
Smoking Cessation
Leadership Center



University of California
San Francisco

illuminating a path forward for Tobacco Nation: Projected impacts of recommended policies on geographic disparities

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Moderator

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A National Center of Excellence for Tobacco-
Free Recovery

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Disclosures

This UCSF CME activity was planned and developed to uphold academic standards to ensure balance, independence, objectivity, and scientific rigor; adhere to requirements to protect health information under the Health Insurance Portability and Accountability Act of 1996 (HIPAA); and include a mechanism to inform learners when unapproved or unlabeled uses of therapeutic products or agents are discussed or referenced.

All speakers, planning committee members and reviewers have disclosed they have no relevant financial relationships to disclose with ineligible companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients.

Catherine Bonniot, Anita Browning, Christine Cheng, Brian Clark, Emily Donovan, MPH, Pamela Ling, MPH, MD, Michael Maciosek, PhD, Jennifer Matekuare, Ma Krisanta Pamatmat, MPH, Jessica Safier, MA, and Aria Yow, MA.

Thank you to our funders



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- Great American Smokeout (GASO) is on November 17th .
- Across the country, thousands of people who smoke will join each other in taking an important step toward a healthier life and reducing their cancer risk.
- PLUS, the ACS can help you and your patient access the resources and support they need at: <https://www.cancer.org/healthy/stay-away-from-tobacco/guide-quitting-smoking.html>



November is Lung Cancer Awareness Month

- When #lungcancer is caught early, the chance of survival dramatically increases.
- Know the high-risk criteria and make a point to have discussions with your eligible patients.
- Share your story on social media through the many platforms out there @Lungforce or @lcrf_org
- Visit Lung.org/get-involved for events near you.

Today's Presenter

Michael Maciosek, PhD

Senior Research Investigator

HealthPartners Institute



Today's Presenter

Emily Donovan, MPH

Senior Research Associate

Truth Initiative Schroeder Institute





Modeling the impact of increased taxes and tobacco control expenditures in Tobacco Nation states

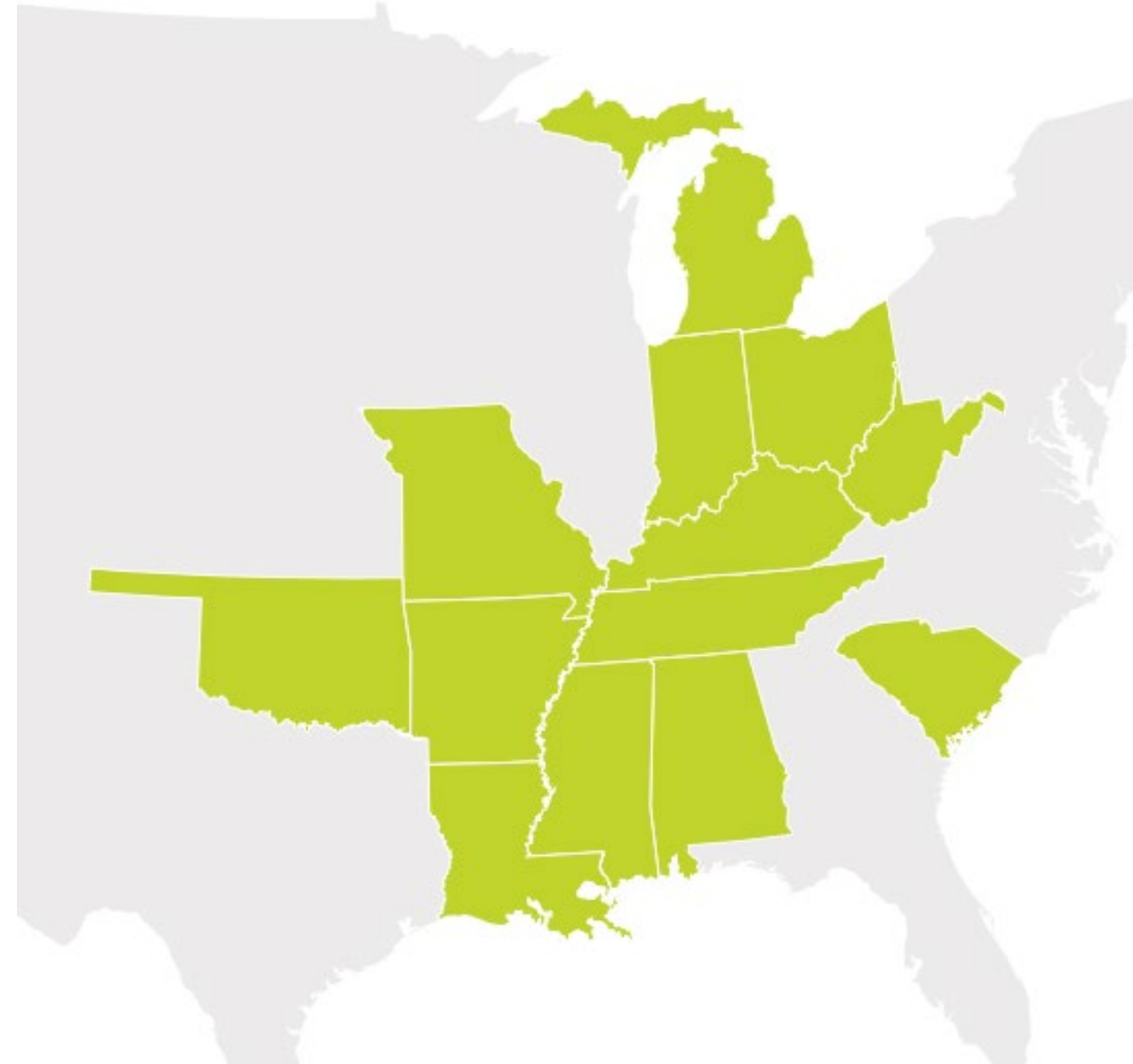
Mike Maciosek, PhD, Emily Donovan, MPH, Amy LaFrance, MPH,
and Barbara Schillo, PhD

