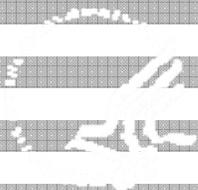


Smoking-related policies and child asthma: a state-level evaluation

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Asthma in Children

- Among the most common chronic childhood conditions
 - 9.6% prevalence in 2009 (~7 million children)
- Has remained at a plateau since 1997
- Persistent racial/ethnic disparities
- Underlying causes are unknown
 - Triggers include tobacco smoke, air pollution, allergens, respiratory infections, stress



State Smoking-related Policy

- Cigarette Taxes
 - Reductions in the prevalence of smoking
- Clean air laws (bars, restaurants, workplaces)
 - Reductions in ETS exposure
- Insurance coverage for cessation therapies
 - Medicaid coverage linked to prenatal cessation



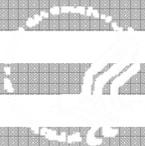
Smoking-related Policies & Asthma

- 2 studies (Lexington-Fayette County, KY and Scotland, UK) used a pre-post design to examine public smoking ban impact on ED visits / hospitalizations for asthma
 - Showed reductions but lacked a contemporaneous control group
- 1 cross-sectional study examined US county smoke-free law (≥ 1 in restaurant, bar, worksite) and child asthma prevalence/severity
 - Associated with lower symptoms but not prevalence
- No studies of taxes or insurance coverage



Importance of Policy Evaluation

- Population health impact
 - 3 core functions of public health
 - Assessment, policy development, assurance
- Comparative effectiveness
- Advocacy for further improvements in policies to promote health



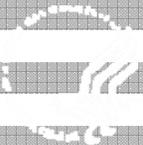
Objective

- To evaluate and compare the impact of state-specific changes in smoking-related policies on childhood asthma prevalence & severity



Data

- Individual-level outcome data come from available waves of NSCH (2003 & 2007)
 - Parent-reported current asthma
 - Severity of current asthma (mild v. moderate/severe)
 - Chronic ear infection (3+ in past year)
 - Control factors: child age, sex, race/ethnicity, primary language, family structure, insurance status/type, household poverty, and parental education
- Longitudinal state policy data from CDC
 - Cigarette Taxes
 - Clean air legislation
 - Medicaid coverage of cessation services



Methods

- State panel analysis
 - Drawing inference within states
 - Each state serves as own control
 - What is impact of making changes in policy within a given state?
- In contrast to cross-sectional analysis
 - Drawing inference between different states
 - No control of state differences associated with policy implementation
 - Can lead to over or underestimation of effect



