis for categorical variables, and bivariate logistic regression analysis for select outcome variables. The project received approval by the institutional review board at the University of North Carolina at Chapel Hill School of Medicine.

Results

Sample Characteristics

Sampling strategies yielded 455 possible business contacts. From this initial pool, 73 were eliminated because they were duplicate listings or were out of business. In another 51 businesses, contact was never made with the owner or manager despite a minimum of 10 attempts. Of the 331 businesses with whom contact with an owner or manager was made, 237 agreed to participate (71.6% response). Of those interviewed, 13 businesses were excluded when an initial screening question determined the business was predominantly outdoors (e.g. an outdoor mini-golf course with a game room might have been listed under ‘arcades’). This left a final sample of 224 businesses included in the analyses. (See Table 1.)

The final sample included 57 bowling alleys (25.4%), 35 grocery stores (15.6%), 35 malls (15.6%), 33 convenience stores (14.7%), 31 arenas (13.8%), 21 arcades (9.4%), and 12 airports (5.4%). Of the 224 respondents, 77.6% were managers, 15.7% owners, and 6.7% had other position titles. Respondents had a mean age of 44.6 years, and the majority were male (59.7%). Across all venues, 23.5% of respondents were smokers, although among respondents in convenience stores 45.5% were smokers. (See Table 2.) Across all venues, the average number of customers per week was 22,390, ranging from 15 (an arcade) to 500,000 (an airport). The businesses were in operation for an average of 25.8 years. Respondents were also asked to estimate the percent of their customers who are under the age of 18. The mean was 26.5%, ranging from 10.6% in airports to 54.7% in arcades.

**Table 1.
Response Rate**

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Initial listing of businesses	14	84	38	114	75	75	55	455
Unable to contact	–	17	3	10	5	9	7	51
Manager duplicate	–	6	2	21	–	–	–	29
Out of business	–	20	–	8	5	8	3	44
Total (unable to contact, duplicates, and out of business)	0	43	5	39	10	17	10	124
Consent to participate requested	14	41	33	75	65	58	45	331
Refused to participate	2	11	1	18	31	23	8	94
Agreed to participate	12	30	32	57	34	35	37	237
Outdoor business	0	9	1	0	1	0	2	13
Final sample	12	21	31	57	33	35	35	224

Table 2.
Description of Venues and Respondents

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Number (% of sample)	12 (5.4%)	21 (9.4%)	31 (13.8%)	57 (25.4%)	33 (14.7%)	35 (15.6%)	35 (15.6%)	224 (100%)
Customers Per Week								
Mean	61,090	3,856	9,594	1,484	2,280	9,246	110,254	22,390
Median	2,500	700	3,750	1,000	1,450	8,000	85,000	2,000
Range	50- 500,000	15- 55,000	500- 60,000	63- 6,000	50- 7,000	450- 20,000	450- 384,615	15- 500,000
Customers under 18	10.6%	54.7%	16.8%	27.2%	22.2%	22.8%	27.3%	26.5%
Years in business (mean)	44.0	10.3	36.5	24.8	17.8	23.7	27.4	25.8
Smoking Status of Respondents								
Nonsmokers	75%	76.2%	93.5%	73.2%	54.5%	76.5%	88.2%	76.5%
Smokers	25%	23.8%	6.5%	27.8%	45.5%	23.5%	11.8%	23.5%

Smoking Policies

A summary of indoor smoking policies for each type of venue is presented in Table 3. A 100% smoke-free policy was reported in just over half of the businesses (52.9%), with the highest rates in arenas (96.7%) and arcades (85.7%) and the lowest in bowling alleys (12.3%). Bowling alleys and convenience stores were significantly more likely to report no limitations on smoking compared to other establishments ($\chi^2 = 20.9$, $p < 0.001$). Alternatively, malls, arenas, and arcades were significantly more likely to report 100% smoke-free policies than other venues ($\chi^2 = 49.4$, $p < 0.001$). In logistic regression analysis, having a 100% smoke-free policy was significantly associated with the business having a higher percentage of customers under the age of 18 (OR = 1.02, $p = 0.02$). For each percentage point increase in clientele under the age of 18, the odds of having a smoke-free policy increases by 0.02, or 2% (e.g., as the percent of customers under 18 increases from 20% to 30%, the odds of the business having a 100% smoke-free policy increases by approximately 20%).

Perceptions of Indoor Air Quality

When asked about their perceptions of the quality of the indoor air at their facility, only 44.5% of respondents rated the indoor air quality at their establishment as “excellent.” The remainder of respondents (those rating the air quality as good, fair, or poor) were asked to report the main source of poor air quality. The single largest source of poor air quality reported was tobacco, mentioned by 39.1% of respondents; other sources of poor air quality include poor ventilation, dust, and other air pollutants.

