

# Town-Level Characteristics and Smoking Policy Adoption in Massachusetts: Are Local Restaurant Smoking Regulations Fostering Disparities in Health Protection?

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*Healthy People 2010* calls for the protection of every citizen in the United States from the hazards<sup>1–4</sup> of environmental tobacco smoke exposure in restaurants.<sup>5</sup> Because of the tobacco industry's strong political influence at the state level,<sup>6–9</sup> only 4 states have enacted smoke-free restaurant legislation,<sup>10</sup> making it unlikely that this objective will be reached via state action. However, more than 950 cities and towns nationwide have adopted restaurant smoking ordinances on a local level,<sup>10</sup> and in Massachusetts alone, it has been reported that more than 100 of the 351 communities have adopted stringent local restaurant smoking restrictions.<sup>11</sup> It is therefore the extent of the adoption of restaurant smoking policies at the local level that will most likely determine how effective we will be in achieving the goal of protecting the public from environmental tobacco smoke in restaurants.

*Healthy People 2010* also calls for the elimination of health disparities among various segments of the population, including differences that occur by race/ethnicity, education, income, and geographic location.<sup>12</sup> There is already a well-documented disparity in environmental tobacco smoke exposure across racial/ethnic and socioeconomic groups;<sup>5</sup> if protection by smoke-free policies varies among these same groups, it might be the case that these policies are actually fostering disparities in health protection. It is therefore critical that we understand the characteristics of towns that do or do not adopt smoke-free restaurant policies to ensure that we are not aiming to achieve one health objective at the expense of another.

Unfortunately, at present we have very little understanding of the town-level characteristics (e.g., socioeconomic, demographic, and political variables) of communities that adopt smoke-free restaurant regulations. To the best of our knowledge, only 2 studies

**Objectives.** We identified and quantified differences in sociodemographic characteristics of communities relative to the strength of local restaurant smoking regulations in Massachusetts.

**Methods.** We examined the relationship between the strength of the 351 local restaurant smoking regulations in Massachusetts and a number of town-level characteristics, using a multinomial logistic regression model.

**Results.** Characteristics important to the adoption of stronger restaurant smoking regulations included higher education and per capita income, geographic region, voter support for a state cigarette tax initiative, board of health funding to promote clean indoor air policymaking, and the presence of a bordering town with a strong regulation.

**Conclusions.** The current pattern of smoke-free restaurant policy enactment fosters socioeconomic and geographic disparities in health protection, undermining an important national health goal. (*Am J Public Health.* 2004;94:286–292)

have examined the relationship between town-level characteristics and the adoption of local tobacco control policies,<sup>13,14</sup> and only 1 of these<sup>13</sup> specifically examined the adoption of restaurant smoking regulations.

Bartosch and Pope<sup>13</sup> examined a number of town-level characteristics of Massachusetts towns in relation to the percentages of Massachusetts towns with highly restrictive, moderately restrictive, and no local restaurant smoking restrictions as of March 1998. They did not, however, model the likelihood of ordinance adoption by varying town characteristics, and they examined only the bivariate relationships between town characteristics and ordinance adoption. In addition, the moderately restrictive restaurant smoking ordinances included those that merely created designated smoking areas, which do not protect patrons from environmental tobacco smoke exposure.<sup>15,16</sup>

In this article, we examine the relationship between town-level characteristics and the adoption and strength of local restaurant smoking regulations in Massachusetts. We expand upon previous work by (1) developing a model to estimate the likelihood of a town's having a smoke-free restaurant ordi-

nance on the basis of a variety of sociodemographic town-level variables, (2) creating a multivariate model to examine the simultaneous effects of town-level variables on ordinance adoption, (3) including in our analysis ordinances in effect through June 2002, many of which have been strengthened since 1998, (4) using 2000 Census data to identify town-level socioeconomic status, and (5) modeling the likelihood of 2 specific levels of local ordinances—elimination of smoking in restaurants entirely and restriction of smoking to separately ventilated areas—both of which, in theory, protect patrons from environmental tobacco smoke exposure.

