

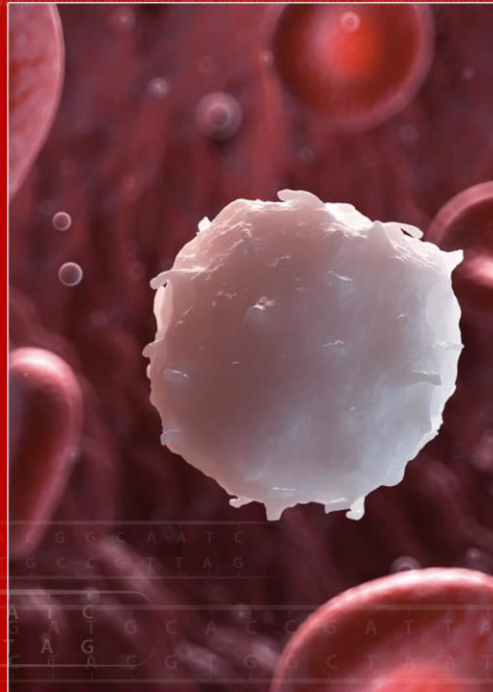
Standardizing Excise Taxes and Estimating Tax Pass-through Rate for Oral Nicotine Pouches (ONPs) In the US Market

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TOPS. July 24, 2026

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Tobacco Center of Regulatory Science



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Disclaimer & Disclosure

- Researcher(s)' own analyses calculated (or derived) based in part on data from Nielsen Consumer LLC and marketing databases provided through the NielsenIQ Datasets at the Kilts Center for Marketing Data Center at The University of Chicago Booth School of Business. The conclusions drawn from the NielsenIQ data are those of the researcher(s) and do not reflect the views of NielsenIQ. NielsenIQ is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein.
- I have no conflicts of interest to declare

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What Are Oral Nicotine Pouches (ONPs)

- Pouch containing nicotine, not leaves
- Nicotine type
 - Tobacco-derived nicotine (TDN)
 - Non-tobacco nicotine (NTN, synthetic)
- Brands: Zyn, ON!, Rogue, and Velo
- Strength: 1.5-8 mg nicotine per pouch, up to nearly 50 mg per pouch
- Flavor: regular/smooth, menthol/mint, wintergreen, fruit, tobacco, etc.
- Low-risk nicotine products, however, still lead to addiction



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Why Study ONPs

- Sales surge
 - 163k in 2016 to 46 million units in 2020
 - 327 million units in July 2021 to over 1 billion units in May 2024
 - 2.2 billion units in 2020 to 4.5 billion units in 2021 globally
- Use prevalence increase
 - Adults, 2021
 - 3% of US adults reported ever using of ONPs
 - 29.2% of adults who smoked had ever seen or heard of nicotine pouches
 - 5.6% had ever tried pouches
 - 16.8% reported interest in using ONPs in the next 6 months
 - Youth
 - 1.1% in 2021 → 1.4% in 2022 → 1.7% in 2023 → 2.4% in 2024

Source: CDC, NYTS, TUS-CPS, He et al. 2025

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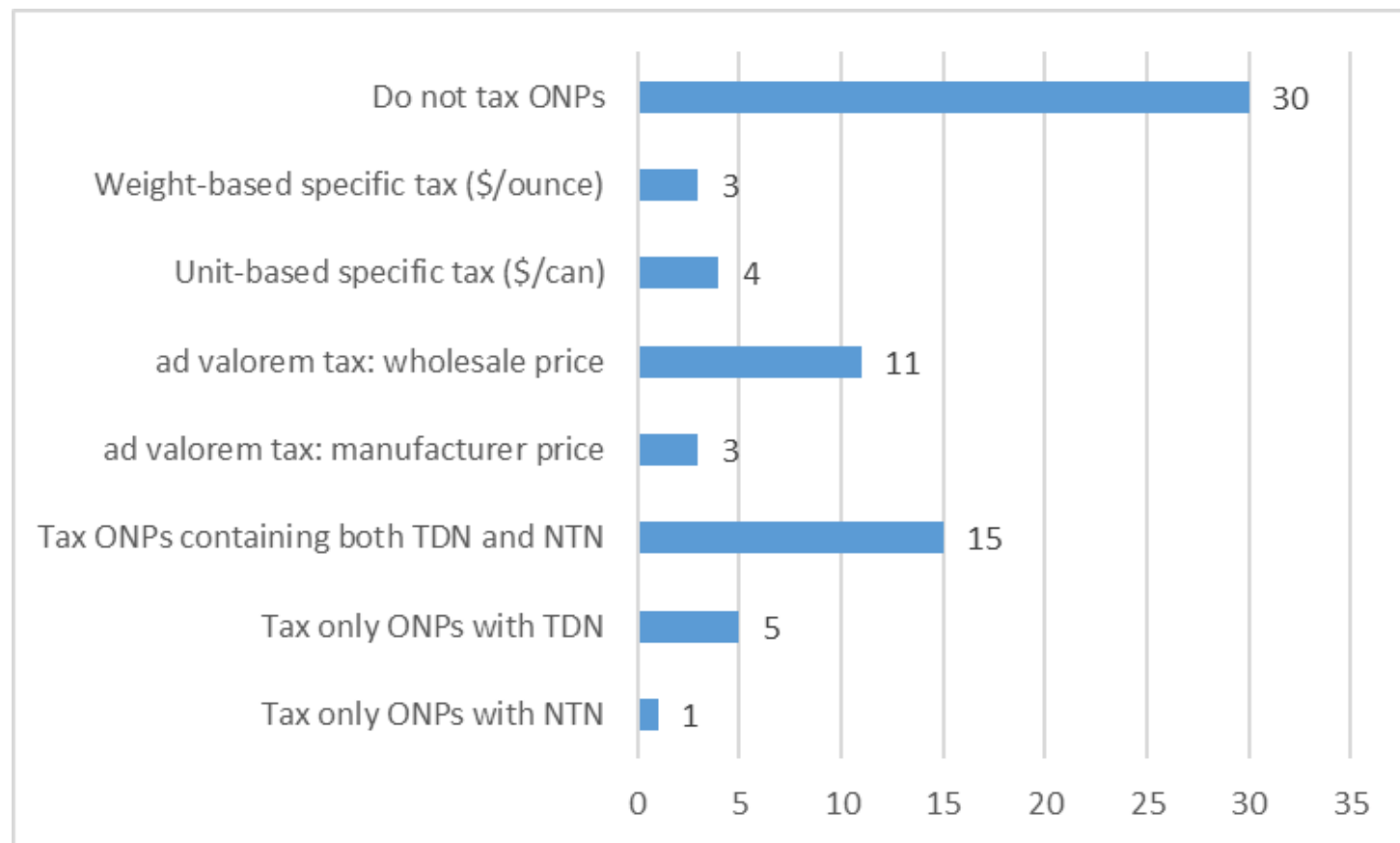
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Harm Reduction?

