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Changes in Self-Reported Smokefree Workplace Policy Coverage Among Employed Adults—United States, 2003 and 2010–2011

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Abstract

Introduction—The workplace is a major source of exposure to secondhand smoke from combustible tobacco products. Smokefree workplace policies protect nonsmoking workers from secondhand smoke and help workers who smoke quit. This study examined changes in self-reported smokefree workplace policy coverage among U.S. workers from 2003 to 2010–2011.

Methods—Data came from the 2003 (n = 74,728) and 2010–2011 (n = 70,749) waves of the Tobacco Use Supplement to the Current Population Survey. Among employed adults working indoors, a smoke-free workplace policy was defined as a self-reported policy at the respondent's workplace that did not allow smoking in work areas and public/common areas. Descriptive statistics were used to assess smokefree workplace policy coverage at two timepoints overall, by occupation, and by state.

Results—The proportion of U.S. workers covered by smokefree workplace policies increased from 77.7% in 2003 to 82.8% in 2010–2011 ($p < .00001$). The proportion of workers reporting smokefree workplace policy coverage increased in 21 states ($p < .001$) and decreased in two states ($p < .001$) over this period. In 2010–2011, by occupation, this proportion ranged from 74.3% for blue collar workers to 84.9% for white collar workers; by state, it ranged from 63.3% in Nevada to 92.6% in Montana.

Conclusions—From 2003 to 2010–2011, self-reported smokefree workplace policy coverage among indoor adult workers increased nationally, and occupational coverage disparities narrowed. However, coverage remained unchanged in half of states, and disparities persisted across

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Declaration of Interests

None declared.

occupations and states. Accelerated efforts are warranted to ensure that all workers are protected by smokefree workplace policies.

Implications—This study assessed changes in the proportion of indoor workers reporting being covered by smokefree workplace policies from 2003 to 2010–2011 overall and by occupation and by state, using data from the Tobacco Use Supplement to the Current Population Survey. The findings indicate that smokefree workplace policy coverage among U.S. indoor workers has increased nationally, with occupational coverage disparities narrowing. However, coverage remained unchanged in half of states, and disparities persisted across occupations and states. Accelerated efforts are warranted to ensure that all workers are protected by smokefree workplace policies.

Introduction

Exposure to secondhand smoke (SHS) from combustible tobacco products causes heart disease, stroke, and lung cancer in adult nonsmokers.[1,2] Each year, SHS exposure from cigarettes causes an estimated 41,000 deaths among U.S. adult nonsmokers from heart disease and lung cancer.[2] In 2006, the U.S. Surgeon General concluded that there is no risk-free level of exposure to SHS, and that eliminating smoking in indoor spaces fully protects nonsmokers from the adverse health effects of SHS exposure in these environments.[1]

The workplace represents an important setting for the implementation of evidence-based strategies to reduce tobacco use.[1–3] Because employed adults typically spend a substantial amount of their time at work, workplaces that allow smoking are a major source of SHS exposure for nonsmoking adults.[1,2] Smokefree workplace policies may be established by state or local laws, or by voluntary policies established by employers.[1,3] Over the past two decades, states and communities have made considerable progress in implementing comprehensive smokefree laws,[4–8] which the Centers for Disease Control and Prevention defines as laws prohibiting smoking at all times in all indoor areas of private worksites, restaurants and bars.[4,6,7] As of April 2017, 28 states (including the District of Columbia) had implemented comprehensive state smokefree laws.[4,6,7] Additionally, as of April 2017, 876 communities had implemented comprehensive smokefree laws at the local level.[5] Many employers have also implemented voluntary smokefree policies in recent years.[1,3] Comprehensive smokefree laws have been shown to reduce SHS exposure among nonsmokers and to help smokers quit.[1,2,9,10] Moreover, by raising awareness about the health effects of SHS and changing social norms regarding the acceptability of smoking around others, these laws can also help facilitate the adoption of voluntary smokefree home rules,[1,10,11] which reduce SHS exposure in another important setting.[1]

Previous studies of U.S. adult workers have documented occupational disparities in smokefree workplace policy coverage, with blue collar workers, service workers in general, and food service workers in particular being less likely than white collar workers to be covered by these policies.[1,12–14] These disparities in policy coverage have, in turn, been linked to occupational disparities in SHS exposure among nonsmoking workers.[1,15,16] Comprehensive smokefree laws have the potential to reduce or eliminate such disparities by effectively protecting all workers from occupational SHS exposure.[1,9,10]

Previous research has examined smokefree workplace policy coverage through 1998–1999 by state[17] and by occupation.[12–14] However, no published reports have examined more recent overall trends in such coverage. These trends are of special interest because 24 states (including the District of Columbia) implemented comprehensive smokefree laws during 2004–2010.[4,6,7] To address this gap in the scientific literature, this study examined changes in the proportion of indoor workers reporting coverage by smokefree workplace policies from 2003 to 2010–2011 overall, by occupation, and by state. Specifically, the study assessed whether occupational disparities in such coverage persisted during this period, and whether this coverage changed at the state level, especially in those states that implemented comprehensive state smokefree laws during the study period.

Methods

Data Source

Data came from two iterations of the National Cancer Institute-sponsored Tobacco Use Supplement to the Current Population Survey (TUS-CPS) that were administered in 2003 and 2010–2011.[18–20] The Current Population Survey (CPS) is a continuous monthly survey that has been conducted by the U.S. Census Bureau for the Bureau of Labor Statistics since 1940, focusing on labor force indicators for the U.S. civilian noninstitutionalized population. It is designed to be representative of the population at the national and state level. The TUS-CPS is a household survey of tobacco use and related indicators that has been administered every 3–4 years as part of CPS since 1992–93. It uses its large, nationally representative sample to provide information on about 240,000 individuals during each iteration. Each wave of the TUS-CPS is a cross-sectional survey conducted in three nonconsecutive months. Each month's data is weighted and can be analyzed as an independent survey. The 3 months' data are combined to form the overall sample of TUS-CPS for each wave. TUS is a key source of national and state-level data on smoking and other tobacco use behaviors and on tobacco control policies in the United States.