A map of the United States with a central orange horizontal band. The word "Background" is written in white on the orange band. Several states are highlighted in a light green color: Michigan, Indiana, Ohio, West Virginia, Kentucky, Tennessee, Mississippi, and Louisiana. The rest of the map is a light gray color.

Background

Background: “Tobacco Nation”

- US states with **highest cigarette smoking rates**: Alabama, Arkansas, Indiana, Kentucky, Louisiana, Michigan, Mississippi, Missouri, Ohio, Oklahoma, South Carolina, Tennessee and West Virginia
- Truth Initiative released a report in 2017 and 2018; in the process of updating report for 2022
- Low tobacco control policy adoption despite **high policy support**



What if...

State tobacco control policies reflected residents' support for strong protections?

Background

HealthPartners Institute developed a microsimulation model, ModelHealth™: Tobacco, and has used this model in several studies to **estimate the impact of tobacco control policies**. This study uses ModelHealth™ to project the impact of intensified policies in Tobacco Nation states.

Research questions:

- Over the next 20 years, what are the projected smoking rates and smoking-attributable health outcomes in Tobacco Nation compared to the US?
- Over 20 years, what would be the impact of:
 - Raising state **taxes by \$1.50**
 - Raising state **tobacco control expenditures (TCE)**



Methods

Methods

- Projected smoking-attributable outcomes in Tobacco Nation states and the US from 2022 to 2041 using a **microsimulation model**, ModelHealth™
- Simulated 500,000 individuals for each Tobacco Nation state and the US overall, **representative of each population** (i.e. sociodemographics, smoking behaviors, incidence of smoking-attributable disease and mortality).
- Projected the impact of simultaneously increasing cigarette taxes by \$1.50 and increasing tobacco control expenditures (TCE) to the CDC recommended level from 2022 to 2041
 - Used **policy impact estimates from the literature**
 - We also estimated **impacts by poverty status and race/ethnicity**

Principle data sources

- Policy data
 - CDC STATE system & Campaign for Tobacco-Free Kids
 - Literature
- Demographic data and smoking status
 - Current Population Survey, YBRS and BRFSS
- Health data & Economic data
 - SEER cancer registry, National Inpatient Sample, CDC mortality files
 - Linked NHIS and MEPS
 - 2014 Surgeon Generals Report and other literature

A hand holding a pack of cigarettes is the central focus, set against a background of several US dollar bills. The bills are slightly out of focus, showing the portrait of a man and some text. The pack of cigarettes is white with a gold band. The text 'Descriptive results' is overlaid on an orange banner across the middle of the image.

