



E-Cigarette Sales and Availability in States with Directory Laws



ACKNOWLEDGMENT

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Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC Foundation.

Outline

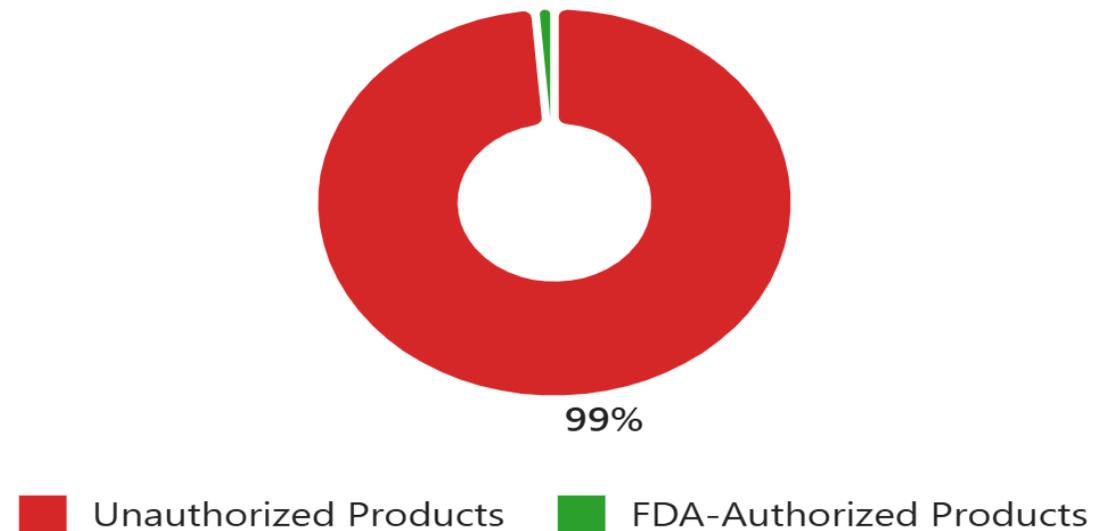
1. Background and methods
2. Findings from early adopter states:
Alabama, Oklahoma and Louisiana
3. Public health implications



Background

- E-cigarette directory laws permit the sale of e-cigarettes only if the products are listed on a state directory.
- In most states, to have their products listed on the directories, companies must indicate they have a pending application for Food and Drug Administration (FDA) premarket authorization (PMTA), a PMTA authorization or a stayed marketing denial order.
- However, federal law prohibits the marketing of products without PMTA authorization.
- Currently, the FDA has authorized only 39 e-cigarette products for legal sale in the United States, none are flavored beyond tobacco or menthol. In contrast, around 12,000 e-cigarette products are being sold on the market.

The number of FDA-authorized e-cigarette products compared to the total number available on the U.S. market



Data and Methods

- Retail sales data are based on custom research by the CDC Foundation using Circana retail POS (Multi-Outlet and Convenience), during 2019-May 2025.
- Data are not available for online or tobacco specialty stores, including vape shops.
- E-cigarette sales were measured by the sum of e-cigarette nicotine sold in milligrams (“e-cigarette nicotine sales”).
- E-cigarette availability was measured by the count of unique e-cigarette products on the market.
- Changes in sales were assessed separately for Alabama, Oklahoma and Louisiana, compared to the total U.S.

Trends in U.S. E-cigarette Sales Measured in Milligrams of Nicotine, 2019–2024



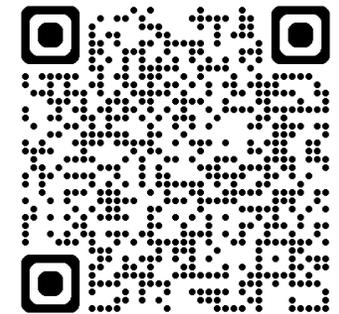
Fatma Romeh M. Ali, PhD,¹ Megan C. Diaz, PhD,² Brian S. Armour, PhD,³ Elisha Crane, MPH,¹
Michael A. Tynan, MPH,³ Kristy L. Marynak, PhD³

Introduction: E-cigarette unit sales have been estimated using the number of items typically available in a package to standardize unit sales of each product type. However, recent market changes, such as increases in e-liquid volume and nicotine concentration, challenge the validity of assessing sales according to item count without accounting for product attributes. This study measured nicotine content (mg) in e-cigarettes sold as a function of e-liquid volume (mL) and nicotine concentration (mg/mL), compared with e-cigarette unit sales standardized by item count.

Methods: U.S. e-cigarette retail sales data from Circana (February 2019 to June 2024) were analyzed. Trends in mg nicotine sold were compared with standardized unit sales. Additionally, sales-weighted average e-liquid volume, nicotine concentration, and price per milligram of nicotine were measured by product type. Trends were assessed using Joinpoint regression. Analyses were conducted in 2024.

Results: From February 2020 to June 2024, monthly milligrams of nicotine content sold increased by 249.2% ($p < 0.001$)—an increase 7.2 times greater than the 34.7% increase in standardized unit sales. Disposable e-cigarettes experienced the greatest increase in mg nicotine sold, which was largely driven by the rise in e-liquid volume. By June 2024, a disposable device contained 9.0 times more e-liquid than a prefilled cartridge. However, the price per milligram of nicotine in prefilled cartridges was 3.7 times greater than that of disposable devices.