- Similar to the e-cigarette debate
- Depend on who uses them and how they are used
 - Harm may reduce
 - If adults use ONPs to quit smoking
 - If individuals who would otherwise initiate cigarette smoking use ONPs instead
 - Harm may increase
 - If smokers dual-use cigarettes and ONPs rather than quitting smoking
 - If never users, such as adolescents, use ONPs and become addicted
- Competing possibilities call for evidence-based policies

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Summary of Oral Nicotine Pouch Excise Taxes in the US, December 2025



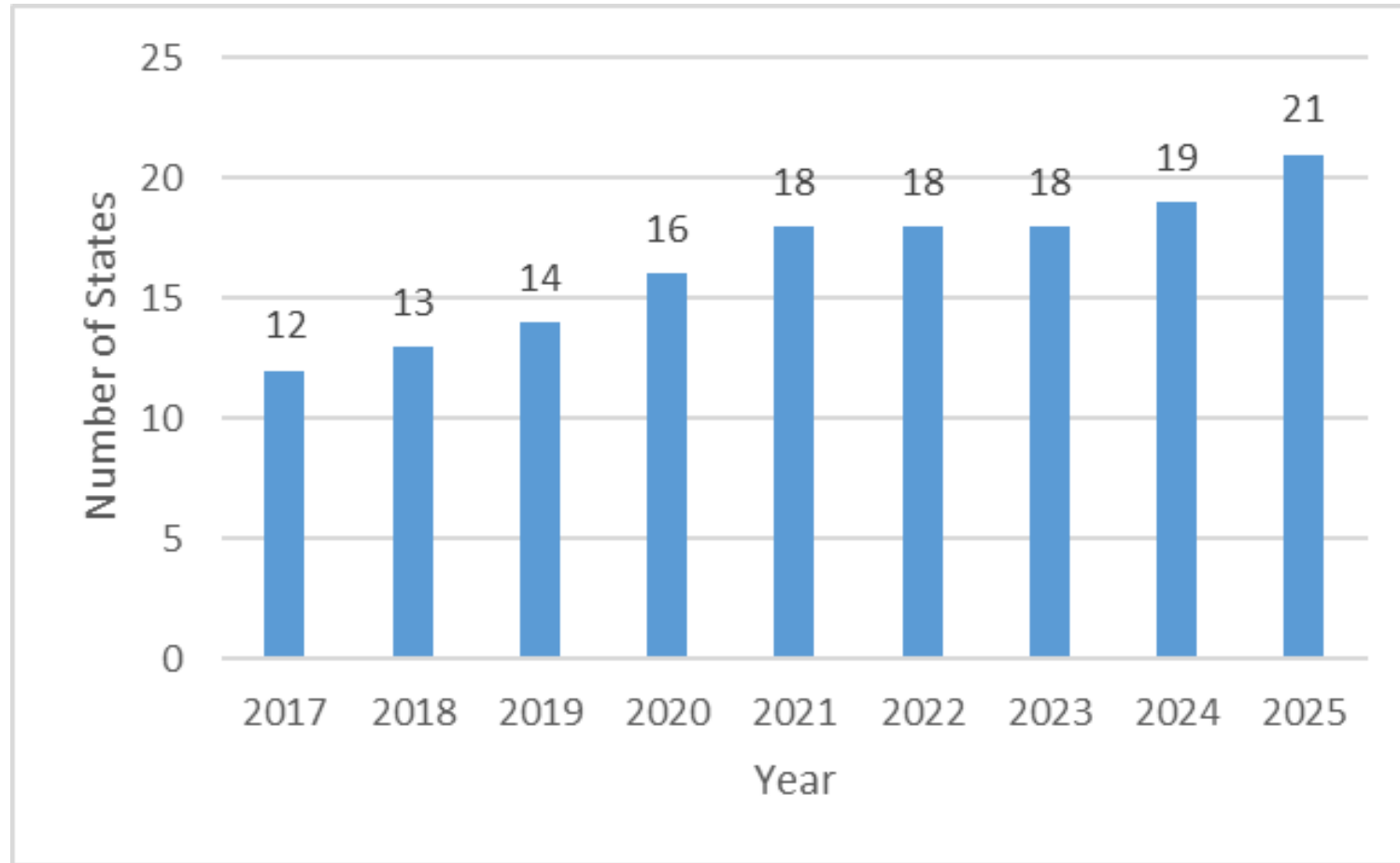
TDN: tobacco-derived nicotine.

NTN: non-tobacco nicotine.

Source : He et al., 2026.

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Number of States That Imposed Excise Taxes on ONPs, 2017-2025



Source : He et al., 2026.

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Tax Pass-through Rates

- Cigarettes
 - Fully passed, or over-shifted
 - Higher pass-through rates for higher-priced cigarettes
- Moist Snuff
 - Fully passed through to prices at the 25th and 50th percentiles
 - Over-shifted at the 75th percentile
- ONPs
 - No evidence yet

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Objective

- Standardizing ONP taxes
- Assessing tax pass-through rate to prices

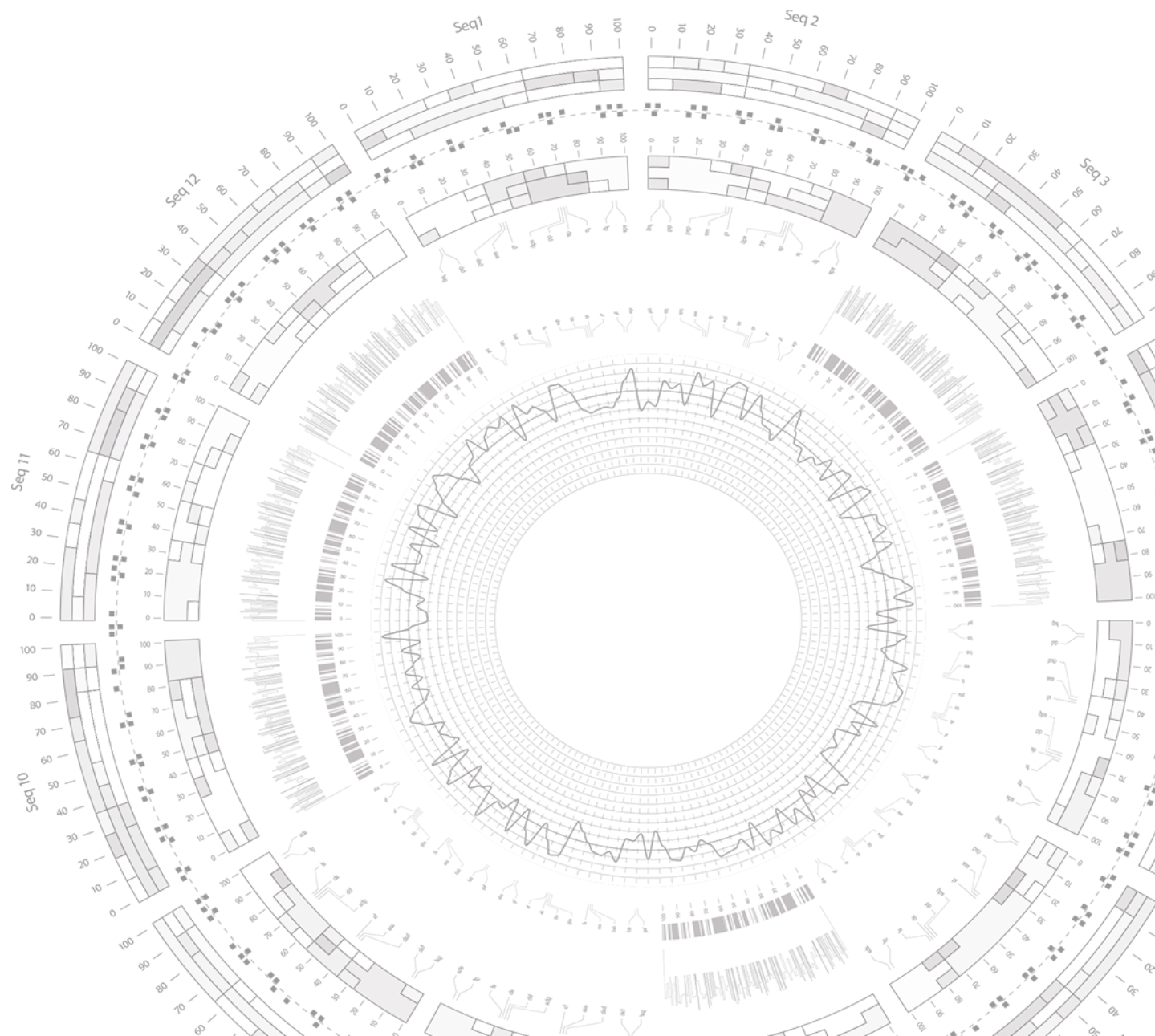
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Standardizing ONP Taxes

