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SMOKE-FREE AIR POLICIES AND ADOLESCENT SMOKING – UNITED STATES, 1991-2001

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Data/estimates preliminary

Background:

- Smoke-free air laws and polices protect non-smokers from secondhand smoke.

- They can also lead to reduced smoking, both in terms of fewer cigarettes per day and lower prevalence.

- Previous analyses of young people:

Background (2) :

- Wasserman, Manning, Newhouse, & Winkler (1991).
  - NHANES II (1976-1980)
  - state-level restriction index negatively associated with consumption

- Chaloupka & Wechsler (1997).
  - 1993 Harvard College Alcohol Study
  - modest negative associations between state & local laws restricting smoking in restaurants and in schools and smoking participation

Background (3) :

- Lewit, Hyland, Kerrebrock, & Cummings (1997)
  - 1990 & 1992 COMMIT 9th grade survey in 21 North American communities
  - local clean indoor air restrictions not associated with smoking participation or with intention to smoke

- Tauras & Chaloupka (1999)
  - 1976-1993 Monitoring the Future Surveys
  - index of state-level restrictiveness of smoking in public places associated with lower participation and fewer cigarettes per day among current smokers

Background (4) :

- Wakefield, Chaloupka, Kaufman, Orleans, Barker, & Ruel (2000)
  - 1996 survey of U.S. high school students
  - index of state & local restrictions inversely associated with probability of smoking and progression along a smoking uptake continuum

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Objectives:

- To assess the relationships between state-based SFA laws and adolescent cigarette smoking data obtained from a national (U.S.) survey of 8th, 10th and 12 grade students (Monitoring the Future [MTF]).

- To control for major socio-demographic and tobacco control variables.

- To assess alternative indicators of exposure, including worksite bans among employed adolescents and young adults from the Current Population Survey Tobacco Use Supplement.

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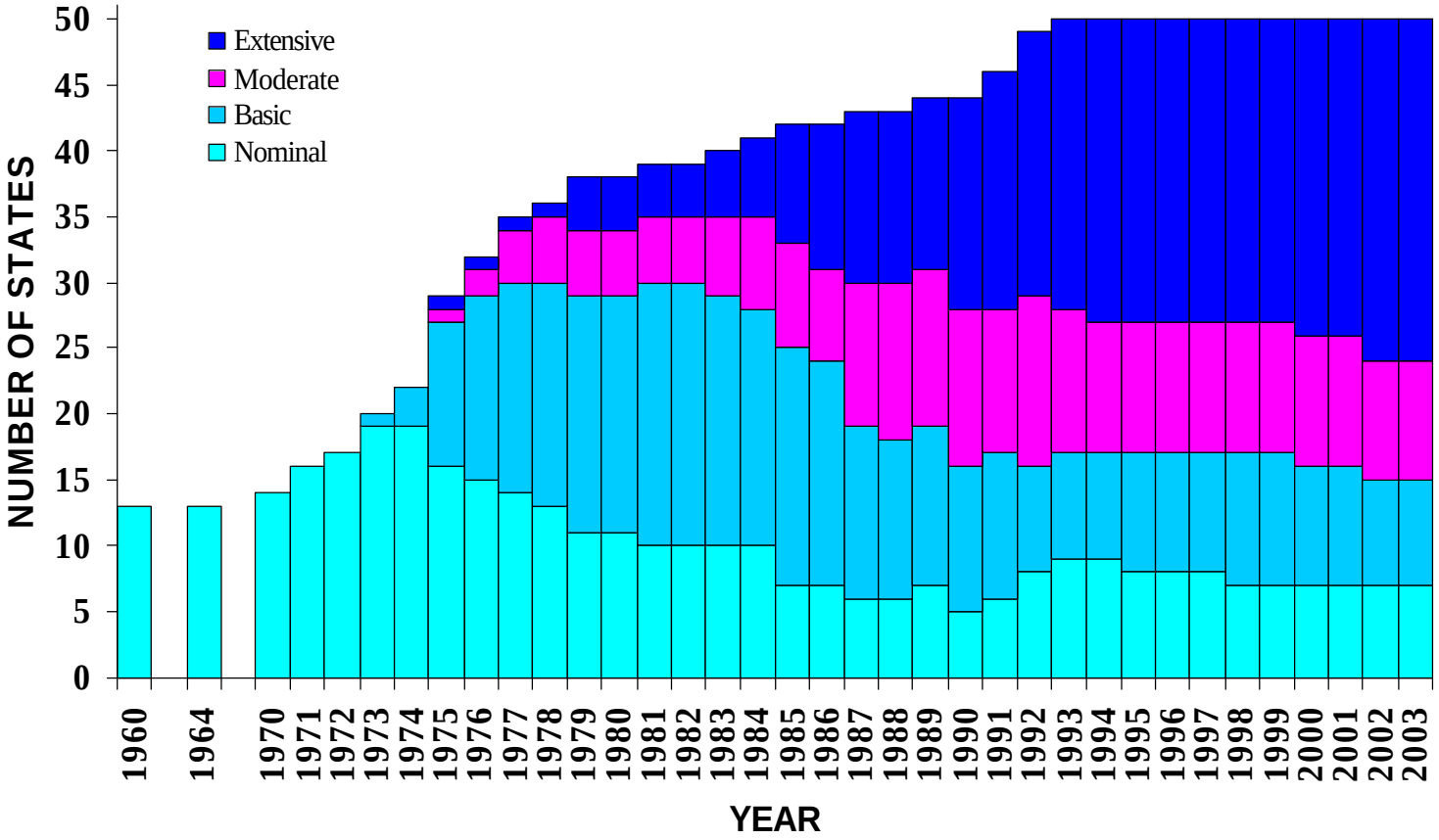
Restrictiveness Of State Laws Regulating Smoking In Public Places – U.S., 1960-2003*