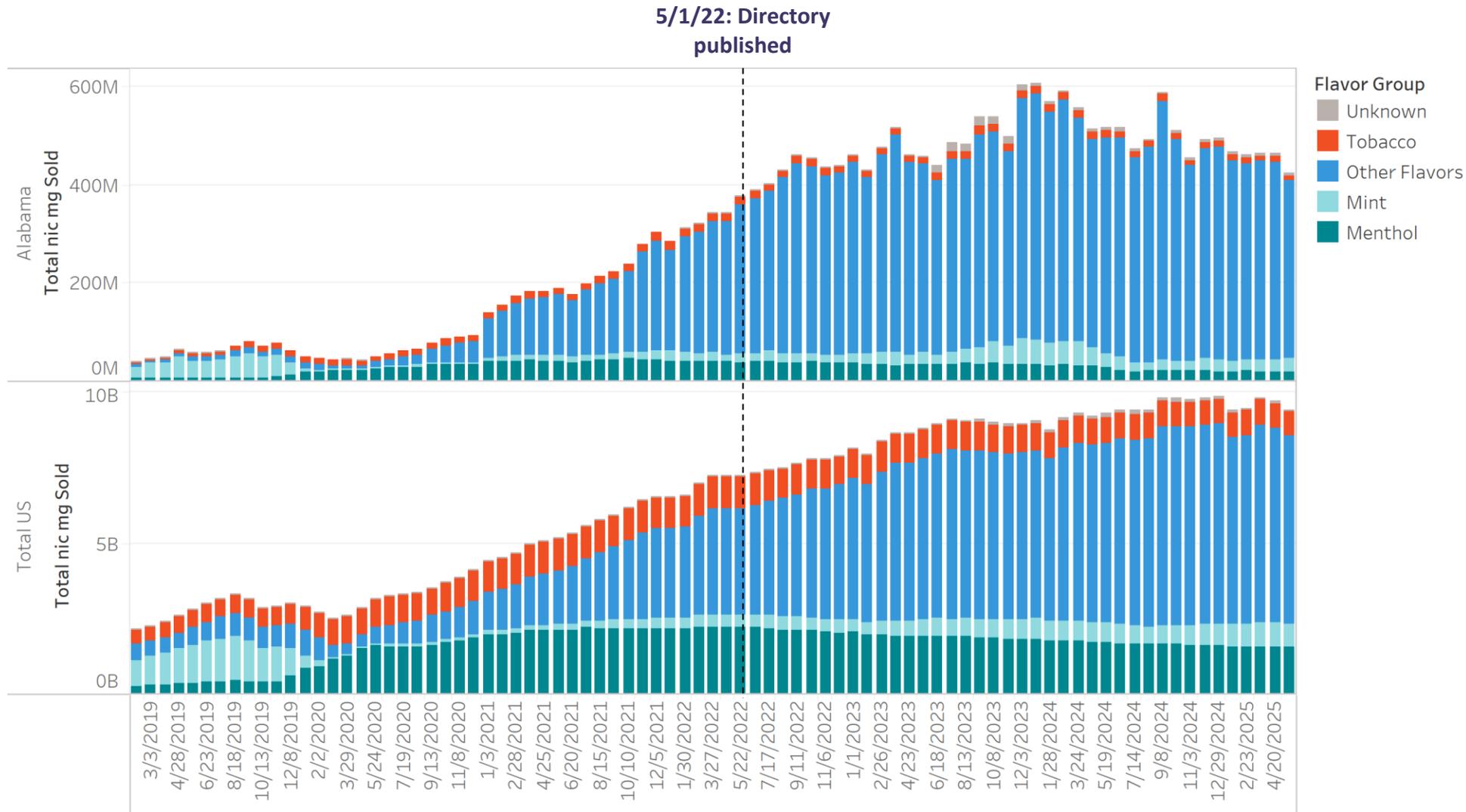
Conclusions: Nicotine is an addictive drug added to most e-cigarettes. Measuring e-cigarette sales





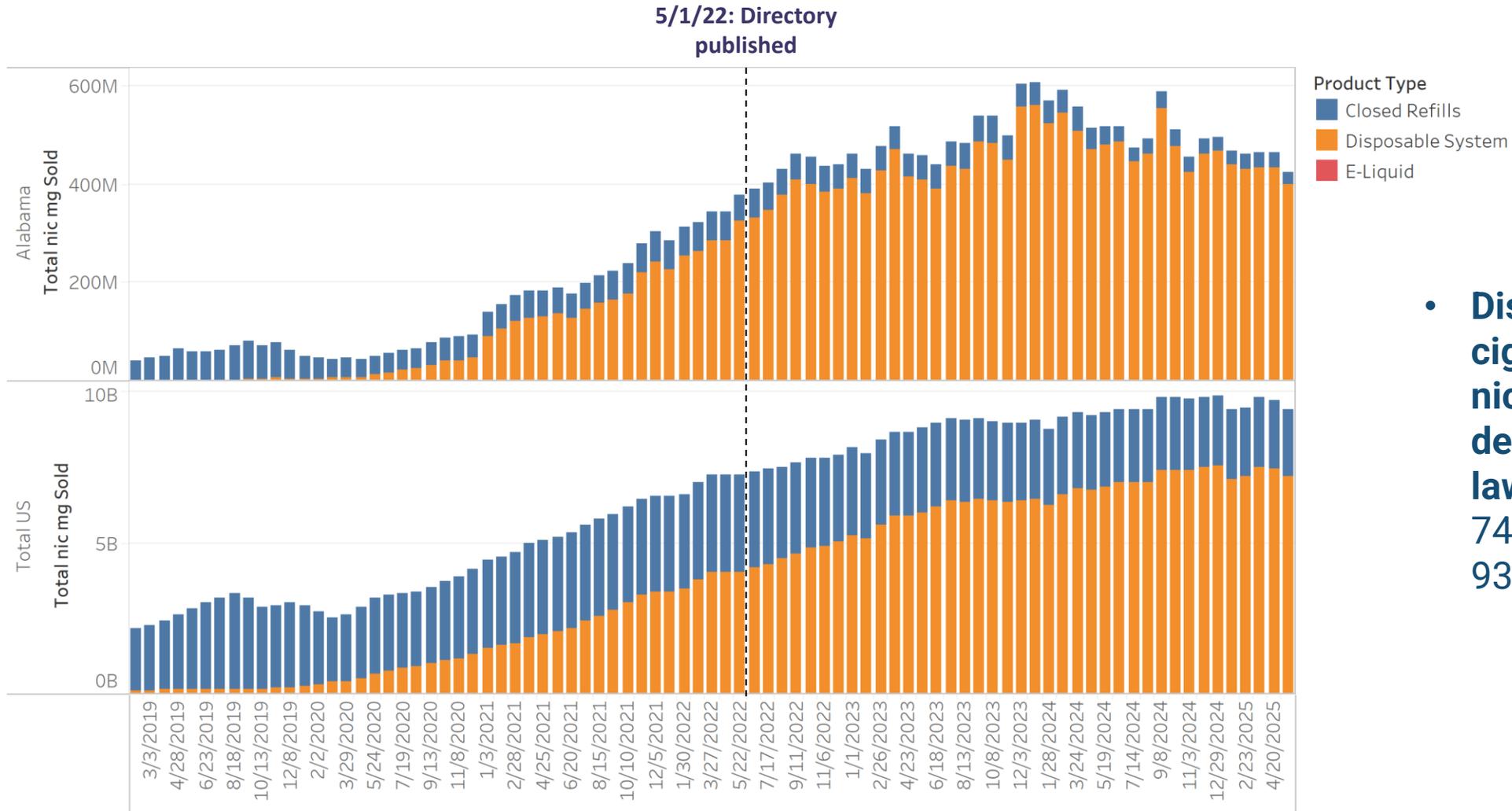
Directory Law in Alabama

E-Cigarette Nicotine Sales by Flavor: Alabama vs. Total U.S.