Identifying town-level characteristics associated with the successful adoption of effective smoke-free restaurant policies will advance the field of public health by (1) assisting in the identification of potential disparities in health protection—which are created by the current pattern of smoke-free restaurant ordinance adoption—that may undermine the nation's overall public health goals, (2) enabling public health practitioners to develop strategies for targeting particular communities in the effort to protect the public from environmental to-

bacco smoke exposure in restaurants, and (3) helping to identify potential confounding variables that may need to be considered in research that assesses the impact of smoke-free restaurant regulations.

## METHODS

### Data Sources

*Local restaurant smoking regulations.* The Massachusetts Tobacco Control Program (MTCP), overseen by the state Department of Public Health, maintains a database of restaurant smoking regulations in each town. We drew upon these data to create our own database by obtaining the local restaurant smoking regulation for each of the 351 cities and towns in Massachusetts. We cross-referenced the regulation information obtained from the MTCP database with 3 other databases that track local restaurant smoking ordinances in Massachusetts: those maintained by the Massachusetts Municipal Association,<sup>17</sup> the American Nonsmokers' Rights Foundation,<sup>10</sup> and Bartosch and Pope.<sup>13,14,18</sup> If any discrepancy existed, we resolved it by obtaining a hard copy of the current regulation.

We revised our database to incorporate any further corrections received by local tobacco control program personnel and local board of health contact persons in the state. We also developed a surveillance system to continuously track new and amended regulations. For any new regulation identified, a hard copy was obtained. We continue to update our database on a regular basis. Our article reflects the status of regulations as of June 15, 2002.

*Town-level characteristics.* We used 3 sources of data to obtain town-level variables: (1) the 2000 US Census<sup>19</sup> (for socioeconomic and demographic factors), (2) state Department of Public Health databases (for geographic region and for the presence or absence of MTCP funding of the local board of health), and (3) our own local restaurant smoking regulation database (for the presence or absence of a bordering town with a strong regulation).

### Measures

*Strength of local restaurant smoking regulations.* For each regulation, we recorded the

major provisions deemed relevant to the protection of restaurant customers from environmental tobacco smoke. These included (1) whether smoking was allowed, restricted to designated areas, restricted to enclosed and separately ventilated areas, or prohibited in restaurant dining and bar areas; and (2) whether variances (exceptions or exemptions to the regulations) were permitted. We then classified each regulation into 1 of 3 categories on the basis of the degree of protection it afforded from environmental tobacco smoke exposure: (1) strong regulation—no smoking allowed in restaurants and no variances allowed; (2) medium regulation—smoking restricted to enclosed, separately ventilated areas or to adult-only restaurants, or smoking not permitted in restaurants but variances allowed; and (3) weak regulation—smoking restricted to designated areas or not restricted at all. In assessing the degree of smoking restriction in restaurants, we considered bar areas of restaurants; restrictions on smoking in free-standing bars were not considered, because they are defined as separate establishments by the regulations.

*Town-level characteristics.* We examined the relationship between the strength of a local restaurant smoking regulation and the following town-level variables: (1) percentage of the town's adult population (aged 25 years and older) with an associate's degree or higher, (2) per capita income, (3) median household income, (4) percentage of town families living below the poverty line, (5) percentage of town households without a telephone, (6) percentage of non-Hispanic Whites in the town, (7) percentage of foreign-born residents in the town, (8) town population, (9) proportion of youths (aged younger than 18 years) in the town, (10) region of the state, (11) percentage of the town's voters who voted yes to Question 1 (thereby agreeing with the 1992 ballot initiative that created the MTCP), (12) board of health funding by the MTCP to promote clean indoor air policymaking, and (13) presence of a bordering town with a strong restaurant smoking regulation.

