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Inequity in California's Smokefree Workplace Laws: A Legal Epidemiologic Analysis of Loophole Closures

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Introduction: California's landmark 1994 Smokefree Workplace Act contained numerous exemptions, or loopholes, believed to contribute to inequities in smokefree air protections among low-income communities and communities of color (e.g., permitting smoking in warehouses, hotel common areas). Cities/counties were not prevented from adopting stronger laws. This study coded municipal laws and state law changes (in 2015–2016) for loophole closures and determined their effects in reducing inequities in smokefree workplace protections.

Methods: Public health attorneys reviewed current laws for 536 of California's 539 cities and counties from January 2017 to May 2018 and coded for 19 loophole closures identified from legislative actions (inter-rater reliability, 87%). The local policy data were linked with population demographics from intercensal estimates (2012–2016) and adult smoking prevalence (2014). The analyses were cross-sectional and conducted in February–June 2019.

Results: Between 1994 and 2018, jurisdictions closed 6.09 loopholes on average (SD=5.28). Urban jurisdictions closed more loopholes than rural jurisdictions (mean=6.40 vs 3.94, $p<0.001$), and loophole closure scores correlated positively with population size, median household income, and percentage white, non-Hispanic residents ($p<0.001$ for all). Population demographics and the loophole closure score explained 43% of the variance in jurisdictions' adult smoking prevalence. State law changes in 2015–2016 increased loophole closure scores and decreased jurisdiction variation (mean=9.74, SD=3.56); closed more loopholes in rural versus urban jurisdictions (mean_{gain}=4.44 vs 3.72, $p=0.002$); and in less populated, less affluent jurisdictions, with greater racial/ethnic diversity, and higher smoking prevalence ($p<0.001$ for all).

Conclusions: Although jurisdictions made important progress in closing loopholes in smokefree air law, state law changes achieved greater reductions in inequities in policy coverage.

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INTRODUCTION

Smokefree laws denormalize smoking, reduce secondhand smoke exposure, reduce heart attack and asthma hospitalizations among nonsmokers, and help smokers quit.¹ Although the proportion of the U.S. population protected by a comprehensive state or local smokefree law continues to increase, gaps in coverage remain and are believed to contribute to tobacco-related health inequities.^{2–4}

California was the first state to prohibit smoking in indoor workplaces. Although progressive at the time,

California's 1994 Smokefree Workplace Act had numerous exemptions, or loopholes, that allowed smoking in

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workplaces, such as hotel common areas, small businesses, and outdoor work sites.³ In addition, hotels could allow smoking in a majority (65%) of guestrooms. These loopholes disproportionately affected blue collar, service, and food workers.² With these exemptions, California failed to meet the Centers for Disease Control and Prevention's definition of a comprehensive smokefree law.⁵

Between 2004 and 2010, a total of 24 states implemented comprehensive smokefree laws.⁵ In a study comparing U.S. workers' self-reported protections from 2003 to 2010–2011, California was 1 of only 2 states that declined in coverage; state exemptions and inadequate or uneven enforcement were blamed.⁶

In California, cities and counties were not prevented from adopting stronger smokefree protections that closed loopholes in the state law, which preemption precludes for smokefree workplace law in 13 states (as of January 2, 2019).^{7,8} Listed in Table 1 are 11 specific indoor workplaces and 8 outdoor workplaces not covered by the 1994 California state law. The list is informed by local legislative actions for which cities and counties in California have

adopted laws to protect people from exposure to second-hand smoke. Consolidating reports from the American Nonsmokers' Rights Foundation and the American Lung Association in California, at least 130 California cities and counties had closed at least 1 of these 19 state smokefree law loopholes as of April 2019.^{9,10} Although advocacy organizations have tracked local smokefree policies, none has tracked such a comprehensive set of exemptions in state law, which can be legally complex, and none has compared the characteristics of jurisdictions with and without loophole closures to address questions of healthy equity.