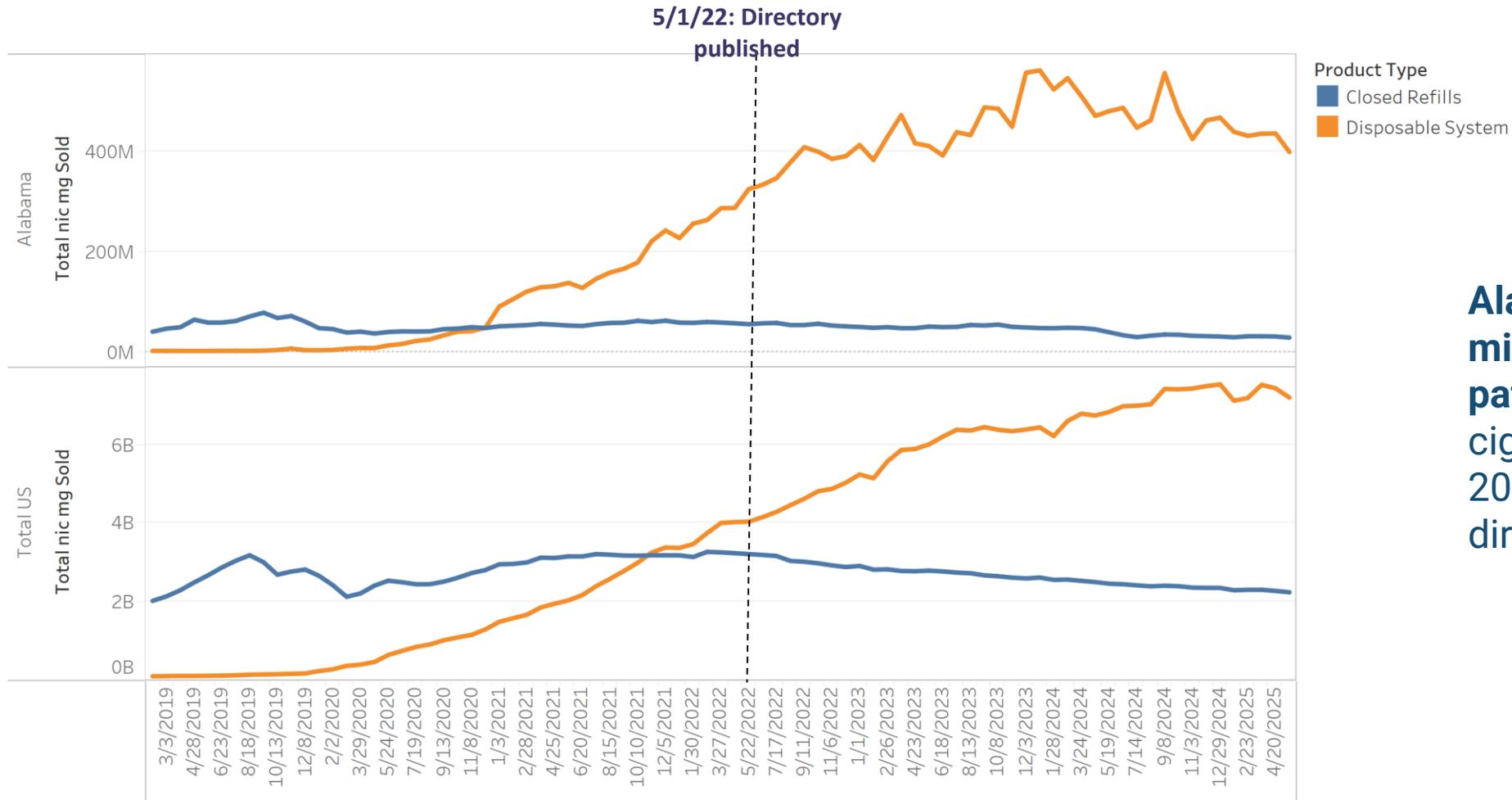
Overall sales in Alabama increased in 2023–2024 following the directory’s publication in May 2022, with non-tobacco flavors remaining dominant and stable.

E-Cigarette Nicotine Sales by Product: Alabama vs. Total U.S.



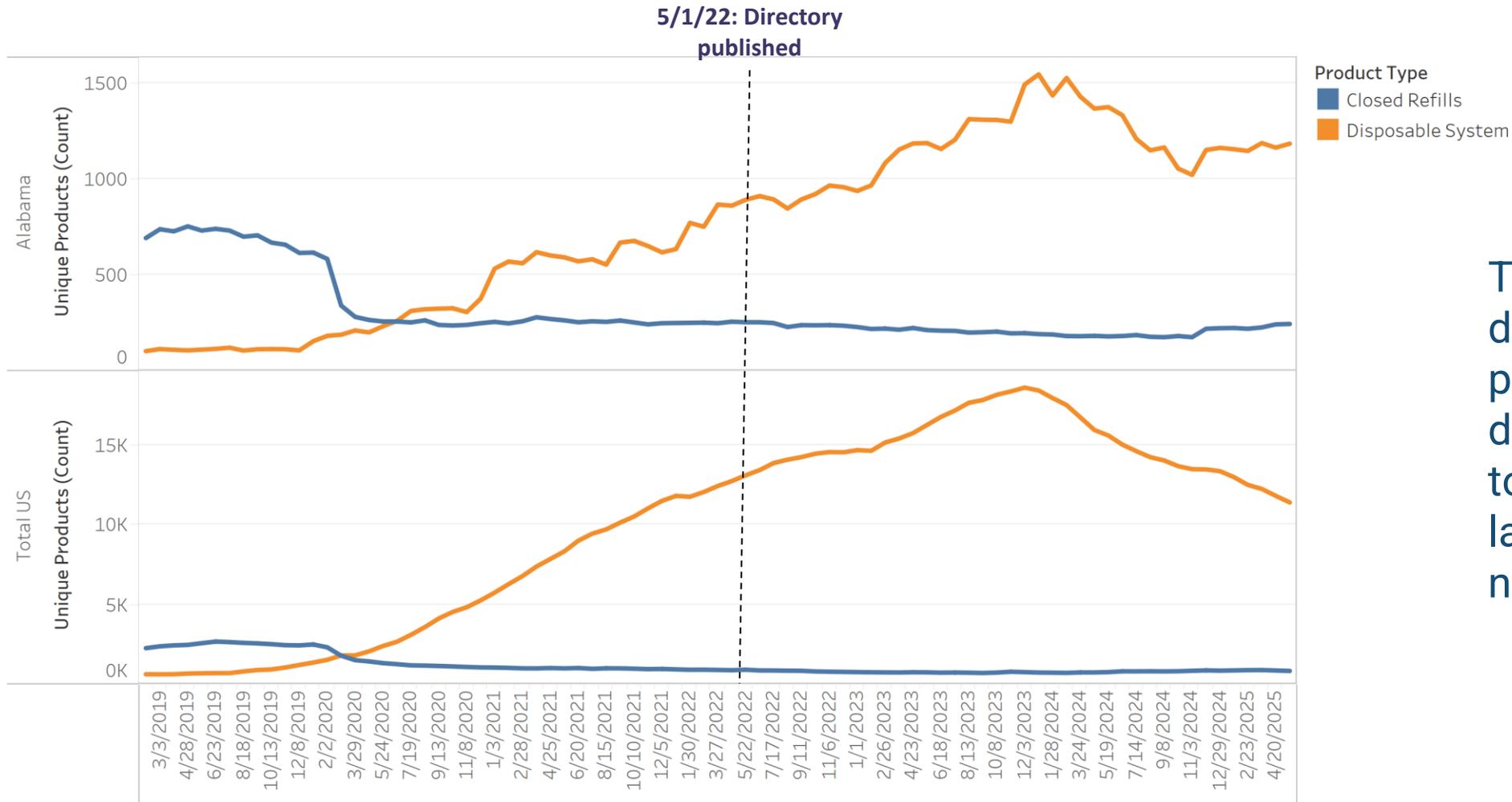
- Disposable e-cigarette' share of nicotine sales rose despite directory law— increasing from 74.3% in 2022 to 93.1% in 2024.

