3. Measuring Policy and Legislative Changes

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Contents

Tables and Figures

3. Measuring Policy and Legislative Changes

This chapter describes measures and methods developed for the evaluation of the American Stop Smoking Intervention Study (ASSIST) for assessment of state and local legislative changes in youth access laws and clean indoor air laws. Although only the clean indoor air measure was subsequently used in the overall analysis, these measures have broader applicability in the analysis of changes in state and local laws for specific tobacco control policy objectives.

On the basis of state legislative data from the National Cancer Institute's (NCI's) State Cancer Legislative Database (SCLD) and local data from the American Nonsmokers' Rights Foundation (ANRF), state-level summary scores were created for youth access and clean indoor air policy, encompassing state legislation as well as the incremental effect of stronger local ordinances. State scores were based on a nine-category quantitative rating in each area, subject to a substantive numerical penalty where preemption laws forbade the implementation of stronger local legislation. An incremental local component to the clean indoor air scores was also created for subareas where local laws were equivalent to or stronger than state legislation, weighted by the percentage of the state's population represented in the community.

Analysis of these data showed that state summary scores for youth access legislation increased over time from a mean of 7.20 to 11.57 accounting for preemption, and from 8.35 to 15.59 without preemption, during the period studied (1993–98). Summary scores for clean indoor air exhibited a smaller increase over this period, from a mean of 7.16 to 8.02 with preemption and 8.71 to 10.98 without. The composite state+local scores for clean indoor air also increased during this period from a mean of 7.71 to 8.64 accounting for preemption, and perhaps more important, there was a significant difference in these scores between ASSIST (M = 10.56) and non-ASSIST (M = 7.68) states.

Introduction

This chapter examines a tool for measuring legislative changes related to tobacco use prevention and control, based on state and aggregated local data sources, as well as trends in these data over the duration of ASSIST. Focusing on key areas of youth access to tobacco products and clean indoor air policies (eliminating exposure to environmental tobacco smoke), this tool ranked the extensiveness of specific legislative items to create a summary legislative score for each of these two policy areas. The resulting summary score for clean indoor air was used as part of the Initial Outcomes Index (IOI) created as part of the ASSIST evaluation analysis.

Governments at all levels in the United States have enacted legislation addressing the public health effects of smoking. Increasingly, legislative restrictions are viewed as a critical component of strategies that may also include tax measures, media interventions, community programs, and other efforts. ASSIST directed intervention efforts at four policy areas: eliminating exposure to environmental tobacco smoke, promoting higher taxes for tobacco, limiting tobacco advertising and promotions, and reducing minors' access to tobacco products. This chapter describes the system developed to measure state and local legislative changes in the United States. Of these policy areas, the ASSIST evaluation focused on state and local clean indoor air laws as a variable for the IOI because there were available data sources for this measure. A measure did not have to be developed for state taxes on tobacco because these data were available. The system used data from NCI's SCLD, data from the ANRF database on local legislation, and policy priorities identified for ASSIST. Raw data from the clean indoor air model are presented here. This chapter also reviews how the system applies to state laws designed to restrict minors' access to tobacco products. Although originally developed for use in the ASSIST evaluation, the tools presented in this chapter will enable the tobacco control and research communities to monitor progress toward specific policy markers based on changes in state and local laws.

State and Local Government Action for Tobacco Use Prevention and Control

The volume of state and local laws on clean indoor air and youth access to tobacco is one indicator that legislators have responded to a health policy approach that goes beyond individual health risks to target broad sectors of the population.[1,2] Much of the state-level activity for clean indoor air legislation began in the 1980s.[3] Notably, 1986 was a watershed year for scientific knowledge about environmental tobacco smoke, which was summarized in reports by the surgeon general and the National Research Council. These reports made the scientific case for enacting policies to protect the public from the effects of involuntary smoking, and states responded with laws restricting smoking in public places.[3–5] In 1993, the Environmental Protection Agency released its risk assessment report on the health consequences of involuntary smoking, and state legislators' attention to the clean indoor air issue continued to evolve in state legislatures.[6] States seeking to enact new requirements for clean indoor air found many prototypes in strong local ordinances that had been enacted and implemented in preceding years.[7,8]

New state laws on youth access to tobacco followed federal activity aimed specifically at the youth cohort.[9] The Synar amendment required states to adopt and implement sales restrictions to

minors or risk losing certain block grant funds and, in response, by 2002 all states had enacted laws prohibiting the sale of tobacco to minors.[10] (See NCI Monograph 16, chapters 6 and 9.) Additionally, the Food and Drug Administration promulgated regulations (later invalidated by the Supreme Court) restricting minors' access to tobacco.

