

The Experimental Tobacco Marketplace: Contemporary Status

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FRALIN BIOMEDICAL
RESEARCH INSTITUTE AT VTC
VIRGINIA TECH.

Disclosure

- HealthSim, LLC
- BEAM Diagnostics, Inc
- Red 5 Group, LLC
- Sober Grid, Inc
- Ria Health
- Alkermes, Inc
- Indivior, Inc
- Boehringer Ingelheim, Inc

The Challenge

- The type and number of tobacco/nicotine products has and continues to expand.
- Tobacco control would benefit from estimates of the impact of new policies and products **prior** to implementation.

Virginia Tech's Tobacco Control Mission

- Develop a method to prospectively examine potential policies and forecast the effects on tobacco purchases.
- Employ our 30 years of experience using behavioral economics to study tobacco products. *

*Bickel, DeGrandpre, Hughes, & Higgins, (1991) JEAB

Today's goal

- Describe a challenge of tobacco regulatory science
- How an experimental method may address that challenge
- Illustrate the method
- Review curated selection of our research

The Experimental Tobacco Marketplace (ETM)

Experimental Tobacco Marketplace



Cigarette

Dip

E-Liquid

Gum

Lozenge

Nicotine Pouch

Snus

Items 1-16 Displayed



Eagle 20 Menthol Silver 100s

1 Eagle 20 Menthol Silver 100 cigarette.
Price is for 1 cigarette.

\$0.25

Qty

Add To Cart



Eagle 20 Red 100s

1 Eagle 20 Red 100 cigarette.
This price is for 1 cigarette.
Flavor category: Tobacco

\$0.25

Qty

Add To Cart



Bright Leaf E-Liquid

1 mL bottle of VaporHQ Bright Leaf E-Liquid.
Flavor category: Tobacco
Nicotine: 24 mg/mL nicotine

\$0.25

Qty

Add To Cart



American Red E-Liquid

1 mL bottle of VaporHQ American Red E-Liquid.
Flavor category: Tobacco
Nicotine: 24 mg/mL nicotine

\$0.25

Qty

Add To Cart



Camel Snus Mellow

1 pouch of Camel Snus Mellow. A spitless tobacco product that the user places in upper lip.
Flavor category: Tobacco

\$0.20

Qty

Add To Cart



Camel Snus Mint

1 pouch of Camel Snus Mint. A spitless tobacco product that the user places in upper lip.
Flavor category: Menthol

\$0.20

Qty

Add To Cart



Grizzly Mint Dip Pouches

1 pouch of Grizzly Mint flavor. A spitless tobacco product that the user holds between the lip and the gums.
Flavor category: Menthol
Strength: Regular

\$0.20

Qty

Add To Cart



Grizzly Straight Dip Pouches

1 pouch of Grizzly Straight flavor. A spitless tobacco product that the user holds between the lip and the gums.
Flavor category: Spice
Strength: Regular

\$0.20

Qty

Add To Cart



Grizzly Snuff Dip Pouches

1 pouch of Grizzly Snuff flavor. A spitless tobacco product that the user holds between the lip and the gums.
Flavor category: Tobacco
Strength: Regular

\$0.20

Qty

Add To Cart



Nicorette Gum Cinnamon

1 piece of Nicorette Gum Cinnamon flavor.
Flavor category: Spice
Nicotine: 4 mg nicotine

\$0.80

Qty

Add To Cart



Nicorette Gum Mint

1 piece of Nicorette Gum Mint flavor.
Flavor category: Menthol
Nicotine: 4 mg nicotine

\$0.80

Qty

Add To Cart



Nicorette Gum Original

1 piece of Nicorette Gum Original flavor.
Flavor category: Unflavored
Nicotine: 4 mg nicotine

\$0.80

Qty

Add To Cart



Nicorette Lozenge Mint

1 piece of Nicorette Lozenge Mint flavor.
Flavor category: Menthol
Nicotine: 4 mg nicotine

\$0.60

Qty

Add To Cart



On! Nicotine Pouch Original

1 piece of On! Nicotine Pouch Original flavor. A spitless smoke-free product that the user places under the upper lip, near the corner of the mouth.
Flavor category: Menthol
Nicotine: 4 mg nicotine

\$0.30

Qty

Add To Cart



On! Nicotine Pouch Cinnamon

1 piece of On! Nicotine Pouch Cinnamon flavor. A spitless smoke-free product that the user places under the upper lip, near the corner of the mouth.
Flavor category: Spice
Nicotine: 4 mg nicotine

