Published in final edited form as:

Am J Public Health. 2012 September ; 102(9): e47–e51. doi:10.2105/AJPH.2012.300838.

U.S. health policy related to hookah tobacco smoking

Brian A. Primack, MD, PhD¹, Maggie Hopkins, BA², Cynthia Hallett, MPH², Mary V. Carroll, BA¹, Mitchell Zeller, JD³, Kathleen Dacheille, JD⁴, Kevin H. Kim, PhD⁵, Michael J. Fine, MD, MSc¹, and Julie Donohue, PhD⁶

¹University of Pittsburgh School of Medicine, Pittsburgh, PA

²American Nonsmokers' Rights Foundation, Berkeley, CA

³Pinney Associates, Bethesda, MD

⁴University of Maryland School of Law, Baltimore, MD

⁵University of Pittsburgh School of Education, Pittsburgh, PA

⁶University of Pittsburgh School of Public Health, Pittsburgh, PA

Abstract

Background—Although cigarette smoking is decreasing in the U.S., hookah tobacco smoking (HTS) is an emerging trend associated with substantial toxicant exposures. The purpose of this study was to assess how a representative sample of U.S. tobacco control policies may apply to HTS.

Methods—We examined municipal, county, and state legal texts that apply to the largest 100 cities in the U.S. We developed a summary policy variable that distinguishes cities without clean air legislation preventing cigarette or HTS in freestanding bars; with anti-smoking legislation exempting HTS by name; with anti-smoking legislation providing for a different exemption under which HTS may fall; and with anti-smoking legislation and no clear exemption governing HTS. We used multinomial logistic regression to determine associations between community-level socio-demographic variables and our policy outcome variable.

Results—Although 73 of the 100 largest cities in the U.S. have laws that disallow cigarette smoking in bars, HTS may be allowed due to exemptions in 69 of these 73 cities. While 4 of these cities have passed legislation specifically exempting HTS, 65 may permit HTS via generic tobacco

Corresponding Author Contact Information: Brian A. Primack, MD, PhD, 230 McKee Place #600, Pittsburgh, PA 15213, Phone: (412) 586-9789, Fax: (412) 692-4838, bprimack@pitt.edu.

About the Authors:

At the time the research was completed, Brian A. Primack, Mary V. Carroll, and Michael J. Fine were with the Program for Research on Media and Health, Division of General Internal Medicine, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA. Brian A. Primack was with the Division of Adolescent Medicine, Department of Pediatrics, University of Pittsburgh School of Medicine, Pittsburgh, PA. Maggie Hopkins and Cynthia Hallett were with the American Nonsmokers' Rights Foundation, Berkeley, CA. Mitchell Zeller was with Pinney Associates, Bethesda, MD. Kathleen Dacheille was with the University of Maryland Francis King Carey School of Law, Baltimore, MD. Kevin H. Kim was with the University of Pittsburgh School of Education, Pittsburgh, PA. Julie Donohue was with the University of Pittsburgh School of Public Health, Pittsburgh, PA.

Contributor Statement:

B. Primack conceived of the study. M. Hopkins and C. Hallett obtained and coded the data. B. Primack and K. Kim conducted statistical analyses. B. Primack wrote the first draft. M. Carroll, M. Zeller, K. Dacheille wrote additional sections of the manuscript. J. Donohue and M. Fine provided supervision. All authors edited the manuscript for important intellectual content. All authors approved the final version.

Human Participant Protection:

No human participants were involved.

retail establishment exemptions. Compared with cities without clean air legislation, the cities in which HTS may be exempted had denser populations.

Conclusions—Although three-fourths of the largest cities in the U.S. disallow cigarette smoking in bars, HTS may be permitted in nearly 90% of these cities via exemptions. Closing this gap in clean air regulation may significantly reduce exposure to HTS.