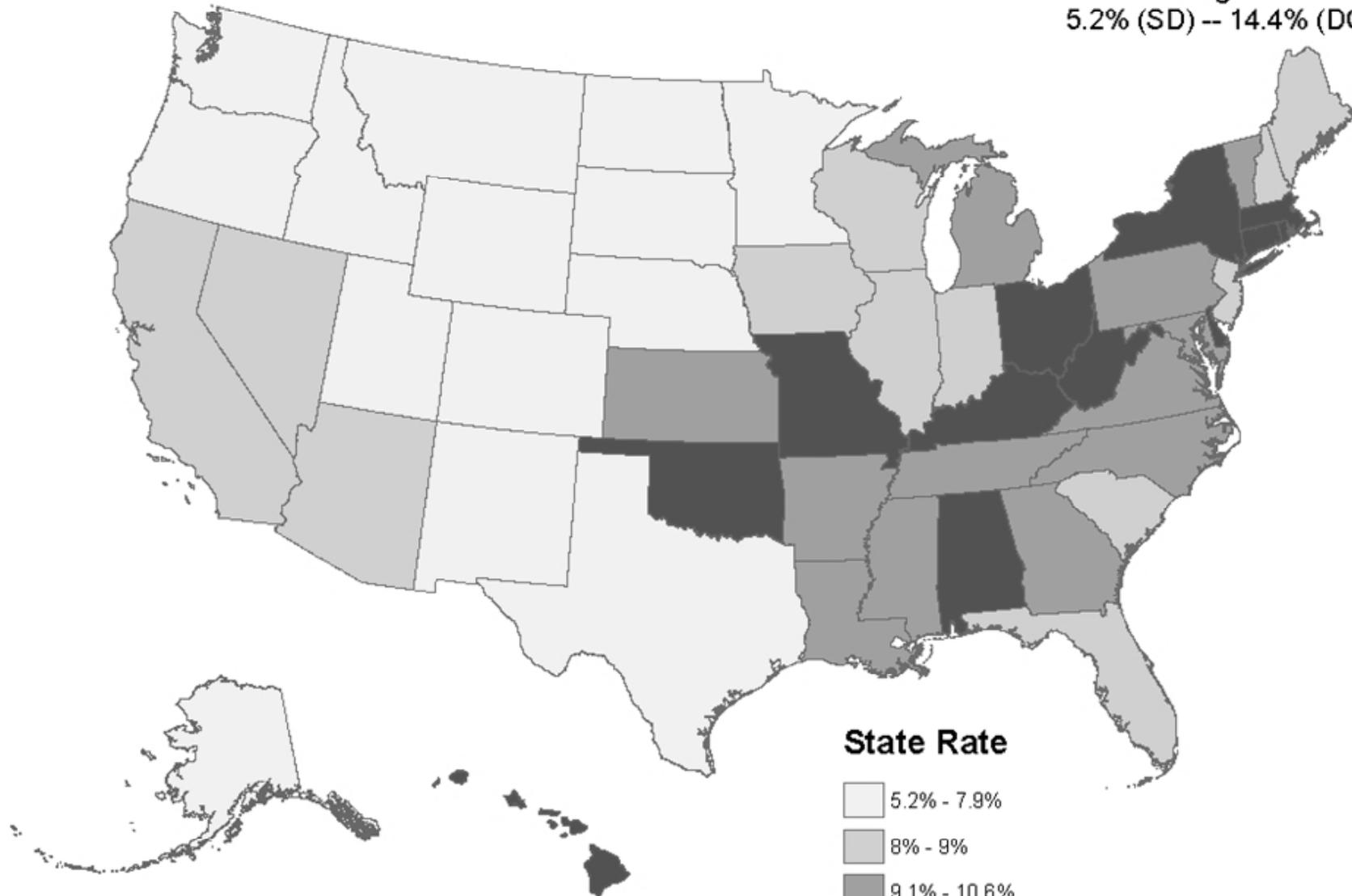
State Panel Approach

- Extension of single state pre-post design
- Compare outcomes before and after the implementation or strengthening of policy
- Requires a control for temporal changes
- This approach uses data on policies and outcomes for all 50 states, contrasting differences over time within states that did enact/strengthen policies to differences within states that did not
- Also called difference-in-difference models



Asthma Prevalence, US Children 2007

US Average = 9.0%
5.2% (SD) -- 14.4% (DC)

