Political Factors Affecting the Enactment of State-Level Clean Indoor Air Laws

| Gregory Jackson Tung, PhD, MPH, Jon S. Vernick, JD, MPH, Elizabeth A. Stuart, PhD, and Daniel W. Webster, ScD, MPH

The rules that govern the policy process in the United States influence policy outcomes. These rules, or political institutional factors, vary greatly among the US states. Examples of political institutional factors include (1) preemption, where a higher level of government restricts a lower level of government's ability to act on a particular policy issue; (2) the ballot initiative process, in which citizen or private groups are able to place specific proposals on the ballot through the collection of signatures; and (3) legislative professionalism, as measured by state legislators' salary, time in session, and support staff.

Political science and public policy research supports the importance of these and other political institutional factors in influencing the enactment of specific policies. Political institutional factors represent the "rules of the policy game" and understanding these factors could inform public health advocacy efforts and contribute to the advancement of evidence-based policies and programs.

Political institutional factors may be especially important when the policy in question is contentious or faces strong opposition from special interests, as is frequently the case with public health policies. Clean indoor air laws restricting smoking in indoor public places are one such example.

Cigarette smoking is the leading cause of preventable death and disease in the United States.[1,2] Clean indoor air policies decrease exposure to secondhand smoke, decrease smoking prevalence, and do not have a negative impact on the hospitality industry.[3,4] Clean indoor air laws also generally receive strong public support, but are opposed by the tobacco industry.[4,5] Therefore, as of January 2013, only 22 US states had comprehensive statewide clean indoor air laws that cover workplaces, restaurants, and bars.[6] Fourteen states did not have a statewide law covering any of these businesses (Table 1).[6]

Using the example of clean indoor air laws, we examined selected political institutional

Objectives. We examined the effects of key political institutional factors on the advancement of state-level clean indoor air laws.

Methods. We performed an observational study of state-level clean indoor air law enactment among all 50 US states from 1993 to 2010 by using extended Cox hazard models to assess risk of enacting a relevant law.

Results. During the 18-year period from 1993 to 2010, 28 states passed a law covering workplaces, 33 states passed a law covering restaurants, 29 states passed a law covering bars, and 16 states passed a law covering gaming facilities. States with term limits had a 2.15 times greater hazard (95% confidence interval [CI] = 1.27, 3.65; *P* = .005) of enacting clean indoor air laws. The presence of state-level preemption of local clean indoor air laws was associated with a 3.26 times greater hazard (95% CI = 1.11, 9.53; *P* = .031) of state-level policy enactment. In the presence of preemption, increased legislative professionalism was strongly associated (hazard ratio = 3.28; 95% CI = 1.10, 9.75; *P* = .033) with clean indoor air law enactment.

Conclusions. Political institutional factors do influence state-level clean indoor air law enactment and may be relevant to other public health policy areas. (*Am J Public Health.* 2014;104:e92–e97. doi:10.2105/AJPH.2013.301689)

factors identified by researchers and practitioners as being important determinants of the advancement of evidence-based public health policies. Using time-to-event analysis, we then examined the statistical associations between these factors and the enactment of state-level clean indoor air laws. The use of time-to-event analysis focuses our analysis on the enactment of clean indoor air policy as opposed to the maintenance of policy. Although both are important, the focus of health advocacy is the enactment of policy. To our knowledge, this is the first study to quantitatively estimate independent associations between the key political institutional factors we examined and state-level clean indoor air law outcomes within a public health context.

METHODS

We conducted an observational study of all 50 US states from 1993, the year before the first US state adopted a statewide clean indoor air law that met our criteria (described subsequently), to 2010. We constructed a survival analysis data set with calendar year as the unit

of time. We used an extended Cox model to estimate the association between a variety of political institutional factors of interest and the time to enactment of statewide clean indoor air laws.