Sources: 1989 Surgeon General's Report, ALA's SLATI, CDC's STATE system, Roswell Park Cancer Institute. Note: Includes the District of Columbia; Alabama = only state with no restrictions on public smoking.

*** 2003 data are represented only for the first quarter of the year.**

Legislative Data:

Smoke-Free Air (SFA) Legislation:

- **Each state was given a smoke-free air rating based on the strength of SFA protection provided during 1991-2001 in the following locations:**
  - Restaurants, recreational facilities, cultural facilities, shopping malls, public schools, private schools, private worksites, health care facilities, and public transit.

- **SFA Preemption was also rated (yes, no) in all of the above locations for each state during 1991-2001.**
  - SFA Preemption prevents local areas from enacting SFA ordinances that are stronger or more restrictive than state SFA laws.

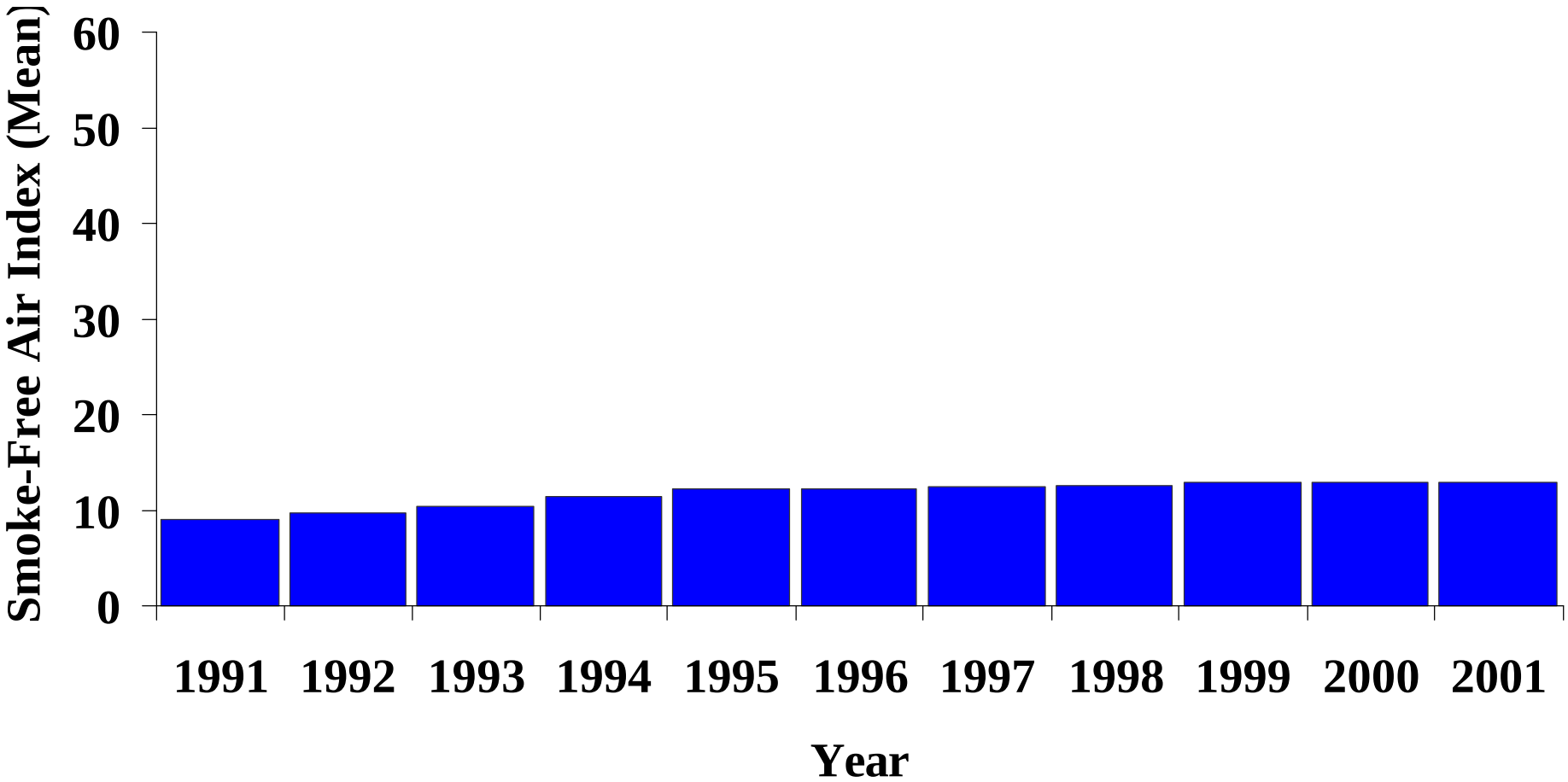
Legislative Data:

Smoke-Free Air (SFA) Legislation:

- **SFA indices with and without preemption were constructed for each state during 1991-2001. The SFA location-specific ratings were summed and SFA ratings for the following locations were weighted times 2:**
  - Restaurants, recreational facilities, cultural facilities, shopping malls, public schools, private schools

- **The SFA index with preemption subtracted points for preemption in each of the specific SFA locations. The total of preemption points was summed and subtracted from the sum of all location-specific SFA ratings.**
  - Points subtracted for preemption were also weighted times 2 for the youth-oriented locations listed above.
  - Points subtracted for location-specific preemption were based on SFA ratings for each state and year.

Mean Smoke-Free Air Index Rating Per State* -- United States, 1991-2001 [without SFA preemption**]

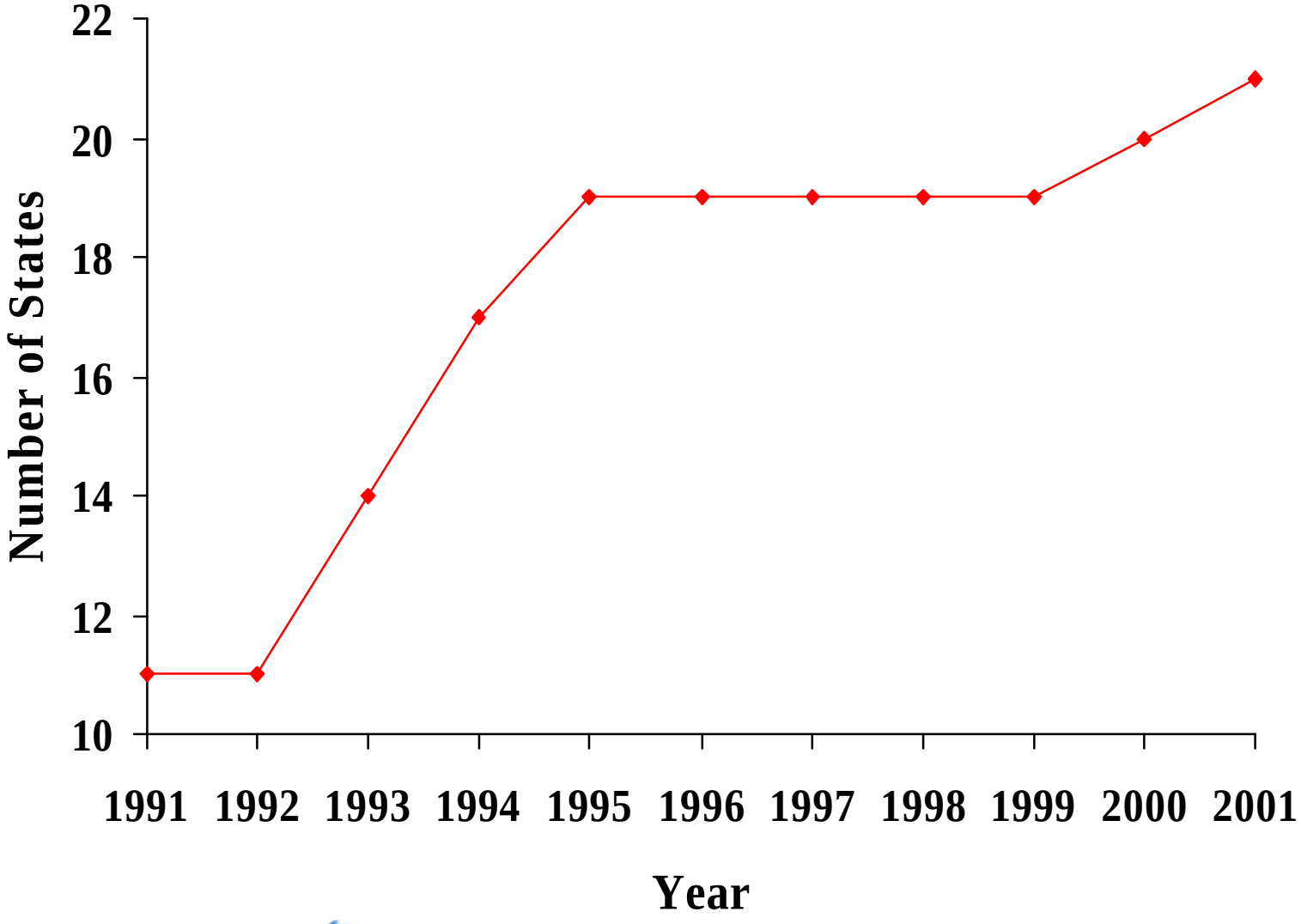


*Includes the District of Columbia; Theoretical Range of SFA Index without preemption = 0-61.

**SFA preemption = state smoke-free air preemption, meaning that state law prohibits local areas from enacting stronger smoke-free air legislation than smoke-free air legislation which exists at the state level.

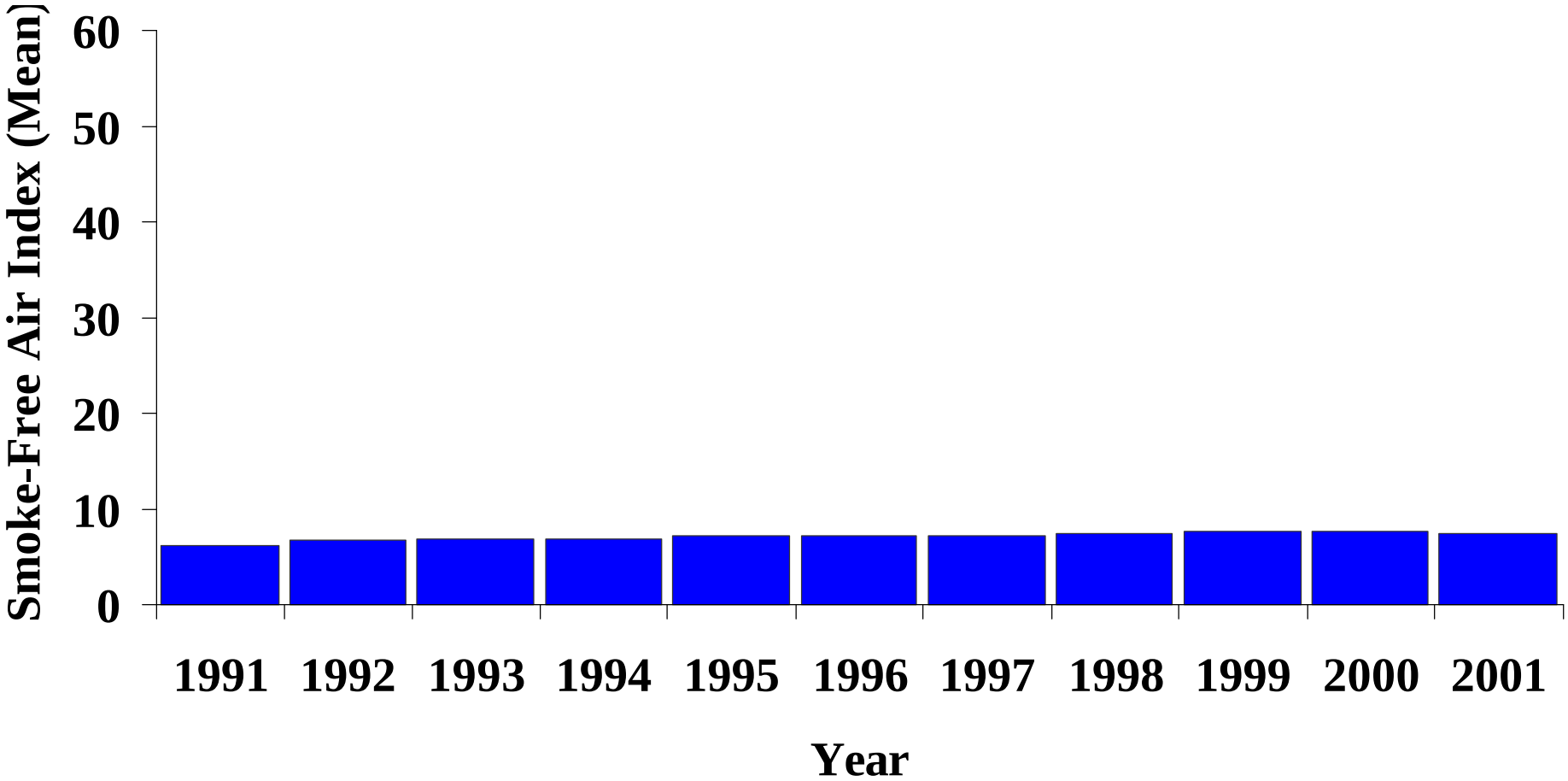
Sources: ALA's SLATI, CDC's STATE system, and Roswell Park Cancer Institute