Data from NCI's SCLD for 1993 through 1999 indicate that states were active in passing clean indoor air laws from 1993 to 1995 but that the level of activity flattened out in the late 1990s.[11] Data on clean indoor air and youth access laws and regulations by local governments, collected for more than two decades by the ANRF, indicate that for the period 1980 to 1998, the number of local clean indoor air laws and regulations enacted annually in the United States peaked in 1993.[12] For the same period, the annual number of laws enacted to restrict youth access to tobacco lagged behind clean indoor air ordinances until 1994. Local activity on youth access has slightly outpaced clean indoor air provisions since 1994, but passage of new local ordinances in both of these areas has slowed.[12] At the time of the ASSIST evaluation, over 1,500 communities had enacted some type of clean indoor air ordinance, and over 1,300 communities had enacted some type of youth access to tobacco ordinance.[13]*

The trend toward adoption of preemption language related to state clean indoor air laws (and youth access to tobacco laws) is well discussed in the literature.[14,15] At the time of the ASSIST evaluation, 27 states included preemption provisions in connection with tobacco control laws.[16] As defined generally, state preemption prohibits lower level jurisdictions from enacting laws more stringent than, or different from, the higher level law.[17] Both the Department of Health and Human Services and the American Public Health Association have issued statements opposing state preemption of local tobacco control ordinances.[18,19]

The Value of Monitoring Policy and Legislative Changes

The usefulness of surveillance of tobacco control policy change is well recognized, and monitoring systems are now an important part of tobacco control efforts in the United States. Former U.S. Surgeon General David Satcher emphasized the importance of data collection and data analysis to identify tobacco control problems and to make progress in solving these problems, and he called for the replication of such systems worldwide.[20]

The NCI system for rating selected tobacco control laws is a benchmark tool: The model offers data comparing the laws in all 50 states and the District of Columbia to well-established public health goals.[11,21] The value of longitudinal monitoring of this kind is also made clear in Stillman et al.,[22] 1999, wherein the ratings serve as a key variable in the ASSIST IOI (along with cigarette prices and the percentage of workers covered by a 100% smoke-free workplace).

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*Information about the ANRF database of community ordinances is located at www.no-smoke.org/document.php?id=313.

The rating system was not designed to predict the effect of laws on behavior; instead, it was expected that the relationship between the rating data and other variables such as prevalence and consumption could be tested as it was in the ASSIST evaluation.

The NCI rating system establishes a numerical rating for every state based on the extensiveness of the state's youth access and clean indoor air laws. The system measures changes in these laws, establishes a firm baseline, uses verifiable data based directly on state laws, and rates the same item for every state (with a high level of interrater agreement) based on established public health objectives.[11,21] The system thereby offers a high degree of measurability for the ASSIST evaluation and other research.

In the ASSIST evaluation, the unit of measure is the state; therefore, an index to assess states based on their changes in tobacco control policy is particularly useful in at least two important respects. The clean indoor air ratings serve as one variable in the IOI and thereby as a measure of the effect of ASSIST on policy outcomes. Specifically, for purposes of its IOI, the ASSIST evaluation used a combined state+local clean indoor air rating. As noted below, only local measures that were as restrictive or more restrictive than the state law were included in the combined rating. ASSIST states had higher policy scores than non-ASSIST states prior to 1995, and the early baseline environment in these states may account for the new clean indoor air laws that were enacted in later years. In a related aspect of the ASSIST evaluation, the combined state+local clean indoor ratings became a variable in the analysis of whether the initial outcomes affected smoking prevalence and consumption rates.[22]

In another example, the NCI rating system was also analyzed with the NCI Tobacco Use Supplement to the U.S. Census Bureau's Current Population Survey.[23] The analysis revealed a differential of more than 30 percentage points among the states in the proportion of the workforce with smoke-free policies.[24] As new findings show that there are significant risks in even short-term exposure to secondhand smoke,[25,26] data that help states, cities, and countries evaluate the extensiveness of their clean indoor air laws will become increasingly important.

Generating quantitative indicators based on state and local laws can help inform decision makers about whether specific aspects of their tobacco control policy are in the best interests of public health. Measures of tobacco control inputs are important in evaluating the comprehensiveness and strength of tobacco control policies by (1) providing target goals by which states can monitor progress, (2) facilitating comparison among states and counties, (3) enabling longitudinal tracking of changes in policy actions over time, and (4) measuring the effect of the inputs on outputs or behavioral and other changes.[27]

Methods for Rating the Comprehensiveness of Tobacco Control Laws

The methods used in the ASSIST evaluation for rating state tobacco control laws have been published in detail.[11,21] This section summarizes those methods and their limitations and presents an additional approach used in the evaluation for adding a local-level component to the system for rating state clean indoor air legislation.

Rating State Tobacco Control Laws

In 1995, NCI convened a technical advisory committee composed of governmental and nongovernmental tobacco control specialists to develop a system for rating state tobacco control laws in the SCLD. With this effort, the NCI program personnel and the ASSIST evaluation team hoped to create a tool to monitor changes in tobacco control policy in all states.

The rating system developed by the committee included information on state laws only; executive orders, regulations, and nongovernmental policies were not captured in the system. In one instance (Maryland, 1995–99), proxy scores were used to complete categories of a state clean indoor air rating for which a narrower statutory provision connoted a broad restriction upheld by the state's highest court in regulation form. The committee recognized that providing data on state laws alone would not reflect overall tobacco control policy for states. Nevertheless, a tracking system for state laws had the benefit of providing consistent, reliable data on a critical component of state tobacco

> **Rating System for State Laws**
>
> - The system has two policy areas: clean indoor air and youth access.
> - In each policy area, nine legislative items are rated.
> - Four or five decision criteria rate the extensiveness of each item.
> - Within each policy area, the sum of the individual ratings for each of the nine items is the summary score assigned to the legislative (policy) area for the specified state.

control policy, and such data were viewed as a potentially valuable research tool.