INTRODUCTION

A hookah, also known as a water-pipe, consists of a head, body, bowl, and hose. Moist, sweetened, flavored tobacco is placed in the head, and lit charcoal is placed on it. Users inhale through the mouthpiece, drawing smoke through the hookah. This practice is associated with substantial inhalation of smoke. For example, the World Health Organization estimates that a hookah smoker may inhale as much smoke during one standard hookah tobacco smoking (HTS) session as a cigarette smoker would inhale consuming 100 cigarettes.¹ Other studies suggest that, compared with a single cigarette, one hookah smoking session may expose the user to more inhaled tar, carbon monoxide, nicotine, and polycyclic aromatic hydrocarbons.¹⁻⁵ In vivo studies have shown hookah smoking to be associated with plasma nicotine concentrations comparable to cigarette smoking, and increases in carbon monoxide levels that are much higher than those typically observed from cigarette smoking.⁶ Second-hand smoke exposure from hookah may also be a concern. Although more study is needed, a published report suggests that expired air from non-smokers in a hookah tobacco café was more concentrated with carbon monoxide compared with non-smokers in a regular bar allowing cigarette smoking.⁷

The rise in HTS in the U.S.⁸⁻¹³ has coincided with a decline in rates of cigarette smoking to its lowest level in nearly 60 years.^{14,15} HTS is highest among young people, with 30% of college students having ever used and 10% having used in the past 30 days, making this nearly as common as cigarette use.^{8,9,11,16} HTS is also increasing substantially among high school students and non-college populations,^{10,13,17} and it is popular across gender, age, race, geographic location, and socioeconomic status.^{9,11,16,18} While some HTS users also smoke cigarettes, as many as half of users would have otherwise been naïve to nicotine.^{12,13} Clean air policies have successfully curbed cigarette smoking in certain regions of the U.S. As of July 1, 2011, 35 states and thousands of local municipalities had passed smoking bans. It is not known, however, whether HTS is affected by laws such as these or whether provisions included in these laws may have intentionally or unintentionally exempted HTS.^{19,20} Because of the importance of HTS establishments for promoting use of these products, these exemptions are likely to contribute to the prevalence of HTS.^{15,16}

Thus, it would be valuable to systematically assess extant clean air laws, with special attention to implications for HTS. Furthermore, it may be valuable to determine what community factors are associated with HTS policy status; this information may ultimately help focus interventions on communities for which there is greatest need. The purposes of this study were to assess how a representative sample of U.S. tobacco control policies may apply to HTS and to determine associations between community-level socio-demographic factors and HTS policy status.

METHODS

Data Source

We obtained data on tobacco-related policies from the U.S. Tobacco Control Laws Database© maintained by the American Nonsmokers' Rights Foundation (ANRF). This database of 8795 policies categorizes each U.S. municipality, county, and state law that

relates to tobacco, including clean air, youth access, advertising, and taxation. Laws included in the database are identified through a variety of means, including systematic scanning of tobacco control publications, websites and listservs, bi-annual solicitation of tobacco control professionals, and partnerships with the National Association of City and County Health Officials and the National Association of Local Boards of Health. Senior staff members utilize standardized guidelines and codebooks to abstract tobacco control laws identified. ANRF reports and data have been instrumental in guiding implementation of policies shown to reduce tobacco use.²¹ For the current study, we focused on clean air legislation. Although factors such as taxation and advertising regulations are also relevant to HTS, clean air laws seem to be the largest policy-related contributor to public health.^{13,19,20,22}

Selection of Municipalities

We assessed tobacco-related clean air policies for each of the 100 U.S. cities with the largest population according to the 2010 census. As have others in similar policy analyses,²³ we used this approach to maintain feasibility while still assessing policies that apply to a substantial population (59,849,899 individuals). For each city, we examined laws at the municipality, county, and state levels. We also assessed which laws were dominant in each municipality; for example, while many municipal laws are stronger than state laws, some state laws preempt municipal legislation.²²

Abstraction Process

ANR staff had previously obtained the legislative documents, which included municipal, county, and state laws for all 100 cities, for prior assessment. Two research team members developed a codebook assessing new variables focused on components of clean air laws relevant to HTS, such as restriction of smoking in bars and presence of exemptions to these laws that may apply to HTS. ANR staff then re-examined all texts using the codebook. Four research team members met after initial abstraction to refine the codebook and determine if it was necessary to extract additional variables. Via this iterative approach, a final codebook was developed, and final codes were confirmed based on re-examination of texts.