More recently, California state law closed 6 of the 19 loopholes for indoor smokefree workplaces (Table 1). In 2015, California state law prohibited tobacco smoking in private residences used for childcare at all hours, regardless of whether children were present.¹¹ In 2016, state law prohibited smoking in at least 80% of a hotel's guestrooms and eliminated exemptions that permitted smoking in hotel common areas, businesses with 5 or fewer employees, owner-operated businesses with no employees, and

Table 1. Jurisdiction and State Law Closures of 19 Exemptions (Loopholes) in California's 1994 Smokefree Workplace Act

Loopholes	Jurisdictions with loopholes closed			
	Municipal laws			State laws, ^a 2015–2016, %
	Rural, % (n=119)	Urban, % (n=417)	All, % (n=536)	
Indoor smokefree workplace loopholes				
Hotel common areas (e.g., lobbies, ballrooms)	34	49	46	100
Small businesses (i.e., five or fewer employees)	34	46	43	100
Vape shops	31	46	43	—
Owner-operated businesses with no employees	34	42	40	100
Warehouses	24	38	35	100
Patient smoking areas in long-term care facilities	19	34	31	—
Medical research settings	19	32	29	—
Hotel rooms (% of hotel rooms smokefree)	41	50	48	80
Tobacco shops	8	22	19	—
Theaters or playhouses	8	17	15	—
Family daycare settings, at all hours	1	7	6	100
Outdoor smokefree workplace loopholes				
Recreational spaces	45	73	67	—
Other outdoor areas (e.g., construction)	55	58	57	—
Buffers around enclosed smokefree areas	24	31	29	—
Outdoor dining	11	32	27	—
Service areas (e.g., taxi stand)	8	27	23	—
Events (e.g., farmers markets)	8	25	22	—
Professional sports or outdoor entertainment venues	12	23	21	—
Community streets or districts	4	11	10	—

Source: Original policy coding, 2012–2016 American Community Survey.

Note: Boldface indicates statistical significance ($p < 0.05$) in workplace protections for rural and urban jurisdictions before the 2015–2016 state law closures.

^aColumn shows the six loopholes closed by state laws in 2015–2016.

warehouse facilities.¹² In 2016, California laws also redefined smoking and tobacco products to include vaping products and specifically prohibited cannabis use where smoking is prohibited.¹³ However, these changes in state law did not address smoking in outdoor work areas, and 5 indoor exemptions remain (Table 1).

This legal epidemiologic study sought to quantify the extent of city and county closures of loopholes in California's 1994 Smokefree Workplace Act and document the variety of products regulated. A secondary analysis examined variation in the effect of the state law changes that followed in 2015–2016. With interest in characterizing inequities in smokefree protections, loophole closures were examined by jurisdiction demographic characteristics, including race/ethnicity. Prior research in 10 states found that urban communities with a greater proportion of higher-income residents were more likely to implement comprehensive smokefree air laws.¹⁴ Hence, it was hypothesized that jurisdictions closing more loopholes in California's 1994 Smokefree Workplace Act would tend to be urban and have higher median household income. Adjusting for jurisdiction demographics, it was further hypothesized that more loophole closures, yielding greater smokefree protections, would be negatively associated with adult smoking prevalence. With state law changes in 2015–2016 closing 6 loopholes, less variation was anticipated between jurisdictions and reduced inequity. Specifically examined was whether recent state laws had the effect of closing more remaining loopholes among rural, less-populated jurisdictions, with lower median household income; greater racial/ethnic diversity; and higher smoking prevalence.

METHODS

Study Sample

This observational, cross-sectional study, with original coding of California municipal laws, examined the extent to which local jurisdictions in California (and, subsequently, the state) closed loopholes. Jurisdictions' loophole closures were initially coded based on municipal laws enacted since 1994 (to the present, May 2018) and secondarily added in were state law changes in 2015 and 2016. The loophole closure scores were linked with jurisdiction-level demographic data and adult conventional cigarette smoking prevalence.

The League of California Cities and the California State Association of Counties were reviewed to identify California's 539 jurisdictions (481 cities and 58 counties, including the City and County of San Francisco). Three sources of jurisdiction data were linked: (1) legal coding of current laws, (2) population demographics from the American Community Survey (2012–2016), and (3) adult smoking prevalence from the 2014 California Health Interview Survey. The source data were publicly available, and the study qualified for exemption from institutional review.