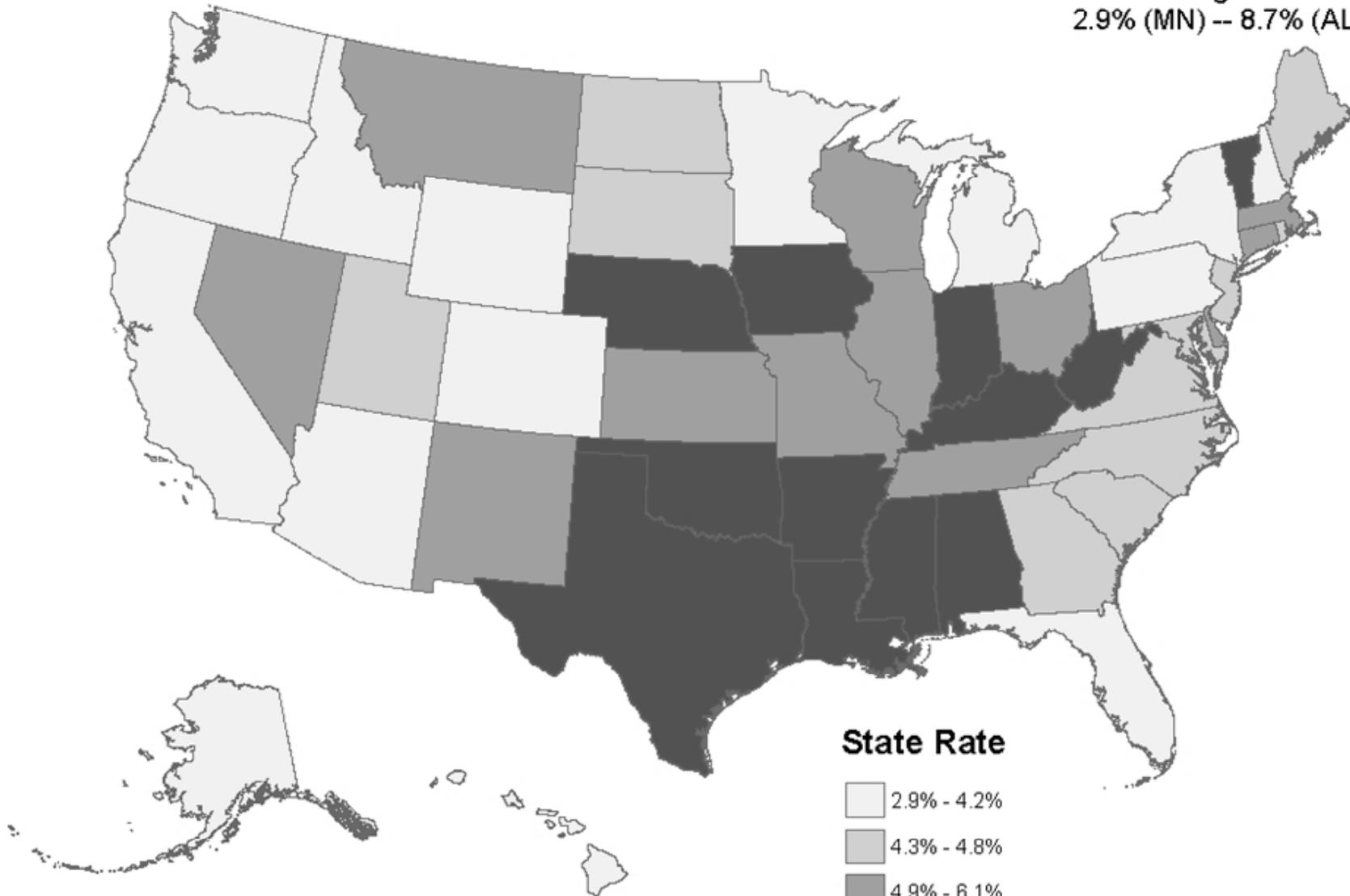


State Rate

- 5.2% - 7.9%
- 8% - 9%
- 9.1% - 10.6%
- 10.7% - 14.4%