The TUS-CPS is a person-level survey, and includes both self-responses and proxy responses; however, the data in this analysis includes self-responses only. The person-level 3-month average response rates for self-respondents aged ≥18 years in 2003 and 2010–2011 were 65% and 61%, respectively. Detailed information on the methodology of the 2003 and 2010–2011 TUS-CPS has been published elsewhere.[18–20] TUS-CPS included persons aged ≥15 until 2006, and has included persons aged ≥18 since 2007; to ensure comparability, this analysis was restricted to persons aged ≥18 years.

To be included in the analysis, individuals must have been ≥18 years of age and: (1) employed either full- or part-time at the time of the interview; (2) employed outside their home, and not self-employed; (3) not working outdoors or in a motor vehicle; (4) not traveling to different buildings or sites; (5) not working in someone else's home; and (6) not serving in the armed forces. The final analysis included a total sample of 145,477 eligible respondents, with 74,728 respondents from the 2003 wave and 70,749 respondents from the 2010–2011 wave.

Measures

Smokefree Workplace Policy Coverage—The definition of smokefree workplace polices used in this analysis was consistent with the definition used in previous published studies on this topic that used the same data source.[12,13,17] Respondents to TUS-CPS aged ≥18 years who reported that they worked indoors at the time of the interview and mainly worked in an office building or in another nonresidential place were asked: "Does your place of work have an official policy that restricts smoking in any way?" The response options were "Yes" or "No." Those who responded "Yes" were then asked the following two questions: "Which of these best describes your place of work's smoking policy for INDOOR PUBLIC OR COMMON AREAS, such as lobbies, rest rooms, and lunch rooms?," with the response options "Not allowed in ANY public areas," "Allowed in SOME public areas," "Allowed in ALL public areas," and "Not Applicable"; and "Which of these best describes your place of work's smoking policy for WORK AREAS?," with the response options "Not allowed in ANY work areas," "Allowed in SOME work areas," "Allowed in ALL work areas," and "Not Applicable." Respondents who reported the presence of a smokefree workplace policy at their place of employment that did not permit smoking in indoor public or common areas and that also did not permit smoking in work areas were considered to be covered by a smokefree workplace policy.

Occupational Groups—Labor force questions from the CPS core were used to determine each respondent's employment status and to categorize each worker into an occupational group using the 2002 Census Occupation Codes (https://www.bls.gov/tus/census02iocodes.pdf). The occupational groups and worker eligibility criteria used in this analysis are aligned with those used by Shopland et al. (2004),[13] with the exception of several changes resulting from the new CPS occupation classification codes introduced in January 2003.[20] The 2003 and 2010–2011 CPS used more than 530 job classifications, which the Census aggregates into 23 detailed groups and 11 major groups, with each occupation being assigned a specific 4-digit Occupational Classification Code (0010–9840).[18–20] Based on the previously described inclusion criteria, the following major occupational groups were excluded from the analyses: Farming, fishing, and forestry (6000–6130); construction and extraction (6200–6940); transportation and material moving (9000–9750); and the armed forces (9840).

A total of 108,055 white collar worker respondents were included in the analysis. White collar workers included management, business, and financial occupations (0010–0950); professional and related occupations (1000–3540); sales and related occupations (4700–4960); and office and administrative support occupations (5000–5930).

A total of 15,186 blue collar worker respondents were included in the analysis. Blue collar workers included: installation, maintenance, and repair occupations (7000–7620), and production occupations (7700–8960).

A total of 22,236 service worker respondents were included in the analysis. Service workers included: health care support occupations (3600–3650); protective service occupations (3700–3950); food preparation and serving related occupations (4000–4160); building and grounds cleaning and maintenance occupations (4200–4250); and personal care and service

occupations (4300–4650). Among those service workers, a total of 8,827 food preparation and serving related occupations workers were included in the analysis. Food preparation and serving related occupations (occupation classification codes 4000–4160) comprise 13 separate job categories: chefs and head cooks (4000); first-line supervisors/managers of food preparation and serving workers (4010); cooks (4020); food preparation workers (4030); bartenders (4040); combined food preparation and serving workers, including fast food (4050); counter attendants, cafeteria, food concession, and coffee shop (4060); waiters and waitresses (4110); food servers, non-restaurant (4120); dining room and cafeteria attendants and bartender helpers (4130); dishwashers (4140); hosts and hostesses, restaurant, lounge, and coffee shop (4150); and food preparation and serving related workers, all other (4160). There was only one sample in 2003 and no sample in 2010–2011 for the occupation code 4160 category. Therefore this category was excluded from our analyses. The remaining 12 job categories fall under two broad categories: food service workers directly involved with the public (4010, 4040, 4050, 4060, 4110, 4120, 4130, 4150), and food service workers involved in cooking and food preparation (4000, 4020, 4030, 4140). The non-food preparation and serving related occupations consisted of 13,409 service workers who were not food preparation and serving related workers, 108,055 white collar workers, and 15,186 blue collar workers.

Statistical Analysis

Descriptive statistical analyses were performed to summarize self-reported smokefree workplace policy coverage prevalence overall, by occupational groups, and by state. To calculate nationally representative estimates and account for the complex sample design of TUS-CPS, sample weights and replicate weights derived using the balanced repeated replication method were incorporated in all analyses.[18–20] The derivation of the CPS replication weights and their use in variance estimation are described elsewhere.[21] Subgroup analyses for complex sample surveys were conducted to obtain estimates by occupational group, sex, and state. Additionally, the relative percent difference in policy coverage between 2003 and 2010–2011 was calculated. Two-proportion z-tests were used to ascertain whether the differences between the two timepoints were statistically significant. Bonferroni correction was applied to account for multiple simultaneous comparisons. All analyses were conducted with SAS callable SUDAAN, version 11.0.0[22] and Microsoft Excel. Statistical significance was ascertained using a threshold of $p < .05$ divided by the number of groups being compared.