Dependent Variable

The primary outcome of interest for this study was the enactment of a statewide clean indoor air law that included (1) workplaces, (2) restaurants, (3) bars, or (4) gaming facilities. We selected this categorization scheme for clean indoor air laws because it is the most common way of categorizing clean indoor air laws among tobacco control advocates and advocacy organizations in the United States and it is the categorization scheme used by the American Nonsmokers' Rights Foundation's US Tobacco Control Laws Database.[6] This database is widely recognized as the leading coded statutory data set for tobacco control clean indoor air laws.[7]

We considered a state to have enacted a clean indoor air law in the calendar year that legislation passed applicable to 1 of the previously mentioned categories with no major

TABLE 1—Clean Indoor Air Policy Status Through 2010 by State: American Nonsmokers' Rights Foundation's US Tobacco Control Laws Database

	Year Policy Enacted			
State	Workplaces	Restaurants	Bars	Gaming
Alabama	. . .	. . .	. . .	. . .
Alaska	. . .	. . .	. . .	. . .
Arizona	2006	2006	2006	2006
Arkansas	. . .	. . .	. . .	. . .
California	. . .	1994	1994	1994
Colorado	. . .	2006	2006	2006
Connecticut	. . .	2003	2003	. . .
Delaware	2002	2002	2002	2002
Florida	2002	2002	. . .	2002
Georgia	. . .	. . .	. . .	. . .
Hawaii	2006	2006	2006	. . .
Idaho	. . .	2004	. . .	. . .
Illinois	2007	2007	2007	2007
Indiana	. . .	. . .	. . .	. . .
Iowa	2008	2008	2008	. . .
Kansas	2010	2010	2010	. . .
Kentucky	. . .	. . .	. . .	. . .
Louisiana	2006	2006	. . .	. . .
Maine	2009	2003	2003	. . .
Maryland	2007	2007	2007	2007
Massachusetts	2004	2004	2004	. . .
Michigan	2009	2009	2009	2009
Minnesota	2007	2007	2007	2007
Mississippi	. . .	. . .	. . .	. . .
Missouri	. . .	. . .	. . .	. . .
Montana	2005	2005	2005	2005
Nebraska	2008	2008	2008	2008
Nevada	2006	2006	. . .	. . .
New Hampshire	. . .	2007	2007	. . .
New Jersey	2006	2006	2006	. . .
New Mexico	. . .	2007	2007	. . .
New York	2003	2003	2003	2003
North Carolina	. . .	2009	2009	. . .
North Dakota	. . .	. . .	. . .	. . .
Ohio	2006	2006	2006	. . .
Oklahoma	. . .	. . .	. . .	. . .
Oregon	2007	2007	2007	2007
Pennsylvania	2008	. . .	. . .	. . .
Rhode Island	2004	2004	2004	. . .
South Carolina	. . .	. . .	. . .	. . .
South Dakota	2002	2010	2010	2010
Tennessee	. . .	. . .	. . .	. . .
Texas	. . .	. . .	. . .	. . .
Utah	2006	1994	2006	. . .
Vermont	2009	2005	2005	. . .

Continued

exemptions. We considered using a combination of these 4 clean indoor air categories as a singular outcome of interest, but after estimating the baseline survival functions for the individual clean indoor air law categories (Figure 1), we concluded that each category represented a related but distinct process, and measure, of the associations of interest. We obtained enactment dates of statewide clean indoor air laws from the American Nonsmokers' Rights Foundation's US Tobacco Control Laws Database.[6]

Independent Variables

We included 4 different political institutional factors in our analysis. We defined political institutional factors as those factors that influence the policy process broadly. The political institutional factors we examined were (1) state preemption of local clean indoor air laws,[8–12] (2) ballot initiative status,[13–15] (3) term limit status,[16,17] and (4) measures of legislative professionalism.[18] We selected these political institutional factors because they have been identified, either by academics or practitioners, as being potentially important factors to consider in the advancement of public health policies.[5,13,16,18–20]

In addition, we included 4 other factors relevant to the enactment of clean indoor air laws in our analysis. These were (1) smoking prevalence,[2] (2) the presence of a previous clean indoor air law,[6] (3) whether the state is a major tobacco-producing state,[21] and (4) measures of citizen and government ideology.[22] We included these other factors in our analysis because previous research or practice experience had identified them as potentially important considerations in the advancement of clean indoor air policies.[5,20–22]

We obtained preemption status of states from the American Nonsmokers' Rights Foundation.[23] States were determined to have preemption in place the calendar year after either preemptive language was explicitly included in enacted legislation, or courts determined that state law preempted local tobacco law. As of January 2013, 13 states (Connecticut, Florida, Michigan, Nebraska, New Hampshire, North Carolina, Oklahoma, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, and Wisconsin) had some type of preemption of local clean indoor air laws in place.[23]

TABLE 1—Continued

Virginia	. . .	. . .	. . .	. . .
Washington	2005	2005	2005	2005
West Virginia	. . .	. . .	. . .	. . .
Wisconsin	2009	2009	2009	. . .
Wyoming	. . .	. . .	. . .	. . .