*Disparities in health protection.* An absence of disparities in regulation coverage could occur under 3 circumstances: (1) if no towns have regulations, (2) if all towns have the

same regulation, or (3) if towns' adoption of regulations were random. Before 1994, disparities in protection were minimal, because no town had strong or medium restaurant smoking regulations. Because some towns have since adopted strong or medium regulations, we examined the question of whether some population groups are now better protected than others—that is, whether disparities have been created by the current pattern of regulation adoption.

It should be noted, however, that in practice, protection from environmental tobacco smoke exposure may or may not be provided by ordinance adoption. For example, if all restaurants were already voluntarily smoke-free, an ordinance would not increase protection, because environmental tobacco smoke exposure would not pose a threat. Likewise, if an ordinance were enacted but not enforced, no protection would be added, because no fewer people would be exposed. Therefore, this measure reflects the theoretical level of protection from environmental tobacco smoke exposure provided by regulations.

### Data Analyses

*Bivariate analyses.* We first assessed the significance of differences in the distribution of strong, medium, and weak restaurant smoking regulations among groups of towns by using  $\chi^2$  tests for categorical independent variables and *t* tests or analysis of variance for continuous variables. We examined the distribution of each independent variable and the monotonicity of the relationship between each independent variable and the strength of local regulations. On the basis of these 2 considerations, we decided whether to model the independent variables as continuous or categorical variables. We found that only 1 variable—percentage of a town's voters who voted yes to Question 1—had a clear, linear relationship with regulation strength. We therefore treated voting yes on Question 1 as a continuous variable and all other variables as categorical.

We then conducted a series of multinomial logistic regression analyses<sup>20</sup> on each of the independent variables separately to assess the likelihood of adoption of a strong or medium (compared with a weak) regulation.

A multinomial logistic regression model was used because such a model can best assess the relationship between independent variables and a categorical dependent variable that is nominally scaled.<sup>20</sup>

Strength of regulation was modeled as a nominal variable rather than as an ordinal response to avoid assumptions that the effect of explanatory variables is constant across all outcomes. For example, we decided not to use a cumulative logit model (often used for categorical dependent variables that are ordinally scaled),<sup>20</sup> both because we were not hypothesizing the existence of a monotonic relationship between regulation strength and town-level characteristics and because the assumption of a linear relationship between the cumulative logits was not met for several of our town-level variables. Essentially, our multinomial logistic regression models estimated the likelihood—in terms of a relative risk ratio (RRR)—of a town's having a strong versus a weak regulation and a medium versus a weak regulation separately for each independent variable.

**Multivariate analyses.** We developed a multivariate multinomial logistic regression model to assess the simultaneous effects of town-level characteristics on the likelihood of adoption of a strong or medium (vs a weak) restaurant smoking regulation. First, we entered all variables found to be significant in the bivariate analyses (with a likelihood ratio test at a significance level of  $P=.10$ ) into 1 model.

Second, to assess which variables remained important even in the presence of the other variables, we omitted each variable from the model, 1 at a time, and assessed the significance of that variable with a likelihood ratio test.<sup>20</sup> Each variable that was found not to be significant was dropped from the model, and the effect of the remaining variables was then reassessed.

Finally, we added each of the variables not found to be important in the bivariate analyses back into the model, 1 at a time, to assess whether that variable was important in a model with other variables. A significance level of  $P=.10$  was used to decide whether to include or drop a variable. This procedure resulted in our final model.

We noted that 3 of the independent variables were highly correlated: Question 1 vote, education, and per capita income. In the final model, only Question 1 vote was retained, so multicollinearity was not a problem.

In the logistic regression analyses, 95% confidence intervals (CIs) for RRRs were calculated with standard errors estimated by the Wald test.<sup>20</sup> For the analysis of the region variable, which had 5 categories, we conducted a series of 10 pairwise comparisons, using each region as the reference group. Because of the large number of comparisons, we used a more stringent significance level ( $\alpha=.01$ ) in assessing the importance of pairwise effects<sup>21</sup>; therefore, we present 95% confidence intervals. All analyses were conducted with SAS Version 8 (SAS Institute Inc, Cary, NC).