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Tax Standardization Method

- Choose a single tax base as a common anchor
- Two standardized measures
 - *ad valorem* (%) and unit-based specific taxes (\$/can) → weight-based taxes (\$/oz)
 - Time-invariant
 - Time-varying
 - Specific taxes → *ad valorem* taxes
- Enabling robust statistical analyses and comparison of ONP tax levels across states

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Data

- Taxes (2017-2025)
 - Hand-collected through direct communication with each state's tax agencies or the Freedom of Information Act
- NielsenIQ Retail Scanner Data (NRSD), 2017-2022
 - Prices per can
 - Sales
- CPI
 - Obtained from the US Bureau of Labor Statistics
 - January 2017 as the base period

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Method: Convert to Weight-based Taxes

- Market-share-weighted-average can weight
 - 99% market share: ZYN, On!, Rogue, and Velo
 - ZYN (60%, 0.21oz), On! (27%, 0.19oz), Rogue (7%, 0.48oz), and Velo (6%, 0.37oz)
 - $0.21 \times 60\% + 0.19 \times 27\% + 0.48 \times 7\% + 0.37 \times 6\% = 0.2332$ oz/can
- Unit-based taxes → weight-based taxes
 - Texas: \$1.46 per can ÷ 0.2332 oz per can = \$6.26 per oz
- *Ad valorem* → weight-based taxes, time-invariant
 - $Std\ WeightBased\ Specific\ Tax_{s,t} = \frac{Benchmark\ Price}{1+T_{s,t}} \times T_{s,t}$
 - Benchmark price: 2017, only 3 non-tax states and 2 of those had fewer than 3 months sales record. Therefore, we use average sales-weighted retail prices from 2017–2018 across 11 non-tax states
 - Mark-up rate: 35% or 20%

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Method: Convert to Weight-based Taxes (Cont)

■ Example 1:

- Minnesota imposes taxes at 95% of **wholesale prices**
- Benchmark retail price: \$4.39 per can → \$18.83 per oz
- Benchmark wholesale price: $\$18.83 \div (1+35\%) = \13.95 per oz
- Std taxes = $\$13.95 \div (1+95\%) \times 95\% = \6.79 per oz

■ Example 2:

- Colorado imposed taxes at 56% of the **manufacturer's list price**
- Benchmark manufacturer's price: $\$18.83 \div (1+35\%)^2 = \10.33 per oz
- Std taxes = $\$10.33 \div (1+56\%) \times 56\% = \3.71 per oz

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Method: Convert to Weight-based Taxes (Cont)

- *ad valorem* → weight-based taxes, time-varying
 - Time-invariant measure captures only policy-driven changes
 - However, it does not reflect the actual levels of *ad valorem* taxes
 - $Std\ UnitBased\ Specific\ Tax_{s,t} = \frac{Price_{s,t}}{1+T_{s,t}} \times T_{s,t}$
- In cases where price data are missing for a given state–month combination, the corresponding standardized specific tax values are also missing.

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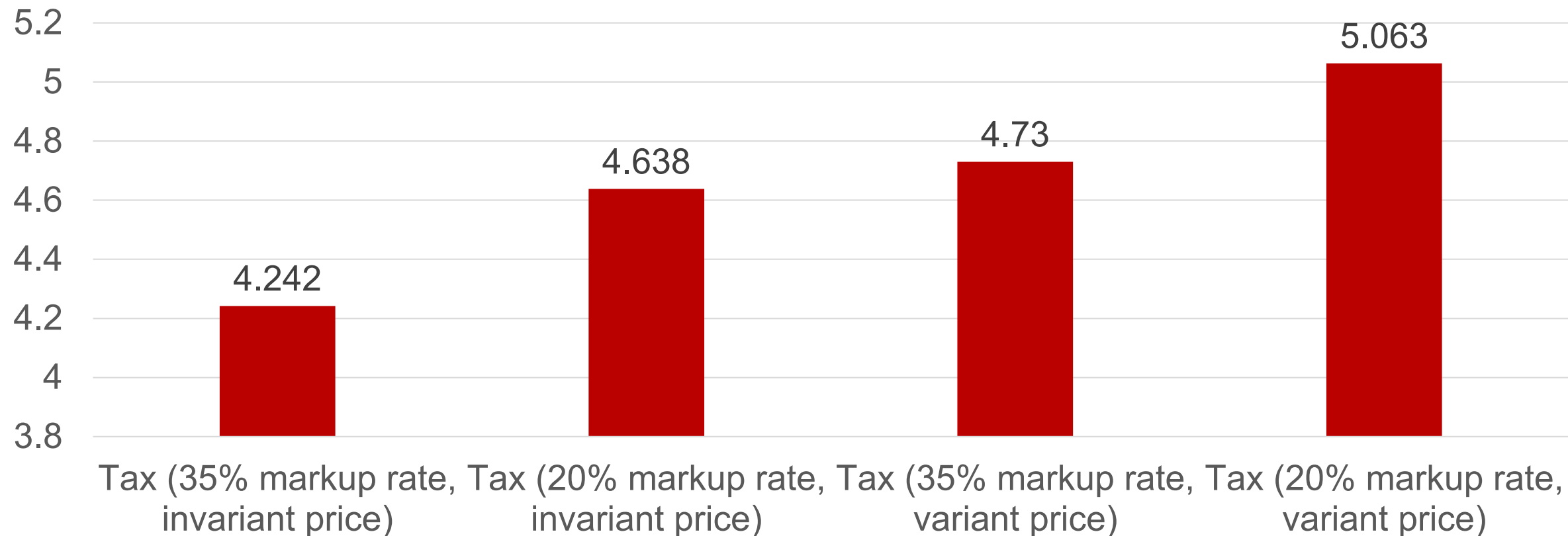
Method: Convert to *ad valorem* Taxes