Smoke-Free Air Preemption: Any Preemption* – United States, 1991-2001



* Includes SFA preemption at any of the following location-specific sites: private worksites, restaurants, health care facilities, public transit, public schools, private schools, shopping malls, recreational facilities, cultural facilities.

Mean Smoke-Free Air Index Rating Per State* -- United States, 1991-2001 [with SFA preemption**]



*Includes the District of Columbia; Theoretical Range of SFA Index with preemption = -22.5-61.

**SFA preemption = state smoke-free air premption, meaning that state law prohibits local areas from enacting stronger smoke-free air legislation than smoke-free air legislation which exists at the state level.

Sources: ALA's SLATI, CDC's STATE system, and Roswell Park Cancer Institute

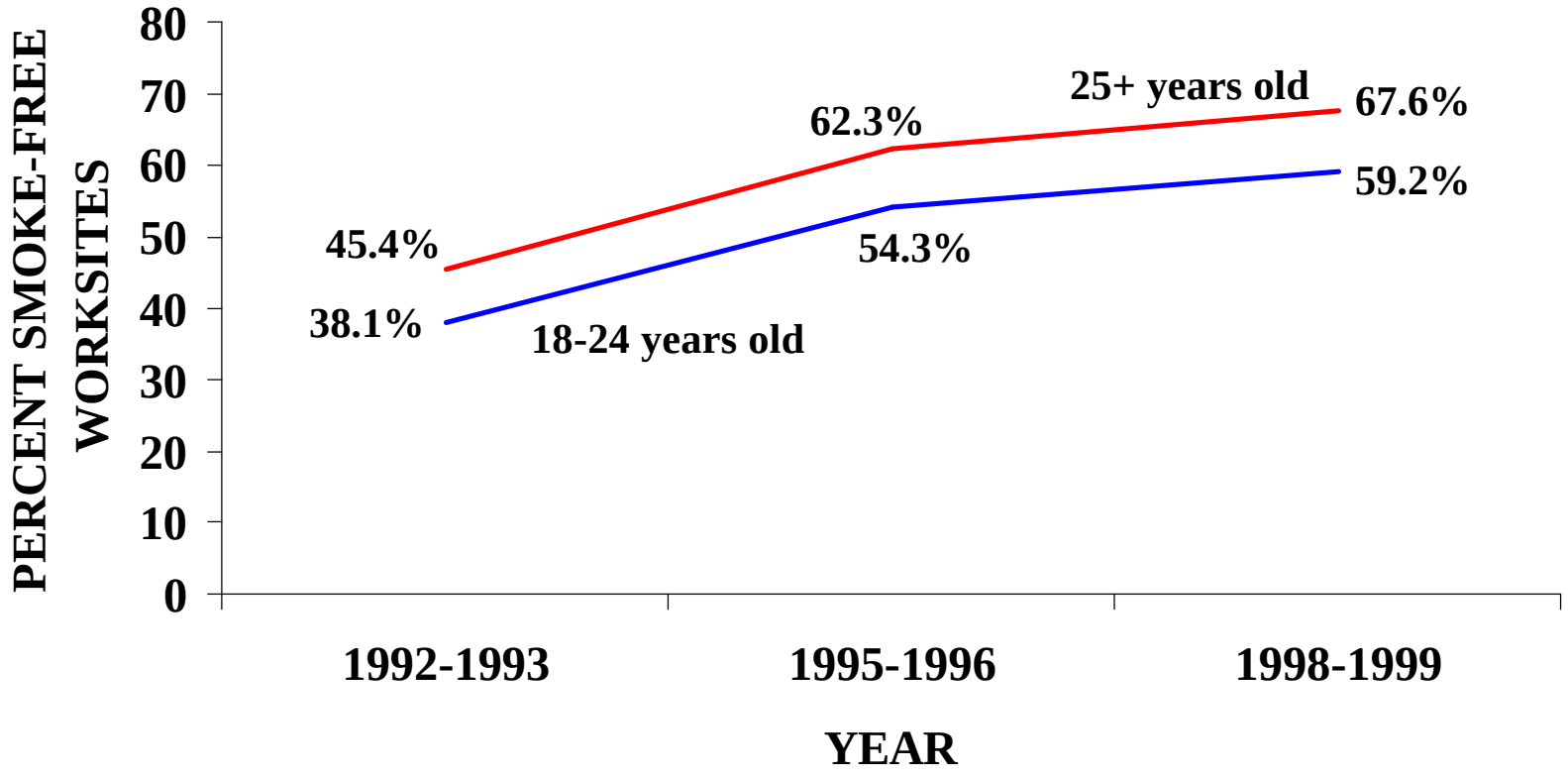
Policy Data: Smoke-free Workplaces

- During 1992/93, 1995/96, and 1998/99, the Current Population Survey Tobacco Use Supplement asked respondents who were employed if smoking was prohibited at their worksite in common areas and in work stations.

- An index was constructed for each state for 18-24 year olds of the percent of respondents who worked in a location where smoking was banned. Estimates are representative of each state and are merged with 1993, 1996, and 1999 MTF survey data.

- This measure incorporates policies that were in effect to comply with state and local ordinances or that were independent business decisions.

Trends in Worksite Smoking Bans Among Employed Adults – United States, 1992/93-1998/99



Source: Current Population Survey, Tobacco Use Supplement; 1992/93, 1995/96, 1998/99 estimates.

Legislative Data:

Possession, Use, Purchase (PUP) Legislation:

- **The presence or absence of a law prohibiting minors' possession, use, and/or purchase of cigarettes in each state for 1991-2001 was determined.**

- **A PUP Index was calculated as the sum of the number of possession, use, and purchase laws in each state in a given year** ***(range = 0-3)*****.**