To identify the variables to include in the rating system, the committee reviewed major provisions of state laws, ASSIST policy priorities,[28,29] and reports of scientific research. The committee identified nine legislative items to rate in the youth access and the clean indoor air legislative areas (tables 3.1 and 3.2). For the youth access area, six items specifically address restrictions aimed at limiting minors' access to tobacco products, and three items emphasize the importance of enforcement efforts. Similarly, for the clean indoor air area, seven legislative items address specific location restrictions that can affect a large number of persons, and two items address enforcement of the location restriction laws. The ratings reflect the cumulation of each state's law over time, so that all amendments to and repeals of the law are incorporated in the annual scores.

Decision criteria are applied to each legislative item to determine its rating by number of points. The item is described according to four or five criteria representing possible levels of requirements

Table 3.1. Target Criteria Rated with 4 Points for Items in the Youth Access Policy Area

Item		Target criteria rated with 4 points
1	Minimum age	Prohibits the sale or distribution of any tobacco products to persons under 18 years of age through any sales or distribution outlet, and a warning sign is required at point of purchase with specific penalty for failing to post a sign
2	Packaging	Prohibits all cigarette sales other than in a sealed package conforming to federal labeling requirements
3	Clerk intervention	Prohibits access to or purchase of tobacco products without the intervention of a sales clerk
4	Photographic identification	Requires merchants to request photographic identification for people who appear to be under 21 years of age
5	Vending machines	Total ban on sale of all tobacco products through vending machines in all locations
6	Free distribution	Total ban on distribution of free tobacco samples, coupons for free samples, or rebates
7	Graduated penalties	Establishes a system of graduated penalties or fines applicable to all youth access laws, to be levied within 3 years, plus possibility of suspension or revocation of a required tobacco retail license for repeated sales to minors
8	Random inspections	Establishes random, unannounced inspections of retailers as part of the enforcement mechanism, using underage buyers for the purpose of identifying violators, and does not prohibit other use of minors to test compliance
9	Statewide enforcement	Establishes a clearly designated statewide enforcement authority for sales

Source: Alciati, M. H., M. Frosh, S. B. Green, R. C. Brownson, P. H. Fisher, R. Hobart, A. Roman, R. C. Sciandra, and D. M. Shelton. 1998. State laws on youth access to tobacco in the United States: Measuring their extensiveness with a new rating system. *Tobacco Control* 7:345–52. Reproduced with permission of the BMJ Publishing Group.

in the item. In each instance, a score of four points reflects the target score from a public health policy perspective. For example, for a law in the area of clean indoor air, the first item applies to government workplaces, and the target criterion is that 100% of government worksites are 100% smoke free. An additional point is assigned if the law specifies that government worksites and grounds are 100% smoke free. The five decision criteria for government worksites describe incrementally the requirements in the law that will lead to that outcome and have rating points from 0 to 5 accordingly. The more comprehensive the requirement, the more points are assigned. See sidebar for an example of the decision criteria for ratings.

The criteria used for rating the youth access and clean indoor air areas were devised to depict the degree of comprehensiveness and stringency of the provisions in the laws. The highest rating for some items is +5, for others the rating is +4, and it describes an ideal situation, usually with tobacco restrictions and population coverage at 100%. The

Table 3.2. Target Criteria Rated with 4 Points for Items in the Clean Indoor Air Policy Area

Item		Target criteria rated with 4 points
1	Government worksites	Government worksites are 100% smoke free, no exemptions
2	Private worksites	Private worksites are 100% smoke free, no exemptions
3	Schools	No smoking permitted in schools during school hours or while school activities are being conducted
4	Childcare facilities	No smoking permitted during operating hours in childcare facilities (explicitly including licensed home-based facilities)
5	Restaurants	Restaurants (explicitly including bar areas of restaurants) are 100% smoke free
6	Retail stores	Retail stores or retail businesses open to the public are 100% smoke free
7	Recreational/cultural facilities	Recreational and cultural facilities are 100% smoke free
8	Penalties	Penalties or fines, applicable to smokers and to proprietors/employers, for any violation of clean indoor air legislation
9	Enforcement	Enforcement authority designated for clean indoor air legislation, and sign posting is required

Source: Chriqui, J. F., M. Frosh, R. C. Brownson, D. M. Shelton, R. C. Sciandra, R. Hobart, P. H. Fisher, R. el Arculli, and M. H. Alciati. 2002. Application of a rating system to state clean indoor air laws (USA). *Tobacco Control* 11 (1): 26–34. Reproduced with permission of the BMJ Publishing Group.

descending criteria reflect where on the per-item rating scale the provisions qualify in relation to the ideal. The criteria also take into account features of the laws that narrow their application—for example, exclusions or explicit exemptions. For each item, if a state law preempts stronger local ordinances, the rating for the specific item is reduced by 2 (–2) points (with a minimum score of 0 on each item).

A summary score, which is the measure of the comprehensiveness of the laws, is calculated for the legislative area for a state by adding the rating points for all nine items for the area. For calculating the summary score, individual items are considered of equal weight across the rating area. For example, for calculation of a summary score for clean indoor air, restrictions on government or private worksites are weighted equally with restrictions on retail stores.