## RESULTS

### Results of Bivariate Models

Local smoke-free restaurant regulations were significantly more likely to be adopted by towns with a higher proportion of college graduates, a higher per capita income, a lower percentage of non-Hispanic Whites, a higher percentage of foreign-born residents, medium-sized populations (20 000–50 000 residents), and a lower proportion of youths (Table 1). Regulations also were more likely to be present in towns in the Metrowest/Boston region (including the western Boston suburbs), in towns where a higher percentage of voters voted yes to Question 1, in towns where the local board of health was funded to conduct clean indoor air policy efforts, and in towns that bordered another town with a strong restaurant smoking regulation. The strength of regulations was not significantly related to median household income, poverty level, or proportion of households without a telephone.

### Results of Multivariate Model

In the multivariate analysis, 8 variables were found to be significantly predictive of regulation strength and were retained in the final model: percentage of non-Hispanic Whites, town population, proportion of

youths, percentage of town voters who voted yes to Question 1, board of health funding for clean indoor air policymaking, bordering another town with a strong restaurant smoking regulation, region of the state, and percentage of foreign-born residents (Table 2). Voting yes to Question 1 was highly correlated with both education ( $r=.90$ ) and per capita income ( $r=.74$ ), which may explain why these 2 variables became insignificant.

### Disparities in Protection From Environmental Tobacco Smoke in Restaurants

We found that 3 factors noted in *Healthy People 2010* to be important causes of health disparities<sup>12</sup> were significantly related to strength of protection from environmental tobacco smoke exposure in restaurants: education, income, and geographic region. To examine the potential magnitude of disparity in health protection, we compared the likelihood of restaurant smoking regulations in towns in the western region of the state, which had a lower level of education and income, with the likelihood of regulations in towns in the Metrowest/Boston region, which had a higher level of education and income (Table 3). We found that towns in the western region were 4 times less likely (RRR=3.93; 95% CI=1.55, 9.98) to have medium restaurant smoking regulations and nearly 5 times less likely (RRR=4.63; 95% CI=1.25, 17.21) to have strong regulations compared with towns in the Metrowest/Boston region.

## DISCUSSION

We found that the strongest predictor of a town's having adopted either a strong or a medium regulation was local board of health funding by the MTCP to conduct clean indoor air policy work. Towns with board of health funding were nearly 5 times more likely to adopt strong regulations and more than 11 times more likely to adopt medium regulations. The most likely reasons for this finding are (1) the presence of board of health funding indicates a willingness on the part of the town to consider the issue of smoke-free restaurants, given that boards had to apply for the funding, and (2) once