Results

Table 1 reports the prevalence of smokefree workplace policy coverage in 2003 and 2010–2011 overall and by occupation class, sex, and metropolitan versus nonmetropolitan status. From 2003 to 2010–2011, the prevalence of such coverage increased for all U.S. workers ($p < .0001$) and for all specific classes of workers ($p < .0001$) included in this study. Among all U.S. workers (with the previously described exclusions), the proportion reporting a smokefree workplace policy increased from 77.7% in 2003 to 82.8% in 2010–2011, representing a statistically significant 6.6% relative increase between the two time periods (Table 1).

Among the three occupation classes, blue collar and service workers showed the largest relative percentage increases in self-reported smokefree workplace policy coverage from 2003 to 2010–2011 (18.8% and 15.7%, respectively). As a result, the gap in coverage between these workers and white collar workers narrowed substantially over this period, but blue collar and service workers continued to lag behind white collar workers in this regard. In both time periods, female workers were more likely than male workers to work in a smokefree environment, both overall and for each of the occupation classes included in Table 1, with the exception of service workers in 2010–2011.

In 2003, indoor workers in metropolitan areas were more likely than those in nonmetropolitan areas to work in a smokefree environment ($p < .05$). In addition to being the case overall, this was also true of white collar and blue collar workers. However, workers in nonmetropolitan areas experienced larger percentage increases in self-reported smokefree workplace policy coverage from 2003 to 2010–2011 than workers in metropolitan areas (13.8% vs. 5.4%). Again, this was true for white collar and blue collar workers as well as overall. As a result, the disparity in coverage by metropolitan residence status that was evident in 2003 had disappeared in 2010–2011.

Table 2 reports the prevalence of smokefree workplace policy coverage in 2003 and 2010–2011 among food service workers as compared to nonfood service workers and among specific subgroups of food service workers. Table 2 also provides the sample sizes for responding indoor workers and the weighted proportion of female workers within each subgroup for the two study time-points. For food preparation and serving related occupations, the prevalence of self-reported smokefree workplace policy coverage increased from 58.0% in 2003 to 77.4% in 2010–2011 ($p < .0031$), while for nonfood preparation and serving related occupations, this prevalence increased from 79.0% in 2003 to 83.2% in 2010–2011 ($p < .0031$). In 2003, food service workers directly involved with the public reported lower smokefree workplace policy coverage (53.1%) than food service workers involved in cooking and food preparation (65.3%) ($p < .0031$). However, in 2010–2011, this gap disappeared (77.3% vs. 77.6%, respectively, a nonsignificant difference). In 2003, bartenders reported the lowest prevalence of such coverage (17.5%) among the 12 specific food service worker categories, while counter attendants, cafeteria, food concession, and coffee shop workers reported the highest prevalence (78.5%). In 2010–2011, these two groups continued to report the lowest and highest prevalences, but the gap narrowed to 61.7% and 89.8%, respectively. Smokefree workplace policy coverage also increased substantially among waiters and waitresses during this time period, from 43.7% to 77.4%.

Table 3 reports the proportion of adult indoor workers covered by self-reported smokefree workplace policies by state, overall and by sex. The prevalence of such coverage varied across states, ranging from 60.0% in Nevada to higher than 85% in Delaware, Maine, Massachusetts, and Utah in 2003, and from 63.3% in Nevada to higher than 90% in Minnesota, Montana, Oregon, and Washington in 2010–2011. The prevalence of such coverage increased for 21 states over the study period ($p < .0010$) and decreased in two states (California and Delaware, $p < .0010$). Changes in coverage by sex were similar to overall changes in most states.

Discussion

The findings from this study reveal that the proportion of indoor workers who reported being covered by smokefree workplace policies increased from 2003 to 2010–2011. This occurred overall, for white collar, blue collar, and service workers, and for food preparation and serving related occupations and nonfood preparation and serving related occupations. Moreover, disparities narrowed during the study period, with categories of workers that were less likely to be covered by smokefree workplace policy coverage in 2003 generally experiencing greater increases in coverage than categories of workers who started out with higher levels of coverage. For example, the prevalence of smokefree workplace policy coverage among blue collar and service workers over the study period increased by 18.8% and 15.7%, respectively, compared to a 3.5% increase among white collar workers. Similarly, the prevalence of such coverage increased by 33.4% among food preparation and serving related occupations during the study period, compared with a 5.2% increase among non-food preparation and serving related occupations. However, while gaps in coverage narrowed during the study period, they did not disappear, and important disparities in coverage by occupational group persist.

The increases in smokefree workplace policy coverage from 2003 to 2010–2011 overall and across occupational groups likely resulted in large part from the implementation of comprehensive smokefree laws in many states and communities during this period, as well as from the adoption of voluntary smokefree policies by employers.[1,3–7,23,24] The narrowing of disparities in policy coverage for blue collar, service, and food service workers probably resulted from the fact that these comprehensive laws include types of workplaces such as restaurants, bars, and manufacturing facilities that had traditionally been less likely to be covered by smokefree laws or voluntary smokefree policies.[1,4–7] The adoption of voluntary smokefree policies by proprietors of restaurants and other hospitality venues in response to changing social norms and customer preferences would be expected to have also contributed to this outcome.[1,10]

The persistence of disparities for blue collar, service, and food service workers likely resulted in part from the fact that 23 states have either no or partial statewide smoking restrictions,[4,6,7] and that the presence and strength of smoking restrictions adopted by local jurisdictions and employers also vary.[1,3,5] For example, partial state and local smoking restrictions may exempt bars, casinos, and some restaurants, and owners of bars and casinos may be less likely to adopt voluntary smokefree policies.[1,4–6,25] Continuing disparities may also be driven by variations in awareness, enforcement, and compliance related to smokefree policies.[1,10,26] For example, levels of compliance with smokefree policies may be lower in certain blue collar and service workplaces than in white collar workplaces.[1,10]