Measures

Jurisdictions' municipal codes were found online. When unavailable, city/county offices were contacted directly. The municipal codes were searched for laws regulating smoking or tobacco use in workplaces using keywords: *cigarette*, *tobacco*, *smok**, *electronic*, and *vap**. Of the 539 jurisdictions, laws for 536 cities and counties were obtained, leaving 3 jurisdictions with inaccessible municipal codes excluded. In California, county laws apply only to unincorporated municipalities.

Smoking or tobacco use laws from each jurisdiction were reviewed and coded (yes or no) for specifically regulating the smoking of tobacco, cannabis, or other plant-based products; vaping of nicotine, cannabis, or other substances; and the use of smokeless tobacco products. A jurisdiction was coded as regulating vaping only if the municipal code explicitly referenced the devices or state law regulating the same.

Health policy legal experts on the team identified a set of 19 workplace loopholes (11 indoor and 8 outdoor, Table 1) in the California Smokefree Workplace Act by considering key workplace settings and local legislative actions passed since 1994. The outdoor loopholes were identified by considering municipal laws passed to protect people from secondhand smoke exposure with a focus on outdoor settings that include workers (e.g., taxi stands, construction sites). Community streets or districts were included with consideration of workers, such as delivery or postal workers, peace officers, sanitation workers, and landscapers or gardeners.

A systematic protocol for reviewing the municipal codes was developed with the criteria for coding each of the 19 loopholes as closed (1) or open (0). An exception was the percentage of hotel rooms required to be smokefree, which could range from 35% (1994 state law) to 100%, and that state law in 2016 increased to a minimum of 80%. Two loophole closure scores (LCSs) were calculated for each jurisdiction: (1) based on coding of the city/county laws (possible range, 0.35–19; owing to the 35% minimum of hotel rooms being smokefree per 1994 state law) and (2) a "post state law closure" score adjusted for state law closures in 2015–2016 (possible range, 5.80–19; owing to 6 state law closures, including raising the minimum percentage of hotel rooms being smokefree to 80%). Also calculated were gain scores reflecting changes in the LCS with the passage of the 2015–2016 state law changes (possible range, 0–5.45; with 0.45 reflecting the increase in the minimum percent of hotel rooms covered from 35% to 80%). Where available, the effective date was recorded for each loophole closure.

Five health policy lawyers coded the ordinances between January 2017 and May 2018. For the first 50 jurisdictions, the ordinances were double-coded for training and consistency. Three lawyers independently coded the remaining 486 jurisdiction laws, of which 5% were randomly sampled for dual coding to calculate the inter-rater reliability, which was determined to be 87%.

Four variables were calculated from the American Community Survey estimates (2012–2016) for urban and rural classification, population size, median household income, and the percentage of white, non-Hispanic residents. The American Community Survey issues 5-year estimates for smaller jurisdictions, with 2012–2016 data the best match for the midpoint (2014) to the jurisdiction smoking prevalence data.

Adult (age ≥ 18 years) cigarette smoking prevalence for each jurisdiction was obtained from the 2014 California Health Interview Survey,¹⁵ which was the most recent publicly available data at the jurisdiction level.

Statistical Analysis

Descriptive statistics (means, frequencies) were run for each loophole closure, the summed LCS, and for each covered product type. Differences were examined by rural and urban classification using *t*-tests for continuous variables and chi-squared tests for categorical variables. Spearman correlations were run for the LCS with population size and median household income in the log scale and the percentage of white, non-Hispanic residents. A linear regression model with smoking prevalence as the outcome examined the association with LCS, controlling for rural and urban classification, population size (log scale), median household income (log scale), and percentage white, non-Hispanic. To test for the narrowing of inequities with state law changes in 2015–2016, the tests of differences by jurisdiction characteristics were repeated with the LCS gain scores as the outcome of interest, which reflected the improvements in loophole closures. Variability in the recording of policy dates and missing data made it impractical to model change over time.