Measures

Clean Air Regulations—Clean air laws vary widely in terms of whether they apply to private workspaces, public workspaces, restaurants, or freestanding bars (i.e., a bar not attached to a restaurant). We focused on freestanding bars because current concerns related to HTS seem to center on HTS smoking establishments that are similar to freestanding bars.^{7,19,20} We developed three separate dichotomous variables assessing whether there are currently comprehensive clean air regulations prohibiting tobacco smoking in free-standing bars on the municipal, county, and state levels. In order to be coded as having a comprehensive clean air legislation, the law had to be unambiguous and without qualifications. For example, many clean air laws provide for “mostly” clean air but allow for a “fully enclosed and separately ventilated smoking room.” For purposes of this analysis we did not consider these laws strong enough to be considered comprehensive, because in practice this situation still exposes both patrons and staff to second-hand smoke.

Special Exemptions—When a municipal, county, or state law did provide for comprehensive clean air in freestanding bars, we generated dichotomous variables describing whether each law allowed exemptions for HTS mentioned by name; “tobacco retail establishments”; and/or “cigar bars.” These latter two categories are the major categories of exemption.²⁰

Composite Clean Air Variables—Based upon these basic policy-related variables, we developed relevant composite variables. Specifically, three dichotomous variables assessed the overall policy environment in that city (i.e., if any municipal, county, or state law was present, this was coded as 1; otherwise, it was coded as 0). Three other variables assessed whether there were exemptions on any policy level (municipal, county, or state) for HTS, tobacco retail establishments, and/or cigar bars.

Final Dependent Variable—For ultimate use in analyses, we developed a single summary policy variable that distinguishes cities without clean air legislation preventing cigarette or HTS in freestanding bars; with anti-smoking legislation exempting HTS by name; with anti-smoking legislation providing for a different exemption under which HTS may fall; and with anti-smoking legislation and no clear exemption governing HTS. We developed this variable because of its strong face validity in comparing different types of policy environments. For example, we felt it was important to compare cities that specifically exempted HTS by name (category 2) compared with those that had general exemptions under which HTS may fall (category 3). However, it was not deemed relevant to differentiate whether the laws specifically exempted tobacco retail establishments, cigar bars, or both.

Independent Variables—We searched 2010 U.S. census records to categorize each city according to population. Because population density figures were not yet available for 2010, we utilized 2000 Census data for this variable. We utilized data from the census bureau over the years 2004-2009 to determine median income, median age, and racial and ethnic diversity.

Analysis

We computed the number of cities with each policy type and summarized socio-demographic characteristics (e.g., population, mean age, percent Hispanic) in each group of cities. We used multinomial logistic regression to determine associations between socio-demographic independent variables and our summary outcome policy variable. We used cities without clean air legislation comprehensively preventing cigarette or HTS in freestanding bars as the reference group. For the one categorical predictor variable (geographic region), we used chi-squared testing to determine whether there was an overall association between geographic region and policy type. We defined statistical significance using a two-tailed $\alpha=0.05$.

RESULTS

According to the 2010 U.S. census, 59,849,899 individuals live in the 100 cities of our sample. Of these 100 cities, 27 are without clean air legislation comprehensively preventing cigarette or HTS in freestanding bars (Table 1). The remaining 73 cities have comprehensive anti-tobacco legislation in place on the municipal, county, and/or state level that disallows tobacco smoking in freestanding bars. In 65 of these 73 cities (89.0%), the law provides for specific exemptions for tobacco retail establishments and/or cigar bars, under which HTS may fall. In 4 cities of these 73 cities (5.5%), comprehensive anti-cigarette legislation exempts HTS by name. However, the 4 remaining cities have comprehensive anti-cigarette legislation and no clear exemption under which HTS seems to fall.

