

# Variation in Nicotine and Flavor Policies Across the U.S.

Alyssa Crippen, PhD<sup>1</sup>, Alex C. Liber, PhD<sup>2,3</sup>, Abigail S. Friedman, PhD<sup>1</sup>

## Background

Over 375 localities in the United States, along with 7 states, have implemented restrictions on the sale of non-tobacco flavored electronic nicotine delivery systems (ENDS), flavored cigars, or menthol cigarettes. In the spring of 2022, the U.S. Food and Drug Administration (FDA) proposed rules to prohibit menthol cigarette and flavored cigar sales, yet these rules have not been finalized. Increasing adoption of flavor restrictions underscores the need for a clear understanding of differences in exposure to these policies, to both safeguard public health and mitigate health disparities going forward.

This study presents newly collected data on all state and local policies limiting sales of flavored ENDS, flavored cigars, or menthol cigarettes from January 2009 through January 2023. Analyses illustrate the geographic variation in policy coverage over time, evaluate correlations between these policies, and estimate racial and ethnic disparities in exposure to each type of policy as of January 1, 2023. These findings are essential for comprehensively assessing the implications of flavor regulations for tobacco-related health inequities.

## Data Collection

To compile data on all US state and local sales restrictions on flavored tobacco products, we first aggregated multiple advocacy groups' lists of states and municipalities with such policies, then expanded that list to include additional local policies identified from news reports and municipal websites. Next, the text of each corresponding ordinance or legislation was obtained and reviewed to confirm the policy's categorization and identify passage dates, effective dates, and key policy details such as products and flavors covered, and any retailer exemptions (e.g. adult-only tobacco retailers). If legislative details were ambiguous, local representatives were contacted to clarify.\*

To calculate the percent of state residents living in areas covered by each type of flavor policy, adopting jurisdictions were matched to their state and local population using U.S. Census data for July 2020.

\*Our focus was exclusively on policies prohibiting or restricting flavored product sales throughout a jurisdiction. Zoning laws barring sales within a specific distance of schools, playgrounds, etc. were not included.

## Statistical Methods

- Geographic Variation in Flavor Policy Coverage**  
Data on the percent of state residents covered by each type of flavor policy were mapped for January 1, 2012 and January 1, 2023, to illustrate changes in geographic variation over time.
- Flavor Policy Correlation Coefficients**  
Pearson correlation coefficients quantify how the percent of state residents subject to ENDS flavor policies relates to the share covered by flavored cigar and menthol cigarette policies, as well as cigarette tax rates. These correlations help clarify the degree to which studies assessing one type of flavor policy's effects should adjust for the influence of others.
- Estimating Demographic Exposures**  
County-level policy exposure data were matched to 2022 US Census data on county and state populations by race and ethnicity to estimate the proportion of each subgroup and the total US population that was subject to each type of flavor policy as of Jan. 1, 2023.

## Results

**Figure 1. Percent of State Residents Covered by Policies Restricting Sales of Flavored ENDS, Flavored Cigars, and Menthol Cigarettes on Jan. 1, 2023**

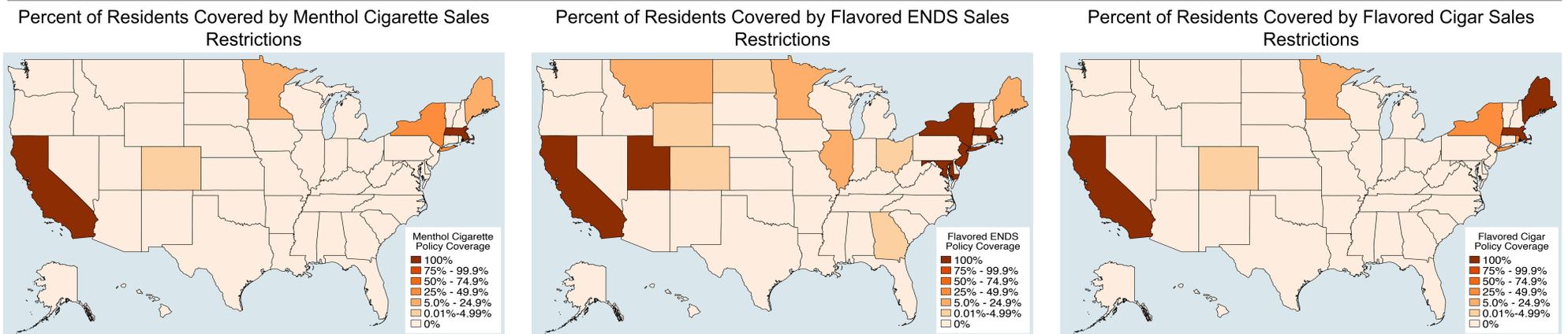


Figure 1 illustrates the geographic variation in each flavor policy's coverage as of January 1, 2023. To consider geographic changes over time, note that on Jan. 1, 2012—the year a US cigarette company first entered the ENDS market — no flavored ENDS or menthol cigarette restrictions were in effect, while flavored cigar coverage was limited to three localities: NYC, Maine, and Santa Clara County, CA.