RESULTS

Nearly all jurisdictions (91%) regulated tobacco smoking, and a majority regulated smoking cannabis (72%) or other plant material (66%). A minority regulated the vaping of nicotine (42%), cannabis (38%), or other substances (38%); 24% regulated the use of smokeless tobacco. Urban jurisdictions were significantly more likely than rural jurisdictions to regulate smoking of tobacco and plant materials and any vaping ($p < 0.05$ for all, Figure 1).

Between 1994 and 2018, California jurisdictions closed on average 6.09 loopholes of a possible 19 (SD=5.28; range, 0.35–18.80); 471 (88%) jurisdictions closed at least 1 loophole; 36 jurisdictions (7%) closed all 11 indoor loopholes; 14 jurisdictions (3%) closed all 8 outdoor loopholes; and 1 jurisdiction (City of Arcata in Humboldt County) closed all 19 loopholes. Urban

jurisdictions (mean=6.63, SD=5.43) closed significantly more loopholes than rural jurisdictions (mean=4.21, SD=4.19, $F_{[1,535]}=20.13$, $p < 0.001$). LCS correlated positively with the population size ($r = 0.31$), median household income ($r = 0.32$), and percentage white, non-Hispanic residents ($r = 0.10$; $p < 0.001$ for all). Figure 2A shows average LCSs owing to municipal laws aggregated at the county level with weighting for jurisdiction population size.

Table 1 summarizes the frequency of jurisdictions closing each of the 19 loopholes overall and by rural and urban classification and with the state law changes in 2015–2016. Although state law has not addressed smoking in outdoor workplaces, most jurisdictions had passed laws to restrict tobacco use in outdoor recreational spaces (67%) and other outdoor areas (57%; e.g., construction). Less than one third had passed smokefree laws covering outdoor hospitality settings (e.g., outdoor dining), outdoor events (e.g., music festivals), service areas (e.g., taxi stands), and community streets or districts. Before state law changes in 2015–2016, only 6% of the jurisdictions prohibited smoking in family daycare settings at all times; more than a third of the jurisdictions removed exemptions for hotel common areas, small businesses, owner-operated business with no employees, and warehouse facilities; and the minimum percentage of hotel rooms designated smokefree averaged 48% (SD=22%). Less than one third of the jurisdictions eliminated smokefree exemptions for patient smoking areas in long-term care facilities, medical research settings, tobacco shops, and theaters or playhouses, which remain exemptions in state law. For 10 of the 11 indoor workplace settings and 6 of the 8 outdoor workplace settings, urban jurisdictions made significantly greater progress in prohibiting tobacco use relative to rural jurisdictions.

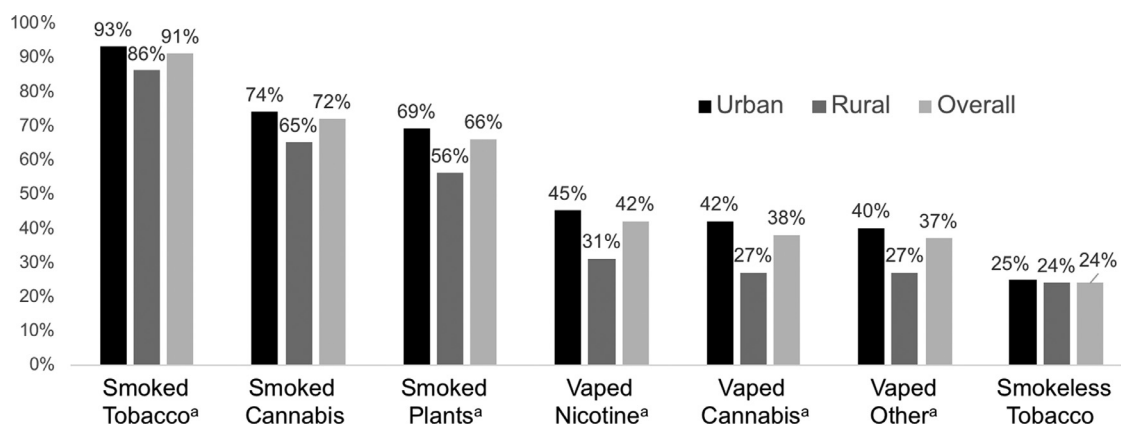


Figure 1. Percentage of California cities and counties that regulate smoking, vaping, or the use of smokeless tobacco and cannabis products in municipal laws.