Trends in E-Cigarette Nicotine Sales by Product: Alabama vs. Total U.S.



Alabama's sales trends mirror national patterns: disposable e-cigarette sales rose in 2023–2024 despite directory law.

E-Cigarette Product Availability: Alabama vs. Total U.S.

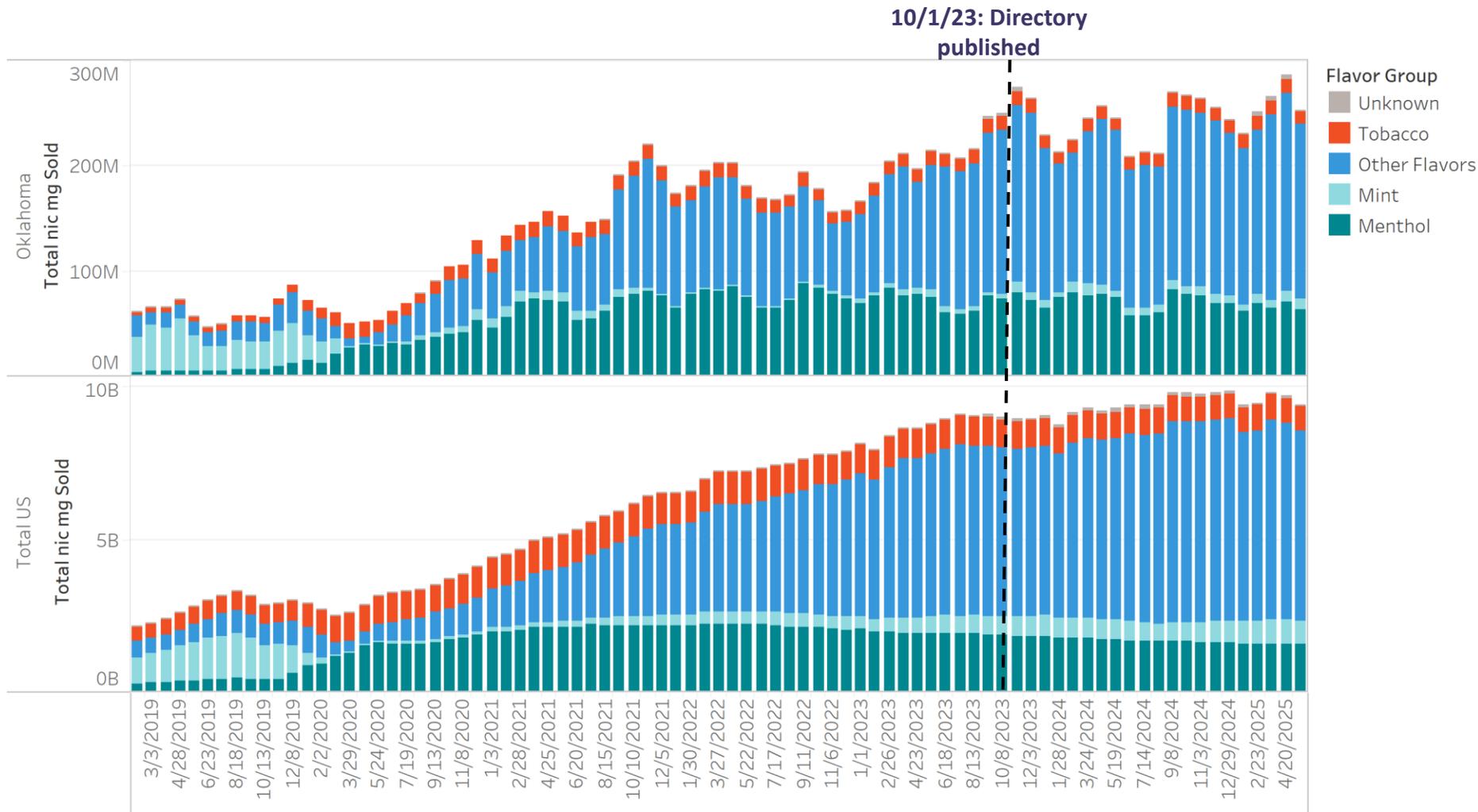


The number of distinct e-cigarette products sold post-directory continued to rise despite the law, mirroring the national trend.