The maximum possible summary score is 39 points for the youth access area and 42 points for the clean indoor air area. Because of the –2-point penalty for an item that is preempted, the summary score for each policy area could be reduced by up to 18 points. The rating reduction for preemption was recognized from the outset as a heavy penalty. However, the committee deemed it important to identify the specific items that included preemptions rather than to create a separate or 10th item to account for preemption because it would be impossible to then account for how many individual items were affected by preemption.

Item 1: Government worksites are 100% smoke free.

Points   **Decision Criteria**

+5   100% of government worksites and grounds (or a specified distance from entries/exits) are smoke free, no exemptions

+4   Government worksites are 100% smoke free, no exemptions

+3   No smoking permitted in government worksites unless restricted to enclosed, separately ventilated designated smoking areas or government worksites are 100% smoke free, with a minimal exemption, for example, worksites with five or fewer employees, privately enclosed offices used exclusively by smokers, or other narrow exemption (for example, based on smoker density)

+2   Smoking in government worksites restricted to designated smoking areas that are separate and enclosed or to enclosed, separately ventilated designated smoking areas, with a minimal exemption

+1   Smoking in government worksites restricted only to designated smoking areas; or to designated smoking areas that are separate and enclosed, with a minimal exemption; or any stricter requirement that applies to some but not all types of worksites (for example, warehouses exempted) and/or includes more than a minimal exemption

0   No restrictions, or requirement(s) that smoking be permitted

Source: Chriqui, J. F., M. Frosh, R. C. Brownson, D. M. Shelton, R. C. Sciandra, R. Hobart, P. H. Fisher, R. El Arculli, and M. H. Alciati. 2002. Application of a rating system to state clean indoor air laws (USA). *Tobacco Control* 11 (1): 26–34. Reproduced with permission of the BMJ Publishing Group.

The Rating Process in Detail

The following equations help to illustrate the rating process and the effect of the preemption reduction on the individual item ratings and summary scores for a given state, s, at time t. In these equations, S_{st} represents the summary score for state s at time t across each of the nine items; S_{stp} represents the state summary score with the preemption reduction; p represents the 2-point preemption reduction applied to each item, i, as appropriate; and i_{xst} represents each of the nine items (denoted by x) in both the youth access and clean indoor air areas for a given state, s, at time t.

The state summary score without the preemption reduction is calculated as follows:

$$S_{st} = i_{1st} + i_{2st} + i_{3st} + i_{4st} + i_{5st} + i_{6st} + i_{7st} + i_{8st} + i_{9st} \tag{3.1}$$
$$12 = 4 + 4 + 4 + 0 + 0 + 0 + 0 + 0 + 0.$$

The state summary score with the preemption reduction is calculated as follows:

$$S_{stp} = (i_{1st} - p) + (i_{2st} - p) + (i_{3st} - p) + (i_{4st} - p) + (i_{5st} - p) +$$
$$(i_{6st} - p) + (i_{7st} - p) + (i_{8st} - p) + (i_{9st} - p) \tag{3.2}$$
$$6 = (4 - 2) + (4 - 2) + (4 - 2) + 0 + 0 + 0 + 0 + 0 + 0.$$

Limitations

As developed in 1995, the rating system included state laws only: reliable sources for data on executive orders, regulations, and nongovernmental policies were too limited for inclusion at

that time. (In the instance of Maryland's scores for 1995 through 1999, proxy scores were used to complete categories of the state clean indoor air rating for which a narrower statutory provision connoted a broad restriction upheld by the state's highest court in regulation form.) State laws alone could not reflect overall tobacco control policy for states; nevertheless, the system has the benefit of providing consistent, reliable data on a critical component of state tobacco control policy.

Moreover, the state rating system was not designed as a stand-alone measure; rather, it was intended to serve with other variables as a measure of a state's overall tobacco control policy on initial and long-term outcomes. The limitations of the system and the decision rules applied in its creation should be considered in light of this goal. An assessment of the effect of the state youth access laws on youth smoking behavior has been published.[30] Data on the effect of clean indoor air laws[11] as part of the IOI are presented in chapter 4 of this monograph.

The rating system was not intended to produce predictive scales for measuring the effect of laws on behavioral and other outcomes. Rather it was intended to evaluate the extent to which state laws met specified health policy goals and to document changes in those laws over time. For these reasons, no attempt was made to give different weights to individual items within the rating scale. Analyses to test the construct validity, which might be appropriate for psychological and behavioral research, were not applicable here for a number of reasons.

These reasons are related not only to the obvious limitations of the sample size (fixed at 51), but also to the nature of the data involved. Any attempt to relate extensiveness of the laws to subsequent tobacco consumption would require adjustments for other variables, in addition to information about changes in laws and tobacco consumption over time. Many potentially mediating variables are relevant here, including the implementation and enforcement of state laws. It was anticipated that the usefulness of the rating system would be tested in its application as a covariate or intervening variable in subsequent research. For further discussion of such variables, see chapter 5 on state facilitating conditions.