\$0.30

Qty

Add To Cart



On! Nicotine Pouch Mint

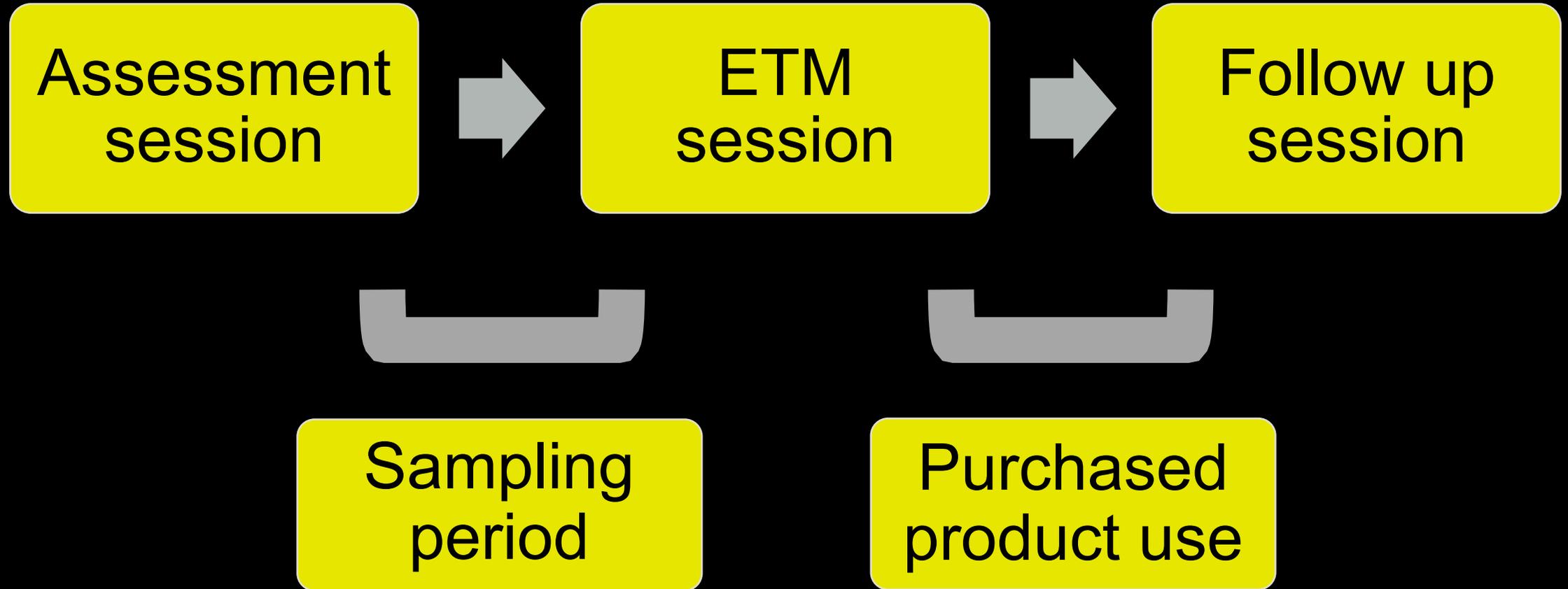
1 piece of On! Nicotine Pouch Mint flavor. A spitless smoke-free product that the user places under the upper lip, near the corner of the mouth.
Flavor category: Menthol
Nicotine: 4 mg nicotine