The ballot initiative process, in which citizen or private groups can place a specific proposal on the ballot for a vote by the public, exists in 24 states. We obtained data regarding the ballot initiative process from the Initiative and Referendum Institute at the University of Southern California.[24]

Term limits are laws in some states that restrict the number of consecutive terms that a state legislator can serve. The first US states adopted term limits in 1990 in an effort, in part, to break the connection between state legislatures and special interests.[16] We obtained data regarding term-limit laws from earlier research.[16]

Legislative professionalism is generally defined as having 3 components: legislator pay, days in legislative session, and number of legislative staff members.[18] The larger a legislator's pay, the more days the legislature is in session, and the more staff members present to support legislators, the more that legislature is considered professional, or full-time, versus citizen or part-time. For this work, we used the Squire index, a previously validated measure of legislative professionalism benchmarked against the professionalism of members of the US Congress.[18]

We included adult smoking prevalence in our analysis as an indication of state-specific social norms surrounding smoking. Data regarding smoking prevalence for a given state and year were obtained from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System.[25]

We also incorporated previous clean indoor air policy status into our analysis. A dedicated variable indicated whether a state had a previous clean indoor air law the calendar year following the adoption of a new statewide clean indoor air law if it included workplaces, restaurants, bars, or gaming facilities.

The US Department of Agriculture estimates that North Carolina, Kentucky, Tennessee, South Carolina, Virginia, and Georgia account for approximately 94% of US tobacco production.[21] We distinguished these 6 states in the analysis with an indicator variable noting that they are major tobacco-producing states.

We incorporated measures of citizen and government ideology into our analysis. We used a previously validated political ideology measure developed by Berry et al.[22] Berry's measure is on a scale of 0 to 100 with increasing measures indicating greater political liberalism determined by interest groups' ratings.[22]

Statistical Analysis

To conduct our analysis we used a variant of the Cox proportional hazards model, the extended Cox model, which allows for the inclusion of time-varying covariates. We included all 50 states in the analysis. We defined an event as occurring in the calendar year (1993–2010) that a state adopted a clean indoor air policy that covered (1) workplaces, (2) restaurants, (3) bars, or (4) gaming facilities (Table 1). This analysis produced estimated hazard ratios (HRs) associated with the political institutional factors of interest. In this context, the hazard or event is the enactment of a statewide clean indoor air law. In contrast to studies that focus on the relative risk or odds that a state adopts a policy, HRs consider how quickly a state adopts a policy. This is relevant both for understanding the influence of political factors on the adoption of public health policies and for public health outcomes because the sooner an evidence-based policy is adopted, the greater the impact on public health.

Each state appears in the data set as 4 distinct survival sequences, once for each possible clean indoor air policy outcome. To account for possible differences in the baseline hazard function, our model allowed for flexibility in the underlying hazard function by policy type. To account for the correlation in the data because of individual states appearing multiple times, we calculated robust standard errors. Our analysis parallels unordered multiple failure type survival analysis used for distinct but related outcomes caused by an identical set of predictors. This type of analysis is commonly used in medical research to examine multiple outcomes from a single disease.[26,27]