Rating Local Tobacco Control Laws— The Case of Clean Indoor Air

Recognizing the importance of local policy activity related to clean indoor air, a working group of the ASSIST Evaluation Technical Expert Panel was convened to adapt the state clean indoor air rating method for use in measuring local clean indoor air ordinances. To adapt the method, the working group first needed to identify the best available source of information on local tobacco control ordinances as a basis for understanding the extent to which a local rating method could be developed. Local ordinance data available as of the end of 1998 (the most recent data available at the time of the ASSIST evaluation) were obtained from the ANRF for this purpose. The ANRF data were deemed to be the best available source of local ordinance tobacco data across the states at the time; however, the data were not entirely

complete because of difficulties in collecting ordinance information from local governments. Therefore, the working group decided to use the ANRF data as a proxy for local ordinances in the states.

The local rating criteria and points were devised to correspond, to the extent possible, with the state rating categories and points. Limitations in the ANRF data precluded rating four of the nine items in the state method. Accordingly, the following five items were used to rate the local ordinances:

1. Private worksites
2. Restaurants
3. Recreational and cultural facilities
4. Enforcement
5. Penalties

The categories of government worksites, schools, childcare facilities, and retail stores were omitted.

Each community received a rating for each of the five items. The summary score for the legislative area (clean indoor air) for a community was the sum of the five per-item scores. A series of comparisons were made to adjust the local scores for each community on each of the five provisions to reflect whether the local score was greater than (equation 3.3), less than (equation 3.4), or the same as (equations 3.5 and 3.6) the state score.

In the following equations, i_{xst} represents the per-item (x) score for state s at time t; i_{xlot} represents the per-item score for the individual local community lo at time t; ai_{xlot} represents the adjusted per-item score for the individual community lo at time t. If a local score equaled a state score, the local community was

given 0.5 points to indicate that the local community's ordinance was at least as strong as the state's ordinance (equation 3.5).

When the local item is stronger than the state item,

$$i_{xlot} > i_{xst} \rightarrow ai_{xlot} = i_{xlot} - i_{xst} \qquad (3.3)$$

When the local item is weaker than the state item,

$$i_{xlot} < i_{xst} \rightarrow ai_{xlot} = 0 \qquad (3.4)$$

When the local item is as strong as the state item,

$$i_{xlot} = i_{xst} \rightarrow ai_{xlot} = 0.5 \qquad (3.5)$$

When the local item and the state item both equal 0,

$$i_{xlot} = 0; i_{xst} = 0 \rightarrow ai_{xlot} = 0 \qquad (3.6)$$

Separate adjusted local item scores were created for each community represented in the data set. Once the adjusted local per-item scores were computed, each score was then weighted by the percentage of the state's population (*perpop*) represented in the community (equation 3.7):

Weighted adjusted local per-item
$$\text{score} = ai_{xlot} \times perpop_{lo} \qquad (3.7)$$

Population estimates as of July 1, 1996, were used as a proxy for the median community-level population across the years of interest for the ratings. The population estimates were obtained from the U.S. Census Bureau.[31] To account for possible jurisdictional overlap, the population figures for a county accounted only for the unincorporated portions of the county. For example, the population of the city of Rockville, an

incorporated city within Montgomery County, Maryland, was not included in the county's population score.

The weighted adjusted local per-item ratings were used to calculate the summary scores for each community within a state, and those were then summed to create a total local rating for each state. The combined state+local score per item was calculated by adding the state legislative rating score (incorporating the preemption reduction) to the state's local rating for each year, 1993 through 1998.

Challenges in Developing the Local Rating System

Developing the local legislative rating methodology presented three unique challenges. First, at the time of the ASSIST evaluation there was no central repository to which local governments sent information about the tobacco control measures they had passed. Instead, ANRF tracks and collects information on local tobacco control policy activity, and this database was used as a proxy measure of local ordinance activity.

Second, local ordinances, in and of themselves, must be examined within their appropriate jurisdictional contexts. In other words, if a county has an ordinance that restricts smoking in restaurants to separately enclosed areas and a city within the county has an ordinance requiring that the separately enclosed areas also contain separate ventilation, which ordinance would apply to restaurants in the city? From our legal research to resolve this issue, we

determined that the predominant scheme emerging in regard to jurisdictional hierarchy is that of a dominant municipality whereby incorporated areas are accorded jurisdictional precedence limited only by state law in a given policy area. In other words, incorporated cities' ordinances take precedence over county ordinances (when the city is incorporated within the county).

Third, we had to account for the fact that, in many instances, state law preempts stronger local laws. To account for this when creating a combined state+local rating measure, we used the state clean indoor air score that incorporated the preemption reduction plus the local score, which was weighted for the percentage of the population covered by the local ordinances. The working group chose not to exclude those ordinance provisions that might have been preempted because excluding them would have counted the preemption effect twice: The state score had already been reduced by two points for each preempted item. In addition, the state scores that incorporate the preemption reduction were used to account for the effect of preemption on the state's ability to encourage policy making and enforcement. An alternative approach to account for the preemption effect would have been to use the state scores without the preemption reduction and then to omit local scores for items that had been preempted by state law. The working group decided against the latter approach because the local ordinance information was proxy data and the local scores, in and of themselves, might not accurately capture the preemption effect.