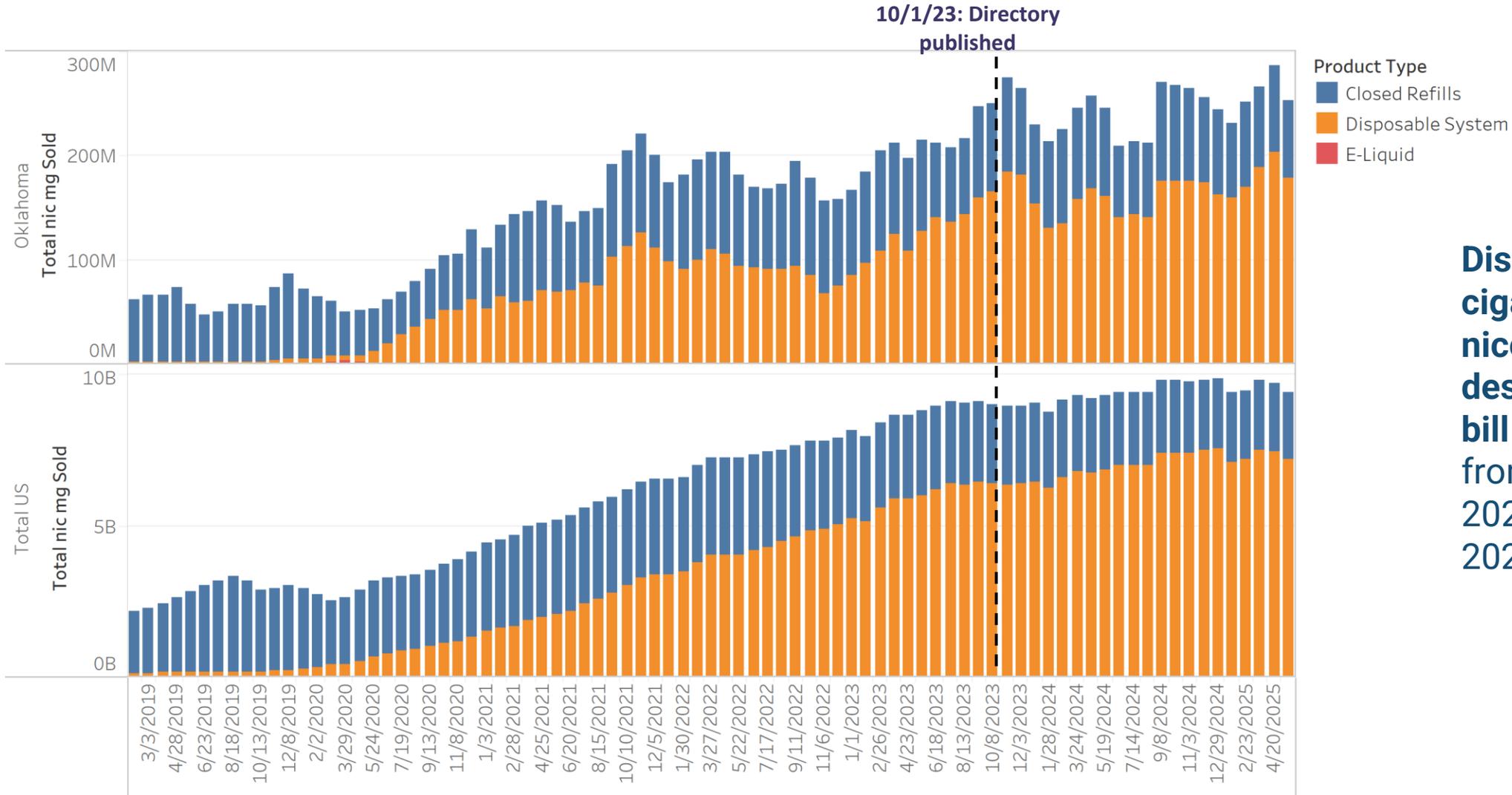
Directory Law in Oklahoma

Total E-Cigarette Nicotine Sales by Flavor: Oklahoma vs. Total U.S.



Despite fluctuations post-directory, Oklahoma's sales remained stable and increased steadily, aligning with national trends.

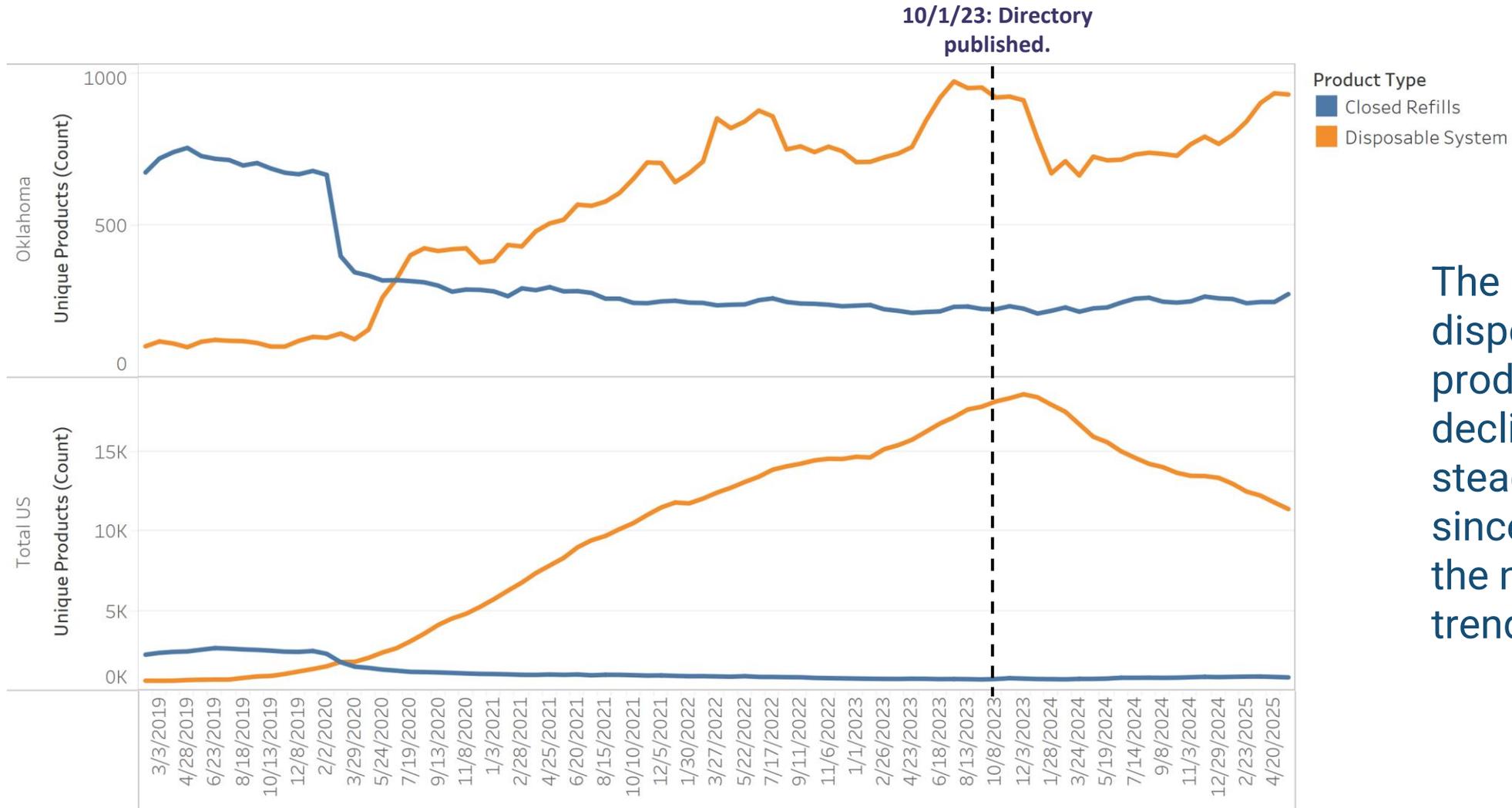
Total E-Cigarette Nicotine Sales by Product: Oklahoma vs. Total U.S.