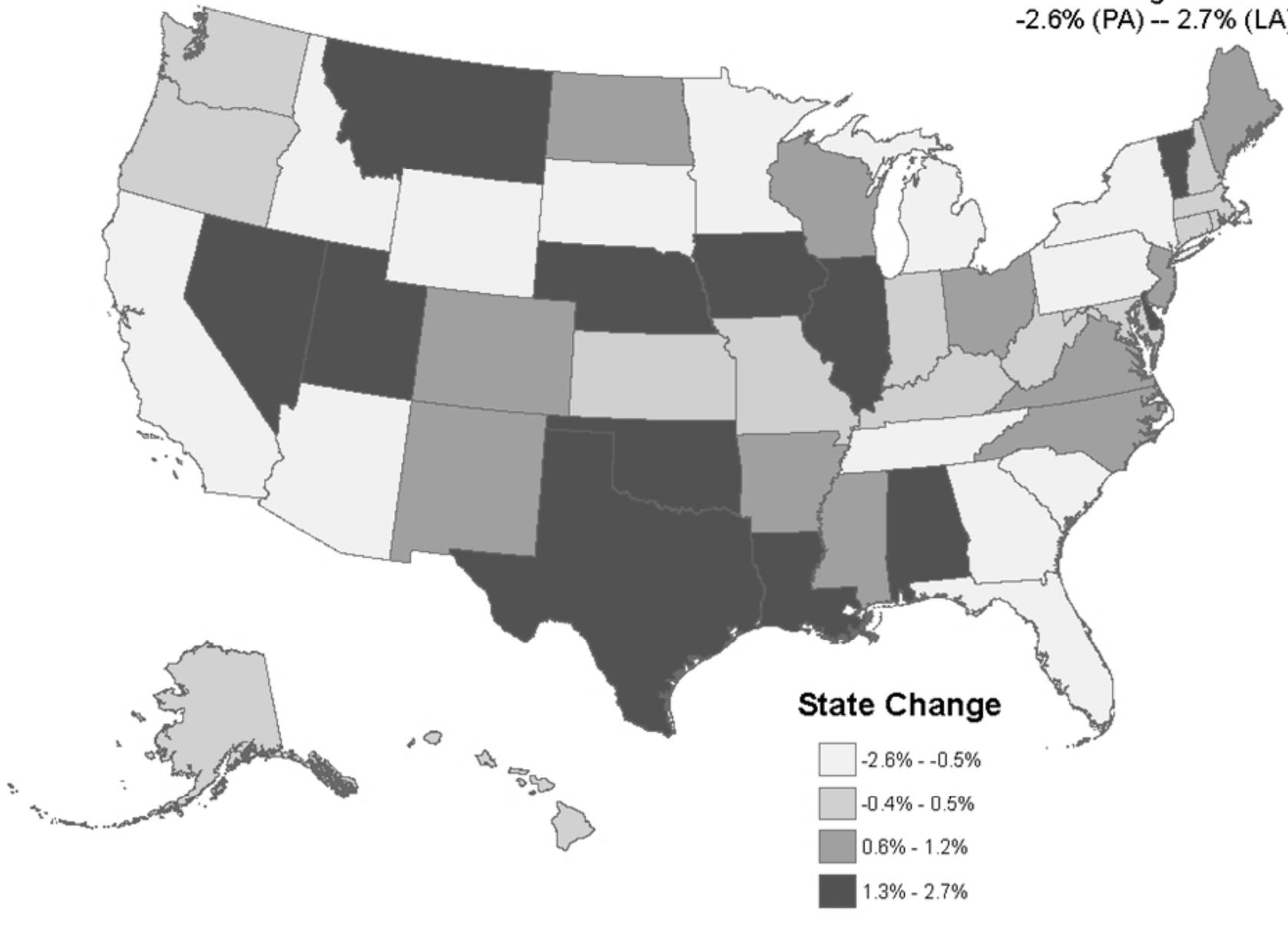
Chronic Ear Infection, US Children 2007

US Average = 5.1%
2.9% (MN) -- 8.7% (AL)