- Weight-based taxes → unit-based taxes
 - Unit-based taxes = weight-based taxes (\$/oz) × 0.2332 oz/can
- Unit-based taxes → *ad valorem* taxes at the wholesale level
 - $$T_{wh_{s,t}} = \frac{UnitBased_SP\ tax_{s,t}}{Benchmark\ WH\ price - UnitBased_SP\ tax_{s,t}}$$
- *ad valorem* taxes at the MF level → *ad valorem* taxes at the wholesale level
 - $$T_{wh_{s,t}} = \frac{T_{mf_{s,t}}}{1 + markup\ rate}$$

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Descriptive Results: Standardized Weight-based Taxes (\$/oz)

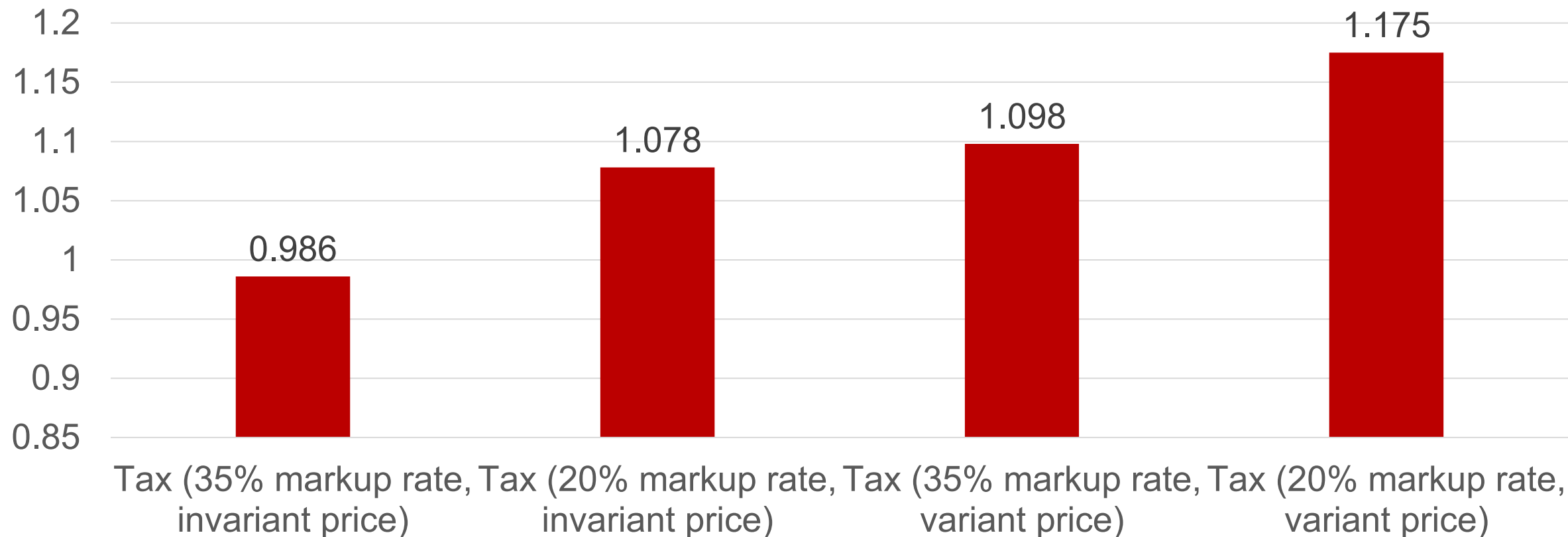
Standardized Weight-based ONP Taxes



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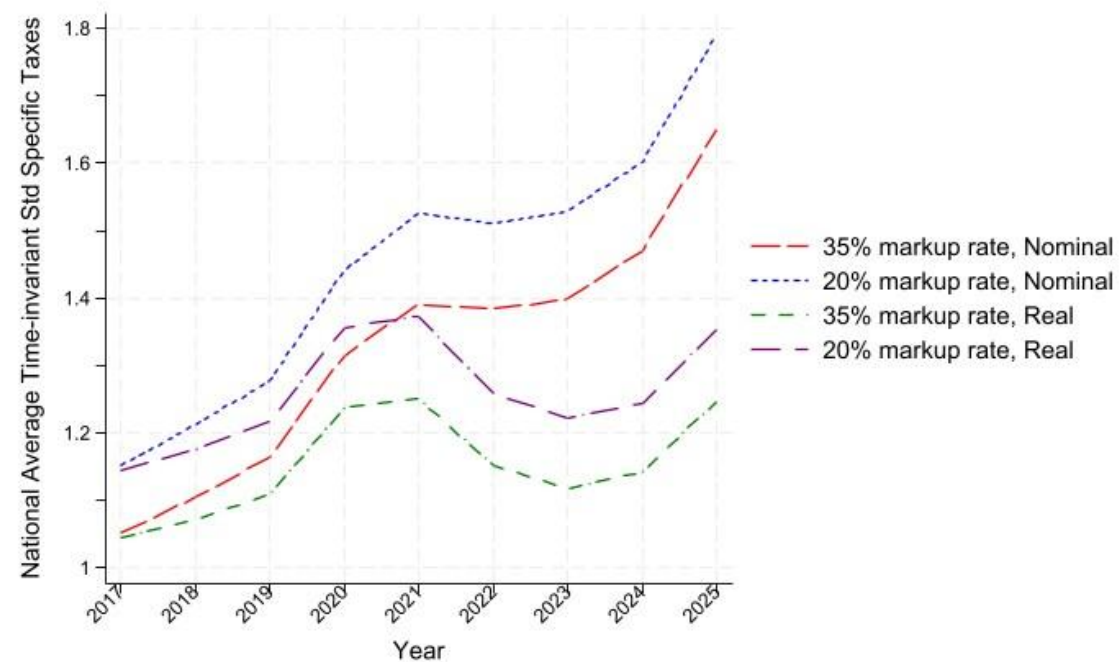
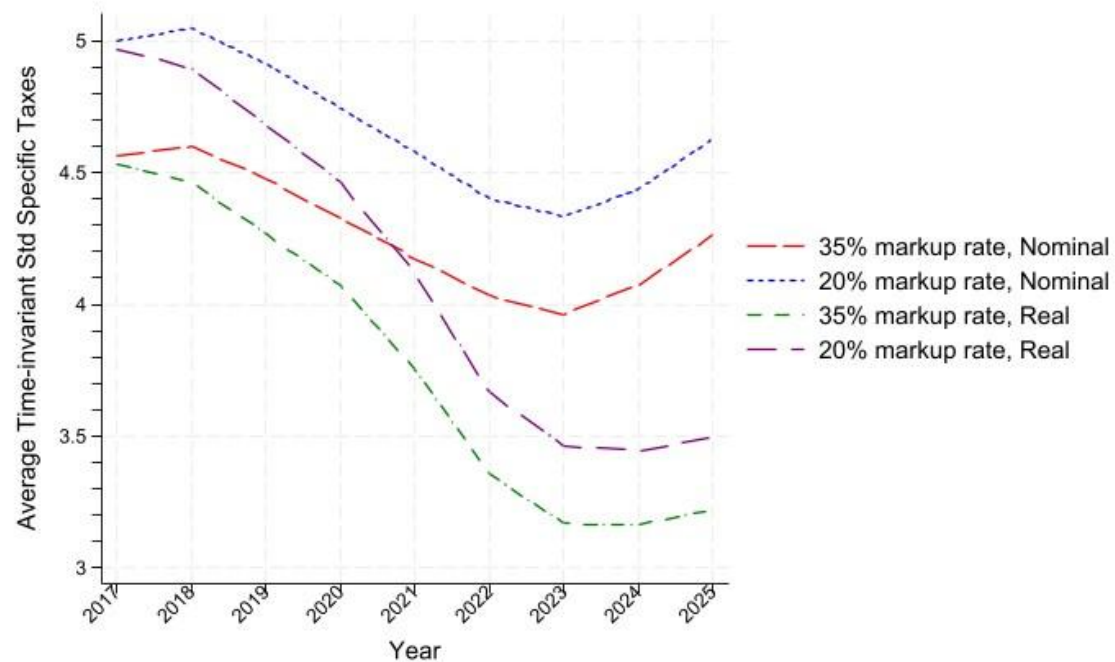
Descriptive Results: Standardized Unit-based Taxes (\$/can)