RESULTS

During the 18-year period from 1993 to 2010, there were 106 state-level clean indoor air law categories enacted among the 50 US states. Within the study period 28 states passed a law covering workplaces, 33 states passed a law covering restaurants, 29 states passed a law
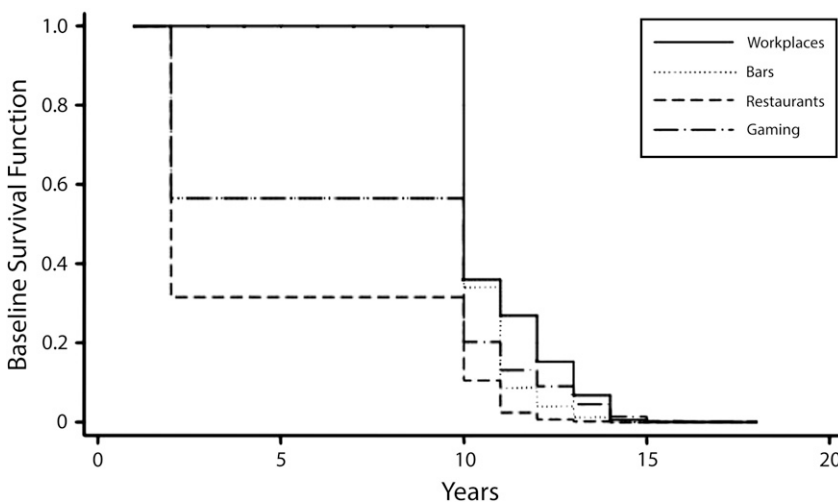

FIGURE 1—Estimated baseline survival functions by clean indoor air category.

covering bars, and 16 passed a law covering gaming facilities (Table 2).

Term limits were strongly associated with the enactment of clean indoor air laws. States with term limits had a 2.15 times greater hazard (HR = 2.15; 95% confidence interval [CI] = 1.27, 3.65; P = .005) of enacting clean indoor air laws compared with states without term limits.

The presence of statewide preemption of local clean indoor air laws was strongly associated with the enactment of statewide clean indoor air laws. States with preemption had a 3.26 times greater hazard (95% CI = 1.11, 9.53; P = .031) of enacting clean indoor air laws compared with states without preemption.

Based on findings from Shipan and Volden[11] that suggest that the effects of state-level legislative professionalism on clean indoor air policy adoption is effect modified by local policy activity, we explored the potential effect modification of legislative professionalism by the presence of preemption. When preemption was absent, measures of legislative professionalism did not demonstrate a statistically significant association with the enactment of statewide clean indoor air laws (HR = 1.01; 95% CI = 0.98, 1.03; P = .573). With preemption present, however, measures of legislative professionalism were strongly associated with the enactment of statewide clean indoor air laws (HR = 3.28; 95% CI = 1.10, 9.75; P = .033).

The ballot initiative process did not have a strong association with clean indoor air policy adoption in our model. States with and without the ballot initiative process did not significantly differ on their hazard of adopting a statewide clean indoor air law (HR = 1.20; 95% CI = 0.68, 2.15; P = .516).

The presence of a previous statewide clean indoor air law that covered a different category (for example, the effect of passing a law that covers only restaurants on the eventual enactment of a later law covering bars) demonstrated a strongly inhibitory effect on the later passage of more comprehensive clean indoor air laws. In our model, states that passed a previous statewide law had an approximately 80% decreased hazard (HR = 0.20; 95% CI = 0.09, 0.48; $P \le .001$) of passing a future more comprehensive law.

Higher measures of smoking prevalence, representing social norms that are less supportive of tobacco control measures, demonstrated a statistically significant and negative association with the adoption of statewide clean indoor air laws (HR = 0.77; 95% CI = 0.68, 0.87; $P \le .001$).

Higher political liberalism at the state level among citizens was positively associated with the advancement of statewide clean indoor air laws. A 1-unit increase in the measure of citizen ideology (scale of 0 to 100) was associated with a statistically significant 2.8% increased hazard of enacting statewide clean indoor air laws (HR = 1.03; 95% CI = 1.01, 1.05; P = .013). The measure of government ideology did not demonstrate a statistically significant association

with the enactment of statewide clean indoor air laws in our model (HR = 1.01; 95% CI = 0.99, 1.03; P = .195).

Being a major tobacco-producing state demonstrated a strongly inhibitory association with the enactment of clean indoor air laws. Our model estimated that major tobacco-producing states had an approximately 85% decreased hazard (HR = 0.15; 95% CI = 0.02, 1.13) of enacting statewide clean indoor air laws. This estimate, however, fell just short of statistical significance (P = .066).