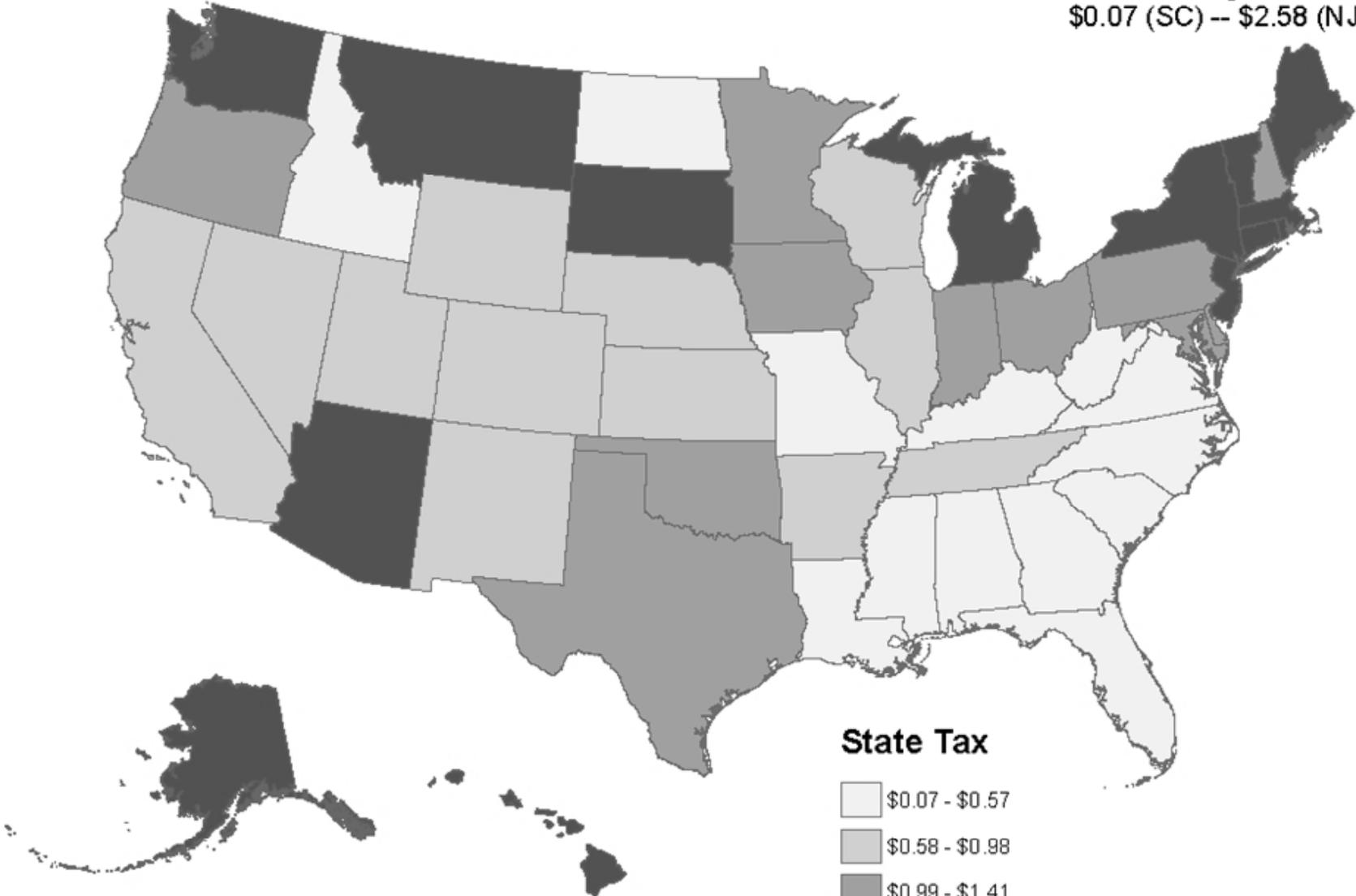
State Changes in Chronic Ear Infection, 2003-2007

US Average = 0.3%
-2.6% (PA) -- 2.7% (LA)