\$0.30

Qty

Add To Cart

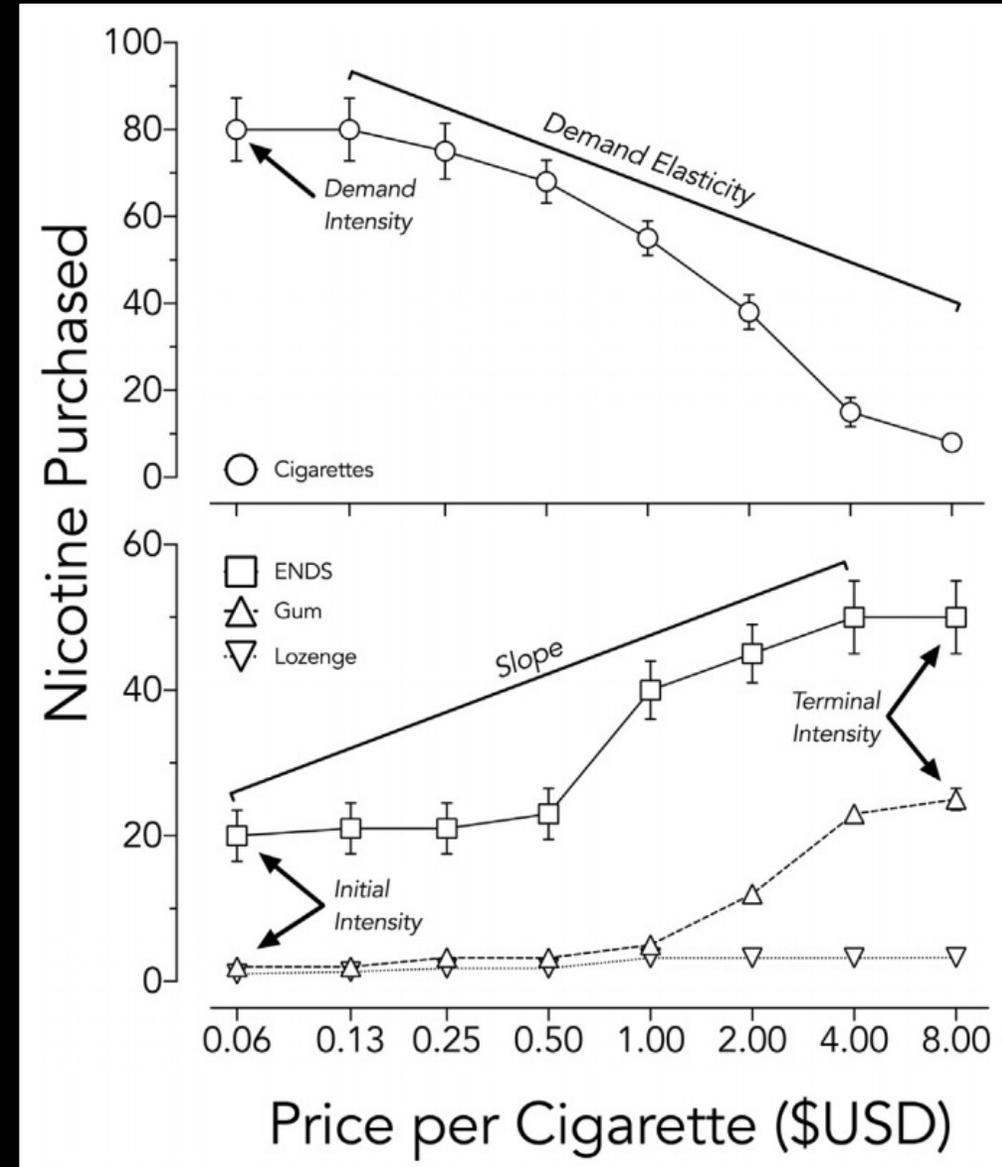
Experimental Tobacco Marketplace



Method