State and State+Local Rating Results

The following discussion summarizes the results of the state ratings as well as the results of the state+local clean indoor air ratings.* In all instances, the overall summary scores were low and indicated that the states (and localities in the case of clean indoor air) were far from meeting key public health targets in the youth access and clean indoor air topic areas. These results have been published in detail.[10,11,21]

Youth Access Ratings

The summary scores for youth access legislation increased over time (table 3.3). Without the preemption reduction, the youth access summary ratings ranged from 0 to 26 points for 1993 and from 0 to 30 points for 1999. With the preemption reduction applied, the scores ranged from 0 to 18 points for 1993 and from 0 to 30 points for 1999. The states with the highest summary scores for 1997 through 1999 did not include any preemptive provisions in their laws.

The mean youth access summary score without the preemption reduction increased by more than 7 points for 1993 through 1999. With the preemption reduction applied, the mean youth access summary rating increased only 4.37 points. As table 3.3 and figure 3.1 show, an increasing number of state laws preempted local youth access provisions in the later years. This finding is consistent with other studies on the prevalence of state youth access preemption provisions during the 1990s.[15,17]

Clean Indoor Air Ratings

The change in summary scores over time was smaller for clean indoor air

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*Individual state scores for clean indoor air and youth access are presented in chapter 4.

Table 3.3. Summary Scores for Youth Access Legislation, All States, 1993–99

Score	1993	1994	1995	1996	1997	1998	1999
Score reduced for preemption							
Low	0	2	1	1	2	3	3
High	18	21	21	21	29	30	30
Mean	7.20	7.94	8.16	9.06	10.96	11.24	11.57
SD	4.03	4.39	4.48	4.77	6.29	6.71	6.57
Score not reduced for preemption							
Low	0	3	3	3	3	3	3
High	26	26	26	26	29	30	30
Mean	8.35	10.22	10.80	12.16	14.39	15.08	15.59
SD	4.99	5.80	5.93	5.85	6.15	6.23	6.25

Note: The maximum possible score is 39 points.

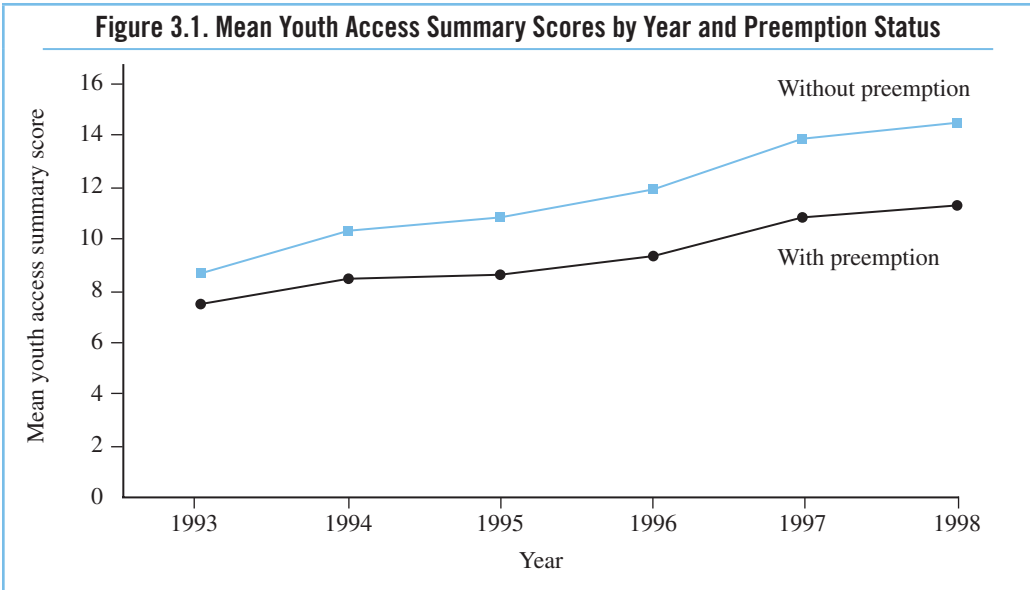## Figure 3.1. Mean Youth Access Summary Scores by Year and Preemption Status

## Table 3.4. Summary Scores for State Clean Indoor Air by Preemption Score Adjustment and Year, All States, 1993–99

Score	1993	1994	1995	1996	1997	1998	1999
Score reduced for preemption							
Low	0	0	0	0	0	0	0
High	18	19	23	23	23	23	23
Mean	7.16	7.43	7.86	7.71	7.71	7.84	8.02
SD	5.54	5.45	5.92	5.94	5.94	5.98	6.02
Score not reduced for preemption							
Low	0	0	0	0	0	0	0
High	20	31	31	31	31	31	31
Mean	8.71	10.02	10.67	10.67	10.67	10.80	10.98
SD	5.18	6.06	6.11	6.11	6.11	6.08	6.03

Note: The maximum score is 42 points.

than for youth access (table 3.4). The high scores (both with and without the preemption reduction) did not change after 1995. Without the preemption reduction, the scores ranged from 0 to 20 points for 1993 and from 0 to 31 points for 1999. With the preemption reduction applied, the scores ranged from 0 to 18 points for 1993 and from 0 to 23 points for 1999.