^aUrban jurisdictions that were significantly more likely than rural jurisdictions to regulate the smoking of tobacco and plant materials and any vaping ($p < 0.05$ for all). Source: Original policy coding.

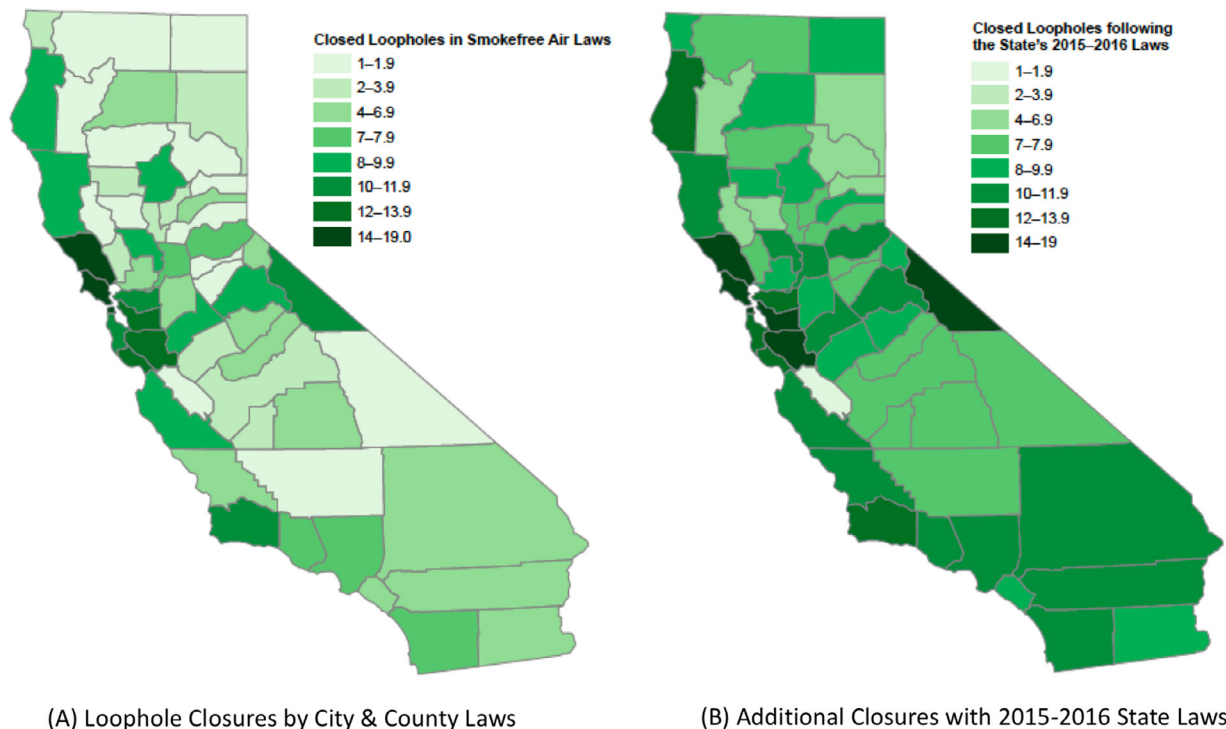


Figure 2. Loophole closures in California's Smokefree Workplace Act aggregated at the county level ($n=58$) and weighted for jurisdiction population size (A) by municipal laws and (B) additional closures with 2015–2016 state laws.

Source: Original policy coding and the 2012–2016 American Community Survey.

For the 536 coded California jurisdictions, 78% were urban; the median population size was 31,791 (IQR=12,171; 74,773); the median household income averaged 67,094 (SD=33,729); and the percentage of white, non-Hispanics averaged 48% (SD=25%).