Summaries of community socio-demographic characteristics across policy variables are shown in Table 2. Compared with cities with no comprehensive clean air laws, the four cities in which HTS was specifically exempted by name were denser (OR=1.46, 95% CI=1.11, 1.92, where each unit represents an additional one thousand people per square

mile). Compared with cities with no comprehensive clean air laws, the 65 cities with generic retail tobacco store exemptions were denser (OR=1.29, 95% CI=1.02, 1.62, where each unit represents an additional one thousand people per square mile). There was a significant association between geographic region and the summary policy variable ($\chi^2=23.3$, $P=.006$). For example, 53% of cities in the South were in category 1 (no comprehensive clean air legislation), while only 6%, 13%, and 14% of cities in the Midwest, Northeast, and West fell into this category, respectively (Table 3).

DISCUSSION

We found that, although 73 of the largest 100 cities in the U.S. disallow cigarette smoking in bars, nearly all (n=69) of these cities may allow HTS via exemptions. We also found that, of socio-demographic variables measured, only population density and geographic location were associated with HTS policy environment.

These findings are consistent with others who have pointed out that many U.S. policies which apply to cigarette smoking do not similarly apply to HTS.^{19,20,24} However, this study extends prior findings in three ways. First, this study systematically examined the most populous cities in the U.S. in order to quantify the extent of dissimilarity in policy related to cigarettes and HTS. It is also the first study to investigate policies on all levels (municipal, county, and state) to determine the specific policy in effect for each location. Finally, this is the first study to systematically assess what socio-demographic community characteristics were associated with overall clean air policy environment.

Compared with cigarette smoking, HTS may be associated with similar or even greater inhalation of toxicants.^{2-4,7} Thus, our findings that most policies enacted to reduce cigarette smoking may not apply to HTS highlight the need for improved U.S. health care policy related to HTS. These findings may be valuable to researchers, lawmakers, health policy officials, and advocacy group leaders seeking to improve policy in this area.

Four municipalities specifically exempted HTS from clean air legislation. It would be valuable to investigate reasons for these exemptions with lawmakers, public health officials, and/or anti-tobacco advocates involved in this legislation. If we uncover important knowledge gaps regarding HTS toxin exposures among any of these individuals, this may provide valuable opportunity for intervention.

We also found four municipalities with comprehensive clean air laws for which there seem to be no specific exemptions that apply to HTS. However, based upon Web searches HTS smoking establishments do seem to exist in these locations.^{25,26} It is possible that we missed or misinterpreted language in these legal codes. However, it is also possible that HTS establishments are illegal in these communities, but that the law is not being sufficiently enforced. Further investigation specific to each of these locations may clarify the law and assist health department officials and public health advocates with enforcement.

In addition to lawmakers and public health officials, these data will be important to advocates, thought leaders, and the lay public, whose understanding of a potentially harmful loophole in prior legislation may increase pressure to update it. However, the aesthetic appeal of HTS—including the sweet-smelling smoke, the attractive apparatus, exotic associations, the mildness of the experience relative to cigarette smoking, and the belief that the water somehow filters toxins—may make it challenging to persuade lay people of its potential harm and addictiveness.

Our study focused on clean air legislation addressing freestanding bars because current concerns related to HTS seem to center on HTS bars/cafés.^{7,19,20} However, it may be

valuable to examine clean air legislation that relates to other environments such as outdoor locations. Also, it would be valuable to systematically assess how current policies may apply differently to cigarettes and HTS with regard to taxation and labeling. Taxation on cigarettes is now substantial and increasing in many communities, and the Food and Drug Administration has recently introduced grizzly new warning labels for cigarettes. However, HTS is generally not affected by regulations such as these.

Among the socio-demographic community factors we assessed, only population density and geographic region were significantly associated with policy environment. While the 27 communities without anti-smoking policies had an average of 3116 individuals per square mile, communities in which HTS was exempted by name or may be exempted via a generic clause were denser (9184 and 4986 individuals per square mile, respectively). Although the reason for this difference is unclear, it is possible that denser communities may have more frequent market turnover and more community elements interested in supporting new businesses such as HTS establishments. The relative lack of anti-tobacco legislation in the South may be related to this region's historical and current involvement in growing tobacco. Knowing prior associations such as these may assist future studies linking policy to behavior, as these studies may wish to control for community factors, such as population density and geographic region, which are potentially associated with both policy environment and substance use behavior.