Standardized Unit-based ONP Taxes



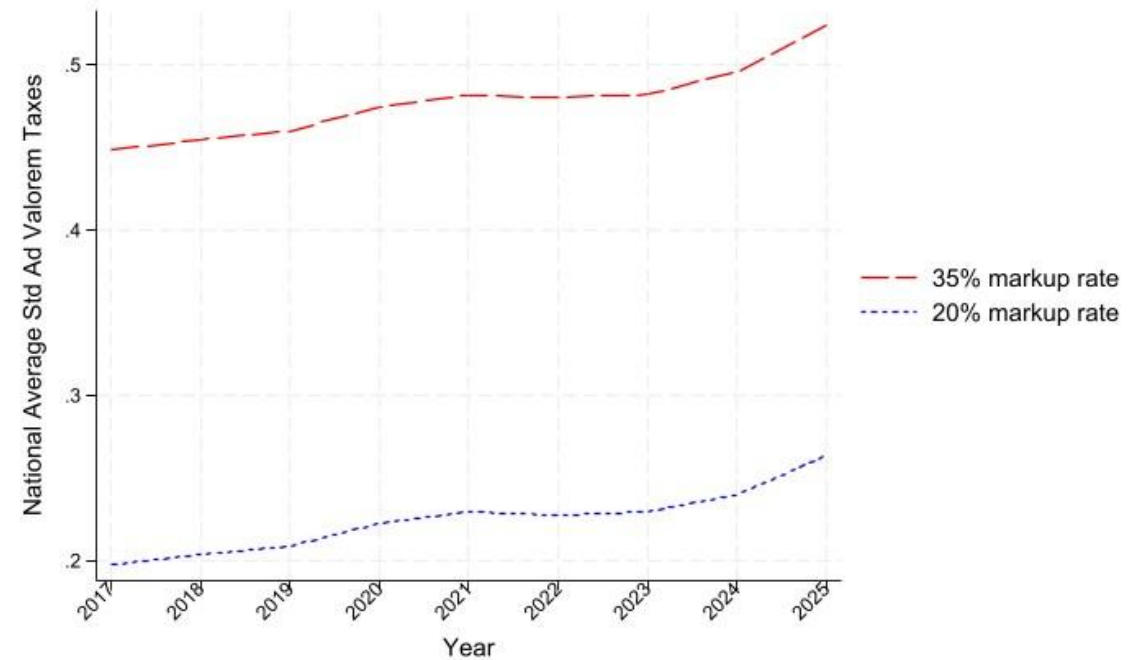
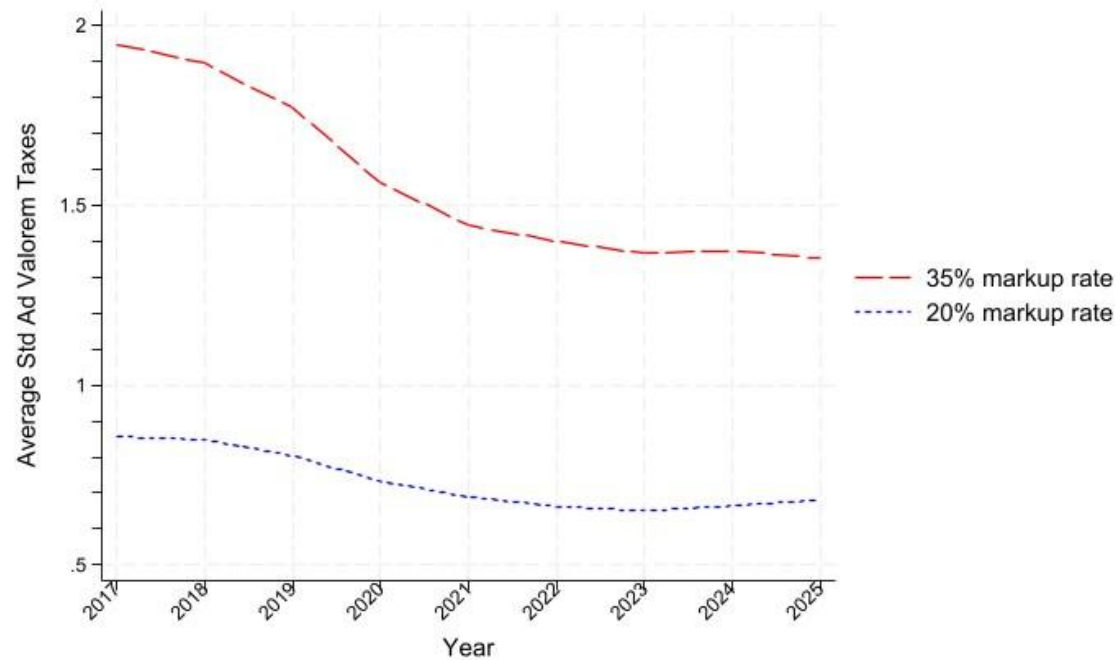
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Descriptive Results: Standardized ONP Taxes (\$/oz)