The major factor driving continuing disparities among states in smokefree workplace policy coverage during the study period is probably variation in state smoking restrictions. This is borne out by the fact that the variation in the changes in policy coverage observed across states during the study period appears to be associated with the implementation of comprehensive state smokefree laws during the study period. Of the 28 states that have implemented comprehensive smokefree laws, two states (Delaware and New York) did so

before the 2003 TUS-CPS survey (with the effective date of the New York law falling during the three-stage 2003 survey administration), 24 states did so during the period between the 2003 and the 2010–2011 surveys (with the effective dates of the Michigan, Kansas, Wisconsin, and South Dakota laws falling during the three-stage 2010–2011 survey administration), and two states (North Dakota and California) made pre-existing partial state smoking restrictions comprehensive after the 2010–2011 survey.[4,6,7] States with comprehensive smokefree laws taking effect prior to 2004, during 2004–2010, and after 2010 are indicated in Table 3. Of the 24 states that implemented comprehensive smokefree laws during the study period, 12 states experienced significant increases in the proportion of workers reporting smokefree workplace policies from 2003 to 2010–2011. Of the 25 states that had not implemented comprehensive smokefree laws through 2010, nine states experienced significant increases in smokefree workplace policy coverage and one state (California) experienced a significant decrease. Two of the states (Kentucky and West Virginia) without comprehensive smoke-free laws that experienced increases in coverage have a number of comprehensive local smokefree laws in place that cover a substantial portion of their states' populations, with some of these laws having been implemented during the study period.[23,27] North Dakota, which also experienced an increase in coverage, had implemented a state law making nonhospitality workplaces smokefree in 2005.

Possible explanations for the observed decline in coverage in Delaware and California include exemptions in these states' laws during the study period or inadequate or uneven enforcement. For example, until California implemented a comprehensive smokefree law in 2016, its state smoking restrictions included exemptions for ventilated employee smoking rooms and some other settings.[4,6] Another possible explanation for these results is uncertainty among TUS-CPS respondents regarding the survey's definition of smokefree workplace policy coverage. Respondents may have reported that they did not have a smokefree workplace policy because they thought of this policy as the result of a state law, instead of an employer policy, although results from cognitive testing conducted prior to fielding of the TUS-CPS suggested that respondents accurately understood the intent of the survey questions on workplace smoking restrictions.

Socioeconomic and geographic characteristics may also play a role in disparities in smokefree workplace policy coverage among states. A study of sociodemographic disparities in coverage by local smokefree laws in ten states that lacked comprehensive state smoke-free laws found that communities with less educated and lower-income residents were generally less likely to have implemented comprehensive local smokefree laws.[28] In several, but not all, of these states, communities in urban areas were more likely than communities in nonurban areas to have 100% local smokefree laws.[28]

The role of variations in state smoking restrictions in contributing to continuing disparities in smokefree workplace policy coverage among states points to the importance of establishing comprehensive smokefree protections in the 23 states that currently lack such protections. Rapid progress in implementation of such laws during 2002–2010 has largely stalled since 2010, in part because some of these 23 states have focused instead on implementing comprehensive smokefree laws at the local level.[6,7] Where implementation of comprehensive laws is not possible at the state level, these laws can often be implemented at

the local level, as shown by the fact that as of April 2017 15 of the 23 states that lack such laws have at least one local jurisdiction with a comprehensive smokefree law.[27] The finding of varying smokefree workplace policy coverage across states also points to the importance of consistently enforcing these policies.

The evidence indicates that smokefree workplace policies reduce SHS exposure among nonsmokers, increase smoking cessation, reduce smoking prevalence, can reduce health care costs, and do not have an adverse impact on the hospitality industry.[1,2,9,10] In addition to being less likely to be covered by smokefree workplace policies and more likely to be exposed to SHS on the job, service workers, including workers in food preparation and serving related occupations, and blue collar workers are also more likely to be smokers.[1,3,13–16,29] For example, a study drawing on 2011–2013 National Health Interview Survey data found that 25.9% of adults working in the accommodation and food services sector were current smokers, compared with 17.3% of all other workers,[29] and bartenders and restaurant wait staff have been found to have even higher cigarette smoking rates than other food service workers.[13] The increases in smokefree workplace policy coverage among these occupations reported in this study would be expected to help address this disparity by motivating and helping workers in these occupations to quit smoking.[1,3,10,13,14,29,30]

Major strengths of this study include its use of a standard, recurring survey with a large, nationally representative sample, as well as the rich occupational data provided by CPS. Another strength of the study is its use of the same framework for reporting patterns in smokefree workplace policy coverage that was used in several previous studies on this topic that drew on TUS-CPS data.[12,13,17] This study is also subject to at least three limitations. First, smokefree workplace policies and occupational groups were self-reported, which could introduce bias. Second, response rates for TUS-CPS have decreased slightly over time. Lower response rates can introduce bias; however, the data were adjusted for nonresponse in the sample weighting procedures. Finally, TUS-CPS cannot distinguish whether self-reported workplace smoking restrictions were the result of state laws, local laws, or employer-initiated workplace policies.

In conclusion, coverage of indoor workers by smokefree workplace policies generally increased between 2003 and 2010–2011, both overall and when stratified by occupation and by state, bringing the United States closer to meeting the *Healthy People 2020* objective of 100% smokefree workplace policy coverage.[31] However, while occupational disparities in coverage narrowed substantially among workers during the study period, these disparities persisted. Disparities in coverage also persist across states. In order to eliminate remaining disparities in smokefree workplace protections, accelerated efforts are warranted to protect all employed U.S. adults from the health risks posed by SHS in their workplaces.