Venues with a 100% smoke-free policy were significantly more likely to rate their indoor air quality as excellent ($\chi^2 = 12.95$, $p < 0.001$). Likewise, venues that allowed any indoor smoking were significantly more likely to name tobacco as the main sources of poor indoor air quality ($\chi^2 = 32.09$, $p < 0.001$). Bowling alleys were significantly more likely than other venues to name tobacco as the main source of poor indoor air quality ($\chi^2 = 17.3$, $p < 0.001$).

Table 3.
Smoking Policies

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Smoking Policy	n=12	n=21	n=30^a	n=57	n=33	n=35	n=35	n=223
100% smoke-free	41.7%	85.7% ^b	96.7% ^b	12.3%	51.5%	51.4%	68.6% ^b	118 (52.9)
Some limits	58.3%	0%	3.3%	56.1%	15.2%	31.4%	25.7%	65 (29.1%)
No limits	0%	14.3%	0%	31.6% ^c	33.3% ^c	17.1%	5.7%	40 (17.9%)

a One respondent answered “don’t know” to whether there was a smoking policy, although the venue was *not* smoke-free.

b $\chi^2 = 49.4$, $p < 0.001$; Malls, arenas, and arcades compared to all others.

c $\chi^2 = 20.9$, $p < 0.001$; Bowling alleys and convenience stores compared to all others.

Employee Exposure and Complaints

For the sub-sample of businesses that allowed smoking (n = 105), respondents were asked about their personal exposure to tobacco smoke during a typical day at work, including exposure from customers and coworkers. Across all venues, respondents estimated that 40.1% of their customers smoke. (See Table 4.) For employees working in these businesses, the majority reported being around 6 or more smokers per day (45.6%) and being exposed to secondhand smoke for one hour or more per day (63.2%). Among venues that allowed smoking, bowling alleys and arcades reported the highest percentages of customers smoking, the highest number of people smoking around employees per day, and the longest durations of exposure.

Respondents reported that customer complaints by nonsmokers occurred at least once a month 20.2% of the time. Bowling alleys were significantly more likely than other venues to report customer complaints once a month or more ($\chi^2 = 17.6, p < 0.001$).

Beliefs about Secondhand Smoke and Restrictions

Across all venues, a high level of general agreement was found with the statements that secondhand smoke may cause

lung cancer (89.6% agreed), and that secondhand smoke may cause heart disease (82.0% agreed). Respondents also addressed beliefs about whether exposure to secondhand smoke should be restricted in public places. Overall 91.2% agreed that exposure to secondhand smoke should be restricted, and 83.8% believed that their customers would support restrictions on secondhand smoke exposure.

Factors Influencing Policy Change

Owners or managers in businesses that were not 100% smoke-free (n = 105) were also asked about factors that would influence adoption of a 100% smoke-free policy, as well as barriers to creating such a policy. When asked in an open-ended question for one reason that would prompt the business to adopt a smoke-free policy, the single greatest response was a legal regulation or requirement (39.1%). An additional 20.7% of respondents responded to this question by saying that they would not change. Other reasons included customer requests or complaints (9.8%), assurance that the business would not lose customers (8.7%), and the improved health of everyone (6.5%). Respondents were also asked which specific strategies

Table 4.
Venues Allowing Smoking: Percent, Number of Customers who Smoke, Exposure Time, and Frequency of Complaints^a

	Airports	Arcades	Arenas	Bowling Alleys	Convenience Stores	Grocery Stores	Malls	TOTAL
Frequency of complaints	n=7	n=3	n=2	n=50	n=16	n=17	n=11	n=106
Almost never	85.6%	100%	100%	50%	87.5%	82.4%	90.9%	74 (69.8%)
Once a month or more	14.3%	0%	0%	50% ^b	12.5%	17.6%	9.1%	32 (30.2%)
Percent of customers who smoke (mean)	15.2%	50.7%	^c	45.9%	38.7%	37.0%	19.7%	40.1%
Smokers per day	n=7	n=3	n=2	n=49^d	n=15^d	n=16^d	n=11	n=103^d
None	85.7%	0%	50.0%	10.2%	6.7%	12.5%	63.6%	22 (21.4%)
1-5	14.3%	33.3%	50.0%	28.6%	46.7%	37.5%	36.4%	34 (33.0%)
More than 5	0%	66.7%	0%	61.2%	46.7%	50.0%	0%	47 (45.6%)
Exposure time per day	n=7	n=3	n=2	n=50	n=16	n=17	n=11	n=106
None	42.9%	0%	50.0%	10.0%	0%	5.9%	54.5%	16 (15.1%)
1-59 minutes	42.9%	33.3%	0%	2.0%	37.5%	52.9%	27.3%	23 (21.7%)
1 hour or more	14.3%	66.7%	50.0%	88.0%	62.5%	41.2%	18.2%	67 (63.2%)

a This table excludes businesses that were 100% smoke-free.

b $\chi^2 = 17.6, p < 0.001$; Bowling alleys compared to other venues.

c The respondents in the 2 arenas that allowed smoking answered "don't know" to this question.

d Differences in sample size due to 3 respondents answering "don't know" to this question.

would influence a change to a smoke-free policy. Agreement was highest for “petition from patrons” (20.5%), “positive recognition in the community” (20.1%), and “patron complaints” (19.2%).