Descriptive results

Table 1: 2021 baseline smoking rates

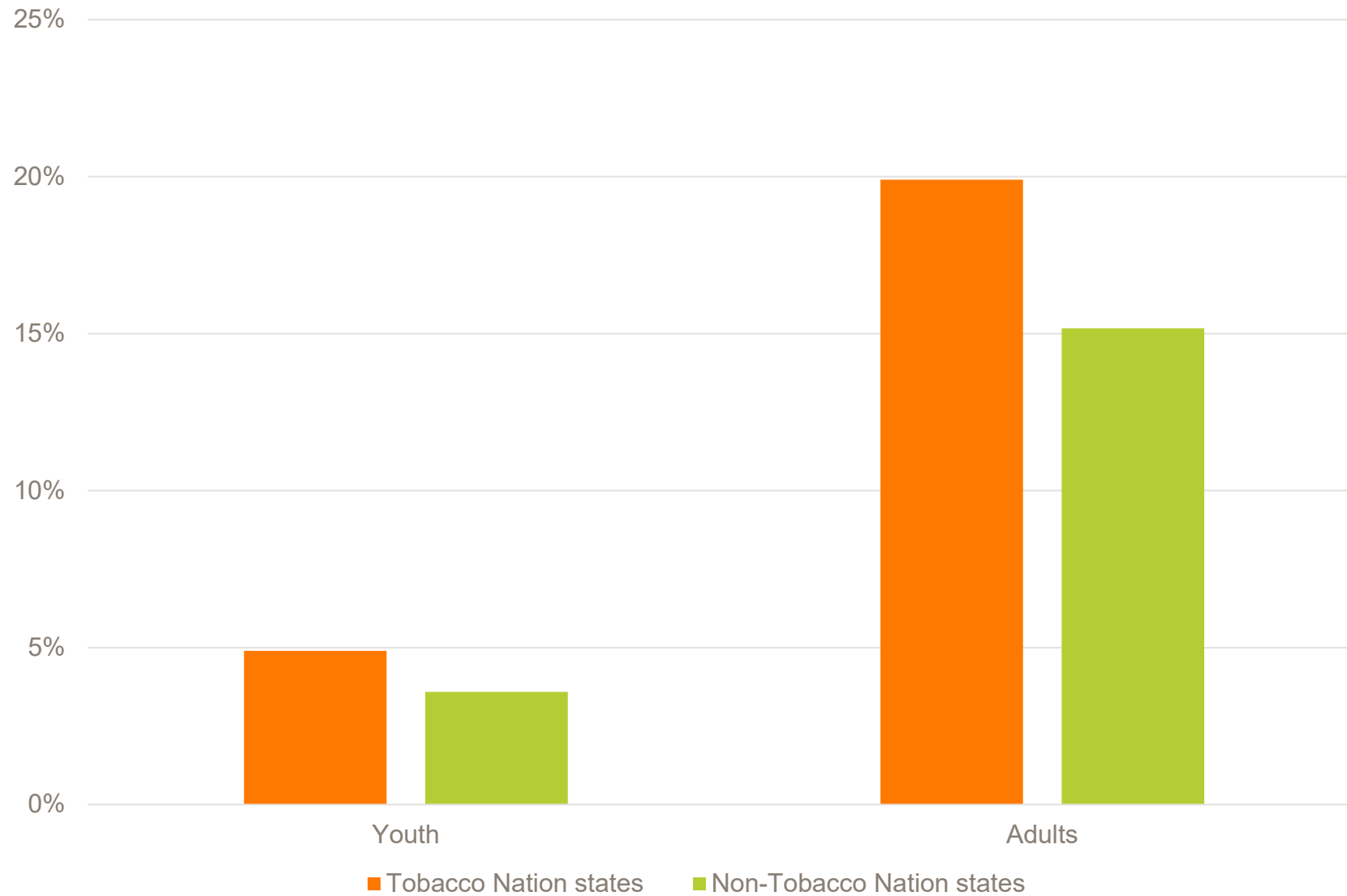


Table 2: Baseline tobacco control policies

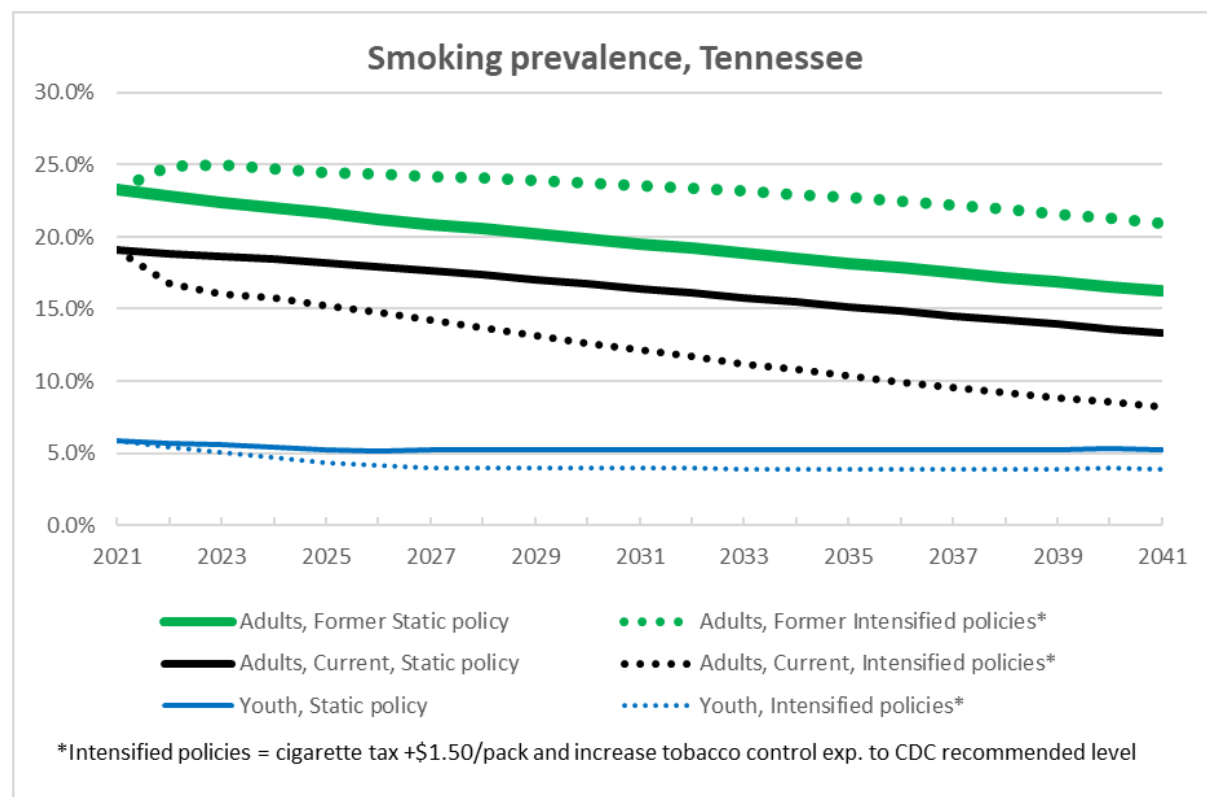
Locality	2021 per-pack cigarette price	2021 per capita TCE	Recommended per capita TCE
Tobacco Nation (avg)	\$6.16	\$1.45	\$13.37
Non-Tobacco Nation (avg)	\$7.57	\$2.57	\$11.49

ModelHealth™ simulation results



Results: Policies would reduce smoking, adverse health outcomes, and improve economic outcome in example state (Tennessee)

- Increased cigarette pack price from \$5.55 to \$7.05
- Increased tobacco control expenditures from \$0.30 per capita to \$12.41 per capita



Cumulative impact over 20 years

Decreased...

Smoking prevalence

Youth: **-1.35%**

Adult: **-5.13%**

Adverse health outcomes*

Hospitalizations

CVD/Diabetes: **-9,234**

Resp. disease: **-6,834**

SA deaths: **-3,721**

SA medical costs: **-\$428M**

Increased...