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Table 1

Proportion of Indoor Workers Aged ≥18 Covered by Smokefree Workplace Policies, Overall and by Occupation Class, Sex, and Metropolitan Status—TUS-CPS, 2003 and 2010–2011[a]

	Sample size		Proportion of indoor workers covered by smokefree workplace policies (% and 95% CIs)		
Occupation class by gender and metropolitan status	**2003**	**2010–2011**	**2003**	**2010–2011**	**Relative difference[b] (%)**
All U.S. Workers	74,728	70,749	77.7 (77.2, 78.1)	82.8 (82.4, 83.2)	**6.6**
Males	28,424	28,850	73.8 (73.1, 74.5)	80.3 (79.7, 80.8)	**8.7**
Females	46,304	41,899	80.6 (80.1, 81.0)	84.9 (84.4, 85.3)	**5.3**
Metropolitan	57,767	56,454	78.5 (78.0, 78.9)	82.7 (82.3, 83.1)	**5.4**
Nonmetropolitan	16,698	13,742	73.2 (71.6, 74.7)	83.3 (82.0, 84.5)	**13.8**
Not identified	263	553	82.4 (71.6, 89.6)	80.3 (74.8, 84.8)	−2.5
White collar workers	55,429	52,626	82.0 (81.5, 82.4)	84.9 (84.5, 85.3)	**3.5**
Males	19,008	19,413	79.8 (79.0, 80.5)	82.8 (82.2, 83.5)	**3.9**
Females	36,421	33,213	83.4 (82.9, 83.9)	86.3 (85.8, 86.8)	**3.4**
Metropolitan	43,986	43,037	82.3 (81.8, 82.8)	84.6 (84.2, 85.1)	**2.8**
Nonmetropolitan	11,259	9,210	79.9 (78.5, 81.3)	86.7 (85.5, 87.7)	**8.5**
Not identified	184	379	83.4 (72.4, 90.6)	84.9 (80.7, 88.2)	1.8
Blue collar workers	8,242	6,944	62.6 (61.1, 64.0)	74.3 (72.9, 75.7)	**18.8**
Males	5,792	5,228	60.1 (58.4, 61.9)	73.2 (71.7, 74.7)	**21.7**
Females	2,450	1,716	69.3 (66.8, 71.8)	78.4 (76.0, 80.7)	**13.1**
Metropolitan	5,627	4,853	64.4 (62.7, 66.1)	74.6 (73.1, 76.1)	**15.8**
Nonmetropolitan	2,583	2,019	57.1 (54.0, 60.1)	73.6 (70.5, 76.5)	**28.9**
Not identified	32	72	92.6 (79.1, 97.6)	64.7 (51.2, 76.3)	**−30.1**
Service workers	11,057	11,179	68.1 (67.1, 69.2)	78.9 (77.8, 79.9)	**15.7**
Males	3,624	4,209	64.3 (62.6, 65.9)	77.4 (75.8, 78.9)	**20.3**
Females	7,433	6,970	70.5 (69.2, 71.8)	80.0 (78.7, 81.3)	**13.4**
Metropolitan	8,154	8,564	68.5 (67.1, 69.8)	78.5 (77.4, 79.6)	**14.6**
Nonmetropolitan	2,856	2,513	66.5 (64.0, 69.0)	80.7 (78.2, 83.0)	**21.4**
Not identified	47	102	71.4 (47.5, 87.3)	76.7 (60.4, 87.6)	7.4

[a]The analysis only included respondents to TUS-CPS aged ≥18 years who reported that they worked indoors and mainly worked in an office building or in another nonresidential indoor place at the time of the interview. Those respondents who reported the presence of a smokefree workplace policy at their place of employment that did not permit smoking in work areas and that also did not permit smoking in

indoor public or common areas (such as lobbies, rest rooms, and lunch rooms) were considered to be covered by a smokefree workplace policy. *White collar workers* included management, business, and financial occupations (0010–0950); professional and related occupations (1000–3540); sales and related occupations (4700–4960); and office and administrative support occupations (5000–5930). *Blue collar workers* included installation, maintenance, and repair occupations (7000–7620); and production occupations (7700–8960). *Service workers* included healthcare support occupations (3600–3650); protective service occupations (3700–3950); food preparation and serving related occupations (4000–4160); building and grounds cleaning and maintenance occupations (4200–4250); and personal care and service occupations (4300–4650).

[b] Relative difference = 100 × (2010–2011 estimate – 2003 estimate)/2003 estimate. The significant relative differences based on two-proportion z-tests are bolded. A Bonferroni-adjusted *p* value of .0021 was used as the threshold for the multisubgroup comparisons.

Table 2

Proportion of Indoor Workers Aged ≥18 Covered by Smokefree Workplace Policies, by Occupation (food service vs. nonfood service workers and specific subgroups of food service workers)—TUS-CPS, 2003 and 2010–2011[a]