**TABLE 1—Magnitude of Relationship Between Town-Level Characteristics and Local Restaurant Smoking Regulations**

Predictor Variable	Relative Risk Ratio <sup>a</sup>			
	Strong vs Weak	CI <sup>b</sup>	Medium vs Weak	CI <sup>b</sup>
Population with college degree, %				
< 35	1.00	...	1.00	...
≥ 35	2.99	1.50, 5.96	1.64	0.96, 2.81
Per capita income				
< \$28 000	1.00	...	1.00	...
≥ \$28 000	1.61	0.88, 2.96	1.84	1.07, 3.14
Percentage of non-Hispanic White residents				
< 97%	1.00	...	1.00	...
≥ 97%	0.41	0.20, 0.83	0.22	0.10, 0.47
Percentage of foreign-born residents				
≤ 4%	1.00	...	1.00	...
> 4%	1.41	0.79, 2.52	2.65	1.54, 4.59
Town population				
< 20 000	0.36	0.19, 0.72	0.63	0.33, 1.19
20 000–50 000	1.00	...	1.00	...
> 50 000	0.51	0.16, 1.62	0.20	0.04, 0.99
Proportion youths (< 18 y)				
< 23%	1.00	...	1.00	...
≥ 23%	0.37	0.20, 0.66	0.71	0.41, 1.24
Region of Massachusetts				
Northeast	1.00	...	1.00	...
Southeast	1.99	0.60, 6.60	1.41	0.35, 5.62
Metrowest/Boston	1.51	0.41, 5.58	3.72	1.40, 9.90
Central	0.70	0.17, 2.92	2.56	0.71, 9.23
Western	0.67	0.19, 2.35	1.57	0.45, 5.44
Percentage who voted yes to Question 1 <sup>c</sup>	1.87	1.34, 2.62	1.37	1.01, 1.84
Funding by local board of health				
Funded	7.34	1.72, 31.27	10.25	2.41, 43.38
Not funded	1.00	...	1.00	...
Bordering a town with a strong regulation				
Bordering	3.29	1.73, 13.37	1.24	0.75, 2.07
Not bordering	1.00	...	1.00	...
Mean household income				
< \$48 000	1.00	...	1.00	...
\$48 000–\$60 000	0.77	0.37, 1.66	0.78	0.41, 1.50
> \$60 000	1.18	0.59, 2.37	1.15	0.62, 2.14
Percentage of families living below poverty line				
< 4%	1.19	0.66, 2.14	0.90	0.53, 1.52
≥ 4%	1.00	...	1.00	...
Percentage of households without a telephone				
< 1%	0.68	0.31, 1.48	0.47	0.22, 1.01
≥ 1%	1.00	...	1.00	...

Note. CI = confidence interval.

<sup>a</sup>Relative risk ratios represent the bivariate analyses and are unadjusted.

<sup>b</sup>Analyses represent 95% CIs; however, analyses for the region variable represent 99% CIs.

<sup>c</sup>Relative risk ratio is based on a 10% increase in the percentage of yes votes.

funded, a designated clean indoor air policy advocate was hired to promote the adoption of smoke-free restaurant regulations in the town. Because funding was granted to every community that applied for it, the presence of funding indicates that a town had a professional health agent or local tobacco control advocate who was motivated and qualified to write the grant. Lack of funding of certain towns may therefore indicate a lack of resources, capability, or motivation to apply for funding. These factors ultimately contribute to the strength of regulation and subsequent health protection provided in these towns.

Variables that were significantly correlated with board of health funding were the percentage of town voters who voted yes on Question 1, percentage of non-Hispanic White residents, percentage of foreign-born residents, town size, and region of the state. However, after controlling for these variables in the multivariate model, board of health funding retained an independent effect and was therefore predictive of whether a town adopted a smoking regulation.

A second important factor in smoke-free restaurant ordinance adoption was whether a town bordered another town with a strong ordinance. There may be 2 reasons for this observed effect. First, the promotion of smoke-free restaurant regulations in Massachusetts tends to occur in regional clusters. Many of the board of health-funded tobacco control policy advocates are appointed to cover a region of neighboring towns. For example, the Barnstable County Board of Health was funded to promote smoke-free restaurant regulations throughout Cape Cod, and 50% of Barnstable County towns have strong restaurant smoking regulations. Second, a key argument against smoke-free restaurant regulations is that smoking customers may go to a neighboring town to dine. The presence of a smoke-free bordering town may weaken this argument and therefore make adoption of strong regulation less objectionable.

The percentage of town voters who voted yes on Question 1 was also related to the adoption of strong regulations. For each 10% increase in a town's yes votes on Question 1, a town was twice as likely to adopt a