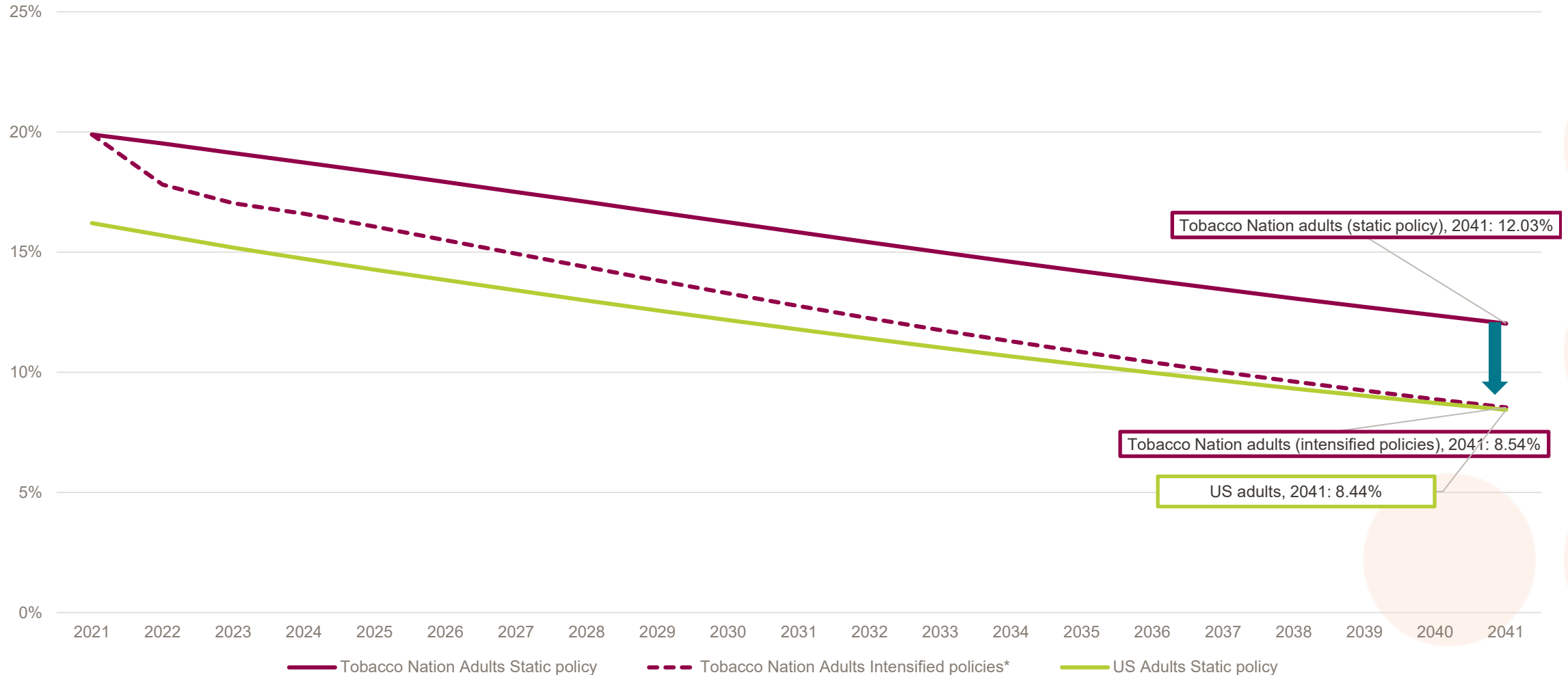
QALYs*: **36,028**

Productivity*: **\$2.03B**

*per million persons

Figure 1: Policies would close the disparity in smoking rates between Tobacco Nation and the rest of the US

Change in smoking prevalence under status and intensified policy scenarios



Policies would reduce adverse health outcomes and smoking-attributable costs in Tobacco Nation

Combined effect of \$1.50 price increase and tobacco control expenditure increase to CDC recommended level, per million persons; means

