

# The Impact of Workplace Smoking Ordinances in California on Smoking Cessation

## ABSTRACT

**Objectives.** The effect of local workplace smoking laws in California was assessed to determine whether such laws increase smoking cessation.

**Methods.** Workplace smoking ordinance data from 1990 were appended to 1990 California Tobacco Survey data from 4680 adult indoor workers who were current cigarette smokers or reported smoking in the 6 months before the survey. Ordinance effects on cigarette smoking and worksite policy were estimated by using multiple logistic regression controlling for sociodemographic variables.

**Results.** Smokers who worked in localities with a strong workplace ordinance (compared with no workplace ordinance) were more likely to report the existence of a worksite smoking policy (odds ratio [OR] = 1.6; 95% confidence interval [CI] = 1.2, 2.2) and to report quitting smoking in the prior 6 months (OR = 1.5; 95% CI = 1.1, 1.7). In communities with strong ordinances, an estimated 26.4% of smokers quit smoking within 6 months of the survey and were abstinent at the time of the survey, compared with an estimated 19.1% in communities with no ordinance.

**Conclusions.** Workplace smoking ordinances increased smoking cessation among employed smokers, indicating that these laws may benefit smokers as well as nonsmokers. (*Am J Public Health.* 2000; 90:757-761)

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With the advent of major state and national tobacco control initiatives, the search for effective public policies to promote smoking cessation has intensified. Since the 1970s, considerable effort has been devoted to the adoption of smoking laws, first at the state and then at the local level. This legislation was developed and promoted by the nonsmokers' rights movement to provide clean indoor air to nonsmokers.<sup>1</sup> A secondary aim of these laws has been to promote smoking cessation. The 1986 Surgeon General's Report predicted that "the widespread adoption of smoking restrictions may have a profound impact on smoking behavior. . . Hypothesized consequences include. . . increased rates of smoking cessation."<sup>2</sup> Policies that restrict worksite smoking may reduce smoking behavior by reducing the opportunity to smoke, by decreasing pressures to smoke, and by increasing social support for cessation.<sup>2</sup> Increases in smoking cessation have been found in worksites that have adopted restrictive smoking policies because of corporate or industrywide decisions,<sup>3-5</sup> which supports the expectation that laws requiring businesses to adopt such policies would also show such effects.

The results from prior research on the effect of smoking laws on smoking prevalence are mixed,<sup>6,7</sup> and we are aware of no research that has assessed the effect of smoking laws on smoking cessation. One study based on a national survey found lower smoking rates for residents of communities with smoking laws.<sup>6</sup> Another study using similar methodology found no effect for state smoking regulations on smoking prevalence.<sup>7</sup> This research has been criticized because the direction of causality is ambiguous.<sup>8</sup> Moreover, smoking prevalence is affected by smoking onset as well as by cessation and relapse; thus, smoking prevalence is not specific to cessation. National studies are problematic for assessing the effects of smoking laws because these laws are confounded with differences in tobacco taxes.

Tobacco tax rates not only vary across states but affect smoking behavior, and smoking laws correlate positively with tobacco taxes, making it difficult to disentangle the effects of smoking regulations.<sup>7</sup> Thus, a single-state study that examines the effects of local ordinances on smoking cessation should provide stronger inferences than a multistate study that assesses effects on prevalence.

Beginning in 1979, nonsmokers' rights legislation spread from the state to the local level, especially in California.<sup>1</sup> These local ordinances extended existing state laws to restrict smoking in private workplaces. By 1990, private workplace ordinances had been adopted by 197 California localities, including 180 of the state's 459 cities. In addition, 17 of the state's 58 counties had restricted smoking in unincorporated areas.<sup>9,10</sup> Most laws restricted smoking in restaurants, health facilities, and retail stores, as well as in private and publicly owned workplaces.