	Sample size (weighted % female)		Proportion of indoor workers covered by smokefree workplace policies (% and 95% CIs)		
Worker Category (occupational code)	**2003**	**2010–2011**	**2003**	**2010–2011**	**Relative difference[b] (%)**
Nonfood preparation and serving related occupations	70,143 (56.7)	66,507 (54.7)	79.0 (78.6, 79.5)	83.2 (82.8, 83.6)	**5.2**
Food preparation and serving related occupations	4,585 (57.6)	4,242 (55.5)	58.0 (56.1, 59.9)	77.4 (75.7, 79.1)	**33.4**
Chefs and head cooks (4000)	171 (26.1)	177 (21.9)	60.5 (50.5, 69.6)	81.7 (74.1, 87.5)	**35.2**
First-line supervisors/managers of food preparation and serving workers (4010)	465 (58.9)	317 (56.1)	73.5 (68.4, 78.0)	81.1 (75.7, 85.5)	10.4
Cooks (4020)	1,141 (41.2)	1,136 (40.8)	66.2 (62.8, 69.5)	78.6 (75.4, 81.5)	**18.7**
Food preparation workers (4030)	387 (64.4)	403 (57.4)	67.3 (60.8, 73.1)	75.9 (69.9, 81.0)	12.9
Bartenders (4040)	298 (60.8)	252 (58.1)	17.5 (12.4, 24.0)	61.7 (54.5, 68.5)	**253.2**
Combined food preparation and serving workers, including fast food (4050)	181 (79.8)	180 (65.3)	74.6 (63.7, 83.0)	84.7 (78.8, 89.2)	13.6
Counter attendants, cafeteria, food concession, and coffee shop (4060)	144 (63.6)	102 (71.0)	78.5 (69.7, 85.3)	89.8 (81.5, 94.7)	14.5
Waiters and waitresses (4110)	1,198 (70.9)	1,123 (70.2)	43.7 (39.6, 47.8)	77.4 (74.3, 80.2)	**77.2**
Food servers, nonrestaurant (4120)	130 (65.1)	108 (66.1)	74.8 (66.4, 81.7)	75.2 (62.4, 84.7)	0.5
Dining room and cafeteria attendants and bartender helpers (4130)	211 (50.9)	206 (48.3)	64.4 (56.2, 71.9)	75.5 (67.4, 82.1)	17.2
Dishwashers (4140)	150 (32.8)	116 (21.3)	57.7 (45.7, 68.9)	67.7 (57.7, 76.3)	17.3
Hosts and hostesses, restaurant, lounge, and coffee shop (4150)	108 (84.3)	122 (80.1)	47.0 (35.6, 58.7)	77.4 (67.3, 85.1)	**64.7**
Food service workers directly involved with the public (4010, 4040, 4050, 4060, 4110, 4120, 4130, 4150)	2,270 (66.9)	2,093 (65.6)	53.1 (50.6, 55.6)	77.3 (75.0, 79.5)	**45.6**
Food service workers involved in cooking & food preparation (4000, 4020, 4030, 4140)	2,315 (43.9)	2,149 (41.5)	65.3 (62.5, 67.9)	77.6 (74.9, 80.0)	**18.8**

[a]The analysis only included respondents to TUS-CPS aged ≥18 years who reported that they worked indoors and mainly worked in an office building or in another nonresidential place at the time of the interview. Those respondents who reported the presence of a smokefree workplace policy at their place of employment that did not permit smoking in work areas and that also did not permit smoking in indoor public or common areas (such as lobbies, rest rooms, and lunch rooms) were considered to be covered by a smokefree workplace policy. The nonfood preparation and serving related occupations consisted of service workers who were not food preparation and service related workers, white collar workers, and blue collar workers.

[b]Relative difference = 100 × (2010–2011 estimate – 2003 estimate)/2003 estimate. The significant relative differences based on two-proportion z-tests are bolded. A Bonferroni-adjusted *p* value of .0031 was used as the threshold for the multisubgroup comparisons.

Table 3

Proportion (with 95% CIs) of Indoor Workers Aged ≥18 Covered by Smokefree Workplace Policies, by State (overall and by sex)—TUS-CPS, 2003 and 2010–2011[a]

	ALL			Males		Females	
State	**2003**	**2010–2011**	**Relative Difference[b] (%)**	**2003**	**2010–2011**	**2003**	**2010–2011**
Total United States	77.7 (77.2, 78.1)	82.8 (82.4, 83.2)	6.6	73.8 (73.1, 74.5)	80.3 (79.7, 80.8)	80.6 (80.1, 81.0)	84.9 (84.4, 85.3)
States that implemented comprehensive smokefree laws prior to 2004[e]							
Delaware[c]	88.7 (85.7, 91.1)	77.8 (74.1, 81.1)	−12.3	86.7 (82.9, 89.8)	78.8 (73.7, 83.1)	90.1 (87.0, 92.5)	**77.1 (73.2, 80.6)**
New York	84.3 (82.8, 85.6)	84.8 (83.2, 86.3)	0.7	80.9 (78.4, 83.3)	82.2 (79.5, 84.6)	86.9 (85.4, 88.3)	87.0 (85.3, 88.6)
States that implemented comprehensive smokefree laws during 2004–2010[f]							
Arizona	78.5 (74.4, 82.2)	83.7 (80.4, 86.5)	6.5	73.8 (66.7, 79.7)	80.5 (75.2, 84.9)	82.5 (79.1, 85.5)	86.3 (82.7, 89.2)
Colorado	77.0 (70.9, 82.2)	83.6 (80.4, 86.4)	8.5	75.2 (69.3, 80.3)	80.5 (76.7, 83.9)	78.6 (71.2, 84.5)	86.5 (82.8, 89.5)
Hawaii	75.0 (71.3, 78.3)	70.7 (66.4, 74.7)	−5.7	75.9 (70.0, 80.9)	69.9 (63.4, 75.7)	74.3 (69.3, 78.7)	71.3 (66.7, 75.4)
District of Columbia	83.3 (79.9, 86.2)	87.2 (84.9, 89.1)	4.7	80.3 (74.7, 85.0)	85.8 (82.4, 88.6)	85.7 (81.8, 88.8)	88.5 (86.0, 90.6)
Illinois[d]	77.0 (74.6, 79.1)	88.4 (86.7, 89.9)	14.9	72.5 (68.6, 76.0)	**88.6 (86.2, 90.6)**	80.5 (78.4, 82.5)	**88.2 (86.1, 90.1)**
Iowa[d]	75.6 (72.6, 78.4)	88.8 (86.2, 91.1)	17.5	68.8 (62.7, 74.3)	**86.8 (83.6, 89.4)**	80.7 (76.9, 84.0)	**90.4 (87.2, 92.9)**
Kansas[d]	75.5 (72.7, 78.1)	86.3 (83.1, 88.9)	14.3	70.6 (66.3, 74.5)	**83.7 (78.6, 87.7)**	79.3 (76.3, 82.0)	**88.4 (85.3, 90.9)**
Maine	85.4 (82.6, 87.8)	85.4 (83.0, 87.6)	0.1	81.9 (77.5, 85.5)	84.1 (80.1, 87.4)	87.8 (85.1, 90.1)	86.4 (83.5, 88.9)
Maryland	84.2 (80.6, 87.2)	86.6 (84.4, 88.4)	2.9	83.0 (77.8, 87.1)	85.3 (81.8, 88.3)	85.0 (81.2, 88.1)	87.6 (85.4, 89.5)
Massachusetts	87.2 (84.8, 89.2)	84.7 (81.1, 87.7)	−2.9	84.8 (81.2, 87.8)	81.6 (76.3, 85.9)	89.1 (86.7, 91.1)	87.1 (83.8, 89.8)
Michigan[d]	71.1 (68.8, 73.3)	88.7 (86.8, 90.5)	24.8	65.0 (61.2, 68.6)	**85.9 (82.7, 88.7)**	76.2 (73.5, 78.8)	**91.2 (89.0, 93.1)**
Minnesota[d]	81.2 (79.2, 83.0)	91.0 (89.2, 92.6)	12.2	75.9 (72.4, 79.1)	**89.8 (87.2, 91.9)**	85.2 (82.9, 87.3)	**92.1 (90.2, 93.7)**
Montana[d]	75.2 (72.0, 78.2)	92.6 (89.5, 94.9)	23.2	73.9 (69.0, 78.2)	**92.1 (86.6, 95.5)**	76.1 (72.5, 79.3)	**93.0 (89.1, 95.5)**
Nebraska	77.4 (74.9, 79.8)	83.1 (79.9, 85.9)	7.4	69.5 (65.4, 73.3)	**80.0 (74.8, 84.3)**	82.7 (79.4, 85.6)	85.8 (82.1, 88.8)
New Jersey[d]	79.9 (77.8, 82.0)	85.6 (83.0, 87.9)	7.1	76.5 (73.1, 79.6)	83.9 (80.4, 86.9)	82.6 (80.1, 84.8)	87.1 (83.7, 89.9)
New Mexico	77.1 (73.9, 80.1)	78.5 (73.2, 83.0)	1.7	75.4 (70.3, 79.8)	76.6 (67.3, 83.8)	78.3 (74.2, 81.9)	80.1 (74.2, 84.9)
Ohio[d]	71.2 (68.3, 73.9)	84.8 (82.6, 86.7)	19.1	65.3 (60.4, 69.9)	**82.7 (79.5, 85.6)**	75.8 (73.1, 78.3)	**86.4 (84.0, 88.5)**
Oregon[d]	80.9 (77.6, 83.8)	91.1 (89.2, 92.8)	12.7	77.5 (73.3, 81.2)	**90.6 (87.2, 93.1)**	83.7 (79.8, 87.0)	**91.6 (89.1, 93.5)**
Rhode Island[d]	81.0 (78.5, 83.3)	86.9 (84.5, 89.1)	7.3	79.9 (75.7, 83.5)	85.3 (81.3, 88.5)	81.9 (79.0, 84.5)	**88.3 (85.6, 90.5)**