The mean summary scores without the preemption reduction did not change

Figure 3.2. Mean Clean Indoor Air Summary Scores by Year and Preemption Status
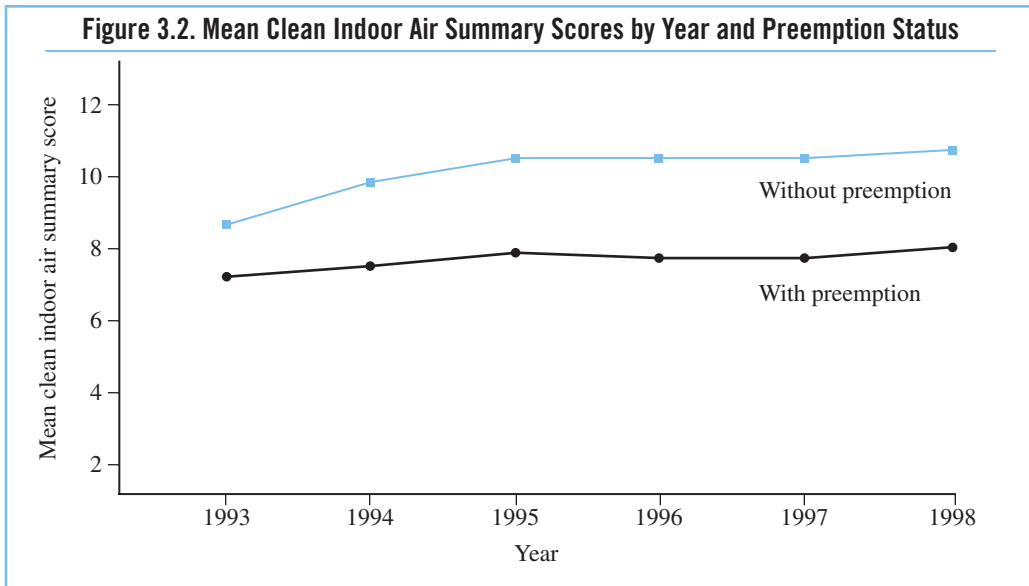
between 1995 and 1997, and the mean scores with the preemption reduction decreased from 1995 to 1996 and remained the same through 1997. In both cases, the difference between the mean scores remained stable at 2.96 points for 1996 through 1999 (figure 3.2). Thus, the clean indoor air summary scores were continuously affected by preemption during the 1990s.

State+Local Clean Indoor Air Ratings

As noted above, for the purpose of the ASSIST evaluation, a measure was constructed that could be used to examine the combined effect of state+local laws on initial and later outcomes. Also, the data for this analysis covered 1993 through 1998 and reflect the state clean indoor air score (with preemption) plus the additional local score weighted for the percentage of the population covered by the local ordinances.

A comparison of the summary scores for the state+local clean indoor air legislation for 1993 through 1998 (table 3.5) with the state clean indoor air scores with preemption (table 3.4) shows that, for the most part, the addition of the local score increased the clean indoor air rating over time. The addition of the local ratings to the state ratings increased the mean total scores consistently over time from 0.55 points for 1993 to 0.77 points for 1997, but the mean scores decreased between 1997 and 1998 to 0.62 points (tables 3.4 and 3.5). The variance in the scores (as measured by the standard deviation) also decreased with the addition of the local scores. By the end of 1998, the means of the combined scores for states with preemption increased by .9 points, but the combined scores continued to reveal how far both states and localities were from meeting tobacco control

policy targets in restricting exposure to environmental tobacco smoke.

Not accounting for other state conditions or factors, the scores for ASSIST state state+local clean indoor air scores were greater than the scores for non-ASSIST states (table 3.6). Across all years, minimum and mean scores were greater for the ASSIST states than for the non-ASSIST states and indicated that the ASSIST states may have started out with stronger laws. Although the highest

score among the non-ASSIST states was greater than for any of the ASSIST states, the deviation between the scores within the ASSIST group was smaller and possibly indicated that local governments were more active in the ASSIST states than in the non-ASSIST states. (See chapter 4 for a further discussion of the adjustments that were made to the state+local scores for inclusion in the ASSIST IOI, and for a discussion of the significance of the scores by ASSIST state status.)

Table 3.5. State+Local Clean Indoor Air Summary Scores by Year, 1993–98

Score	1993	1994	1995	1996	1997	1998
Low	0	0	0	0	0	0
High[a]	18.00	19.98	24.10	24.10	24.10	24.10
Mean	7.71	8.08	8.55	8.43	8.48	8.64
SD	5.32	5.19	5.73	5.77	5.80	5.83

Note: The maximum score is 42 points. The state score reflects the state score adjusted for preemption.

[a]Maryland was the outlier in all years, due to passage of the Maryland Occupational and Safety Health (MOSH) regulation prohibiting workplace smoking, along with the lack of preemption legislation.

Table 3.6. State+Local Summary Scores for Clean Indoor Air for ASSIST and Non-ASSIST States, 1993–98

Score	1993	1994	1995	1996	1997	1998
Non-ASSIST						
Low	0	0	0	0	0	0
High	18.00	18.00	24.10	24.10	24.10	24.10
Mean	6.80	6.95	7.59	7.60	7.66	7.68
SD	5.49	5.05	5.99	5.99	6.04	6.06
ASSIST						
Low	1.86	3.57	3.44	3.06	3.06	3.06
High	16.33	19.98	20.18	20.39	20.47	20.31
Mean	9.54	10.32	10.47	10.07	10.13	10.56
SD	4.58	4.83	4.75	5.07	5.06	4.96

Note: The maximum score is 42 points.