We studied the effects of California's local smoking ordinances on the existence of worksite smoking policies and on smoking cessation. We hypothesized that smokers who worked in localities with ordinances that restricted worksite smoking, compared with smokers working in localities without such ordinances, would be more likely to report that their worksite had a smoking policy and

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would be more likely to have quit smoking in the 6 months before the survey.<sup>11-14</sup> Furthermore, we hypothesized that these effects would be greater for those who worked in localities with more restrictive workplace ordinances. The study was conducted with data from the baseline survey for the California Tobacco Education Program; thus, the results are not affected by programs instituted as a result of Proposition 99, the voter initiative that raised the tax on cigarettes and other tobacco products. Because we had cross-sectional data from a single point in time, we chose a 6-month time frame for smoking cessation to ensure that those who quit did so after the ordinance was adopted.

## Methods

The study population consisted of respondents to the 1990 California Tobacco Survey, a computer-assisted telephone survey conducted between July 1990 and February 1991.<sup>15,16</sup> With the use of a stratified, random-digit dialing technique, heads of household were interviewed; 85 000 potential respondents were enumerated. All adults 18 or older who had smoked in the past 5 years were sampled, as well as 28% of those who did not fit these criteria. Response rates for the screener interviews (n = 32 135) and extended interviews (n = 24 296) were 75.1% and 75.3%, respectively.<sup>16</sup>

For the present study, the sample consisted of 4680 respondents to the extended interview who reported that they (1) smoked cigarettes 6 months before the survey, (2) worked indoors in a nonmilitary facility outside of their home in California, (3) worked within the last 2 weeks, and (4) provided either a place name or a zip code that corresponded to a worksite location that could be located with geographic information system software (Atlas GIS 3.0).<sup>17</sup> Responses were weighted to adjust for the probability of selection and for representation in the 1990 census. The study sample represented 2.35 million Californians.

Variance estimation was based on a jackknife estimation procedure<sup>18</sup> using the sample replicate weights included in the public domain file.<sup>16</sup> The jackknife was implemented with specially written macros for SAS 6.12<sup>19,20</sup> and with WesVarPC 2.12 using the JK1 option.<sup>21</sup> This approach was adopted to compensate for the complex design of the survey sample and thereby to obtain more appropriate estimates of sampling error than would otherwise be found.

Two dependent variables were constructed from the California Tobacco Survey: worksite smoking policy and smoking cessa-

**TABLE 1—Population Estimates<sup>a</sup> for Sociodemographic and Workplace Characteristics and Ordinance Strength: California Tobacco Survey, 1990**

Characteristic	Sample Size (n)	Population Estimated %	95% Confidence Interval (%) <sup>b</sup>
Age, y			
18–24	724	15.7	13.8, 17.6
25–44	2707	56.9	54.5, 59.2
≥45	1249	27.5	25.4, 29.6
Sex			
Male	2068	50.8	48.8, 52.9
Female	2612	49.2	47.1, 51.2
Race/ethnicity			
White	3876	74.9	72.4, 77.5
Black	250	7.3	5.9, 8.7
Asian	245	7.3	5.6, 8.9
Other	349	10.5	8.2, 12.8
Hispanic status			
Non-Hispanic	4106	80.2	77.6, 82.8
Hispanic	574	19.8	17.2, 22.4
Educational attainment			
<High school graduate	384	20.0	17.9, 22.1
High school graduate	1481	32.0	29.6, 34.4
Some college	2351	40.3	38.1, 42.4
≥College graduate	464	7.8	6.7, 8.8
Type of work area			
Private/shared office	2442	51.5	49.2, 53.7
Open area	1684	35.3	32.9, 37.8
No regular work area	554	13.2	10.9, 15.5
Worksite size			
<50 employees	2415	50.1	47.6, 52.6
≥50 employees	2265	49.9	47.4, 52.4
Ordinance strength			
No ordinance	1032	23.0	20.6, 25.3
Weak ordinance	669	25.2	23.1, 27.3
Moderate ordinance	1393	27.7	25.8, 29.6
Strong ordinance	1586	24.2	22.5, 25.8

<sup>a</sup>Observations were weighted on the basis of probability of selection and poststratification.