Limitations

This study did not assess the impact of policies on behavior, which is an important area for future work. In particular, it may be valuable to assess whether past changes in policy environment have been associated with changes in HTS rates. If there are unintended consequences of clean air legislation that result in increased HTS, this will be important information for not only those involved in future legislation but also the lay public. This type of research may be difficult, however, because of how recent the HTS phenomenon is in the U.S.; few systematically collected, national data are currently available on HTS behavior, and much of extant clean air legislation was passed before the proliferation of HTS. This study was also limited in that it only reviewed the top 100 most populous cities. Because historically small cities can be the first to pass strong, innovative clean air laws, it may be valuable to systematically assess smaller jurisdictions. Additionally, interpretation of legal texts is a complex and often subjective process. This subjectivity remains a limitation even though we used established data sources and coders highly familiar with interpretation of these texts. Finally, it should be noted that we did not assess whether the laws we found were being appropriately enforced.

Conclusion

Despite these limitations, this study systematically assessed clean air policies as they relate to HTS, which is associated with high toxicant exposures. It found that about 90% of cities with comprehensive policies disallowing cigarette smoking in freestanding bars may allow hookah tobacco smoking via exemptions. It also found that community population density is associated with HTS policy environment. These results may be valuable to researchers, lawmakers, health policy officials, and advocacy group leaders seeking to improve policy in this area.

Acknowledgments

The research presented was funded by the National Cancer Institute (R01-CA140150).

REFERENCES

1. World Health Organization. TobReg Advisory Note: Waterpipe tobacco smoking: health effects, research needs and recommended actions by regulators. World Health Organization; Geneva, Switzerland: 2005.
2. Katurji M, Daher N, Sheheitli H, Saleh R, Shihadeh A. Direct measurement of toxicants inhaled by water pipe users in the natural environment using a real-time *in situ* sampling technique. *Inhalation Toxicology*. 2010; 22:1101–9. [PubMed: 21062108]
3. Shihadeh A, Saleh R. Polycyclic aromatic hydrocarbons, carbon monoxide, “tar”, and nicotine in the mainstream smoke aerosol of the narghile water pipe. *Food and Chemical Toxicology*. 2005; 43:655–61. [PubMed: 15778004]
4. Sepetdjian E, Shihadeh A, Saliba NA. Measurement of 16 polycyclic aromatic hydrocarbons in narghile waterpipe tobacco smoke. *Food and Chemical Toxicology*. 2008; 46:1582–90. [PubMed: 18308445]
5. Eissenberg T, Shihadeh A. Waterpipe tobacco and cigarette smoking: direct comparison of toxicant exposure. *Am J Prev Med*. 2009; 37:518–23. [PubMed: 19944918]
6. Jacob P 3rd, Abu Raddaha AH, Dempsey D, et al. Nicotine, carbon monoxide, and carcinogen exposure after a single use of a water pipe. *Cancer Epidemiol Biomarkers Prev*. 2011; 20:2345–53. [PubMed: 21908725]
7. Barnett TE, Curbow BA, Soule EK Jr, Tomar SL, Thombs DL. Carbon monoxide levels among patrons of hookah cafes. *Am J Prev Med*. 2011; 40:324–8. [PubMed: 21335264]
8. Maziak W, Ward KD, Afifi Soweid RA, Eissenberg T. Tobacco smoking using a waterpipe: a re-emerging strain in a global epidemic. *Tob Control*. 2004; 13:327–33. [PubMed: 15564614]
9. Primack BA, Sidani J, Agarwal AA, Shadel WG, Donny EC, Eissenberg TE. Prevalence of and associations with waterpipe tobacco smoking among U.S. university students. *Ann Behav Med*. 2008; 36:81–6. [PubMed: 18719977]
10. Primack BA, Walsh M, Bryce C, Eissenberg T. Water-pipe tobacco smoking among middle and high school students in Arizona. *Pediatrics*. 2009; 123:e282–8. [PubMed: 19171581]
11. Smith-Simone S, Maziak W, Ward KD, Eissenberg T. Waterpipe tobacco smoking: Knowledge, attitudes, beliefs, and behavior in two U.S. samples. *Nicotine Tob Res*. 2008; 10:393–8. [PubMed: 18236304]
12. Eissenberg T, Ward KD, Smith-Simone S, Maziak W. Waterpipe tobacco smoking on a U.S. college campus: prevalence and correlates. *Journal of Adolescent Health*. 2008; 42:526–9. [PubMed: 18407049]
13. Akl EA, Gunukula SK, Aleem S, et al. The prevalence of waterpipe tobacco smoking among the general and specific populations: a systematic review. *BMC Public Health*. 2011; 11:244. [PubMed: 21504559]
14. Kilmer G, Roberts H, Hughes E, et al. Surveillance of certain health behaviors and conditions among states and selected local areas--Behavioral Risk Factor Surveillance System (BRFSS), United States, 2006. *MMWR Surveill Summ*. 2008; 57:1–188. [PubMed: 18701879]
15. National Association of Attorneys General. Cigarette sales in US reach historic 55-year low. National Association of Attorneys General; Washington, DC: Mar 8. 2006
16. Smith SY, Curbow B, Stillman FA. Harm perception of nicotine products in college freshmen. *Nicotine Tob Res*. 2007; 9:977–82. [PubMed: 17763115]
17. Barnett TE, Curbow BA, Weitz JR, Johnson TM, Smith-Simone SY. Water pipe tobacco smoking among middle and high school students. *Am J Public Health*. 2009; 99:2014–9. [PubMed: 19762667]
18. Primack BA, Fertman CI, Rice KR, Adachi-Mejia AM, Fine MJ. Waterpipe and cigarette smoking among college athletes in the United States. *J Adolesc Health*. 2010; 46:45–51. [PubMed: 20123257]
19. Tobacco Public Policy Center. Hookah Bars and Clean Indoor Air Laws. Capital University Law School; Columbus, OH: 2006.
20. Martinasek MP, McDermott RJ, Martini L. Waterpipe (Hookah) Tobacco Smoking Among Youth. *Curr Probl Pediatr Adolesc Health Care*. 2011; 41:34–57. [PubMed: 21232693]