Locality	Change in youth smoking prevalence at 20 years	Change in adult smoking prevalence at 20 years	Change in SA deaths*	Change in QALYs*	Change in SA medical costs* (\$ millions)
Tobacco Nation	-0.80%	-3.49%	-2,361	23,301	-334
Non-Tobacco Nation	-0.44%	-1.49%	-1,021	9,988	-155

*Cumulative impact over the first 20 years

Policies would reduce adverse health outcomes and smoking-attributable costs in Tobacco Nation (cont'd)

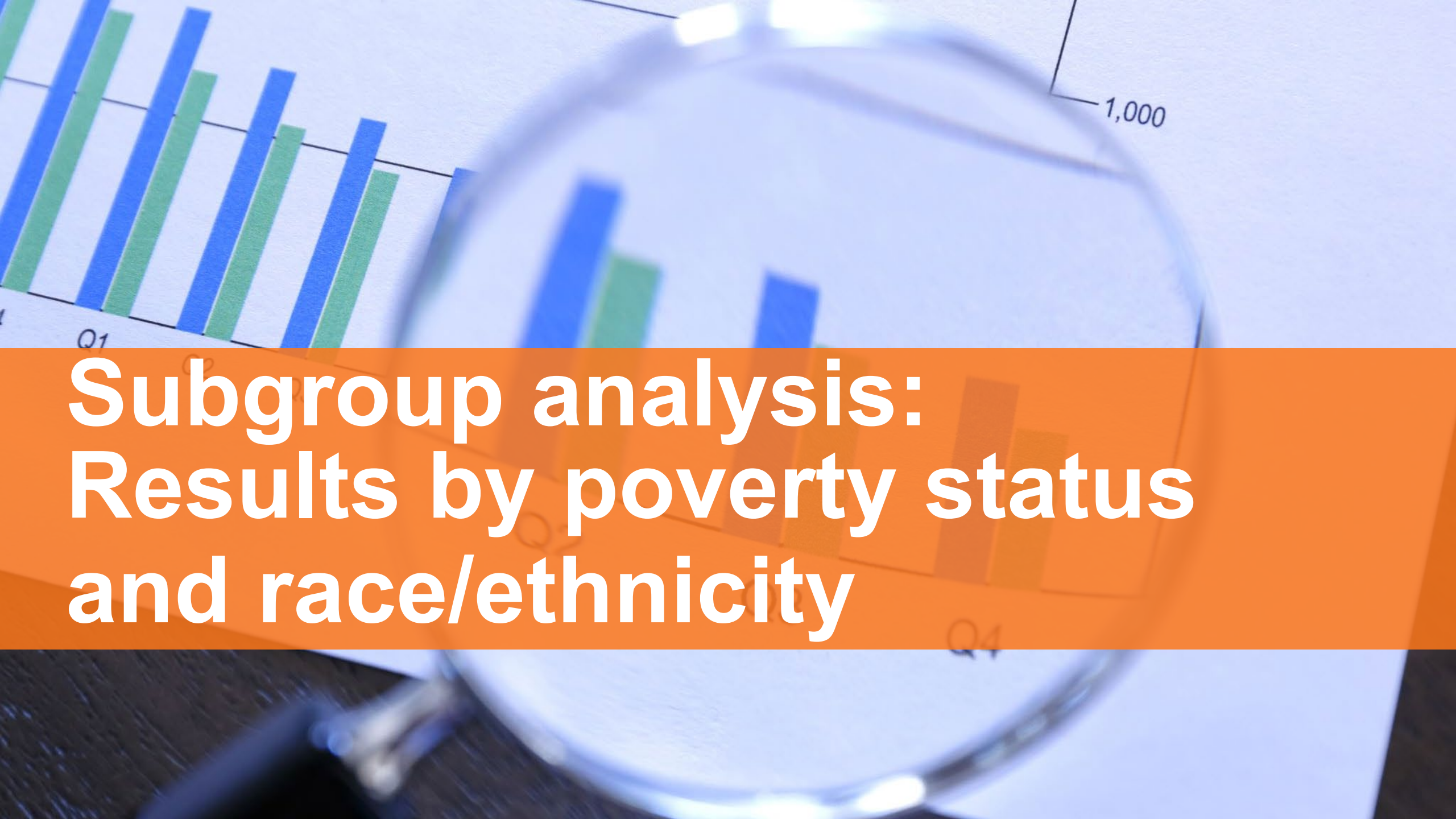
Combined effect of \$1.50 price increase and tobacco control expenditure increase to CDC recommended level, per million persons; means