<sup>b</sup>Confidence intervals were based on jackknife estimates of standard errors.

tion. Worksite smoking policy was assessed from responses to the question, “Does your employer have an official policy that restricts smoking in any way?” A “no” response was coded as 0 and a “yes” response was coded as 1. Smoking cessation was assessed from the following questions: (1) “Have you smoked at least 100 cigarettes in your lifetime?” (2) “Do you smoke cigarettes now?” and (3) “When did you last smoke or have a puff on a cigarette?” Smoking cessation was coded 0 if responses to the first 2 questions were “yes.” Smoking cessation was coded 1 if the respective responses were “yes,” “no,” and less than or equal to 6 months ago. The observation was excluded from the analysis if the response to the latter question was more than 6 months ago.

The provisions of workplace smoking ordinances in 1990 were assessed from content analyses of local laws conducted by Americans for Nonsmokers’ Rights<sup>9,10</sup> and the California Smoke-Free Cities Project.<sup>22</sup>

Any discrepancies between these 2 sources of data were resolved by staff at Americans for Nonsmokers’ Rights. Ordinance strength was assessed for each place in California by a point system. One point was assigned for each of following provisions: (1) no exemption for businesses with 4 or more employees, (2) smoking prohibited in restrooms, (3) smoking prohibited in meeting rooms, (4) smoking prohibited in hallways, (5) employees can designate their work area as smoke-free, and (6) nonsmokers’ concerns take precedence in a conflict. The points were summed to yield a score with a range of 0 to 6 for each locality in the state.

We merged the survey response data with the ordinance data, using the worksite’s zip code or place name. Atlas GIS 3.0<sup>17</sup> was used to compute for each zip code in California the amount of land area that pertained to specific places contained within the zip code boundaries. We estimated the relative population of these intersections with 1990 census

**TABLE 2—Population Estimates<sup>a</sup> of Worksite Smoking Policy (n=4638) and Smoking Cessation (n=4680) by Sociodemographic and Workplace Characteristics: California Tobacco Survey, 1990**

Characteristic	Worksite Policy		Smoking Cessation	
	%	<i>P</i> <sup>b</sup>	%	<i>P</i> <sup>b</sup>
Age, y		.24		.51
18–24	62.0		27.6	
25–44	67.6		23.0	
≥45	68.3		24.2	
Sex		.13		.64
Male	68.5		23.5	
Female	65.5		24.6	
Race/ethnicity		.16		.10
White	68.5		24.3	
Black	66.7		14.1	
Asian	64.2		23.5	
Other	57.9		29.8	
Hispanic status		.004		.008
Non-Hispanic	69.2		21.7	
Hispanic	58.1		33.8	
Educational attainment		.006		.05
<High school graduate	55.7		27.1	
High school graduate	66.5		19.6	
Some college	71.7		25.6	
≥College graduate	76.5		26.7	
Type of work area		.000		.25
Private/shared office	70.6		25.5	
Open area	67.2		24.0	
No regular work area	51.7		18.5	
Worksite size		.000		.97
<50 Employees	52.3		24.0	
≥50 Employees	81.6		24.1	
Ordinance strength		.001		.22
No ordinance	61.6		19.8	
Weak ordinance	61.9		25.5	
Moderate ordinance	69.9		24.4	
Strong ordinance	73.7		26.2	

<sup>a</sup>Observations were weighted on the basis of probability of selection and poststratification. Numbers of respondents are given in parenthesis.

<sup>b</sup>*P* values obtained from the jackknife estimation procedure with the RS2 statistic from  $\chi^2$  analysis.<sup>18</sup>

data for cities and counties. Each zip code received a set of likelihood scores (that summed to 1.0), with each score equal to the likelihood that a particular place was contained within the zip code. A weighted ordinance score was then computed for each zip code by multiplying the place likelihood scores by their associated ordinance scores. On the basis of the results of preliminary analyses, a 4-level ordinance strength variable was constructed: (1) no ordinance (0 points), (2) weak ordinance (>0 and <1.5 points), (3) moderate ordinance (≥1.5 and <6 points), and (4) strong ordinance (6 points).