Adult smoking prevalence, available for 515 jurisdictions (96% of the sample), ranged from 2.9% to 24.7% and averaged 12.6% (SD=3.8%, median=12.1%). In a linear regression model that predicted the adult smoking prevalence, the LCS was significant, as were the jurisdiction demographic variables ($p<0.01$ for all). The model explained 43% of the variance in adult smoking

prevalence, and the proportion of the variance attributed to LCS was 2.2% (Table 2).¹⁶

California state law closures of 6 of the 19 loopholes in 2015–2016 increased the mean jurisdiction LCS to 9.74, and reduced the variation between jurisdictions (SD=3.56, range: 5.8–18.8). LCS improved more for rural (mean_{gain}=4.14, SD=1.87) than urban jurisdictions (mean_{gain}=3.51, SD=2.09, $F_{[1,535]}=8.99$, $p=0.003$), and among jurisdictions less populated ($r=-0.22$), of lower median household income ($r=-0.29$), and with fewer white, non-Hispanic residents ($r=-0.16$; $p<0.001$ for all). LCS gain scores correlated positively with 2014 adult

Table 2. Jurisdiction Level 2014 Smoking Prevalence as a Function of Municipal Loophole Closures Score and Jurisdiction Characteristics

Parameter	% or M (SD)	β	SE	t	p-value	Partial η^2
% urban (vs. rural)	78 (vs. 22)	-0.015	0.004	-3.82	<0.001	0.028
Population size (n), M (SD)	71,006 (200,106)	0.003	0.001	3.05	0.002	0.018
Median household income, M (SD)	\$67,094 (\$33,729)	-0.053	0.004	-12.87	<0.001	0.245
% white, non-Hispanic, M (SD)	48 (25)	0.035	0.006	5.56	<0.001	0.057
Municipal loophole closures score, M (SD)	6.09 (5.28)	-0.001	0.000	-3.53	<0.001	0.024

Source: Original policy coding, 2012–2016 American Community Survey, and 2014 California Health Interview Survey.

Note: Boldface indicates statistical significance ($p<0.05$).

Full model $F_{(5, 510)}=76.03$, $p<0.001$, $R^2=0.427$, adjusted- $R^2=0.422$.

M, mean; t, t-statistic.

smoking prevalence ($r = 0.16$, $p < 0.001$), indicating that jurisdictions with higher smoking prevalence benefited more from the recent state laws closing loopholes. Figure 2B shows the average loophole closures with the addition of state law changes in 2015–2016 at the county level with weighting for jurisdiction population size.

DISCUSSION

In 1994, California became the first state in the nation to prohibit smoking in indoor workplaces. Although the law included many exemptions, critically, it did not preempt (prohibit) local governments from adopting stronger laws. Preemption occurs when a “higher” level of government (state or federal) eliminates or reduces the authority of a “lower” level of government over a given issue.¹⁷ In California, 88% of the jurisdictions asserted local authority to close at least 1 loophole in smokefree air law between 1994 and 2018.

The tobacco industry uses state-level preemption to thwart local tobacco control laws, including smokefree laws.¹⁸ Local control of public health policies can foster innovation, allow diverse communities to adopt protections appropriate for their needs, allow for greater accountability (because local legislators regularly interact with their constituents), and provide greater local awareness of public health issues.¹⁹ These benefits are lost when local power is pre-empted. Indeed, California cities and counties have made important progress in closing loopholes over the last 25 years. On average, California’s cities and counties closed about one third of the 19 loopholes identified in the state’s 1994 smokefree law. Innovations in policy, once shown successful locally, can influence community norms and build support for broader legislative action.^{20–22}

However, progress at the local level was not distributed equitably. Urban jurisdictions were more likely than rural jurisdictions to have closed 16 of the 19 loopholes and had a higher overall LCS. Additionally, loophole closures were greater among jurisdictions with larger populations and a greater proportion of higher income and white, non-Hispanic residents. Controlling for these demographic characteristics, closing more loopholes since 1994 was associated with a lower adult smoking prevalence in 2014. Although causal inferences cannot be made from these observational data, the findings suggest an important health benefit of lower adult smoking prevalence with more comprehensive smoke-free workplace protections (i.e., fewer loopholes).