Locality	Change in SA cancers*	Change in SA CVD and diabetes hosp.*	Change in SA resp. disease hosp.*	Change in productivity* (\$ millions)
Tobacco Nation (avg)	-1,340	-5,881	-4,121	1,382
Non-Tobacco Nation (avg)	-748	-2,293	-1,527	699

*Cumulative impact over the first 20 years

Policies would be about twice as impactful in Tobacco Nation states than they would be in other US states

Ratio of state to non-Tobacco Nation average benefits of implementing combined policies			
State	Adult smoking prevalence reduction at 20 years	SA deaths prevented during first 20 years	SA medical costs saved during first 20 years
Alabama	1.69	1.91	1.49
Arkansas	1.37	1.21	1.05
Indiana	1.60	1.50	1.59
Kentucky	2.47	2.61	2.33
Louisiana	1.65	1.67	1.58
Michigan	1.64	1.72	1.74
Mississippi	1.53	1.50	1.22
Missouri	1.96	1.91	1.99
Ohio	1.86	1.74	1.96
Oklahoma	0.81	0.70	0.67
South Carolina	1.49	1.40	1.31
Tennessee	2.66	2.83	2.21
West Virginia	2.78	2.34	2.71



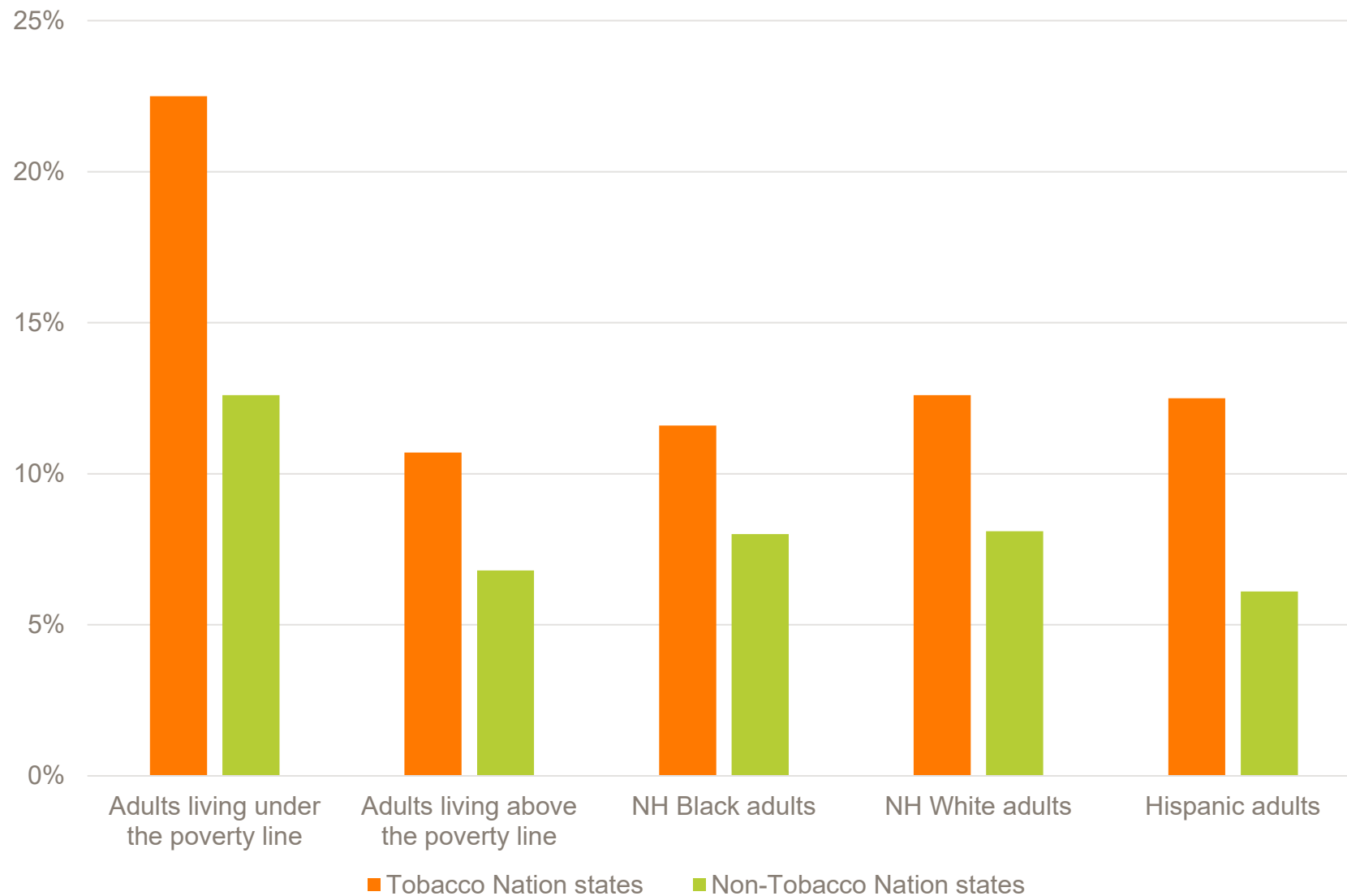
**Subgroup analysis:
Results by poverty status
and race/ethnicity**