DISCUSSION

Our analysis supports the conclusion that certain political institutional factors have influenced the adoption of statewide clean indoor air laws in the United States. Specific discussions regarding the political institutional factors examined in our model of statewide clean indoor air laws follow.

Political Institutional Factors

Term limits. Estimates from our model showed a strong association between term limits and the advancement of statewide clean indoor air laws. As clean indoor air laws are generally supported by the public but opposed by the tobacco industry, our findings are consistent with the hypothesis that term limits may help break the connection between legislatures and special interests, thereby making policy outcomes more responsive to public interests.

Preemption. In public health, preemption is almost universally viewed as detrimental to the advancement of evidence-based public health policies.[8–10,19] This belief derives, in part, from the clean indoor air advocacy experience in which grassroots movement building and local clean indoor air policies have been seen as important steps to building the public and political support for the eventual passage of statewide laws.[12] Public support for a policy is an important facilitator of policy change. Our model, however, estimated a strong and statistically significant positive association between the presence of preemption and the advancement of statewide clean indoor air laws, just the opposite of what one would expect if preemption did, in fact, inhibit the advancement of statewide clean indoor air laws.

TABLE 2—Extended Cox Analysis for State-Level Clean Indoor Air Laws: United States, 2003–2010

Variable	Hazard Ratio (95% CI)	P
Ballot initiative	1.20 (0.68, 2.15)	.516
Term limits	2.15 (1.27, 3.65)	.005
Preemption	3.26 (1.11, 9.53)	.031
Legislative professionalism		
Without preemption	1.01 (0.98, 1.03)	.573
With preemption	3.28 (1.10, 9.75)	.033
Previous clean indoor air law policy	0.20 (0.09, 0.48)	< .001
Smoking prevalence	0.77 (0.68, 0.87)	< .001
Citizen ideology	1.03 (1.01, 1.05)	.013
Government ideology	1.01 (0.99, 1.03)	.195
Major tobacco-producing state	0.15 (0.02, 1.13)	.066

Note. CI = confidence interval.

During the time frame examined by our model, public support for clean indoor air laws was generally very high. When public support has not yet developed for a particular policy, local policy activity may be especially important to building the public support and social norm change necessary to advance policy.[8] The potential social norm change associated with local policy activity is itself a important objective of public health advocacy.[8] However, once strong public support is already present, our findings suggest that restricting the local policy venue through preemption might actually speed the advancement of the policy by concentrating policy efforts (and pressure) at the state level.

Other research is consistent with this finding. Shipan and Volden examined the enactment of clean indoor air laws, finding that under certain circumstances the restriction of local policy activity could actually advance policy at the state level.[11] They called this dynamic the "pressure valve effect." The pressure valve effect hypothesizes that restricting policy activity at the local level increases political pressure directed to the state level, speeding the advancement of state-level policy.[11]

Preemption remains an important consideration in many different public health advocacy efforts. Proposed public health policies will sometimes have preemption clauses attached to them in the course of legislative debates. In this situation public health advocates are forced to decide whether to continue to support the proposed policy or to withdraw their support because of the preemption clause. Our findings are not a conclusive statement that public health advocates should redefine how they view preemption, but our research does suggest that the effects of preemption may be more complicated than previously believed. When faced with preemption, public health advocates should carefully weigh the potential benefits of the proposed policy in question and understand that the impacts of preemption may be dependent on their specific political context.[19]

The ballot initiative process. The ballot initiative process was introduced in US states with the intention, in part, of making policy outcomes more responsive to public interests as opposed to special interests. But there has been controversy and uncertainty about whether the ballot initiative process actually accomplishes this goal.[14] Within the context of clean indoor air laws, the ballot initiative process has been used to directly introduce statewide clean indoor air laws in 5 US states (Arizona, Florida, Ohio, Nevada, and Washington).[5] It has been theorized that the ballot initiative process might also make policy outcomes more responsive to public interests through indirect means (i.e., legislatures responding to the threat of a ballot initiative) even if clean indoor air laws are not enacted directly via a ballot initiative.[15]