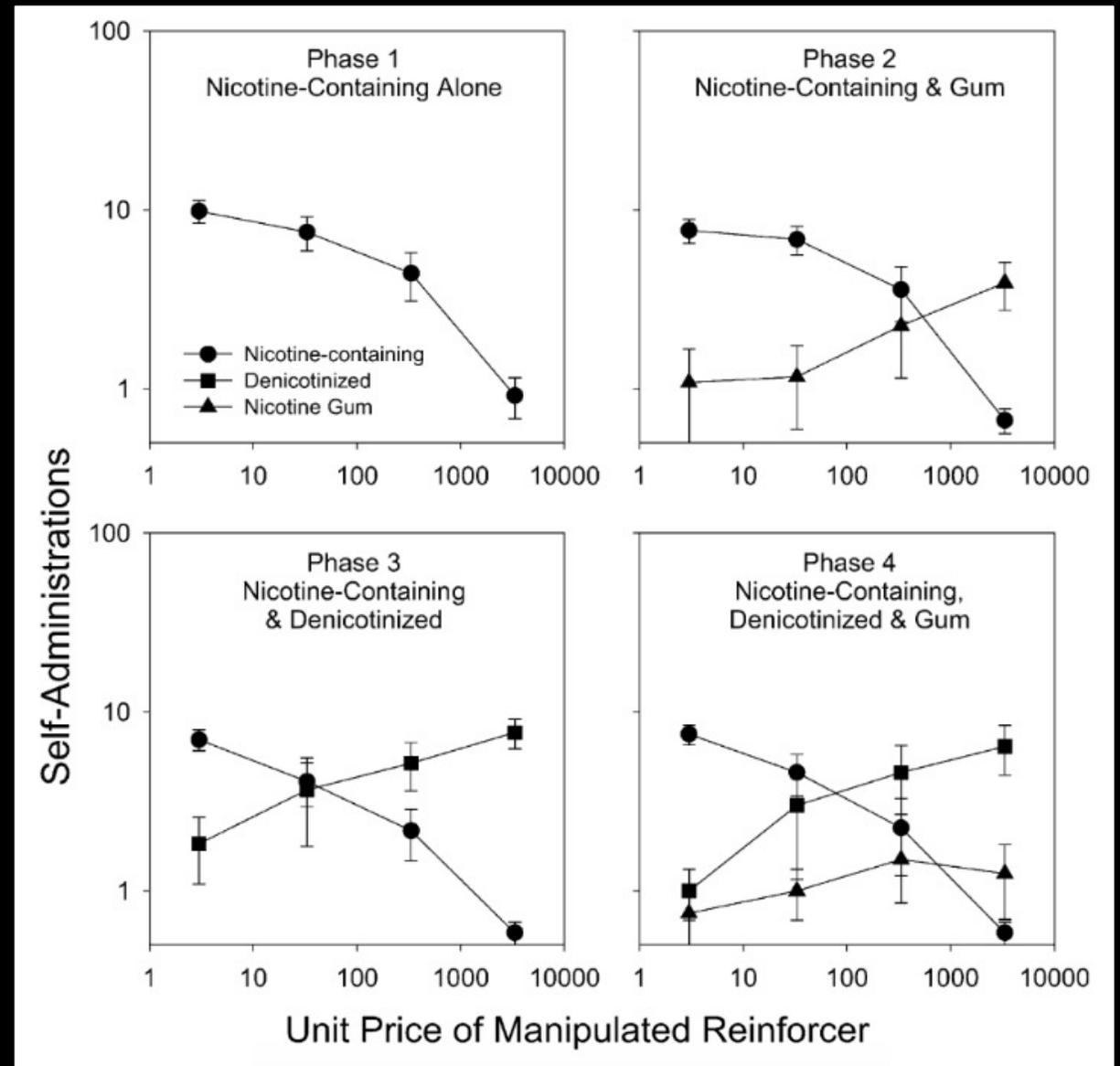
Key Measures

- Demand intensity
- Demand elasticity
- Substitution