Disposable e-cigarette' share of nicotine sales rose despite registry bill – increasing from 50.1% in 2022 to 64.4% in 2024.

Source: CDC Foundation, Monitoring E-Cigarette Sales: National and State Trends, [Monitoring E-Cigarette Use Among Youth | CDC Foundation](#)

E-Cigarette Product Availability: Oklahoma vs. Total U.S.



The number of unique disposable e-cigarette products initially declined but has steadily increased since, contrasting with the national downward trend.

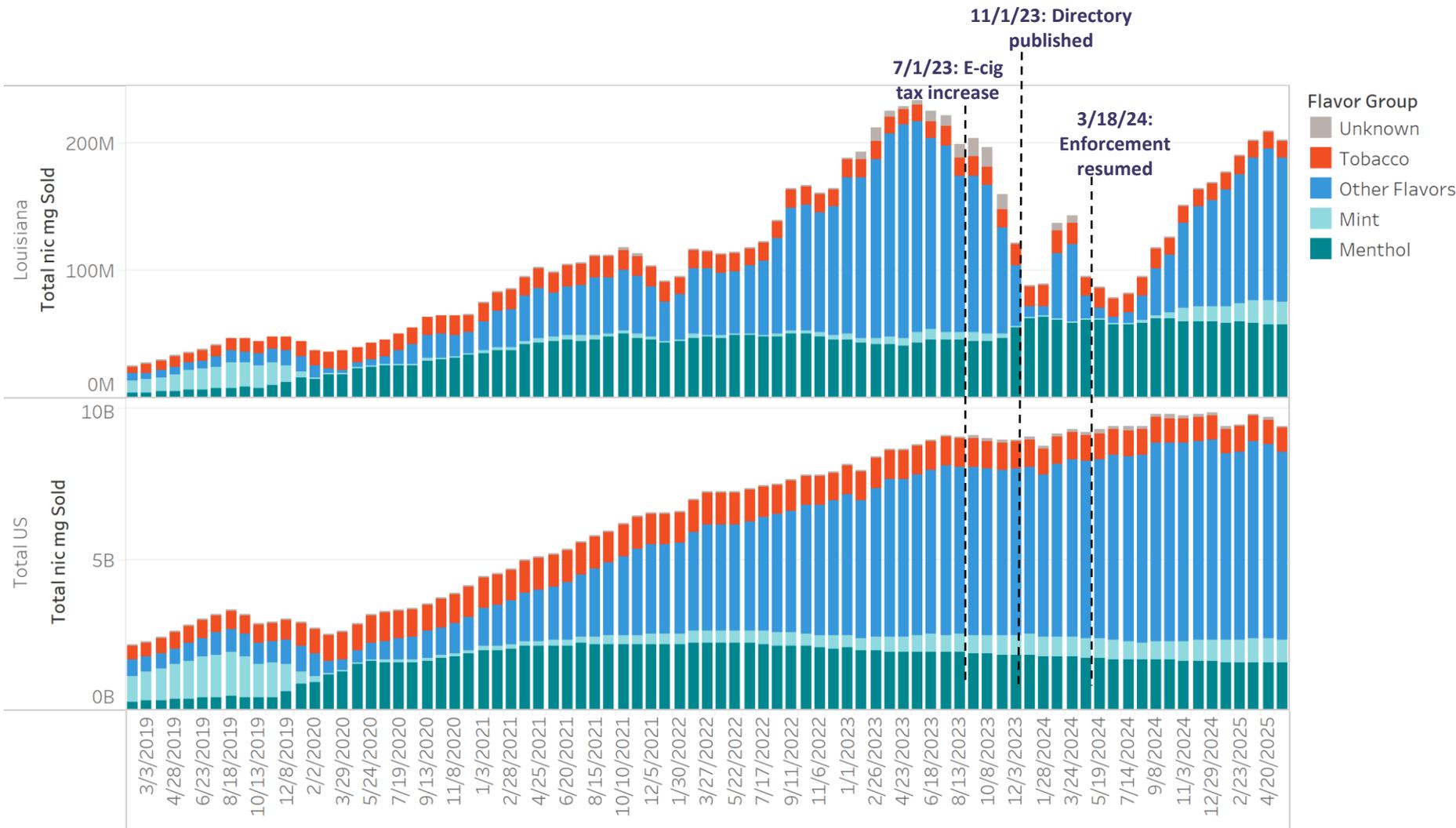
Key Takeaways from Alabama and Oklahoma

- Directory laws had no apparent impact on total sales or product availability.
- Despite the directory laws, disposable e-cigarettes and non-tobacco flavored sales continued to lead the e-cigarette market.