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Descriptive Results: Standardized *ad valorem* Taxes



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Comparison between Different Products

	ONPs ¹	Cigarettes ²	Closed system e-cigarettes ²	Open system e-cigarettes ²	Moist Snuff ³
Standardized tax rates	\$0.92/can	\$3.21/pack	\$0.49/0.7 fluid mL	\$0.12/0.7 fluid mL	\$1.00/ounce
Tax rates per ounce	\$3.95/ounce	\$4.59/ounce	\$0.70/ounce	\$0.17/ounce	\$1.00/ounce
As percentage of cigarette tax rates based on ounces	86.0%	-	15.3%	3.7%	24.2%
As percentage of cigarette tax rates based on equivalent units	28.7%	-	15.3%	3.7%	15.6%
Period	4 th quarter of 2023	4 th quarter of 2023	4 th quarter of 2023	4 th quarter of 2023	4 th quarter of 2020

1 can=1 pack, 0.7 fluid mL=1 pack, 1 oz moist snuff=2 pack

Source: 1, present study; 2, Cotti et al. 2024; 3, He et al. 2024

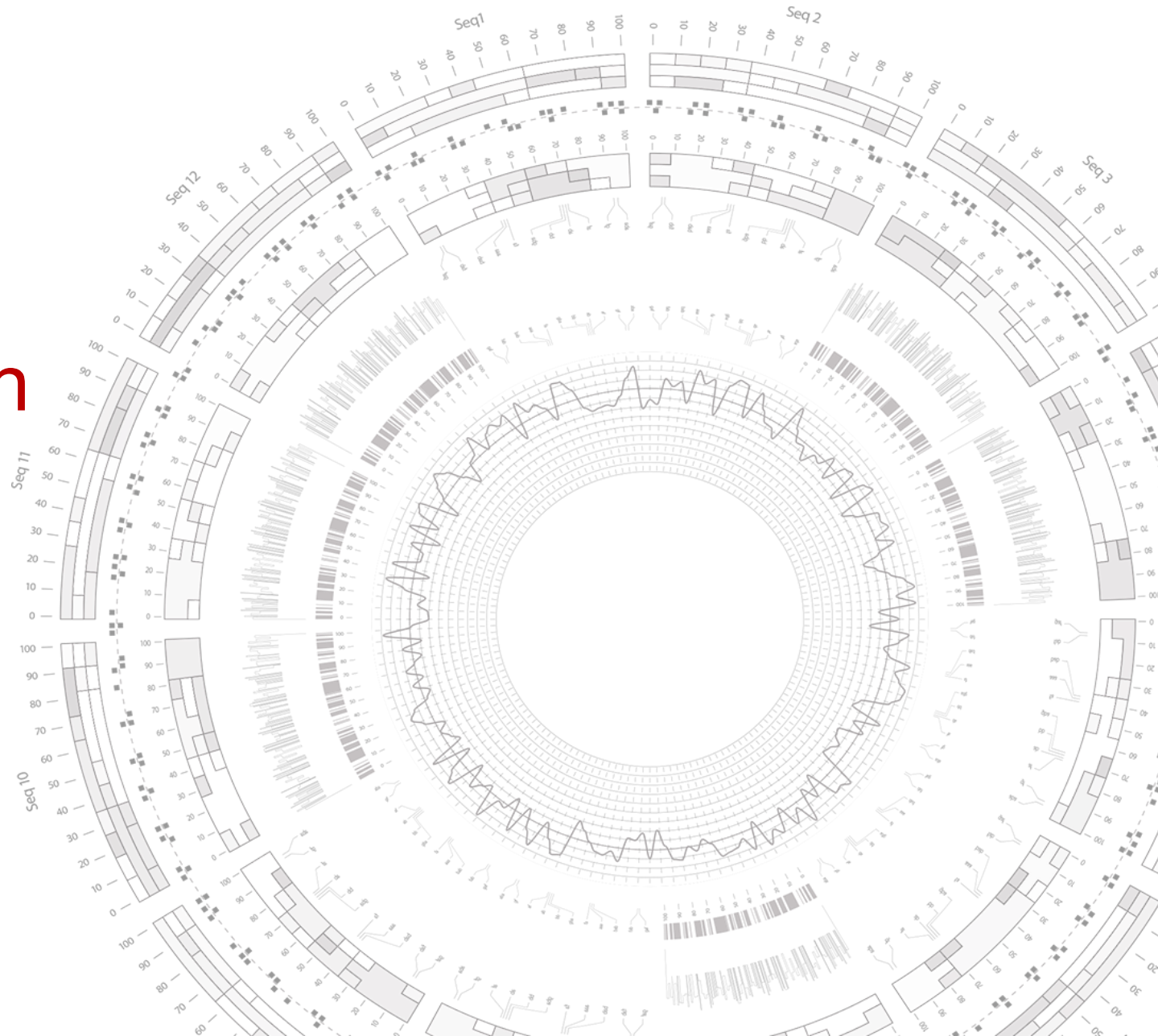
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ONP Tax Pass-through to Prices

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Method: Examine Tax Pass-through Rates

- Three separate ordinary least squares (OLS) models
 - Y: ONP prices at the 25th, 50th, and 75th percentiles as the outcomes (\$/can)
 - X: standardized ONP taxes (\$/can)
 - Primary analysis: Traditional two-way fixed-effects DID
- Sensitivity analyses
 - Restrict samples to those states with specific taxes (n=7)
 - dCDH event study estimator
 - Staggered DID with continuous treatment

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Regression Results: TWFE

Estimated tax pass-through rates of ONPs, 2017-2022

	Assuming 35% markup rate Coefficients (SE)	Assuming 20% markup rate Coefficients (SE)
25 th percentile prices	0.641* (0.262)	0.551* (0.220)
50 th percentile prices	1.363** (0.434)	1.215*** (0.352)
75 th percentile prices	1.401** (0.508)	1.259** (0.415)
# of observations	806	806

Under-shifting
\$1 tax leads to <\$1
price change

Over-shifting
\$1 tax leads to >
\$1 price change

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

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Results from Sensitivity Analyses