21. Eriksen M, Chaloupka F. The economic impact of clean indoor air laws. *CA Cancer J Clin.* 2007; 57:367–78. [PubMed: 17989131]
22. Eriksen MP, Cerak RL. The diffusion and impact of clean indoor air laws. *Annu Rev Public Health.* 2008; 29:171–85. [PubMed: 18348710]
23. Mayer JA, Woodruff SI, Slymen DJ, et al. Adolescents' use of indoor tanning: a large-scale evaluation of psychosocial, environmental, and policy-level correlates. *Am J Public Health.* 2011; 101:930–8. [PubMed: 21421947]
24. Quenqua D. Putting a crimp in the hookah. *The New York Times.* May 20.2011 :2011.
25. Hookah Bars Seattle. [Accessed March 28, 2012] 2012. archived by Webcite at <http://www.webcitation.org/66VNweRKV>, at http://www.yelp.com/search?cflt=hookah_bars&find_loc=Seattle%2C+WA
26. Hookah Bars Louisville. [Accessed March 28, 2012] 2012. archived by Webcite at <http://www.webcitation.org/66VOQkzOY>, at http://www.yelp.com/search?find_desc=hookah+bars&find_loc=Louisville%2C+KY&ns=1

Table 1
Categorization of 100 Largest Cities in the U.S. by Clean Air Policy Type