Legislative Data:

Sales to Minors' (STM) Index:

- The Alciati Index measures the extensiveness of state tobacco control youth access laws, and is comprised of the following youth access components, which have been developed and coded by the National Cancer Institute's State Cancer Legislative Database Program (SCLD):
  - *Minimum age of purchase*
  - *Packaging*
  - *Clerk intervention*
  - *Photo identification*
  - *Vending machine availability*
  - *Free distribution*
  - *Graduated penalties*
  - *Random inspections*
  - *Statewide enforcement*

(NOTE: This index was initially developed by MaryAnn Alciati and colleagues to assess sales to minors' laws from 1993-1996.)

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Legislative Data:

SFA, PUP, and STM data were compiled by researchers at Roswell Park Cancer Institute using:

- **ALA's State Legislated Actions On Tobacco Issues (SLATI)**
- **CDC's State Tobacco Activities Tracking and Evaluation (STATE)**
- **NCI's State Cancer Legislative Database (SCLD) systems.**
- **Verified and expanded upon by MayaTech.**

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Sources of Data:

Price data from *The Tax Burden on Tobacco*:

- State-specific price estimates of the average price per cigarette pack (excluding generics) as of November 1st of each year.
- Average price for 1991-2001 was constructed by weighting present year and past year prices, and then adding the average to the average of federal and state excise taxes for the current year.

NOTE: Dollar amounts were adjusted to 2001 dollars.

Sources of Data:

Tobacco Control Expenditures: CDC and Research Triangle Institute:

- State-specific tobacco control expenditure estimates for 1991-2001 were compiled from various sources *(i.e., ASSIST, IMPACT, Smokeless States, excise taxes, state funds)* by the Centers for Disease Control and Prevention (CDC) and the Research Triangle Institute.

NOTE: Dollar amounts were adjusted to 2001 dollars.