We first examined the distribution of each variable in the population and then the relationship of each demographic and workplace variable to the dependent variables, worksite smoking policy and smoking cessation. The Rao-Scott (RS2) approximation to the  $\chi^2$  statistic was employed as a test for sta-

tistical independence to accommodate the complex sampling design.<sup>23,24</sup> Next, for each dependent variable, multiple logistic regression was used to estimate the odds ratios of ordinance strength, adjusting for the following sociodemographic and workplace characteristics: age (18–24, 25–44, 45+ years), sex (female, male), race/ethnicity (White, Black, Asian, other), Hispanic status (non-Hispanic, Hispanic),<sup>1</sup> educational attainment (less than high school graduate, high school graduate, some college or technical school, college graduate), the type of work area (no regular work area, private or shared office, open area),<sup>25</sup> and number of employees at the worksite (<50, 50+). The categories selected for these variables were based on prior research.<sup>15</sup> Variables were eliminated from the model if none of the parameter estimates was significant at the .25 level. To maximize statistical power, some categories were col-

lapsed for the following variables when similar odds ratios were obtained for different values of the variable: race, educational attainment, and type of work area. Regression diagnostics were performed on the final model for each dependent variable. To account for the complex sample design, the Hosmer-Lemeshow goodness-of-fit statistic was deflated by the harmonic mean of the design effects for the coefficients in the model. The goodness-of-fit statistics were nonsignificant ( $P > .10$ ), suggesting adequate model fit.<sup>26</sup> Finally, the interaction of ordinance strength with each of the sociodemographic variables was tested one at a time by creating dummy variables and adding them to the final models.

The protocol for the present study was approved by the University of California at Berkeley Committee for the Protection of Human Subjects.

## Results

As can be seen in Table 1, about one fourth of the population worked in communities with no workplace smoking ordinance. Similar proportions worked in communities with weak, moderate, and strong ordinances.

As shown in Table 2, worksite smoking policy was related to Hispanic status, educational attainment, the type of work area, the size of the worksite, and the strength of the smoking ordinance. Respondents who worked in communities with moderate or strong workplace smoking ordinances were more likely to report having a worksite smoking policy ( $\chi^2_3 = 17.63, P = .0005$ ). In addition, workers were more likely to report a worksite smoking policy if they were not Hispanic, had more education, worked in indoor areas, and worked in a larger worksite. Smoking cessation was related to race and Hispanic status. Blacks were less likely to quit smoking than other racial groups, and Hispanics were more likely to quit than non-Hispanics. Although respondents were somewhat more likely to report smoking cessation if they worked in a community with a smoking ordinance, the bivariate relationship between smoking cessation and ordinance strength was not significant ( $\chi^2_3 = 4.39, P = .22$ ).

The results of the final 2 logistic regression analyses are summarized in Table 3. Employees who worked in communities with strong ordinances were more likely to report a worksite smoking policy and were more likely to report smoking cessation. The odds ratios for ordinance strength generally increased across levels of the variable, suggesting a “dose–response” relationship with both worksite policy and smoking cessation. Em-

**TABLE 3—Adjusted Odds Ratios (ORs) and 95% Confidence Intervals (CIs) From Logistic Regression Models for Worksite Smoking Policy (n = 4639) and Smoking Cessation (n = 4684): California Tobacco Survey, 1990**

	Worksite Policy		Smoking Cessation	
	OR	95% CI	OR	95% CI
Race/ethnicity				
Non-Black <sup>a</sup>	...	...	...	...
Black	...	...	0.57**	0.33, 0.97
Hispanic status				
Non-Hispanic <sup>a</sup>	...	...	...	...
Hispanic	0.59***	0.42, 0.84	2.13***	1.34, 3.40
Educational attainment, y				
≤12 <sup>a</sup>	...	...	...	...
>12	...	...	1.33**	1.03, 1.71
Type of work area				
No regular work area <sup>a</sup>	...	...	...	...
Office environment	2.01****	1.44, 2.82	1.49	0.87, 2.55
Worksite size				
<50 employees <sup>a</sup>	...	...	...	...
≥50 employees	4.18****	3.29, 5.32	...	...
Ordinance strength				
No ordinance <sup>a</sup>	...	...	...	...
Weak ordinance	0.99	0.70, 1.40	1.38*	0.95, 2.00
Moderate ordinance	1.38*	0.98, 1.95	1.35	0.94, 1.95
Strong ordinance	1.61***	1.20, 2.15	1.52***	1.14, 1.71

<sup>a</sup>Reference category.