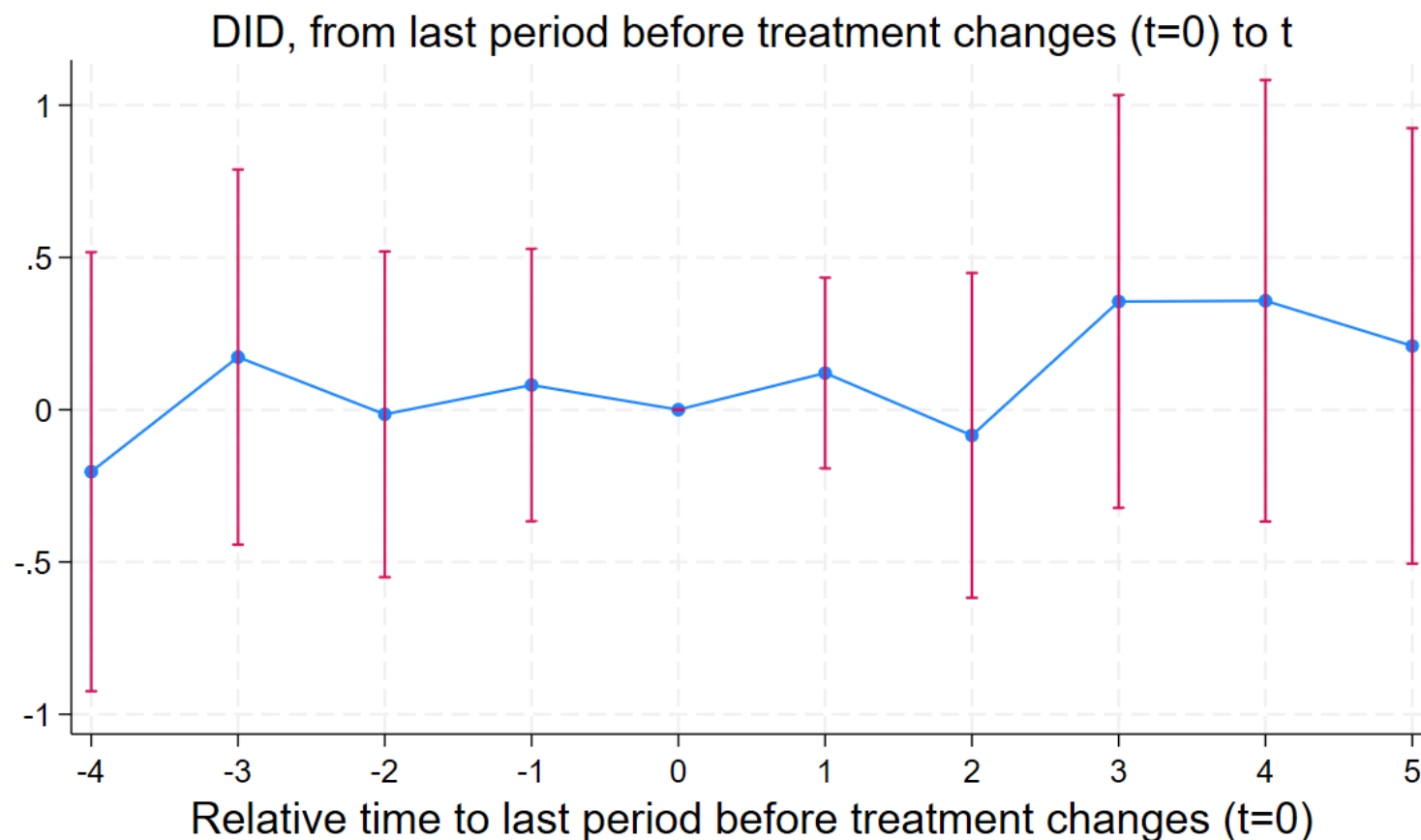
Estimated tax pass-through rates of ONPs, restricted samples, 2017-2022

	Coefficients (SE)
25th percentile prices	0.297 (0.892)
50th percentile prices	1.734 (1.366)
75th percentile prices	1.035 (0.804)
# of observations	121

Note: ***p<0.001, **p<0.01, *p<0.05

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Results from Sensitivity Analyses: dCDH, 25th percentile prices

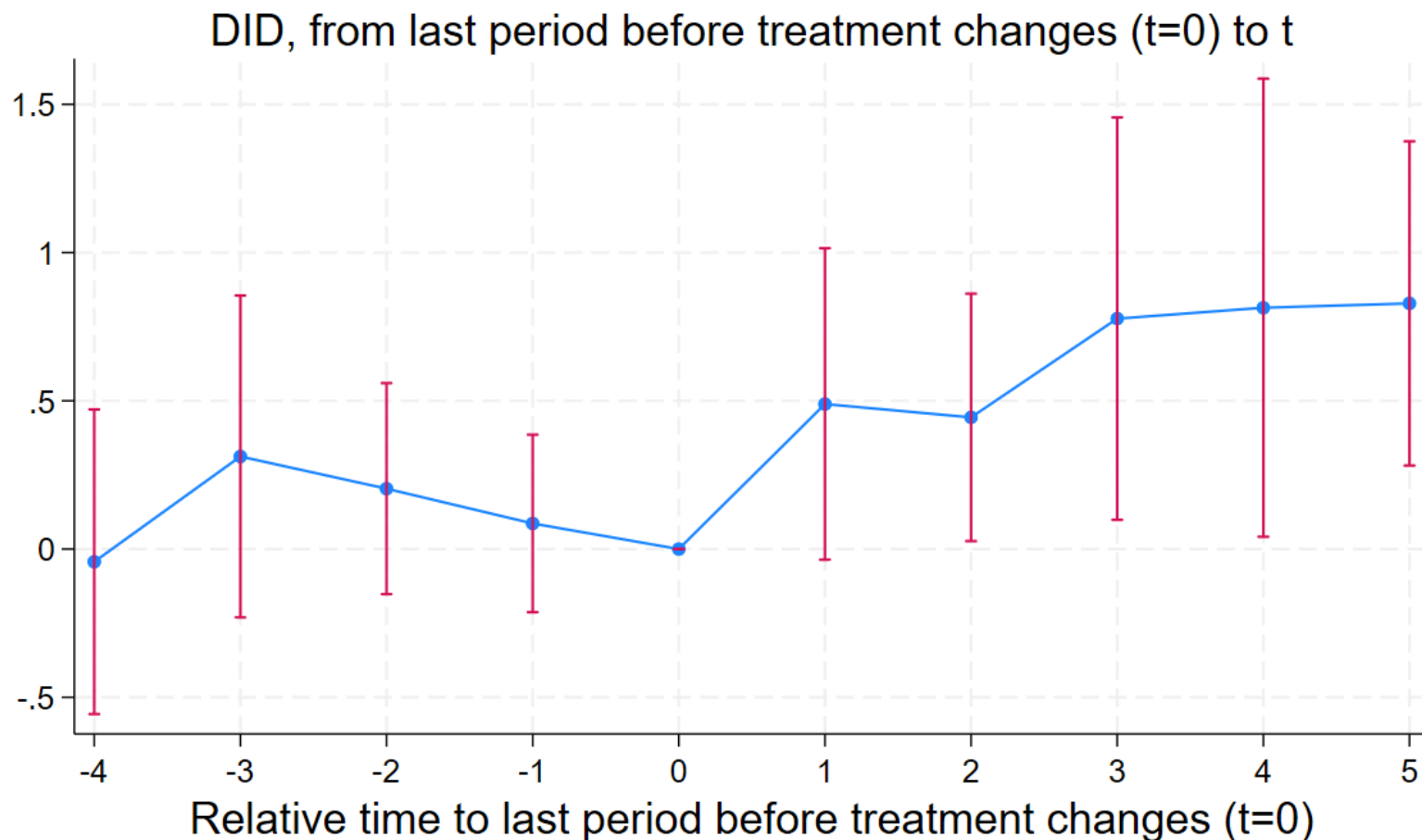


No significant tax pass through to prices at the 25th percentile level

Average treatment effect=0.23 SE=0.30

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Results – dCDH, 50th percentile prices