### Flavor Policy Correlation Coefficients

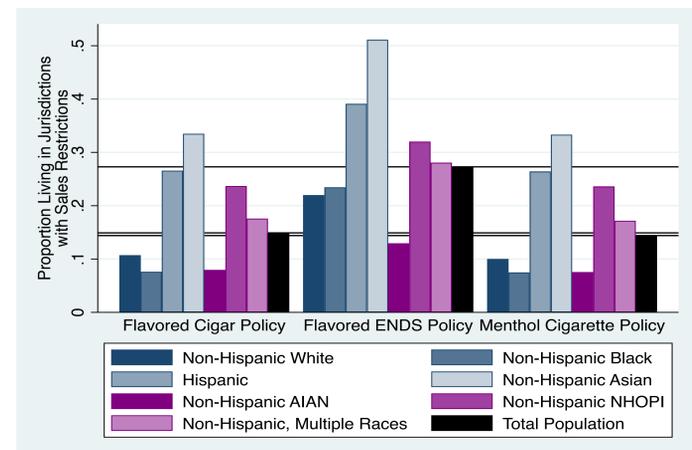
Table 1 shows strong positive correlations of sales restrictions on flavored ENDS with flavored cigar policies, menthol cigarette policies, and state cigarette tax rates. Moreover, the strength of these relationships increases over time.

**Table 1. Pearson Correlation Coefficients for ENDS Flavor Policies' Relationship to Other Flavor Policies and Cigarette Tax Rates**

Date	Flavored Cigar Restriction Coverage	Menthol Cigarette Restriction Coverage	Cigarette Tax Rates
Jan 1, 2016	0.1676	0.3452	0.4293
Jan 1, 2017	0.3102	0.4292	0.4120
Jan 1, 2018	0.3939	0.3105	0.4175
Jan 1, 2019	0.4650	0.3038	0.3760
Jan 1, 2020	0.3212	0.2695	0.3593
Jan 1, 2021	0.4067	0.5086	0.4134
Jan 1, 2022	0.5070	0.5875	0.6134
Jan 1, 2023	0.5971	0.6437	0.6046

### Racial and Ethnic Variation in Flavor Policy Exposure

**Figure 2. Flavor Policy Exposure by Race and Ethnicity on Jan. 1, 2023**



Accounting for differences in the demographics of counties with more versus less flavor policy coverage revealed marked differences in exposure to these policies by race and ethnicity. Specifically, non-Hispanic Black and American Indian/Alaska Native populations were less exposed to flavored cigar and menthol cigarette sales restrictions than other subgroups (Figure 2). Given disproportionately high rates of combustible tobacco use and tobacco-related disease in those subgroups, these findings raise concerns that differential exposure to restrictions on sales of menthol cigarettes and flavored cigars in particular may exacerbate tobacco-related health disparities.

## Study Limitations

- Policy Data Collection**  
While efforts were made to compile a comprehensive record of all US state and local flavor restrictions, there is a possibility that some policies were missed.
- Demographic Data Constraints**  
Absent demographic data for all US towns, estimates of policy coverage by race and ethnicity were based on county demographics. This could result in inaccuracies if adopting municipalities' demographics differ from the rest of their county.
- Exclusion of Tribal Policies**  
Tribal restrictions on flavored ENDS sales were identified but not incorporated into the analysis due to lack of clarity on the extent to which specific policies were location-specific (e.g., applying to any business on a particular reservation), tribe-specific (e.g., applying to a specific tribe's members regardless of location), or a combination thereof (e.g., applying to a specific tribe's members on a given reservation).

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	Tobacco Industry	E-cigarette & nicotine product industry	Pharma Industry
Please add "yes" or "no" to each table cell. If "yes," please turn cell background color to yellow.			
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## Conclusions

- State and local adoption of restrictions on flavored ENDS sales has outpaced adoption of policies restricting sales of flavored cigars or menthol cigarettes in the US.
- Strong correlations between states' flavor policy coverage for different products and cigarette tax rates indicate that analyses estimating such regulations' effects must adjust for all of these policies to avoid confounding. This is critical, as confounded results could cement misunderstandings of specific policies' effects, potentially leading to the rejection of beneficial policies or support for deleterious ones.
- Racial/ethnic groups with the highest burdens of tobacco-related mortality were least exposed to menthol cigarette and flavored cigar sales restrictions. This finding raises concerns that patterns of local adoption could exacerbate tobacco-related health disparities. Federal action—such as implementing FDA product standards barring menthol cigarette and flavored cigar sales nationwide—is needed to avoid expanding health inequities.

1. Yale School of Public Health, New Haven, CT, USA  
2. Georgetown University, Washington, DC, USA  
3. RTI International, Research Triangle Park, NC, USA