State	ALL		Relative Difference[b] (%)	Males		Females	
	2003	2010–2011		2003	2010–2011	2003	2010–2011
South Dakota	82.4 (79.2, 85.2)	83.5 (81.2, 85.5)	1.3	79.8 (75.3, 83.7)	81.3 (77.8, 84.4)	84.2 (81.0, 86.9)	85.0 (81.9, 87.7)
Utah	85.7 (82.7, 88.3)	89.4 (86.9, 91.4)	4.3	84.3 (79.9, 87.8)	91.8 (88.7, 94.2)	86.9 (83.7, 89.6)	87.0 (83.5, 89.9)
Vermont	83.5 (81.2, 85.6)	86.5 (84.1, 88.6)	3.6	78.2 (73.6, 82.2)	82.6 (78.8, 85.9)	87.0 (83.9, 89.6)	89.3 (86.4, 91.7)
Washington[d]	79.3 (76.5, 81.9)	91.5 (89.7, 93.1)	15.4	75.1 (70.0, 79.5)	**89.4 (85.8, 92.2)**	82.5 (79.3, 85.3)	**93.3 (91.3, 94.8)**
Wisconsin[d]	76.9 (73.6, 79.9)	86.5 (84.6, 88.2)	12.5	72.4 (67.4, 76.8)	**82.9 (79.2, 86.1)**	80.2 (77.1, 83.0)	**89.4 (86.7, 91.5)**
States that implemented comprehensive smokefree laws after 2010							
California[c]	84.3 (83.0, 85.5)	79.6 (78.3, 80.8)	−5.6	82.5 (80.7, 84.3)	**77.0 (75.1, 78.8)**	85.8 (84.2, 87.4)	**81.9 (80.5, 83.3)**
North Dakota[d]	78.3 (75.4, 80.9)	86.6 (83.5, 89.1)	10.5	73.5 (68.6, 77.9)	**86.1 (81.9, 89.4)**	81.4 (78.0, 84.3)	86.9 (83.3, 89.9)
States that have not implemented comprehensive smokefree laws							
Alabama	76.1 (72.3, 79.6)	83.0 (79.5, 86.0)	9	73.0 (67.5, 77.8)	81.5 (76.5, 85.7)	78.4 (73.6, 82.5)	84.2 (80.0, 87.6)
Alaska	81.7 (79.1, 84.1)	83.0 (79.7, 86.0)	1.6	80.3 (74.8, 84.8)	78.8 (73.4, 83.4)	82.7 (79.5, 85.5)	86.5 (81.7, 90.2)
Arkansas	69.8 (63.3, 75.5)	78.7 (72.1, 84.2)	12.9	64.6 (55.1, 73.0)	73.6 (63.4, 81.7)	73.8 (68.1, 78.7)	82.8 (77.5, 87.0)
Connecticut	79.1 (76.1, 81.8)	82.3 (79.9, 84.5)	4	78.1 (74.0, 81.8)	79.5 (75.8, 82.7)	79.8 (76.1, 83.1)	84.7 (81.9, 87.1)
Florida	78.4 (76.1, 80.5)	81.8 (79.9, 83.5)	4.3	75.5 (72.4, 78.3)	79.6 (76.8, 82.2)	80.3 (77.8, 82.5)	83.5 (81.0, 85.7)
Georgia[d]	71.3 (67.7, 74.7)	79.0 (76.5, 81.4)	10.8	67.7 (62.2, 72.8)	75.3 (71.0, 79.2)	73.7 (68.9, 77.9)	81.9 (78.6, 84.7)
Idaho[d]	75.1 (71.3, 78.6)	84.4 (81.0, 87.2)	12.3	68.9 (62.4, 74.8)	79.9 (74.1, 84.6)	79.7 (75.7, 83.1)	**88.2 (84.8, 91.0)**
Indiana	70.8 (66.2, 75.1)	79.9 (76.5, 83.0)	12.9	64.2 (58.3, 69.7)	75.4 (69.6, 80.5)	76.1 (71.2, 80.3)	83.8 (81.0, 86.2)
Kentucky[d]	69.2 (65.7, 72.5)	81.0 (77.9, 83.8)	17.1	64.0 (58.8, 68.9)	**81.0 (77.2, 84.3)**	73.2 (68.8, 77.2)	81.1 (76.7, 84.7)
Louisiana	67.7 (61.9, 73.1)	72.1 (64.0, 78.9)	6.4	58.9 (50.6, 66.8)	68.0 (57.2, 77.1)	72.9 (67.1, 78.1)	75.2 (67.4, 81.7)
Mississippi	75.2 (69.1, 80.5)	79.6 (74.6, 83.8)	5.8	68.5 (60.7, 75.4)	75.8 (69.5, 81.2)	79.4 (72.8, 84.8)	81.9 (76.5, 86.3)
Missouri	74.2 (70.1, 77.9)	77.6 (74.5, 80.4)	4.6	66.8 (61.7, 71.5)	74.0 (69.7, 77.9)	79.4 (74.9, 83.2)	80.1 (76.6, 83.1)
Nevada	60.0 (56.8, 63.1)	63.3 (60.1, 66.3)	5.4	55.0 (49.6, 60.4)	60.8 (56.3, 65.0)	63.8 (60.9, 66.6)	65.5 (61.2, 69.6)
New Hampshire	84.0 (81.6, 86.1)	82.1 (79.7, 84.2)	−2.3	82.2 (78.8, 85.2)	80.1 (76.4, 83.3)	85.4 (82.7, 87.8)	83.8 (80.9, 86.3)
North Carolina[d]	71.1 (67.8, 74.2)	82.0 (79.3, 84.3)	15.2	66.4 (62.3, 70.4)	**78.1 (74.2, 81.6)**	74.7 (70.6, 78.3)	**84.8 (81.9, 87.4)**
Oklahoma	77.1 (73.4, 80.4)	81.7 (78.2, 84.7)	6	73.2 (67.3, 78.3)	79.7 (74.7, 83.9)	79.9 (75.3, 83.9)	83.3 (79.2, 86.8)
Pennsylvania[d]	77.7 (75.1, 80.1)	87.3 (85.5, 88.9)	12.3	73.7 (69.8, 77.2)	**85.4 (82.9, 87.6)**	80.7 (77.6, 83.5)	**88.7 (86.5, 90.6)**
South Carolina	72.4 (69.7, 75.0)	75.5 (72.2, 78.6)	4.3	64.1 (58.6, 69.3)	68.9 (64.2, 73.3)	77.9 (74.4, 81.1)	80.4 (76.8, 83.6)
Tennessee[d]	72.6 (69.1, 75.8)	82.5 (78.8, 85.7)	13.6	66.5 (60.8, 71.8)	78.0 (71.8, 83.1)	77.1 (73.3, 80.4)	**86.2 (82.6, 89.2)**