Sources of Data:

Monitoring the Future Surveys

(8th, 10th & 12th grade students)

- Conducted by the Institute for Social Research at the University of Michigan
- Funded by the National Institute on Drug Abuse
- Independent samples are drawn for each grade; samples are taken within the contiguous United States
- Data from 1991-2001 were used for this study (n = 17,923 – 420,714)

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Sources of Data:

Monitoring the Future Surveys

(8th, 10th & 12th grade students)

- Age range of adolescents in sample: primarily 13-18 years of age.
- Survey measures:
  - **Current Smoking** *(Yes vs. No)*
  - **Cigarettes Per Day among Current Smokers** *(< 1/2 pack/day vs. ≥ 1/2 pack/day)*
  - **Attitude toward Being Around Cigarette Smoke** *(dislike being around cigarette smoke vs. more tolerant toward cigarette smoke)*

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Dependent Variables (from MTF):

- **Current Smoking** *(Yes vs. No)*
- **Cigarettes Per Day among Current Smokers** *(< ½ pack/day vs. ≥ 1/2 pack/day)*
- **Attitude toward Being Around Cigarette Smoke** *(dislike being around cigarette smoke vs. more tolerant toward cigarette smoke)*

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Independent Variables

- **SFA Index without preemption**
- **SFA Index with preemption**
- **SFA Private worksite restrictions**
- **CPS Smoking Ban**

(the % of employed 18-24 year-olds in a state with a smoke-free workplace)

Control Variables:

Demographics:

- Age, sex, race/ethnicity, father's education, mother's education, respondent's total income, year (1991-2001)

Tobacco control policies:

- Average price of a pack of cigarettes *(excluding generics)**, tobacco control expenditures*, sales to minors' (Alciati) index, PUP index

* Adjusted to 2001 dollars

Statistical Analyses:

- Tobacco control variables were merged with the MTF survey data.
- Dependent variables were dichotomous
- Logit analyses were conducted using STATA 7.0 to assess the strength of association of SFA laws with smoking behaviors and attitudes.

Statistical Analyses:

- The cluster option in STATA was used to adjust at the state level.
  - Standard errors were corrected for correlation created by having multiple observations within a single state.
- Analyses were conducted on data weighted to account for the differential probability of selection at the school level.
- Coefficients, z-scores, and significance levels are reported.

Table 1. Logit Analyses of the Association Between Smoke-Free Air and Current Smoking among Adolescents – United States, 1991-2001

Current Smoking				
	Adjusted (demographics)		Adjusted* (demographics+TC variables)	
	Coeff (*z*-score)	*p*-value	Coeff (*z*-score)	*p*-value
SFA Index (no preemption)	-0.009 (-2.67)	0.008	-0.006 (-1.83)	0.068
SFA Index (with preemption)	-0.006 (-2.02)	0.044	-0.002 (-0.66)	0.511
SFA Private worksite restrictions**	0.002 (0.05)	0.959	0.023 (0.74)	0.460
CPS Smoking ban**	-0.016 (-3.46)	0.001	-0.013 (-2.23)	0.026

Table 2. Logit Analyses of the Association Between Smoke-Free Air and Cigarettes per day for Current Smokers among Adolescents – United States, 1991-2001

Cigarettes Per Day among Current Smokers				
	Adjusted (demographics)		Adjusted* (demographics+TC variables)	
	Coeff (*z*-score)	*p*-value	Coeff (*z*-score)	*p*-value
SFA Index (no preemption)	-0.005 (-1.14)	0.253	-0.000 (-0.13)	0.899
SFA Index (with preemption)	-0.003 (-1.11)	0.266	0.000 (0.14)	0.885
SFA Private worksite restrictions**	0.025 (0.53)	0.599	0.050 (0.94)	0.346
CPS Smoking ban**	-0.009 (-1.35)	0.178	-0.004 (-0.68)	0.497

* Adjusted for demographic variables and the following tobacco control variables: average cigarette price, tobacco control expenditures, Alciati sales to minors index, PUP index.
** For employed students only.

Table 3. Logit Analyses of the Association Between Smoke-Free Air and Attitude Toward Smoking among Adolescents – United States, 1991-2001

Dislike Being Around Cigarette Smoke ✠				
	Adjusted (demographics)		Adjusted* (demographics+TC variables)	
	Coeff (*z*-score)	*p*-value	Coeff (*z*-score)	*p*-value
SFA Index (no preemption)	0.005 (1.66)	0.096	0.002 (0.80)	0.425
SFA Index (with preemption)	0.002 (1.03)	0.303	-0.000 (-0.27)	0.785
SFA Private worksite restrictions**	0.021 (0.60)	0.546	0.005 (0.19)	0.848
CPS Smoking ban**	0.011 (3.42)	0.001	0.007 (2.10)	0.036

✠ All analyses adjusted for smoking status.

* Adjusted for current smoking, demographic variables, and the following tobacco control variables: average cigarette price, tobacco control expenditures, Alciati sales to minors index, PUP index; ** For employed students only.