Our analysis, which generates estimates that encompass both direct and indirect mechanisms of action, did not find a statistically significant difference in state-level clean indoor air policy outcomes between states with and without the ballot initiative process. Despite the lack of a statistically significant association in our model, the ballot initiative process remains an important policy venue for public health advocates. The fact remains that 5 US states have enacted statewide clean indoor air laws via the ballot initiative process and there are numerous other examples of policies of public health consequence being advanced via the ballot initiative process.[13,14,28]

Legislative professionalism. More professionalized legislatures are generally thought to be better able to identify and incorporate relevant scientific evidence into policymaking.[18] The results from our model suggest that this mechanism may only hold true when state-level preemption of local policy venues is in place. Legislative professionalism may become especially relevant when policy decisions are focused at the state level as is the case when preemption is present. When cities and counties remain a policy venue option, political pressure surrounding particular policies is less concentrated at the state level, and state legislatures have the option of deferring to the local level on policy actions.

Previous policy. The presence of a previous clean indoor air policy demonstrated a strongly inhibitory effect on the advancement of future policies in our model. In the course of policy debates, public health advocates are sometimes confronted with a decision to support or not support a policy that contains only some of the components they desire. Our findings suggest that public health advocates should carefully consider the possible inhibitory effects of enacting a weaker policy on the eventual passage of a more comprehensive policy.

Citizen and government ideology. Political ideology is frequently recognized as one of the primary factors that influences outcomes in public policy debates. States that are viewed as more politically liberal are generally also seen as being more receptive to government intervention and public health policies. The findings from our analysis generally support this view but also highlight the reality that there are many other important factors that influence policy outcomes independent of political ideology.

Limitations

The policy process is complex and the number of factors that influence policy enactment is large. This work only addresses quantifiable institutional and environmental factors and not the influence of advocacy organizations, individual personalities, seminal events, etc. It may be that our sample had insufficient statistical power to reveal the true associations between certain political institutional factors and clean indoor air law adoption.

Measurement error—for example in the enactment dates for specific state-level policies—is always a potential threat to validity. Our use of well-accepted data sets should minimize this concern. Our analysis focused on the advancement of state-level clean indoor air policy. However, local policy advancement can also provide significant public health benefits. Finally, we only examined clean indoor air laws. Additional research in other public health areas would help to assess the generalizability of our findings.

Conclusions

The ability of public health professionals to translate scientific evidence into effective policies could be enhanced by a greater understanding of the political institutional factors that govern the policy process. The findings from this study, though specific to clean indoor air laws, support the importance of considering and continuing to study the influence of political institutional factors on the advancement of a broad range of evidence-based public health policies.

The focus of the field of public health in influencing policy has historically been to provide relevant scientific evidence to inform policy decisions. Although there is wide

recognition that many other factors influence the policy process, the core strategy of providing relevant scientific evidence with the hope and expectation that the policy process will be responsive in some way remains. There has been a notable focus on advocacy efforts and the building of grassroots movements to advance public health policies. These efforts should continue, but research regarding a range of other important factors that influence policy advancement including legislator voting behavior,[29] bill-level factors,[30] state-to-state diffusion of policy,[31] and political institutional factors, such as those examined in this work, are needed to enhance our knowledge regarding the translation of scientific evidence into effective public health policies. ■

About the Authors

Gregory J. Tung is with the Pediatric Injury Prevention, Education, and Research Program and the Department of Health Systems, Management, and Policy at the Colorado School of Public Health, Aurora. Jon S. Vernick and Daniel W. Webster are with the Department of Health Policy and Management, and Elizabeth A. Stuart is with the departments of Mental Health and Biostatistics at the Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

Correspondence should be sent to Gregory J. Tung, MPH, PhD, Colorado School of Public Health, Mail Stop B119, 13001 E 17th Place, 3rd Floor, Aurora, CO 80045 (e-mail: gregory.tung@ucdenver.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints" link.

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Contributors

G. J. Tung conceptualized and designed the study, performed the statistical analysis, and led the writing. All authors contributed to writing, analysis, and interpretation of the findings.

Human Participant Protection

Institutional review board approval was not needed for this research because this work did not involve human participants.

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