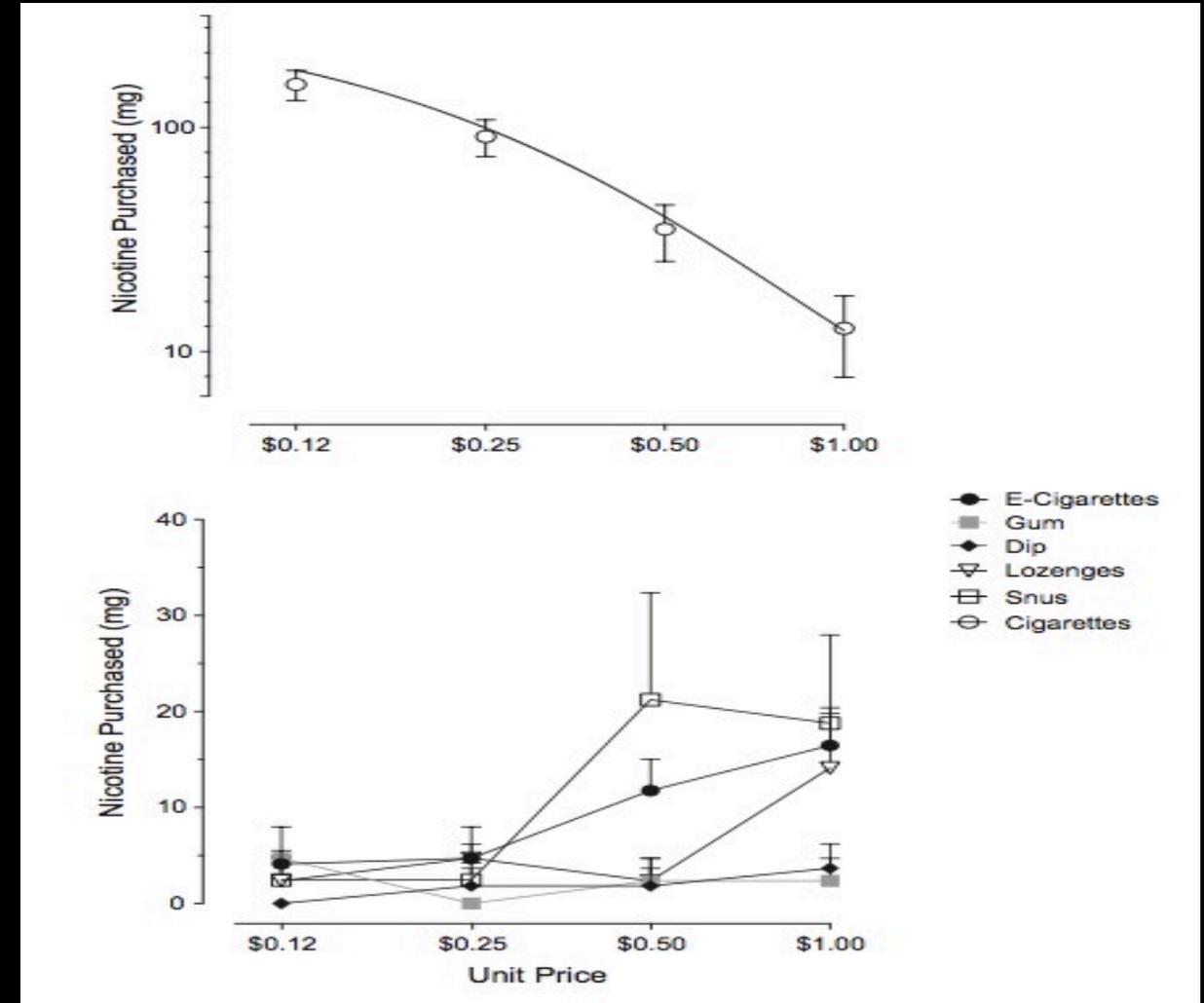
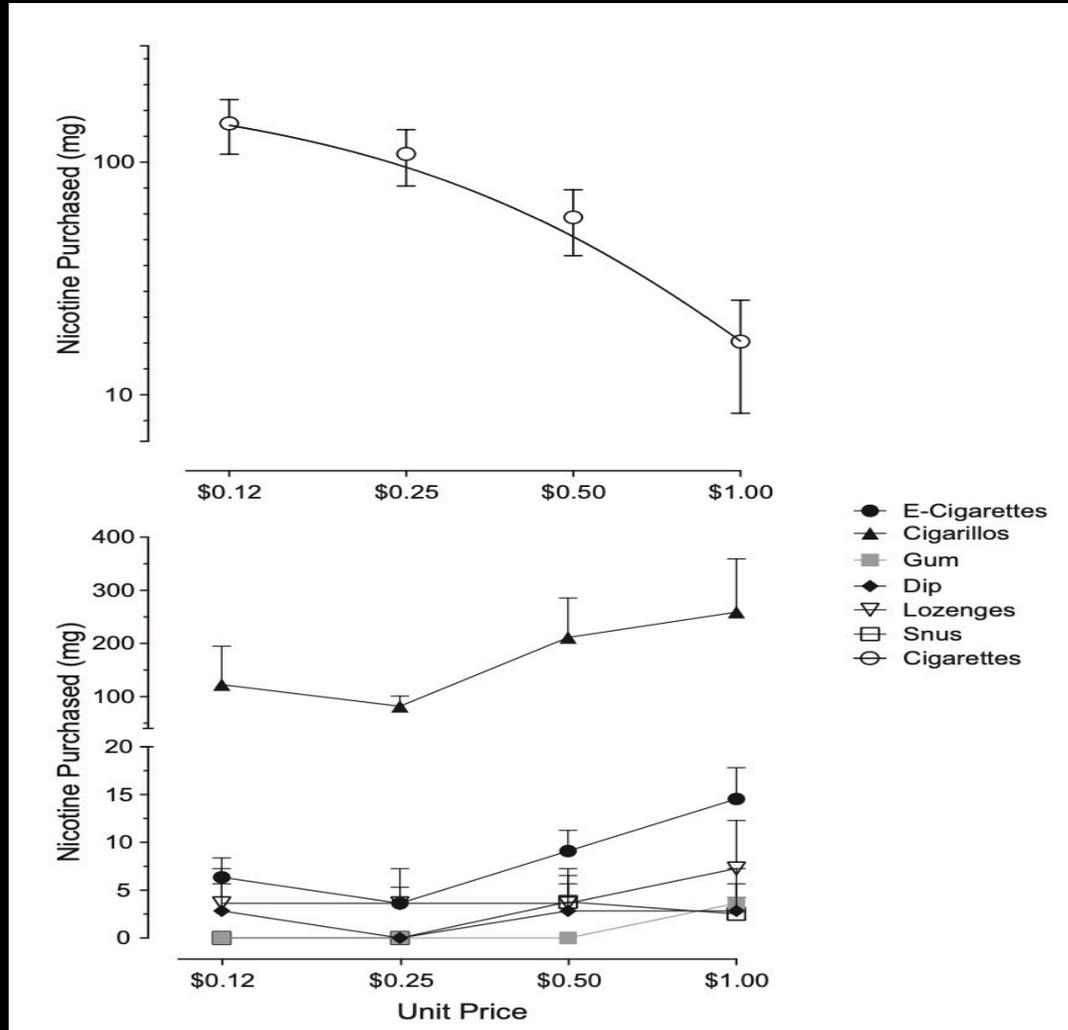


Why an Experimental Tobacco Marketplace?