Policy Environment Label	Description of Policy	n of Cities	Specific Cities*
Smoking Legal	No comprehensive clear air legislation related to any type of tobacco use in bars	27	Jacksonville, FL; Indianapolis, IN; Fort Worth, TX; Memphis, TN; Nashville, TN; Las Vegas, NV; Oklahoma City, OK; Virginia Beach, VA; Atlanta, GA; Miami, FL; Tulsa, OK; Arlington, TX; New Orleans, LA; Tampa, FL; Pittsburgh, PA; Henderson, NV; St. Petersburg, FL; Orlando, FL; Lubbock, TX; Baton Rouge, LA; Garland, TX; Reno, NV; Hialeah, FL; Chesapeake, VA; North Las Vegas, NV; Irving, TX; Birmingham, AL;
HTS Exempt	Comprehensive legislation disallowing cigarette smoking in bars; however, HTS specifically exempted by name	4	Chicago, IL; Boston, MA; Albuquerque, NM; Long Beach, CA
TRE Exempt	Comprehensive legislation disallowing cigarette smoking in bars; however, HTS exempted via a generic exemption for "tobacco retail establishments" or "cigar bars"	65	New York, NY; Los Angeles, CA; Houston, TX; Philadelphia, PA; Phoenix, AZ; San Antonio, TX; San Diego, CA; Dallas, TX; San Jose, CA; San Francisco, CA; Austin, TX; Columbus, OH; Charlotte, NC; Detroit, MI; El Paso, TX; Baltimore, MD; Washington, DC; Denver, CO; Portland, OR; Tucson, AZ; Fresno, CA; Sacramento, CA; Kansas City, MO; Mesa, AZ; Colorado Springs, CO; Omaha, NE; Raleigh, NC; Cleveland, OH; Oakland, CA; Minneapolis, MN; Wichita, KS; Bakersfield, CA; Honolulu, HI; Anaheim, CA; Aurora, CO; Santa Ana, CA; St. Louis, MO; Corpus Christi, TX; Riverside, CA; Cincinnati, OH; Lexington, KY; Stockton, CA; Toledo, OH; St. Paul, MN; Newark, NJ; Greensboro, NC; Buffalo, NY; Plano, TX; Lincoln, NE; Fort Wayne, IN; Jersey City, NJ; Chula Vista, CA; Norfolk, VA; Chandler, AZ; Laredo, TX; Madison, WI; Winston-Salem, NC; Durham, NC; Glendale, AZ; Scottsdale, AZ; Fremont, CA; Irvine, CA; Rochester, NY; San Bernardino, CA; Spokane, WA
Strict	Comprehensive legislation disallowing cigarette smoking in bars; HTS does not seem to be exempt from this legislation	4	Seattle, WA; Louisville, KY; Milwaukee, WI; Anchorage, AK

* Cities are listed in order of population, from highest to lowest.

Table 2
Socio-Demographic Characteristics of Cities of Differing Policy Types Related to HTS*

	All N = 100	Smoking Legal n = 27	HTS Exempt n = 4	TRE Exempt n = 65	Strict n = 4
Population	598,499 (921,037)	390,358 (197,042)	1,080,325 (1,078,718)	659,943 (1,097,187)	523,164 (154,343)
Population Density persons per square mile	4603 (3977)	3116 (2482)	9184 (4453)[†]	4986 (4250)[†]	3861 (3396)
Median Income , U.S. dollars per year	48,196 (12,710)	45,758 (10,342)	48,683 (3151)	49,144 (13,616)	48,768 (19,106)
Median Age , years	33 (3)	34 (3)	33 (1)	33 (3)	34 (3)
Percent Caucasian	60 (16)	62 (15)	53 (12)	60 (17)	63 (10)
Percent Black	21 (18)	26 (19)	16 (10)	19 (18)	21 (17)
Percent Asian	7 (9)	4 (3)	7 (4)	8 (11)	6 (5)
Percent Hispanic	23 (21)	21 (22)	35 (13)	25 (21)	8 (6)

* Numbers in table cells represent mean (SD). Please see Table 1 for definitions of column heading categories.

[†] $P < .05$ for multinomial logistic regression analyses respectively comparing each of policy types 2, 3, and 4 (HTS exempt, TRE exempt, and Strict) with policy type 1 (Smoking Legal).

Table 3
Policy Types Related to HTS by Geographic Region*

	Smoking Legal n = 27	HTS Exempt n = 4	TRE Exempt n = 65	Strict n = 4
Midwest (n = 17)	6	6	82	6
Northeast (n = 8)	13	13	75	0
South (n = 38)	53	0	45	3
West (n = 37)	14	5	76	5

* Cell values are row percentages, which may not sum to 100 because of rounding. For the overall table, $\chi^2 = 23.3$, $P = .006$. Please see Table 1 for definitions of column heading categories.