**TABLE 2—Predictors of Local Restaurant Smoking Regulation Strength**

Predictor Variable	Relative Risk Ratio <sup>a</sup>			
	Strong vs Weak	CI <sup>b</sup>	Medium vs Weak	CI <sup>b</sup>
Percentage of non-Hispanic White residents				
≥ 97%	0.59	0.25, 1.39	0.26	0.11, 0.60
< 97%	1.00	...	1.00	...
Town population				
< 20 000	0.40	0.16, 0.98	1.18	0.52, 2.62
20 000–50 000	1.00	...	1.00	...
> 50 000	0.56	0.14, 2.22	0.17	0.03, 0.87
Proportion youths (< 18 y)				
≥ 23%	0.33	0.16, 0.68	0.59	0.30, 1.14
< 23%	1.00	...	1.00	...
Percentage who voted yes to Question 1 <sup>c</sup>	2.01	1.31, 3.07	1.02	0.70, 1.50
Funding by local board of health				
Funded	4.79	1.06, 21.61	11.6	2.62, 51.33
Not funded	1.00	...	1.00	...
Bordering a town with a strong regulation				
Bordering	2.59	1.26, 5.34	0.94	0.52, 1.69
Not bordering	1.00	...	1.00	...
Region of Massachusetts				
Northeast	1.00	...	1.00	...
Southeast	2.20	0.53, 9.16	1.30	0.28, 6.01
Metrowest/Boston	1.25	0.28, 5.56	3.33	0.82, 13.51
Central	1.62	0.31, 8.41	4.07	0.94, 17.57
Western	1.06	0.23, 4.82	2.40	0.57, 10.04
Percentage of foreign-born residents				
> 4%	0.44	0.18, 1.04	1.84	0.89, 3.78
≥ 4%	1.00	...	1.00	...

Note. CI = confidence interval.

<sup>a</sup>Relative risk ratios are adjusted for all variables in the table.

<sup>b</sup>Analyses represent 95% CIs; however, analyses for the region variable represent 99% CIs.

<sup>c</sup>Relative risk ratio is based on a 10% increase in the percentage of yes votes.

adopt strong regulations, and larger towns were significantly less likely to adopt medium regulations. Potential reasons for very small towns' being less likely to adopt regulations include a lower level of public health resources and a smaller number of restaurants, resulting in a lower priority being given to this issue. A possible reason for large towns' being less likely to adopt regulations is that groups who are generally opposed to smoke-free restaurant regulations, such as the tobacco industry and restaurant associations, may be more likely to fight against proposed regulations in large towns because of the towns' higher profiles and the fear that enactment of laws in these towns would set a trend for the entire state.

The other town-level factors that independently predicted the presence or absence of smoke-free restaurant regulations included region, percentage of youths, percentage of non-Hispanic White residents, and percentage of foreign-born residents.

These results are consistent with those of Bartosch and Pope,<sup>13</sup> who found that board of health funding, presence of a smoking policy in bordering towns, Question 1 vote, education, and town population were significant predictors of the strength of smoke-free restaurant regulations in Massachusetts. It should be noted that many of the towns classified in the Bartosch and Pope analysis<sup>13</sup> as having "highly restrictive" policies were classified as having weak regulations in our analysis, because they did not restrict smoking to enclosed, separately ventilated areas. Our analysis thus reinforces this earlier work by identifying factors associated with not just any restaurant smoking regulation but also with specific levels of regulation defined by the extent to which they actually protect pa-

strong regulation. A potential explanation for this effect is that the Question 1 vote is a measure of how people felt about tobacco control in 1992, which suggests that people who favored an excise tax in 1992 might

also favor other kinds of tobacco control policies in later years, including restaurant restrictions.

Compared with medium-sized towns, smaller towns were significantly less likely to

**TABLE 3—Disparities in Protection From Environmental Tobacco Smoke in Restaurants, by Town-Level Characteristics**

	Smoking Regulation Strength		
	Weak, No. (%)	Medium, No. (%)	Strong, No. (%)
Towns in the western region with lower socioeconomic status <sup>a</sup>	35 (70.0)	11 (22.0)	4 (8.0)
Towns in the Metrowest/Boston region with higher socioeconomic status <sup>b</sup>	17 (36.2)	21 (44.7)	9 (19.1)
Unadjusted relative risk ratio (95% confidence interval)	1.0 (N/A)	3.93 (1.55, 9.98)	4.63 (1.25, 17.21)

<sup>a</sup>Socioeconomic status indicates level of education and per capita income.