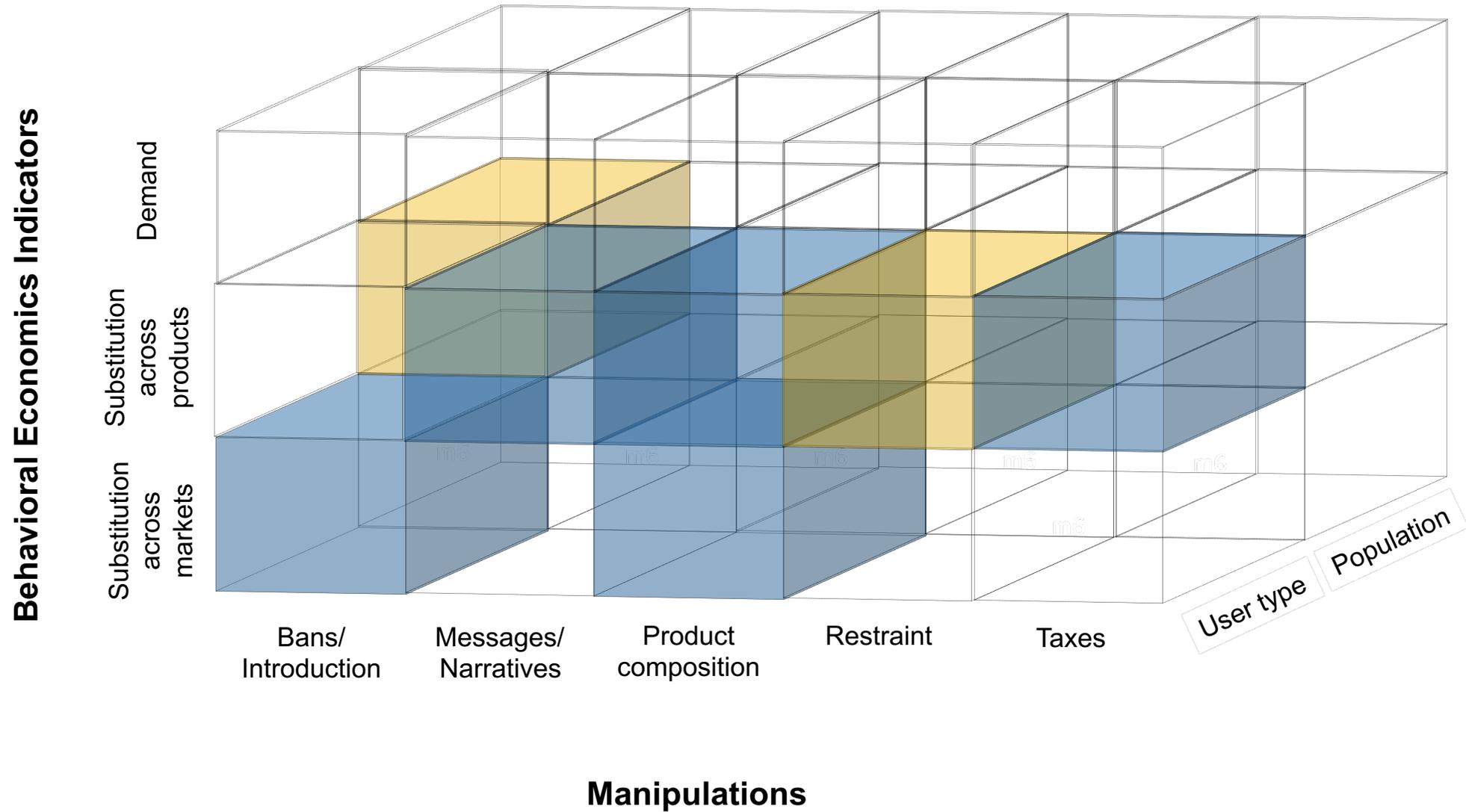
Type and number of products in a marketplace alters demand elasticity and substitution



Why an Experimental Tobacco Marketplace?