\* $P < .10$ , \*\* $P < .05$ , \*\*\* $P < .01$ , \*\*\*\* $P < .001$ .

employees who reported that their worksite had a smoking policy were more likely to be non-Hispanic. They tended to work in an office environment (i.e., a private or shared office or an open area) and in a large worksite. Employees who quit smoking were less likely to be Black and more likely to be of Hispanic origin and to have completed some postsecondary education.

Using the final logistic regression model for smoking cessation, we estimated the prevalence of smokers who quit by levels of ordinance strength, setting the remaining covariables in the model to their weighted means, as follows: 19.1% cessation (95% confidence interval [CI] = 15.4%, 23.4%) for no ordinance, 24.6% cessation (95% CI = 19.2%, 30.1%) for weak ordinance, 24.2% cessation (95% CI = 19.7%, 29.3%) for moderate ordinance, and 26.4% cessation (95% CI = 23.0%, 30.2%) for strong ordinance. These adjusted estimates were quite similar to the unadjusted estimates that appear at the bottom of Table 2. Smokers who worked in communities with strong ordinances were 38% [(26.4 - 19.1)/19.1] more likely to quit smoking than were those who worked in communities with no ordinance.

Subsequent models were fit to test for effect modification. The interactions (i.e., effect modifiers) of ordinance strength with race, Hispanic status, age, sex, educational status, and type of workplace area were not signifi-

cant. Thus, our data suggest that workplace smoking ordinances have similar effects on smoking cessation and worksite policy across different segments of the population.

Because we were concerned that our smoking cessation results were not generalizable beyond 6 months, we replicated our smoking cessation analysis, including in the sample former smokers who quit within 5 years of the survey. The results from this analysis were quite similar to the results reported in the tables, suggesting that the current results are not simply an artifact of the 6-month time frame we selected.

## Discussion

The present study examined the effects of local California ordinances that restricted smoking in workplaces in 1990. The results suggest that laws with comprehensive restrictions led to more worksites with smoking policies and increased the likelihood that workers would quit smoking. An estimated 26.4% of smokers who worked in communities with strong ordinances quit smoking within 6 months of the survey and were still abstinent at the time of the survey, compared with only 19.1% of those who worked in communities with no ordinance. Therefore, public health policy should continue to support the passage of strong local smoking ordinances.

The effects of workplace ordinances on worksite policy and on smoking cessation were related to the strength of the ordinances. The effects were greatest in localities with strong ordinances—that is, those that prohibited smoking in restrooms, meeting rooms, and hallways; allowed employees to designate their work area as smoke-free; allowed nonsmokers' concerns to take precedence in a conflict; and did not exempt any businesses with 4 or more employees. In recent years, many localities have adopted even stronger ordinances that require virtually all workplaces to be smoke-free. On the basis of the present results, we would anticipate that such ordinances would lead to even greater effects on smoking cessation.

In spite of the overall support of our hypotheses, the results were somewhat disappointing. Over one fourth of smokers who worked in communities with the strongest workplace ordinances and over one third of smokers in communities with the weakest ordinances reported that their worksite had no smoking policy. The data suggest that many California businesses in 1990 may have been in violation of local smoking laws. Prior research also indicated that compliance with workplace smoking laws had been poor.<sup>27,28</sup> Additional resources may have been needed to ensure adequate public awareness about these laws and to monitor compliance.

Many worksites in California were exempt from local workplace smoking ordinances in 1990. Workers not covered by local smoking ordinances included employees of very small worksites (no more than 3 employees) and employees of public schools and state government. The public schools, which included 3.5% of the workforce,<sup>29</sup> had until 1996 under state law to adopt strict smoking policies.<sup>30</sup> The state government, which employed 5.3% of the workforce,<sup>29</sup> has only recently established strict smoking regulations for its employees. Although many county government employees, accounting for 2.0% of California's workers,<sup>29</sup> were not covered by city ordinances, they were covered by county smoking ordinances.<sup>7,8</sup> Because we could not determine whether workers were employed in an exempt worksite, the present study may underestimate compliance with local ordinances and the effects of these ordinances on smoking cessation.