State	ALL		Relative Difference[b] (%)	Males		Females	
	2003	2010–2011		2003	2010–2011	2003	2010–2011
Texas	75.5 (73.3, 77.6)	74.8 (72.8, 76.7)	−0.9	71.4 (68.4, 74.2)	71.0 (68.4, 73.5)	78.6 (75.9, 81.1)	78.0 (75.4, 80.4)
Virginia[d]	76.8 (74.0, 79.5)	83.1 (80.6, 85.3)	8.1	74.9 (70.0, 79.2)	80.2 (76.2, 83.7)	78.3 (74.7, 81.5)	85.5 (82.2, 88.4)
West Virginia[d]	76.0 (72.5, 79.2)	85.7 (82.1, 88.7)	12.7	75.1 (70.1, 79.5)	83.9 (78.6, 88.0)	76.7 (73.0, 80.0)	**86.9 (82.3, 90.5)**
Wyoming	75.9 (72.9, 78.7)	80.3 (77.6, 82.7)	5.8	71.6 (66.5, 76.2)	78.0 (73.2, 82.2)	78.3 (75.1, 81.2)	81.9 (78.9, 84.6)

[a]The analysis only included respondents to TUS-CPS aged ≥18 years who reported that they worked indoors and mainly worked in an office building or in another nonresidential place at the time of the interview. Those respondents who reported the presence of a smokefree workplace policy at their place of employment that did not permit smoking in work areas and that also did not permit smoking in indoor public or common areas (such as lobbies, rest rooms, and lunch rooms) were considered to be covered by a smokefree workplace policy. Two-proportion z-tests were used to ascertain significant differences between values for the two timepoints for each state. A Bonferroni-adjusted *p* value of .0010 was used as the threshold for the multisubgroup comparisons. Separate state-level statistical tests were performed for males and females, respectively, across the two time periods. For each sex, the state-level 2010–2011 estimates were bolded if a significant change from 2003 was detected for that sex.

[b]Relative difference = 100 × (2010–2011 estimate – 2003 estimate)/2003 estimate.

[c]States showed significant decreases in smokefree workplace policy coverage prevalence from 2003 to 2010–2011.

[d]States showed significant increases in smokefree workplace policy coverage prevalence from 2003 to 2010–2011.

[e]The New York smokefree law's effective date fell during the 2003 survey administration.

[f]The effective dates for the Michigan, Kansas, Wisconsin and South Dakota smokefree laws fell during the 2010–2011 survey administration.