California made state law changes in 2015–2016 to remove workplace exemptions, and the result was reduced inequity in smokefree protections. The gains in loophole closures with the recent state law changes were

greater for rural, less-populated jurisdictions with lower median household income, fewer white, non-Hispanic residents, and a higher smoking prevalence. The 2016 state law changes also led the Centers for Disease Control and Prevention to deem California’s smokefree workplace legislation “comprehensive.”²

The 2 loopholes closed by most jurisdictions prohibited tobacco use in outdoor recreational spaces and other outdoor areas, such as city- or county-owned grounds. Coding could not determine whether these local laws were driven more by support to ban smoking in public spaces rather than broadening protections for workers. Commentary on secondhand smoke policymaking has noted a pattern whereby legal protections are afforded more fully to those least exposed (i.e., transient patrons of hospitality or public settings); whereas, those most exposed (i.e., those employed in these settings) are the least protected.²³ This underscores the importance of education and inclusion of those most impacted by tobacco use and secondhand smoke exposure in policy and program efforts.

This study provides evidence that some workplace settings received little attention at the local level, emphasizing the importance of state law for immediate widespread change. For example, fewer than 1 in 10 local jurisdictions prohibited tobacco smoking in family childcare settings at all hours, a provision of state law that protects both employees and children. A minority of jurisdictions had revised their definition of tobacco use or smoking to include vape products. Inclusion of vaping in the state definition of smoking and tobacco products in 2016 applies only to state protections. Hence, jurisdictions that close loopholes still need to explicitly prohibit vaping in their provisions that go beyond state law. In contrast, current California state law prohibits cannabis wherever smoking is prohibited.¹³

Limitations

Study limitations include that some types of businesses (e.g., playhouses) may not be relevant for all jurisdictions and hence not a high priority for closure. Older laws written with a specific problem in mind may not extend to new developments. For example, where a jurisdiction did not specifically address smoking or vaping in vape shops, coders may have looked to restrictions in “public places” or “places of employment.” Date-stamping the loophole closures proved challenging because of inconsistencies and missing data. Hence, it was not feasible to study loophole closure and smoking over time. This cross-sectional study could not determine whether the loophole closures preceded the 2014 measure of smoking prevalence; thus, causation cannot be inferred. Finally, the keyword search did not include cannabis-specific

keywords; hence, some cannabis laws may have been missed. Study strengths include obtaining laws for 99% of the jurisdictions; systematically reviewing and coding the laws by lawyers with public health policy expertise; and determining inter-rater reliability, which was high (87%). The inverse correlation of loophole closures with adult smoking prevalence supports the construct validity of the LCS.

CONCLUSIONS

Cities and counties closing loopholes in California's Smokefree Workplace Act tended to be urban; with larger populations; and a greater proportion of higher income; white, non-Hispanic residents. Controlling for these demographic characteristics, closing more loopholes since 1994 was associated with a lower adult smoking prevalence in 2014. In 2015–2016, changes in the state law were associated with reduced inequity in smokefree policy coverage. Remaining loopholes warrant attention. Future research should consider which populations are protected by strong smokefree laws and the percentage of the population protected. With direct relevance to California, the findings have national significance for concerns regarding how preemption thwarts tobacco control.

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Author contributions: JJP completed tasks of conceptualization, funding acquisition, methodology, investigation, formal analysis, and writing of the original draft. MHW completed tasks of investigation, methodology, supervision, and review and editing of writing. LZ completed tasks of investigation, methodology, and review and editing of writing. DH completed tasks of data curation, writing of the original draft, and review

and editing of writing. EJD completed tasks of investigation, methodology, validation, and review and editing of writing. JR completed tasks of investigation, methodology, and review and editing of writing. MJP completed tasks of investigation, methodology, and funding acquisition. LH completed tasks of conceptualization, funding acquisition, investigation, methodology, and review and editing of writing.

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Judith Prochaska, PhD, MPH has consulted to technology and pharmaceutical companies focused on smoking cessation and has served as an expert in litigation against the tobacco companies. Leslie Zellers, JD has provided legal expertise in litigation against the tobacco companies. No other financial disclosures were reported by the authors of this paper.

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