Many businesses in California adopted worksite smoking policies even though not required to by law in 1990. Almost two thirds of workers reported the existence of a worksite smoking policy in localities without workplace ordinances. Businesses with multiple worksites may have adopted a uniform smoking policy for all worksites to comply with local laws that affect only some work-

sites. In such instances, a worksite's smoking policy may be attributable to the passage of smoking ordinances in other localities even if there was no local ordinance regulating that specific worksite. The present study did not estimate this potential indirect effect of local ordinances.

The research design for the present study was cross-sectional, which limits confidence in interpreting the results. We deliberately chose a short time frame for smoking cessation to ensure that those who quit did so after the ordinance was adopted. Nevertheless, strong antismoking norms within a community could lead to the adoption of a local smoking ordinance, worksite smoking policies, and increased smoking cessation. Future research would benefit from longitudinal studies that could rule out alternative hypotheses.

The adoption of smoke-free workplace laws may lead to better compliance because it may be easier to publicize laws that are less complicated.<sup>31</sup> Statewide laws may also lead to better compliance for the same reason. Beginning in 1991, California localities began to adopt stronger antismoking ordinances than those presently examined.<sup>9</sup> By 1996, 1 year after the adoption of a statewide smoke-free law that covered all indoor work areas except bars and gaming clubs, 64% of indoor workers in California reported a smoke-free workplace policy, compared with only 35% reporting one in 1990.<sup>32,33</sup> In addition to increasing the likelihood of smoking cessation, smoke-free workplace laws should also result in less exposure to environmental tobacco smoke<sup>15,25,34–38</sup> among nonsmokers. □