State Cigarette Taxes, 2007

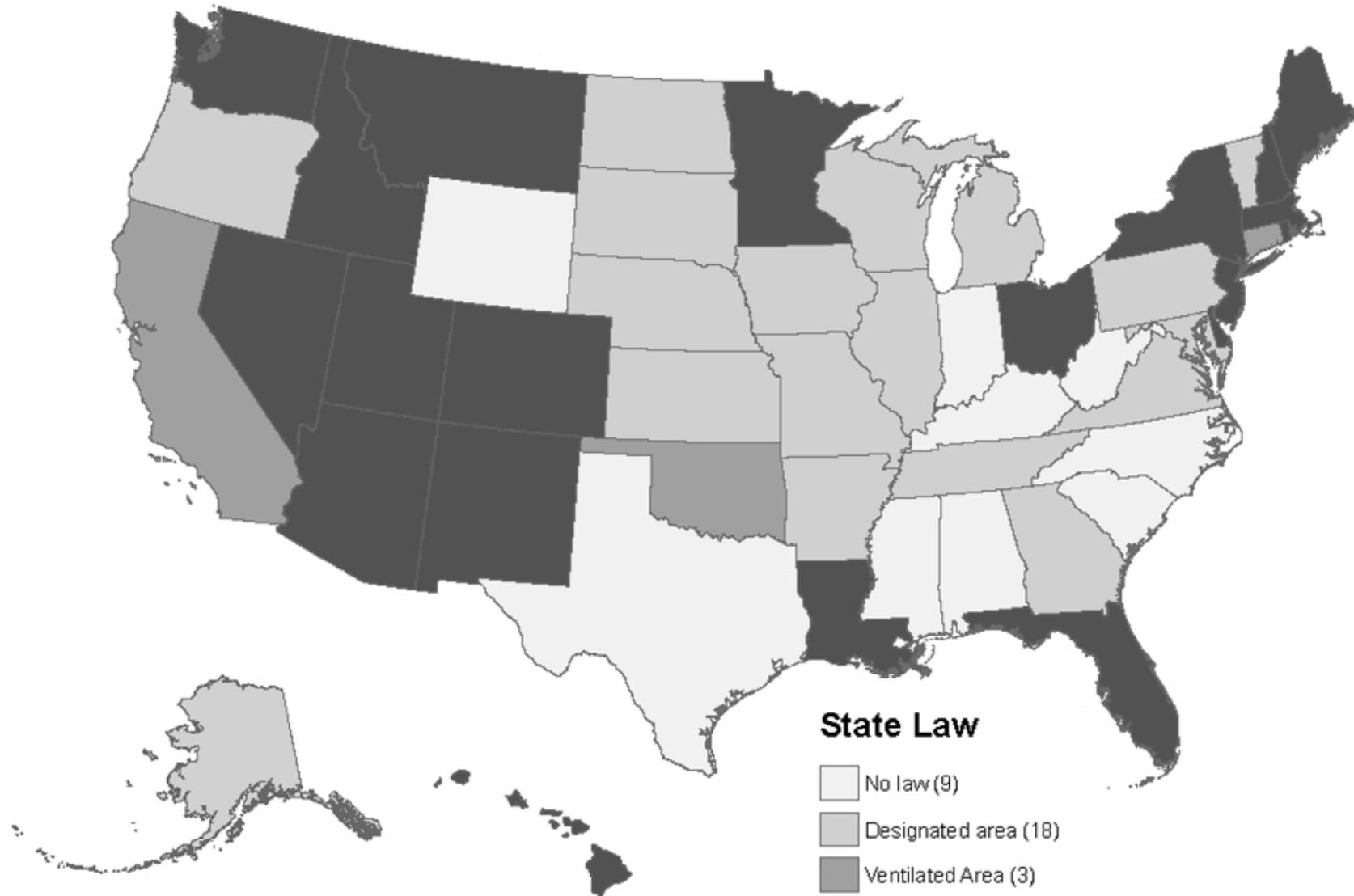
State Average = \$1.07
\$0.07 (SC) -- \$2.58 (NJ)