The majority of owners and managers cited economic reasons as the main barrier to becoming smoke-free. Over half of respondents (53%) were concerned about losing business from customers who smoke. Less frequently mentioned barriers included identification with North Carolina’s tobacco heritage (7%) and the need to allow business tenants (7%) or corporate leadership (7%) to decide smoking policies.

Discussion

It is clear that there is a shifting landscape with respect to exposure to secondhand smoke in public places across the US. Issues related to secondhand smoke exposure are being addressed through changes in public opinion and policy, which in turn are increasingly informed and supported by research on the health effects of environmental tobacco exposure.¹¹ The World Health Organization (WHO) has developed the world’s first public health treaty, the Framework Convention on Tobacco Control (FCTC), which calls for international adoption of comprehensive tobacco control legislation.¹² National policies restricting public exposure have increasingly been implemented across the globe, and the pace of the adoption of smoke-free policies has also increased substantially in the US.

Given that the science is compelling and that an increasing number of states in the US are adopting comprehensive smoke-free policies, questions arise as to whether the continued promotion of voluntary policy change should occur in states that have not yet adopted comprehensive policies. States with existing preemptive smoke-free indoor air laws, such as North Carolina, face specific challenges and barriers in repealing such laws and in passing new state laws.

Clearly policy successes have occurred through voluntary adoption of smoke-free policies. Arenas in North Carolina, for example, are virtually all smoke-free (96.7%), as are most arcades (85.7%). However, establishments like airports, grocery stores, convenience stores, and bowling alleys still pose significant risks and high levels of involuntary exposure for both patrons and employees. For example, only slightly more than 40% of the airports in North Carolina report being completely smoke-free, yet they experience extremely high levels of public traffic. Although 100% smoke-free policies were associated with larger numbers of clientele under age 18, many venues with high numbers of adolescent customers lack protection. Grocery stores, convenience stores, and bowling alleys are venues where youth frequently visit and may be employed, yet show the least amount of progress in restricting exposure.

Our data show that owners and managers in businesses that allow smoking continue to raise economic concerns that they will experience decreased revenues if they eliminate smoking. While such arguments have been completely discredited in the scientific literature,^{13,14} the fact that many owners still cite such fears demonstrates the limits of science, insufficient communication of those data, or both. It may be that voluntary

changes are less likely to be implemented in these types of venues than would a statewide call to action. Statewide legislation appears potentially more acceptable to these establishments since such legislation would affect all business, reducing concerns about a shifting customer base due to smoking policy. Education aimed at addressing business owners’ fears about potential loss of business is another avenue for advocacy and intervention.

This report also suggests a need to focus workplace smoking cessation resources on disparate rates of tobacco use among certain blue-collar workers. Our data show much higher rates of smoking (45% smokers) among owners or managers in convenience stores where rates of smoke-free policies were lowest, while respondents from arenas and malls with high rates of smoke-free policies reported much lower rates of smoking (6.5% and 11.8%, respectively). Smoke-free workplace policies have been shown to reduce the prevalence of smoking among employees.¹⁵

Because knowledge about lung cancer and heart disease risks associated with secondhand smoke exposure is very high among employees, public health advocates should not dedicate significant energy on educational campaigns alone. Knowledge of health effects is not sufficient to motivate many remaining establishments go smoke-free. Ironically, even the belief among most businesses that the majority of their customers would support restrictions on smoking at their businesses and personal belief that exposure to tobacco should be restricted does not appear to translate into smoke-free policy adoption.

Although the presence of the tobacco industry in states such as North Carolina may have some influence in policy change, the data in the current study show that tobacco heritage and production are only marginally influencing businesses’ opinions and beliefs about policy change. North Carolina’s historic association with tobacco may not be a significant barrier to policy change today from the perspective of local businesses.

Limitations

Data in the current study may be limited by the subjective nature of the survey. The accuracy of respondents’ knowledge on topics such as the number of customers who smoke in their establishment, daily exposure time, and percent of customers under age 18 likely varies across respondents and should be considered owners’ and managers’ “best estimates.” Also, recruitment using online telephone listings may have excluded some smaller or rural businesses without a business listing in the online telephone book. In addition, some survey responses may be biased due to declining social acceptability of smoking and increased knowledge of health risks. The Surgeon General’s report on the health risks of secondhand smoke exposure was released after the collection of the current data (June, 2006).⁵ It is possible that knowledge about this report would have positively influenced endorsement of smoke-free policies in local businesses or increased respondents’ perceptions of health as a more salient factor for policy change. These concerns are partly addressed by the findings that knowledge of health risks associated with secondhand smoke within our sample was already high, and

the economic concerns identified by respondents are not directly related to increased knowledge of the public health risks of secondhand smoke exposure.