<sup>b</sup>Compares the likelihood of medium and strong regulations with the likelihood of weak regulations, with towns in the western region (which have lower socioeconomic status) as the reference group.

trons and workers from environmental tobacco smoke in restaurants. By analyzing a regulation in its entirety and not taking into consideration exemptions and variances, we obtained a more accurate assessment of the actual protection from environmental tobacco smoke.

Our most important finding was that because policies that provide protection from environmental tobacco smoke in restaurants are stronger in towns with higher levels of education and income and in certain regions, these policies are in fact fostering disparities in health protection among population groups living in these towns. Thus, although these policies are contributing toward the *Healthy People 2010* goal of protecting citizens from environmental tobacco smoke exposure in restaurants, they may, within this context, be undermining the goal of eliminating health disparities among segments of the population, especially differences that occur by education, income, and geographic location. Public health practitioners need to be aware of the disparities in health protection that are being created by the current pattern of smoke-free policy enactment and must develop specific strategies for targeting communities that may have been overlooked in previous efforts to reduce or eliminate these disparities.

Towns with a higher percentage of racial/ethnic minority residents were more likely to have stronger restaurant smoking regulations. Thus, these regulations in Massachusetts are not causing a racial/ethnic disparity in health protection in the direction that *Healthy People 2010* addresses (i.e., to the detriment of racial/ethnic minorities).

A second finding is that funding for local clean indoor air policy promotion is the most significant predictor of whether a town will adopt a smoking regulation. Therefore, existing tobacco control programs should make funding programs a priority. Additionally, public health advocates need to target towns that lack protection, not towns in which it is politically convenient to enact legislation.

Our findings also have important research implications. We identified several town-level variables that may confound the results of research on the impact of tobacco

control policies because they are related strongly to policy enactment and thus would be expected to be related to potential study outcomes such as smoking behavior. For example, in Massachusetts we found that educational level and per capita income in a town and a yes vote to Question 1 were each strongly related to smoke-free restaurant policy enactment. If not controlled, these variables could potentially confound studies on the effect of smoke-free policies on smoking behavior, given that each of these 3 factors could plausibly be related to that outcome. Few existing studies of the impact of tobacco control policies have taken into account these types of differences in towns.

The main limitation of our study is that we focused on town-level variations in smoke-free restaurant policies that do not necessarily translate into individual-level variations in protection from environmental tobacco smoke. If the disparities in health protection according to town-level characteristics identified in this article indicated disparities according to individual factors, we would consider this to be a cause of additional concern. However, our goal in this study was to achieve an understanding of the pattern of enactment of smoke-free restaurant regulations in Massachusetts at the town level, rather than to describe differences in regulation coverage among individuals. Future research should examine whether disparities in health protection do in fact exist at the individual level.

We have identified a number of town-level factors related to the adoption of meaningful smoke-free restaurant regulations in Massachusetts. Our findings suggest that the current pattern of smoke-free restaurant policy enactment fosters disparities in health protection according to socioeconomic and geographic town-level factors, thus undermining one of the major overall goals of *Healthy People 2010*. Two strategies that public health practitioners can use to extend protection from environmental tobacco smoke are (1) working harder, regardless of political convenience, to promote smoke-free policies in towns that lack protection, and (2) attempting to enact statewide smoking bans to close gaps in health

protection that currently exist as a result of inadequate regulations. ■

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### Contributors

M. Skeer and M. Siegel contributed to conception and design of the study, data analysis, and writing the article. S. George contributed to data analysis and writing the article. W.L. Hamilton contributed to conception and design of the study and article preparation. D.M. Cheng contributed to conception and design of the study, data analysis, and article preparation.

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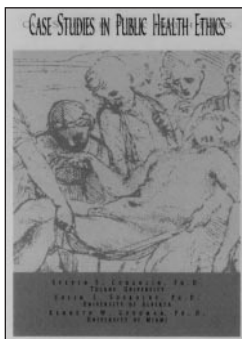
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