State Tax

- \$0.07 - \$0.57
- \$0.58 - \$0.98
- \$0.99 - \$1.41
- \$1.42 - \$2.58

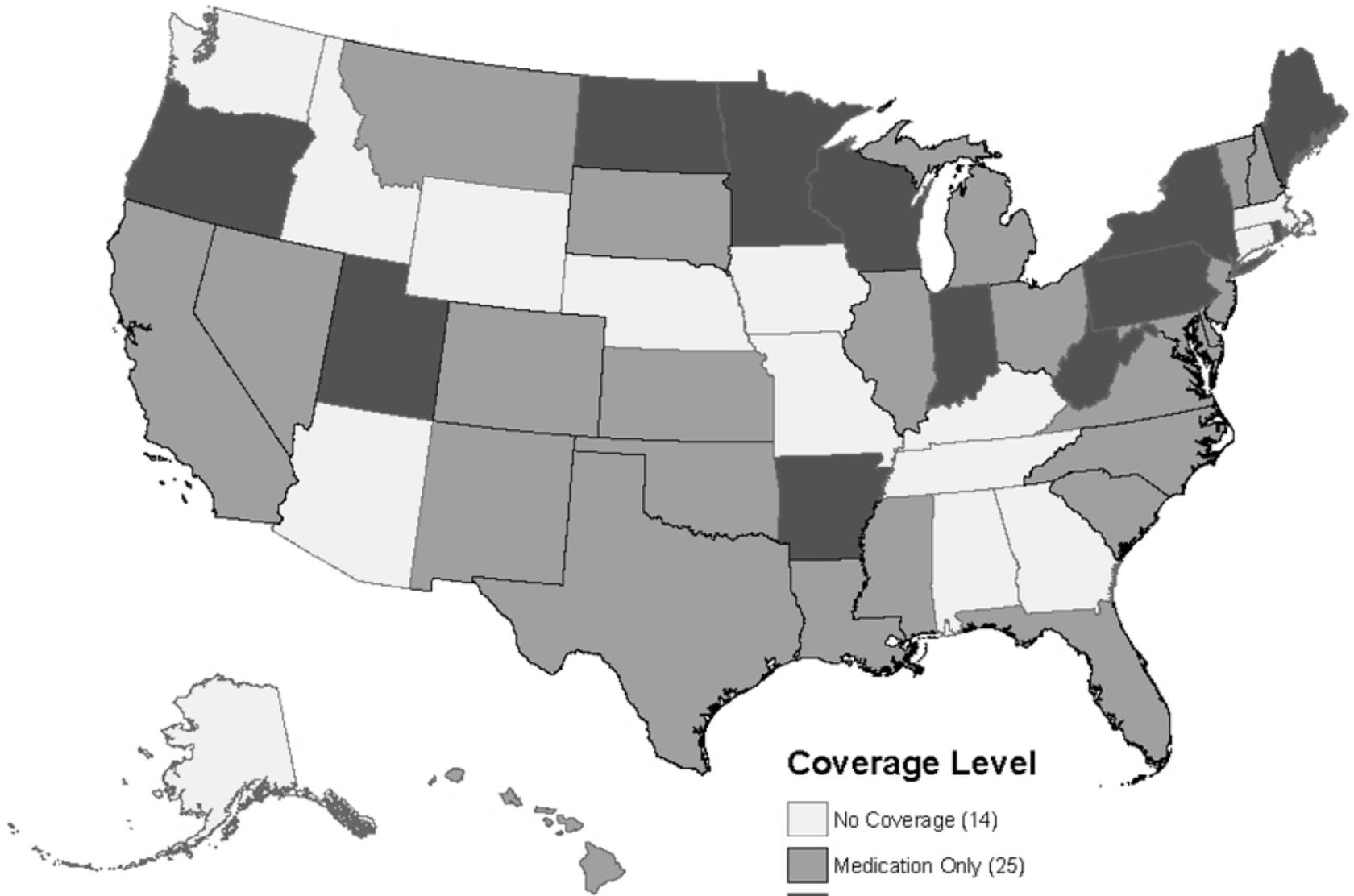
Clean Air Laws for Restaurants, 2007



State Law

- No law (9)
- Designated area (18)
- Ventilated Area (3)
- 100% Ban (21)