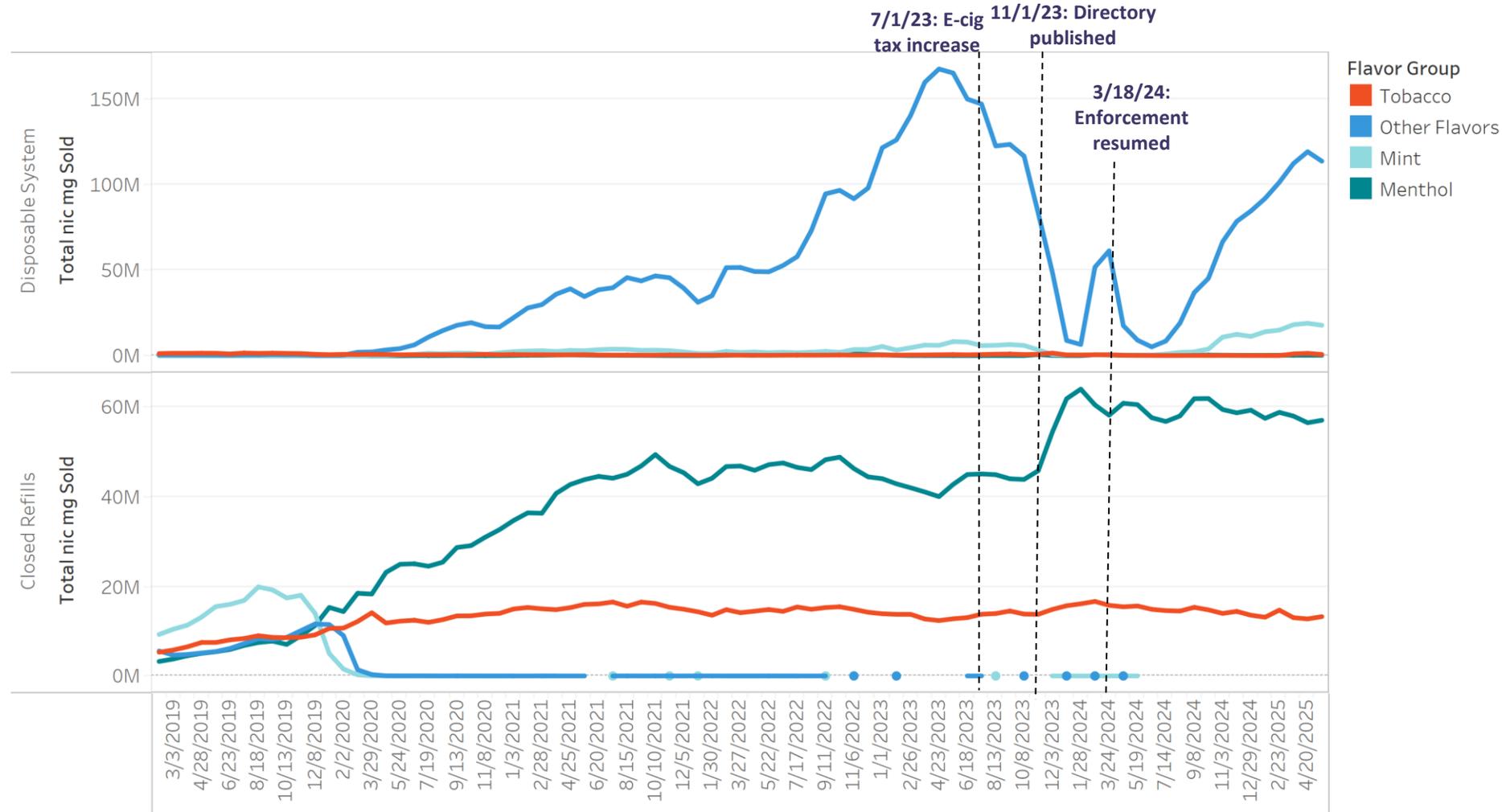
Directory Law in Louisiana

Total E-Cigarette Nicotine Sales by Flavor: Louisiana vs. Total U.S.



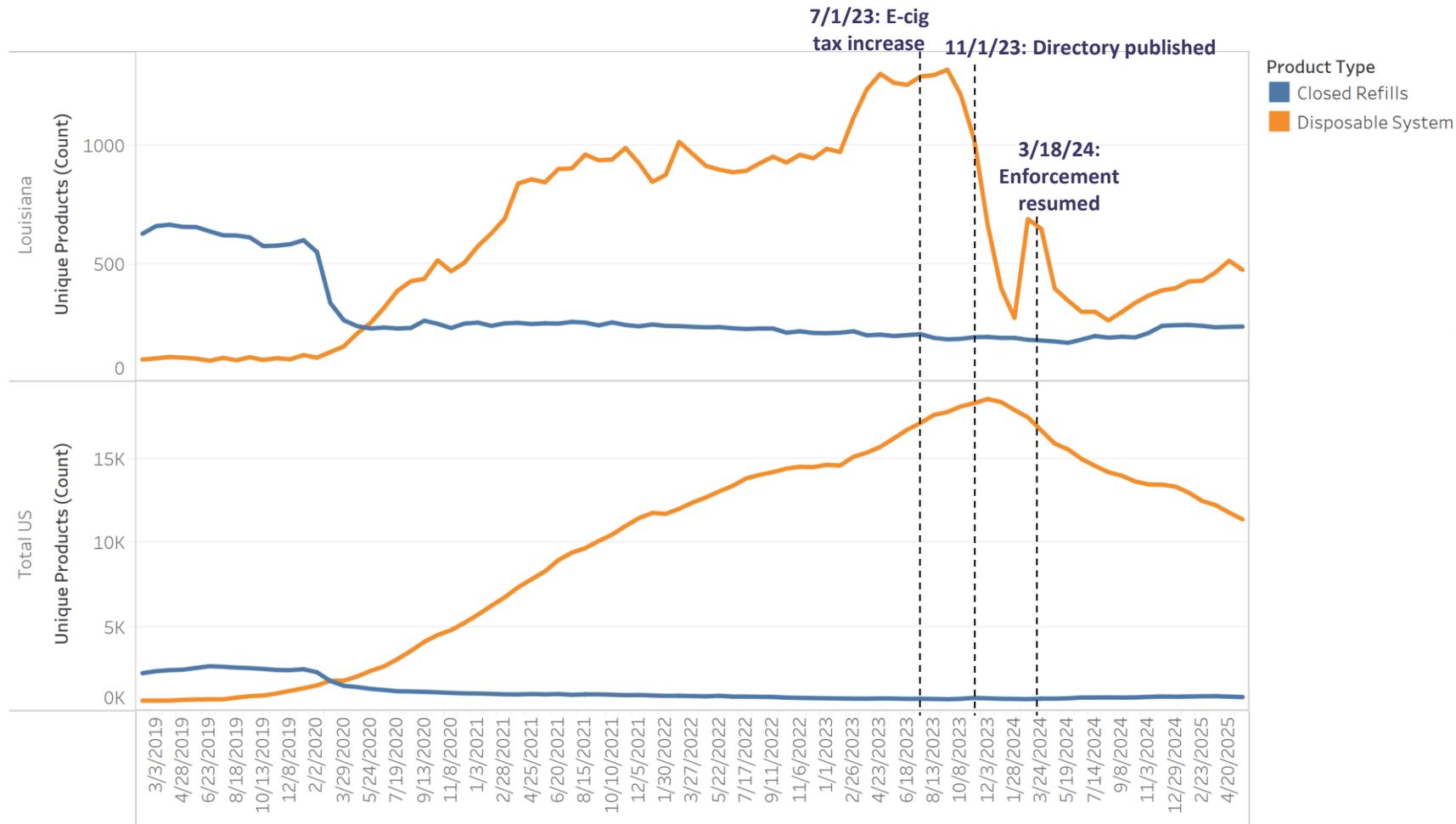
- Sales dropped after the July 2023 tax increase and again following the directory release in November 2023.
- However, sales rebounded from June 2024 and have continued to rise since.
- Non-tobacco flavors remained dominant throughout the period, with menthol showing a notable increase.