Summary

Tobacco use prevention and control are public health issues that have been addressed by federal, state, and local governments through laws and other policy instruments, and longitudinal monitoring of policy and legislative changes is fundamental to tobacco control. Enactment of tobacco control laws, however, establishes only a framework for preventing and controlling tobacco use. Enforcement of these laws is equally—if not more—challenging than getting the laws passed.

Tobacco control policies are also accomplished through means other than state laws. While there is no comprehensive database for the various inputs involved, there are some data that move in this direction—for example, data on trends in smoking policies for workers and occupations due to mandated and voluntary actions[32] and data on hospital-based smoking bans.[33] In addition, there is a need for data on intermediate indicators related to tobacco control policies and laws, specifically, changes in knowledge of health consequences and knowledge of codified laws.[34]

Former U.S. Surgeon General Satcher characterized data monitoring and analysis as critical public health tools.[20] In line with the former surgeon general's global thinking on this issue, a worldwide tracking system of comprehensive measures for change in tobacco control policy would be an invaluable tool. Current databases that capture state (and local) tobacco control legislation in the United States can help lay the groundwork for such an effort.

The ASSIST evaluation used data from NCI's SCLD (www.scld-nci.net) for state youth access and clean indoor air laws. NCI's SCLD program has monitored state tobacco control laws since 1993 and makes data available to the research and public health communities. In addition, the *SCLD Updates Index*, a searchable quarterly summary of a wide range of cancer-related legislation, provides current information on tobacco laws. Information on tobacco-related state legislation is also available from three other sources:

- The State Tobacco Activities Tracking and Evaluation System (STATE; http://apps.nccd.cdc.gov/statesystem), is a CDC database that monitors state tobacco control laws and executive orders.
- State Legislated Actions on Tobacco Issues (SLATI) of the American Lung Association (www.lungusa.org) is an advocacy-based reporting service on state tobacco control measures.
- The Campaign for Tobacco-Free Kids (www.tobaccofreekids.org) is a nonprofit, nongovernment initiative that provides tobacco control-related information such as state and federal tobacco tax rates, and the current status of tobacco-relevant legislation.

A number of state legislatures have searchable data on tobacco control laws available on their Web sites; however, the state legislative information available varies greatly by state in terms of the frequency of updating. In addition, the state legislatures often note that the material provided on the Web site does not reflect an "official" version of the law and that

it must be obtained from hard copy volumes produced by the legislature.

For legislation on local clean indoor air, the ASSIST evaluation used the database of the ANRF (www.no-smoke.org), a nonprofit organization that has tracked local tobacco control ordinances and health regulations since 1985. Some state and local governments and research organizations, such as the Robert Wood Johnson Foundation-supported ImpacTeen project (www.impacteen.org) at the University of Illinois at Chicago, also collect local tobacco control ordinance information for use in research and policy efforts. Given the difficulty of monitoring legislative changes at the local level, developing a coordinated and comprehensive approach to collecting data will be important.

Uniform data on local tobacco control laws are more difficult to collect and analyze than state laws, but the complement of state+local data offers considerable potential for refining and specifying changes in tobacco control policy nationwide. As local tobacco policy information becomes more readily available, new measures will be needed that can be used to evaluate the effect of policy on initial and later behavioral outcomes. Tools such as the IOI can be applied more extensively to tobacco control measures once more data are available.

Finally, researchers face both the opportunity and the challenge of linking data and data analyses of governmental action on tobacco use prevention and control to other relevant data sets. The ASSIST evaluation broke new ground

in measuring policy outcomes with the IOI, which includes state and local clean indoor air scores and other variables. Research that builds on available and new measurement tools will have important benefits for long-term tobacco control. Some researchers are already using tobacco control policy markers for research in this promising direction.[24,30]

Conclusions

1. As part of the ASSIST evaluation, a measure of legislative changes was developed in two areas: youth access to tobacco products and clean indoor air. The resulting clean indoor air score became a component of the Initial Outcomes Index used in the overall analysis.
2. The methodology for the measurement of legislative policy change involved a rating scale applied to nine target criteria within each policy area, based on state-level data compiled from the National Cancer Institute's State Cancer Legislative Database and aggregated local data from the American Nonsmokers' Rights Foundation. Penalty values were applied to states with preemption laws, while population-adjusted incremental values were added in cases where stronger local laws existed.
3. Target criteria for youth access to tobacco included minimum age, packaging, clerk intervention, photographic identification, vending machines, free distribution, graduated penalties, random inspections, and statewide enforcement. Target criteria for clean

indoor air included government worksites, private worksites, schools, childcare facilities, restaurants, retail stores, recreational/cultural facilities, penalties, and enforcement.

4. During the period of study from 1993 to 1999, mean summary scores for youth access legislation increased 4.37 points from 7.20 to 11.57 when adjusted for preemption, and 7.24 points from 8.35 to 15.59 without this adjustment. Similarly, mean summary scores for clean indoor air legislation increased 0.86 points from 7.16 to 8.02 when adjusted for pre-emption, and 2.27 points from 8.71 to 10.98 without this adjustment.

5. Beyond the immediate use as out-come metrics within the ASSIST evaluation, this effort was a valuable test case for the quantitative measure-ment of legislative policy outcomes for a broad range of future tobacco use prevention and control issues.

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