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Discussion:

- Minimal legislative activity at the state level during study period. Future analyses will have more variability.
- Considerable changes in worksite policies in early 1990s.

- SFA Index negatively associated with current youth smoking, even after control for demographics and TC variables
- SFA Index with Preemption negatively associated with current smoking only after controlling for demographics.

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Discussion:

- Workplace legislative provision – no associations
- Indicator variable using survey reports of smoking bans was negatively associated with current smoking and positively associated with disliking smoking, after controlling for demographics and TC variables.

- What is the nature of the association?

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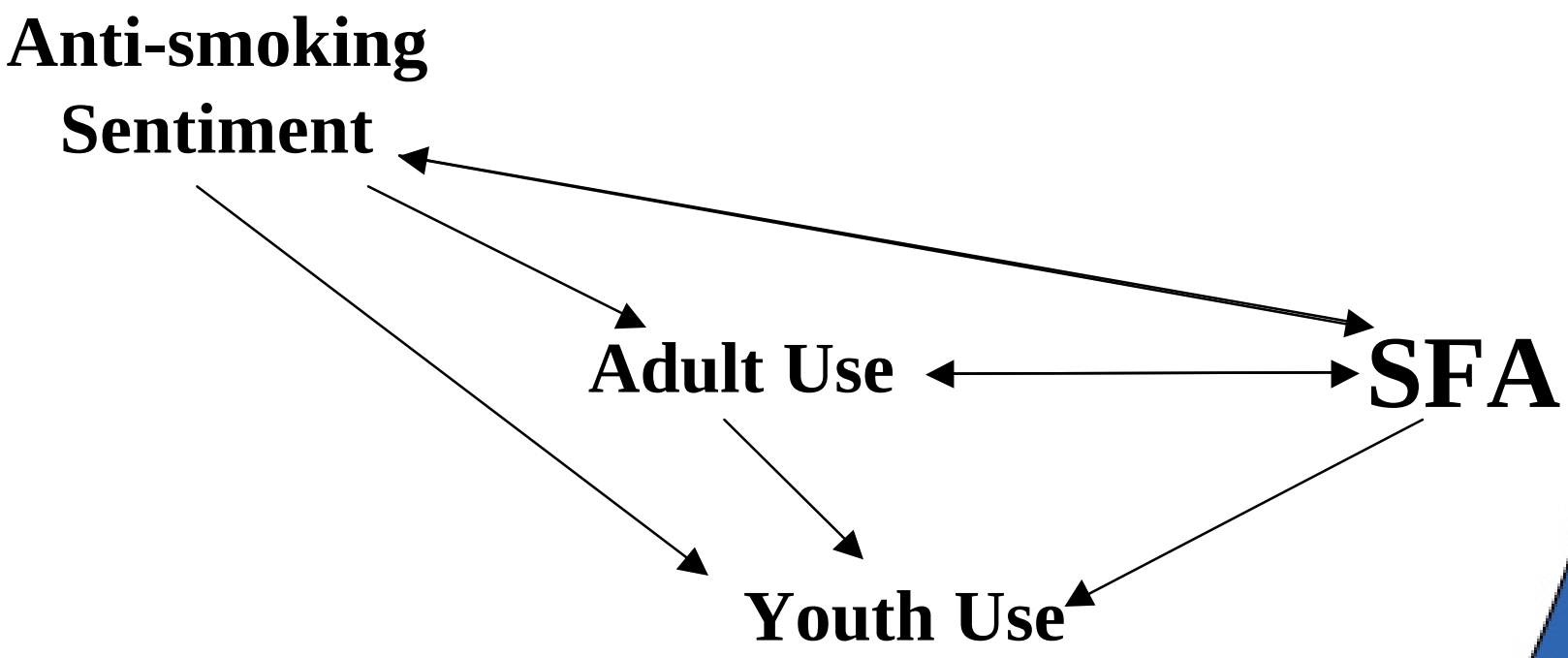
Nature of the Association:



Limitations:

- Local SFA laws were not measured.
- Little change in state-level laws overduration of study period.
- Cross-sectional analyses only depict associations.

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Future Research Will:

- Assess the influence of local laws,
- incorporate pre-emption as a separate variable,
- control for adult smoking prevalence,
- incorporate the new wave of SFA laws that ban smoking in virtually all worksites, and
- use a prospective study design to facilitate our understanding of the directions of the associations.

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In the Mean Time:

SFA laws and policies should proliferate to provide everyone with optimal protection from the chemicals in secondhand smoke.

Such laws and policies will likely change social norms in a positive direction and likely contribute to reduced use among youth and adults.

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