Total E-Cigarette Nicotine Sales by Product by Flavor: Disposables vs. Prefilled Pods.



- Temporary sales decline was driven by a decline in flavored disposable sales, partially offset by higher menthol prefilled sales.
- As flavored disposable sales rebounded after June 2024, menthol prefilled sales stayed high and did not decline.

E-Cigarette Product Availability: Louisiana vs. Total U.S.



- The number of unique disposable e-cigarette products initially declined, then rebounded as sales recovered— though still lower after directory laws.

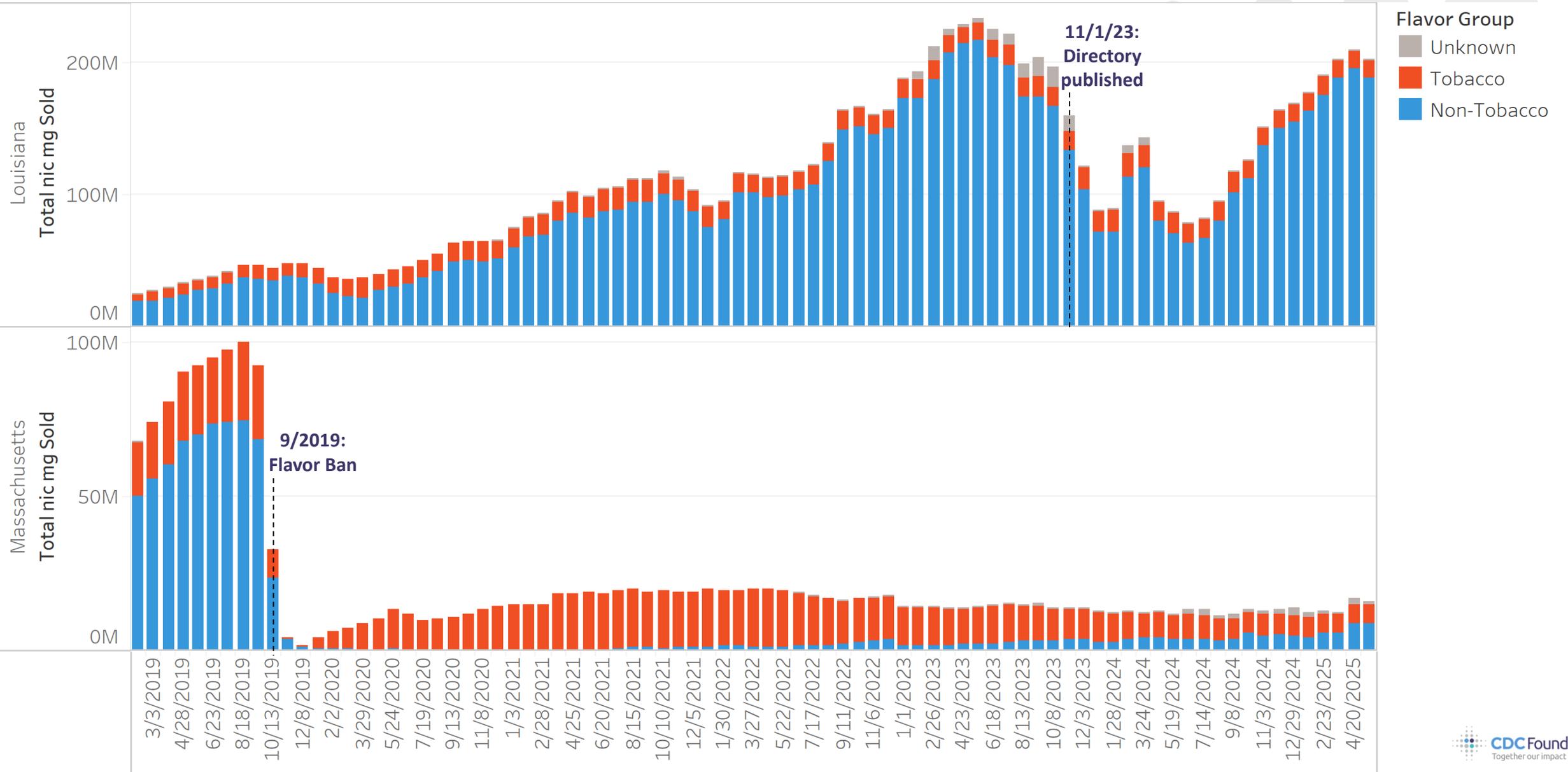
Public Health Implications

- Current directory laws can result in the perpetuation of sales of e-cigarette products commonly used among youth and those marketed without FDA authorization.
- Only 39 e-cigarette products in tobacco or menthol flavors are FDA authorized.
- Directory laws had no apparent impacts in Alabama and Oklahoma.
- Louisiana's law briefly reduced flavored disposable sales and increased menthol prefilled sales; flavored disposables later rebounded while menthol stayed high.
- Differences in short-term effects may be driven by variations in law structure, enforcement, or other tobacco control policies (e.g., the e-cigarette tax increase in Louisiana).
- Continued monitoring of sales and enforcement in states with directory laws is needed to assess whether differences in policy effects reflect variations in law structure and enforcement.

A large collection of various flavored tobacco products, including packs of cigarettes, pouches, and tins, scattered on a light surface. The products are in various colors and shapes, representing a wide variety of flavors.

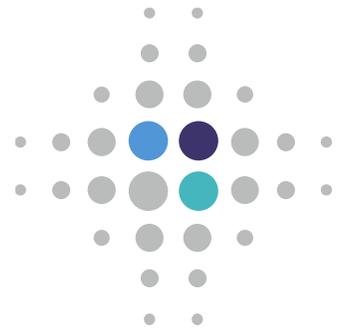
Bonus Slide:
Directory Laws vs.
Comprehensive Flavor Bans

If the goal is sustained public health impact, comprehensive flavor bans—not directory laws—should be the priority



Special thanks to my co-authors for their contributions:

- Kristy Marynak
- Elizabeth Seaman Jones
- Maggie Mahoney
- Michael Tynan



CDC Foundation
Together our impact is greater

Fatma Romeh M. Ali, PhD, fali@cdcfoundation.org