Although the current study did not include restaurants and bars, it provides new knowledge about venues less frequently studied. It included venues with large numbers of people congregating, high proportions of youth clientele, and potential for wide public exposure to secondhand smoke. These are also venues toward which efforts are currently being directed to encourage voluntary policy change in North Carolina. The results therefore have considerable implications with respect to future policy and program changes, including increasing state advocacy, lobbying, coalition building, education, and outreach. For statewide policy considerations, large business groups such as those represented in this study are important segments of the community to examine in order to understand the most fruitful ways in which to direct energies for the betterment of the overall public health.

Conclusions

This study suggests that broader approaches may be needed to enact policy changes, and it identifies new potential strategies

for advocacy. Business owners and managers suggested that a statewide law or other legal requirement would be the most critical factor for them to make their businesses smoke-free. In addition, a statewide law would provide some measure of economic security for these businesses; fears about losing the portion of the customer base who smoke are alleviated when all businesses are subject to the same regulations. Educational advocacy efforts may also focus on dispelling the perceptions that negative economic effects are associated with adoption of smoke-free policies. Avenues for consumer advocacy include positive support of smoke-free policies and businesses as well as petitions and complaints against secondhand smoke exposure. Overall these results provide evidence for increased mobilization of patrons and communities, targeted education for businesses, and a renewed focus on broad legislative change. As more states pass comprehensive smoke-free laws, states like North Carolina without such laws will become a minority. North Carolina appears ready to implement statewide legislation to assure a higher standard of protection from the health hazards of secondhand tobacco smoke for youth and adults, employees and patrons. **NCMJ**

REFERENCES

- 1 California Environmental Protection Agency. *Health Effects of Exposure to Environmental Tobacco Smoke: Final Report*. Sacramento, CA: Environmental Protection Agency; 2005.
- 2 Glantz SA, Parmley WW. Passive smoking and heart disease: mechanisms and risk. *JAMA*. 1995;273(13):1047-1053.
- 3 Ségala C, Poizeau D, Neukirch F, et al. Air pollution, passive smoking, and respiratory symptoms in adults. *Arch Environ Health*. 2004;59(12):669-676.
- 4 Feinson JA, Chidekel AS. Adult smoking and environmental tobacco smoke: a persistent health threat to children. *Del Med J*. 2006;78(6):213-218.
- 5 Office of the Surgeon General. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Washington, DC: Office of Public Health Service and Science; 2006.
- 6 US Department of Health and Human Services. *Healthy People 2010: The Cornerstone for Prevention*. Healthy People 2010 website. <http://www.healthypeople.gov>. Accessed January 30, 2007.
- 7 Shopland DR, Gerlach KK, Burns DM, Hartman AM, Gibson JT. State-specific trends in smoke-free workplace policy coverage: the current population survey tobacco use supplement, 1993-1999. *J Occup Environ Med*. 2001;43(8):680-686.
- 8 Skeer M, Cheng DM, Rigotti NA, Siegel M. Secondhand smoke exposure in the workplace. *Am J Prev Med*. 2005;28(4):331-337.
- 9 Plescia M, Malek SH, Shopland DR, Anderson CM, Burns DM. Protecting workers from secondhand smoke in North Carolina. *NC Med J*. 2005;66(3):186-189.
- 10 States with preemption of smoke free air laws. Americans for Nonsmokers' Rights website. <http://www.no-smoke.org/pdf/preemptionmap.pdf>. Accessed January 2, 2008.
- 11 Centers for Disease Control and Prevention. State-specific prevalence of current cigarette smoking among adults, and policies and attitudes about secondhand smoke - United States, 2000. *MMWR Morb Mortal Wkly Rep*. 2001;50(49):1101-1106.
- 12 Framework convention on tobacco control. World Health Organization website. <http://www.fctc.org/treaty/index.php>. Accessed April 1, 2007.
- 13 Goldstein AO, Sobel RA. Environmental tobacco smoke regulations have not hurt restaurant sales in North Carolina. *NC Med J*. 1998;59(5):284-287.
- 14 RTI International. *First annual independent evaluation of New York's Tobacco Control Program: Final Report*. Research Triangle Park, NC: RTI International; 2004.
- 15 Fichtenberg CM, Glantz SA. Effect of smoke-free workplaces on smoking behaviour: systematic review. *BMJ*. 2002;325(7357):188-194.