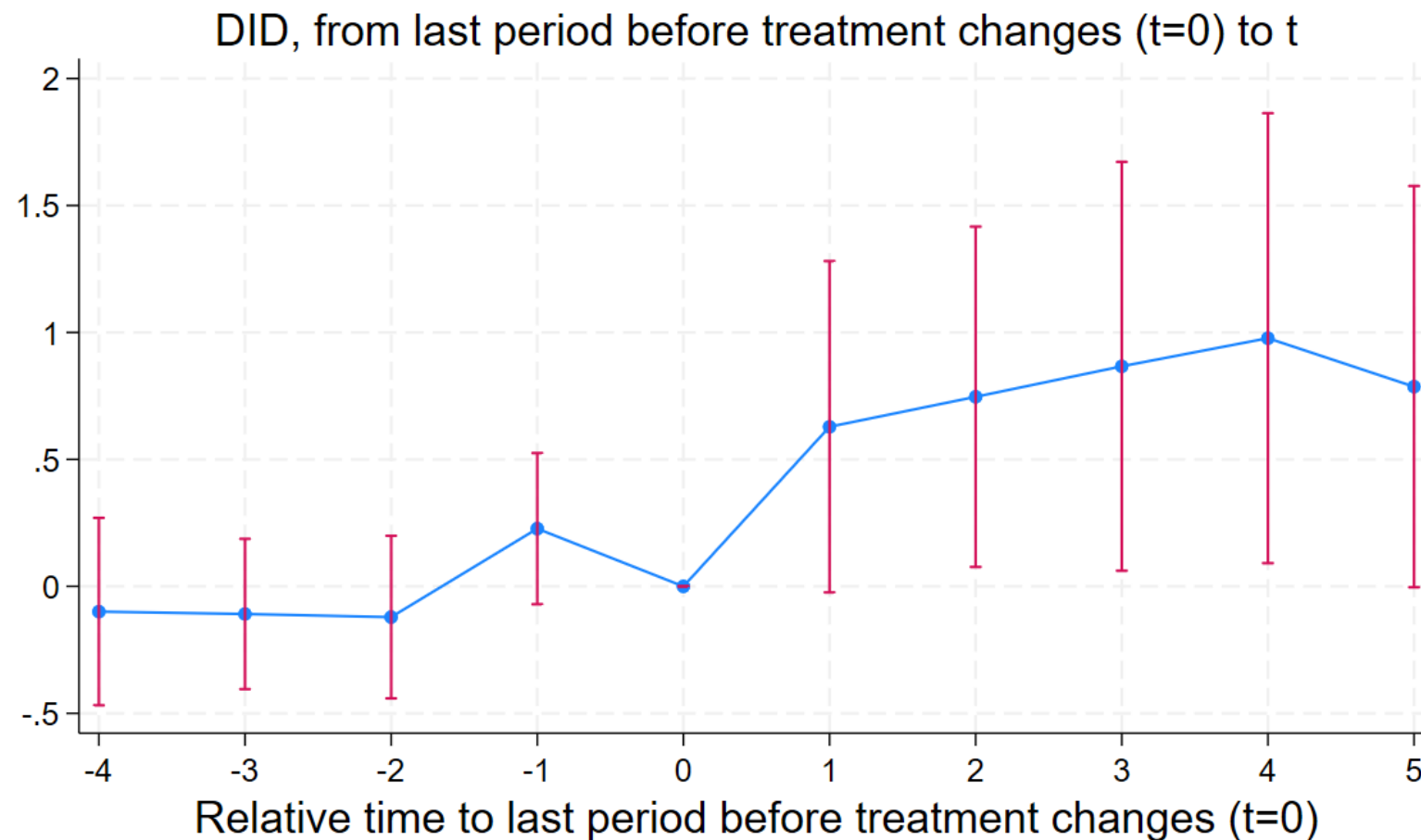


Tax under-shifted
at the 50th
percentile level

Average treatment effect=0.80 SE=0.32
CI [0.14, 1.42]

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Results – dCDH, 75th percentile prices



Tax exactly
shifted at the 75th
percentile level

Average treatment effect=0.95 SE=0.46
CI [0.05, 1.86]

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Conclusions

- Standardized ONP taxes
 - About \$4.3/oz or about \$1/standard can
 - ONPs are taxed at levels comparable to cigarettes and substantially higher than e-cigarettes and smokeless tobacco.
- Tax pass-through
 - ONP taxes are either not or under-shifted to lower-priced products at the 25th percentile level
 - ONP taxes may be under-, exactly, or over- shifted to prices above the median, depending on modeling choices.
 - Consistent with the existing literature (He *et al.*, 2023 & 2024), tax increases are shifted more to higher-priced ONPs than lower-priced ONPs

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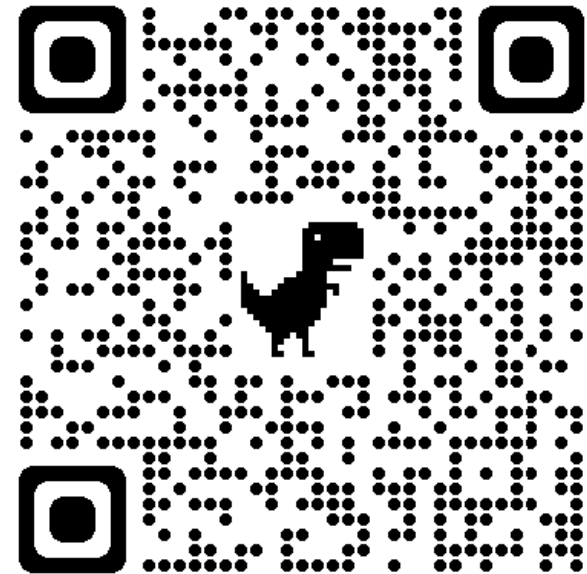
More to Consider

- Theories driving the pass-through behavior
 - ONP market is highly concentrated (dominated by several big brands/tobacco companies)
 - Companies may use a similar strategy in their response to cigarette taxes by over-shifting taxes to prices for profit
 - ONP market is relatively new
 - Companies may have incentives to under-shift taxes to prices to maintain pricing competitiveness of ONP products compared to other tobacco products
- More discussions are needed about the tax levels levied on ONPs and how this may change consumers tobacco use behaviors and product preferences

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Questions?

- Contact information
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