Methods: estimating impacts for subpopulations

- Estimated impacts of a \$1.50 tax increase by poverty status and race/ethnicity
 - 138% poverty level (Medicaid eligibility)*
 - Race/ethnicity: NH White, NH Black, NH Other, Hispanic

*Used differential tax elasticities by poverty status from the literature

Smoking rates among subpopulations



Taxes lead to greater outcomes for those living below the poverty line in Tobacco Nation

Combined effect of \$1.50 price increase, per million persons; means

Tobacco Nation subpopulation: Poverty status	Change in adult smoking prevalence at 20 years	Change in SA deaths*	Change in QALYs*	Change in SA medical costs* (\$ millions)
Below 138% poverty line	-1.0%	-934	8,307	-154
Above 138% poverty line	-0.3%	-186	3,613	-33
Ratio: below vs above 138% poverty line	3.23	5.03	2.03	4.73

These ratios are generally higher in Tobacco Nation than the rest of the US

*Cumulative impact over the first 20 years

Taxes lead to greater outcomes for those living below the poverty line in Tobacco Nation (cont'd)

20-year combined effect of \$1.50 price, per million persons; means

Tobacco Nation subpopulation: Poverty status	Change in SA cancers*	Change in SA CVD and diabetes hosp.*	Change in SA resp. disease hosp.*
Below 138% poverty line	-547	-2,643	-1,848
Above 138% poverty line	-110	-507	-343
Ratio: below vs above 138% poverty line	4.98	5.21	5.42

These ratios are generally higher in Tobacco Nation than the rest of the US

*Cumulative impact over the first 20 years

Taxes lead to greater outcomes for non-Hispanic Black individuals in Tobacco Nation

20-year combined effect of \$1.50 price increase, per million persons; means

Tobacco Nation subpopulation: Race/ethnicity	Change in adult smoking prevalence at 20 years	Change in SA deaths*	Change in QALYs*	Change in SA medical costs* (\$ millions)
NH Black	-0.4%	-413	-6,542	-60
NH White	-0.4%	-295	-4,091	-48
Ratio: NH Black vs NH White	0.93	1.40	1.60	1.24

These ratios are similar
in Tobacco Nation and
the rest of the US

*Cumulative impact over the first 20 years

Taxes lead to greater outcomes for non-Hispanic Black individuals in Tobacco Nation (cont'd)

Combined effect of \$1.50 price increase, per million persons; means

Tobacco Nation subpopulation: Race/ethnicity	Change in SA cancers*	Change in SA CVD and diabetes hosp.*	Change in SA resp. disease hosp.*
NH Black	-225	-1,371	-885
NH White	-176	-718	-524
Ratio: NH White vs NH Black	1.28	1.91	1.69

These ratios are similar in Tobacco Nation and the rest of the US

*Cumulative impact over the first 20 years

A scenic landscape featuring rolling hills under a clear blue sky. The foreground shows a paved road with a white dashed line, leading into the distance. The hills are covered in green grass and some trees. An orange semi-transparent banner is overlaid across the middle of the image, containing the word "Conclusions" in white text.