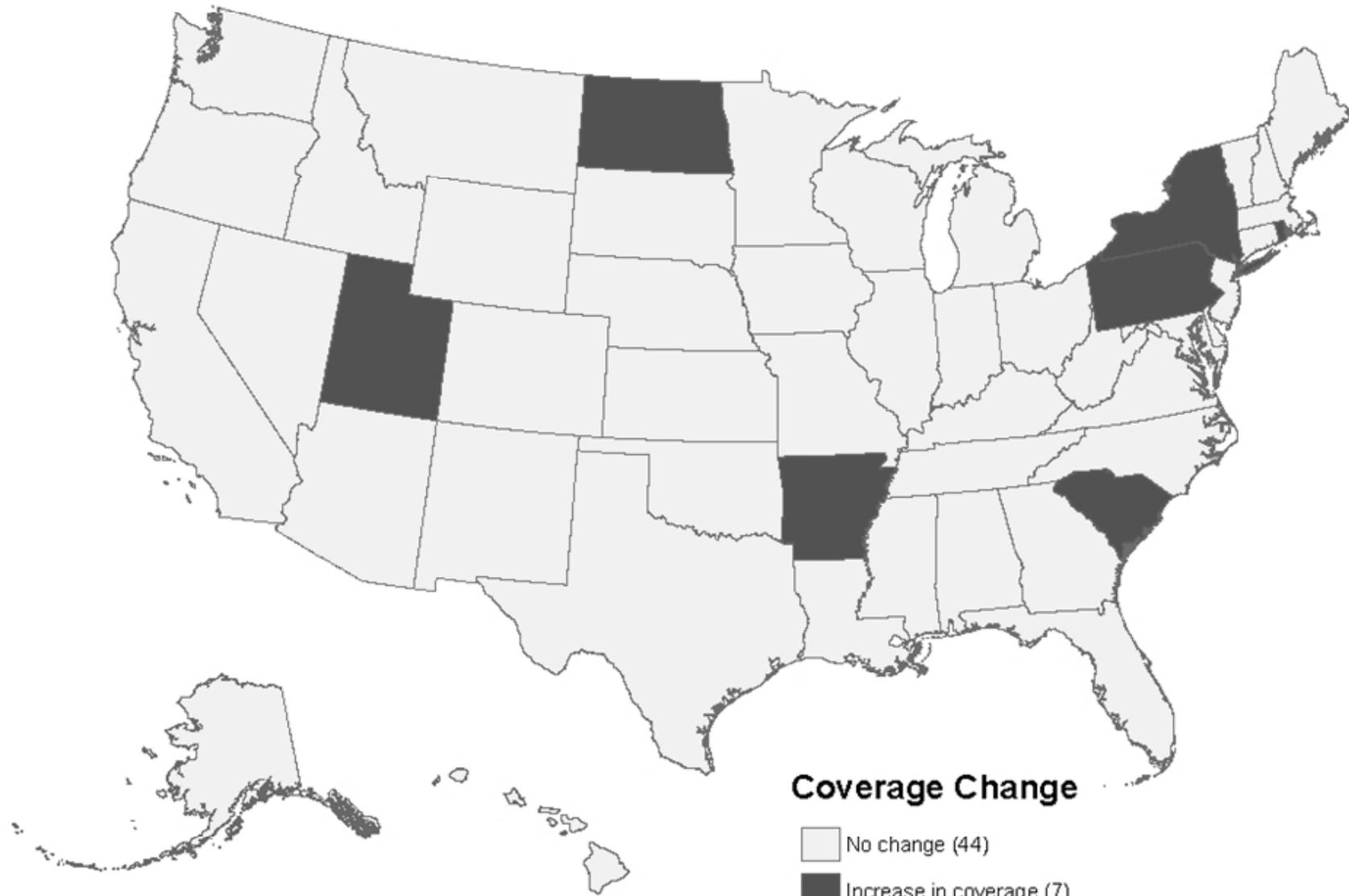
Medicaid Coverage for Cessation Therapy, 2005



Coverage Level

- No Coverage (14)
- Medication Only (25)
- Medication and Counseling (12)

Medicaid Coverage Changes, 2001-2005



Coverage Change

□ No change (44)

■ Increase in coverage (7)

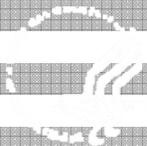
Results

- Cigarette taxes
 - Asthma prevalence: ↓ 16% per \$1 increase, $p=0.09$
 - Moderate/severe asthma: ↓ 29% per \$1 increase, $p=0.04$
- Clean air legislation
 - No significant effects
- Medicaid coverage for cessation therapy
 - Chronic ear infection: ↓ 60% with expansion, $p<0.01$



Limitations & Future Directions

- Only 2 time points, can't control for state-specific trends
- Examining mediation by household smoking
- Examining sensitivities according to age, race/ethnicity, poverty
- Effects on ED visits and hospitalizations



Implications

- Increases in cigarette taxes and Medicaid coverage for tobacco cessation services appear effective in reducing the burden of child asthma and ear infection
- Healthy People 2010 Objectives
 - 27-21: Increase cigarette tax to \$2 per pack
 - 30 states and DC met the objective
 - 27-8: Increase insurance coverage for cessation therapy
 - 38 cover 1+ medication, 18 cover counseling



Resources for Policy Evaluation

- CDC School Health Policies and Practices Study (1994, 2000, 2006)
 - Tracks state, district, school and classroom policies for nutrition, physical activity, tobacco use, violence prevention, health/sexual education, health services
- Economic policy as health policy
 - Earned Income Tax Credit



Questions/Comments?

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Moderate/Severe Asthma, US Children 2007

US Average = 2.6%
1.2% (SD) -- 4.1% (DE)