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## References

1. *Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report of the Surgeon General.* Rockville, Md: US Dept of Health and Human Services; 1989. CDC publication 89-8411.
2. *The Health Consequences of Involuntary Smoking: A Report of the Surgeon General.* Washington, DC: US Dept of Health and Human Services; 1986.
3. Glantz S. Back to basics: getting smoke-free workplaces back on track. *Tob Control.* 1997;6: 164–166.
4. Longo D, Brownson R, Johnson J, et al. Hospital smoking bans and employee smoking behavior: results of a national survey. *JAMA.* 1996; 275:1252–1257.
5. Chapman S, Borland R, Scollo M, Brownson RC, Dominello A, Woodward S. The impact of smoke-free workplaces on declining cigarette consumption in Australia and the United States. *Am J Public Health.* 1999;89:1018–1023.
6. Lewit E. *Clean Indoor Air Laws and Male/Female Smoking Differences. Final Report of Program Activities.* Newark: University of Medicine and Dentistry of New Jersey; 1988.
7. Wasserman J, Manning W, Newhouse J, Winkler J. The effects of excise taxes and regulations on cigarette smoking. *J Health Econ.* 1991;10: 43–64.
8. Chaloupka F, Saffer H. *The Demand for Cigarettes and Restrictions on Smoking in the Workplace.* New York, NY: National Bureau of Economic Research; 1991.
9. US Dept of Health and Human Services. *Major Local Tobacco Control Ordinances in the United States. Smoking and Tobacco Control Monograph 3.* Bethesda, Md: National Cancer Institute; 1993. NIH publication 93-3532.
10. Pertschuk M, Shopland D. *Major Local Smoking Ordinances in the United States.* Bethesda, Md: National Cancer Institute; 1989. NIH publication 90-479.
11. DiClemente C, Prochaska J, Fairhurst S, Velicer W, Velasquez M, Rossi J. The process of smoking cessation: analysis of precontemplation, contemplation and preparation stages of change. *J Consult Clin Psychol.* 1991;59:295–304.
12. Prochaska J, DiClemente C. Stages and processes of self-change of smoking: toward an integrative model of change. *J Consult Clin Psychol.* 1983;51:390–395.
13. Prochaska J, DiClemente C, Velicer W, Gimpil S, Norcross J. Predicting change in smoking status for self-changers. *Addict Behav.* 1985;10: 395–406.
14. Prochaska J, Velicer W, DiClemente C, Fava J. Measuring processes of change: applications to the cessation of smoking. *J Consult Clin Psychol.* 1988;56:520–528.
15. Pierce J, Shanks T, Pertschuk M, et al. Do smoking ordinances protect non-smokers from environmental tobacco smoke at work? *Tob Control.* 1994;3:15–20.
16. Burns D, Pierce J. *Tobacco Use in California, 1990–1991.* Sacramento: California Dept of Health Services; 1992.
17. *Atlas GIS Reference Manual.* Santa Clara, Calif: Strategic Mapping Inc; 1994.
18. Efron B. *The Jackknife, the Bootstrap, and Other Resampling Plans.* Philadelphia, Pa: Society for Industrial and Applied Mathematics; 1982.
19. *SAS/STAT User's Guide, Release 6.03.* 3rd ed. Cary, NC: SAS Institute Inc; 1991.
20. *SAS/STAT(R) Software: Changes and Enhancements Through Release 6.12.* Cary, NC: SAS Institute Inc; 1996.
21. Brick J, Broene P, James P, Severynse J. *A User's Guide to WesVarPC.* Rockville, Md: Westat Inc; 1997.
22. Fourkas T, ed. *Tobacco Control in California Cities: A Guide for Action.* Sacramento: California Dept of Health Services; 1992.
23. Rao J, Scott A. The analysis of categorical data from complex sample surveys: chi-squared tests for goodness of fit and independence in two-way tables. *J Am Stat Assoc.* 1981;76:221–230.
24. Rao J, Scott A. On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data. *Ann Stat.* 1984;12: 46–60.
25. Borland R, Pierce J, Burns D, Gilpin E, Johnson M, Bal D. Protection from environmental tobacco smoke in California: the case for a smoke-free workplace. *JAMA.* 1992;268: 749–752.
26. Hosmer D, Lemeshow S. *Applied Logistic Regression.* New York, NY: John Wiley; 1989.
27. Rigotti N, Stoto M, Kleiman M, Schelling T. *Implementation and Impact of a City's Regulation of Smoking in Public Places and the Workplace: The Experience of Cambridge, Massachusetts.* Cambridge, Mass: Harvard University; 1988. Institute for the Study of Smoking Behavior and Policy Discussion Paper Series.
28. Rigotti N, Bourne D, Rosen A, Locke J, Schelling T. Worksite compliance with a no-smoking law: a randomized community intervention trial. *Am J Public Health.* 1992;82:229–235.
29. Fay J, ed. *California Almanac.* Santa Barbara, Calif: Pacific Data Resources; 1991.
30. Cal. Health & Safety Code §104350–104480, 104500–104545 (1999).
31. Sorenson G, Glasgow R, Corbett K, Topor M. Compliance with worksite nonsmoking policies: baseline results from the COMMIT study of worksites. *Am J Health Promot.* 1992;7: 103–109.
32. Pierce J, Evans N, Farkas A, et al. *Tobacco Use in California: An Evaluation of the Tobacco Control Program, 1989–1993.* La Jolla: University of California, San Diego; 1994.
33. Pierce J, Gilpin E, Emery S, et al. *Tobacco Control in California: Who's Winning the War? An Evaluation of the Tobacco Control Program, 1989–1996.* La Jolla: University of California, San Diego; 1998.
34. Gerlach K, Shopland D, Hartman A, Gibson J, Pechacek T. Workplace smoking policies in the United States: results from a national survey of more than 100,000 workers. *Tob Control.* 1997; 6:199–206.
35. Gottlieb N, Eriksen M, Lovato C, Weinstein R, Green L. Impact of a restrictive work site smoking policy on smoking behavior, attitudes and norms. *J Occup Med.* 1990;32:16–23.
36. Marcus B, Emmons K, Abrams D, et al. Restrictive workplace smoking policies: impact on nonsmokers' tobacco exposure. *J Public Health Policy.* 1992;13:42–51.
37. Mullooly J, Schuman K, Stevens V, Glasgow R, Vogt T. Smoking behavior and attitudes of employees of a large HMO before and after a work site ban on cigarette smoking. *Public Health Rep.* 1990;105:623–628.
38. Moskowitz J, Lin Z, Hudes E. The impact of California's local smoking ordinances on worksite smoking policy and on exposure to environmental tobacco smoke in the workplace. *Am J Health Promot.* 1999;13:278–281.