Conclusions

Conclusions

- The simulations indicate that Tobacco Nation states **will not catch-up to the US** average (which is also trending downward) in the next 20 years **without policy change**.
- Policy changes would have about **twice the impact** on health outcomes in Tobacco Nation as they would in non-Tobacco Nation states over 20 years.
- Increasing taxes and tobacco control expenditures in states with larger populations (e.g. Michigan and Ohio) can reduce more harms of tobacco than other Tobacco Nation states, despite lower effects on per-capita estimates than many other Tobacco Nation states.

Conclusions

- The projected impact of increasing cigarette taxes by \$1.50 varies by poverty status and race
 - Smoking rates and associated health and economic outcomes are projected to be greater for individuals living below the poverty line in Tobacco Nation than for those living above the poverty line
 - Smoking-attributable health and economic outcomes are projected to be greater for Black residents of Tobacco Nation than White residents, despite smoking rates being similar
- Disparities might be further reduced by directing tobacco control expenditures toward priority populations

Thank you. Questions?

Supplemental slides

Table 2: additional outcomes (disease-related deaths)

Table 2. 20-year combined effect of \$1.50 price increase and tobacco control expenditure increase to CDC recommended level, per million persons in 2021; means

State	Change in SA cancer deaths	Change in SA CVD and diabetes deaths	Change in SA resp. disease deaths.
Alabama	-771	-874	-866
Arkansas	-523	-516	-549
Louisiana	-703	-792	-701
Michigan	-752	-742	-770
Mississippi	-642	-695	-640
Ohio	-781	-740	-763
South Carolina	-611	-611	-615
Tennessee	-1,159	-1,213	-1,349
United States average	-492	-398	-425
Tobacco Nation average**	-787	-770	-804
Non-Tobacco Nation average**	-409	-293	-318

Table 3: total outcomes (deaths, QALYs, medical expenditures)

Table 3. 20-year combined effect of \$1.50 price increase and tobacco control expenditure increase to CDC recommended level for total population in 2021*; means

State	Change in SA deaths	Change in QALYs	Change in SA medical costs (\$ millions)
Alabama	-12,655	131,320	-1,461
Arkansas	-4,804	43,800	-616
Louisiana	-10,155	97,503	-1,415
Michigan	-22,752	229,841	-3,383
Mississippi	-5,833	57,472	-699
Ohio	-26,898	265,130	-4,487
South Carolina	-9,532	95,732	-1,324
Tennessee	-25,953	251,303	-2,986
Tobacco Nation Total	-172,099	1,698,443	-24,349

Table 3: total outcomes (disease incidence)

Table 3. 20-year combined effect of \$1.50 price increase and tobacco control expenditure increase to CDC recommended level for total population in 2021*; means

State	Change in SA cancers	Change in SA CVD and diabetes hosp.	Change in SA resp. disease hosp.
Alabama	-6,155	-33,476	-23,836
Arkansas	-2,782	-10,897	-7,098
Louisiana	-5,313	-23,726	-14,852
Michigan	-12,721	-56,623	-41,181
Mississippi	-3,189	-15,331	-10,587
Ohio	-15,565	-65,225	-46,484
South Carolina	-5,527	-24,956	-17,322
Tennessee	-13,743	-64,412	-47,667
Tobacco Nation Total	-97,676	-428,690	-300,374

Table 3: total outcomes (disease-related deaths)

Table 3. 20-year combined effect of \$1.50 price increase and tobacco control expenditure increase to CDC recommended level for total population in 2021*; means

State	Change in SA cancer deaths	Change in SA CVD and diabetes deaths	Change in SA resp. disease deaths.	Change in SA deaths
Alabama	-3,885	-4,404	-4,366	-12,655
Arkansas	-1,581	-1,563	-1,660	-4,804
Louisiana	-3,250	-3,663	-3,242	-10,155
Michigan	-7,557	-7,458	-7,736	-22,752
Mississippi	-1,894	-2,050	-1,889	-5,833
Ohio	-9,201	-8,712	-8,986	-26,898
South Carolina	-3,170	-3,170	-3,192	-9,532
Tennessee	-8,083	-8,458	-9,413	-25,953
Tobacco Nation Total	-57,360	-56,104	-58,636	-172,099

Submit questions via the 'Q & A' box



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"It's About a Billion Lives".

- **Thursday, January 26, 2023**
- **11:00 am – 3:30 pm EST**
- The keynote: a panel of experts reflecting on 20 years of the **Tobacco Industry Documents**, what it has meant for tobacco control to date, and where we can and should go in the future.
- Presentations by UCSF faculty and postdocs from the CTCRE
- **Free CME/CEUs will be available**

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