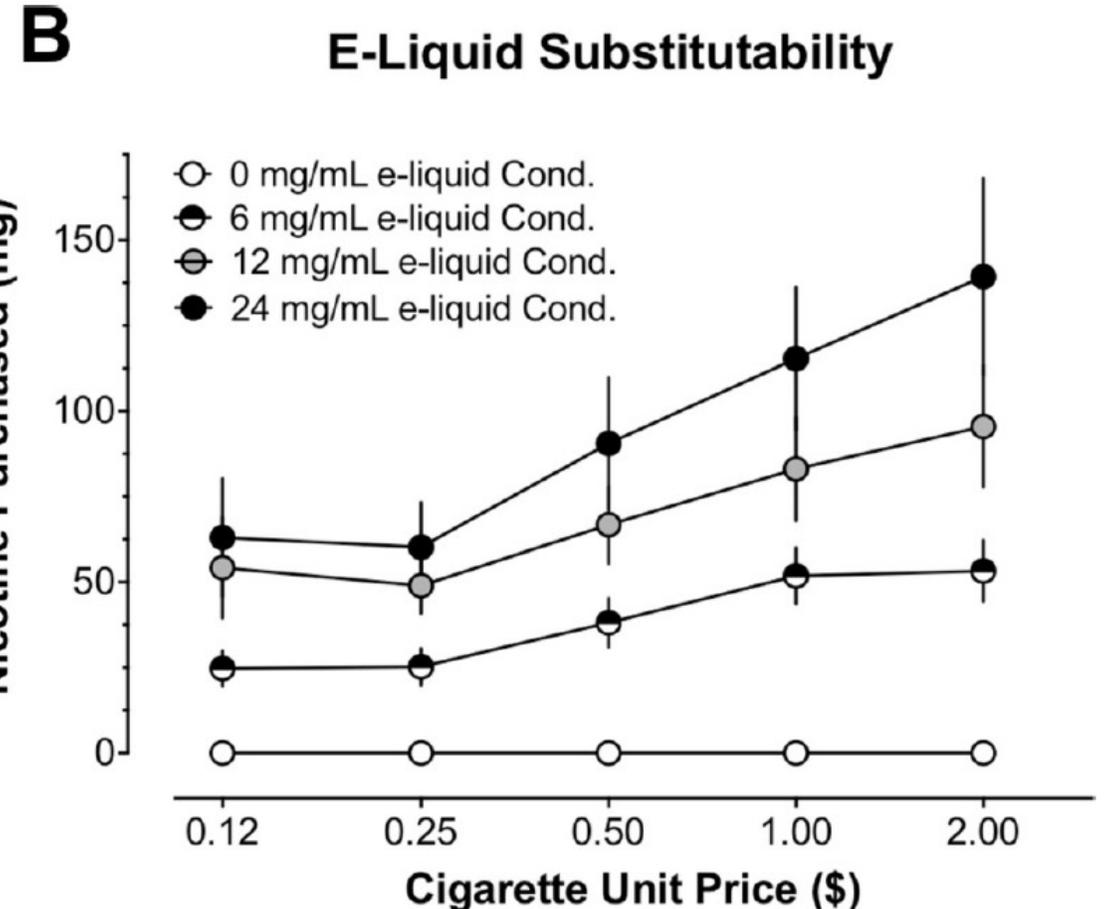
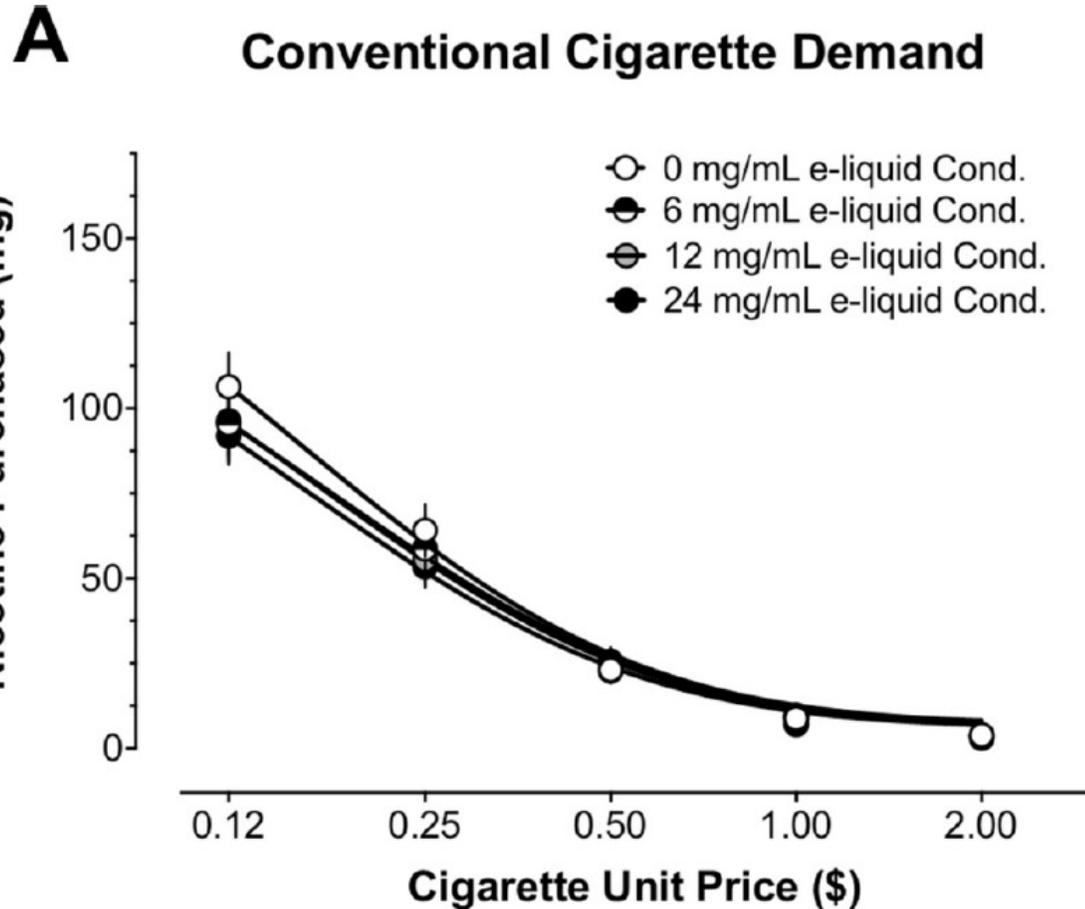
ETM: Parameter Space



ETM 2 : E-cigs Nicotine Strengths on Substitution

- 25 smokers (within-subject)
- Different e-Liquid strengths; 0, 6, 12, & 24mg/mL
- Purchased across 5 prices of conventional cigarettes

ETM 2: key findings



ETM 2: Conclusion

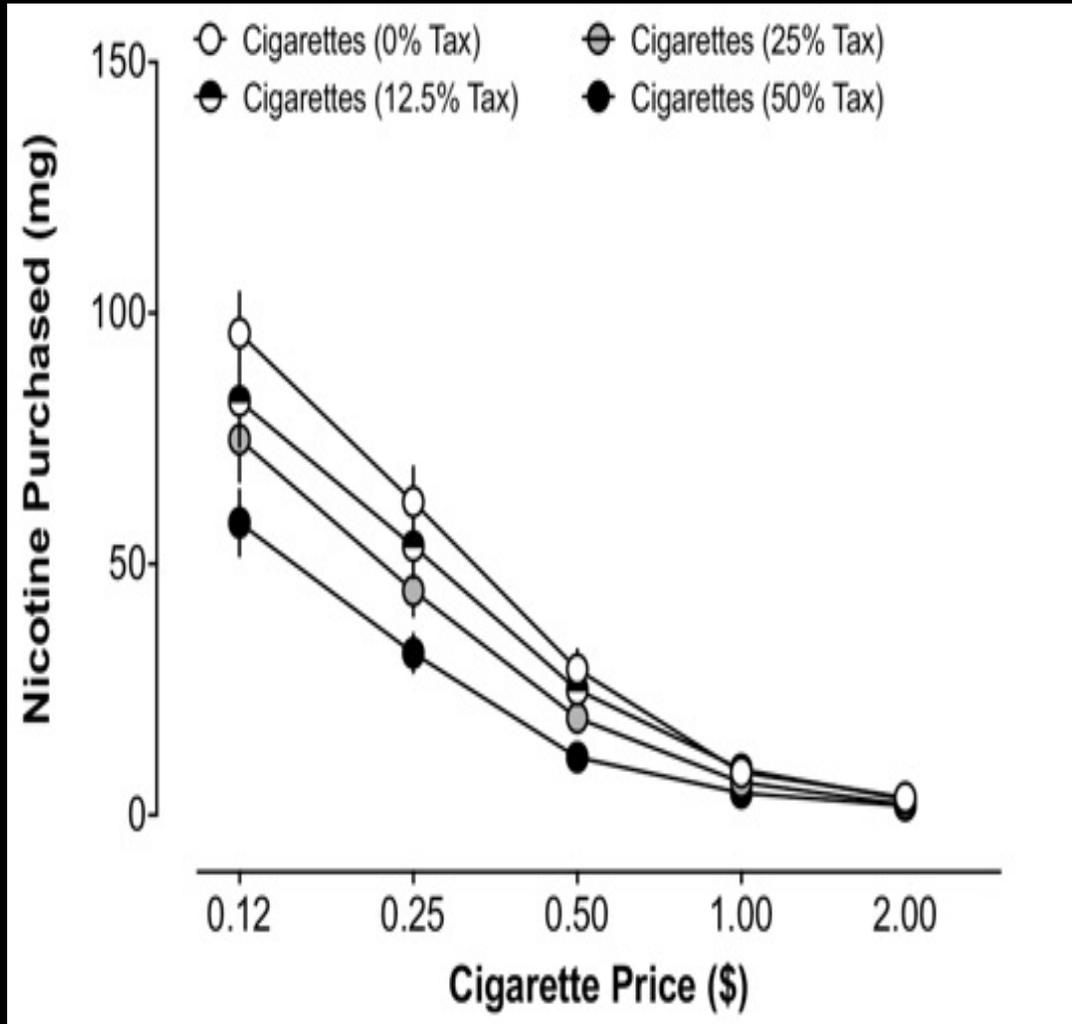
- Cigarette purchasing decreased as a function of cigarette price
- E-Liquid purchasing increased as a function of both cigarette price and e-liquid strength
- The 24 mg/mL e-liquid appears to function as the better substitute

ETM 3: Taxes and Subsidies

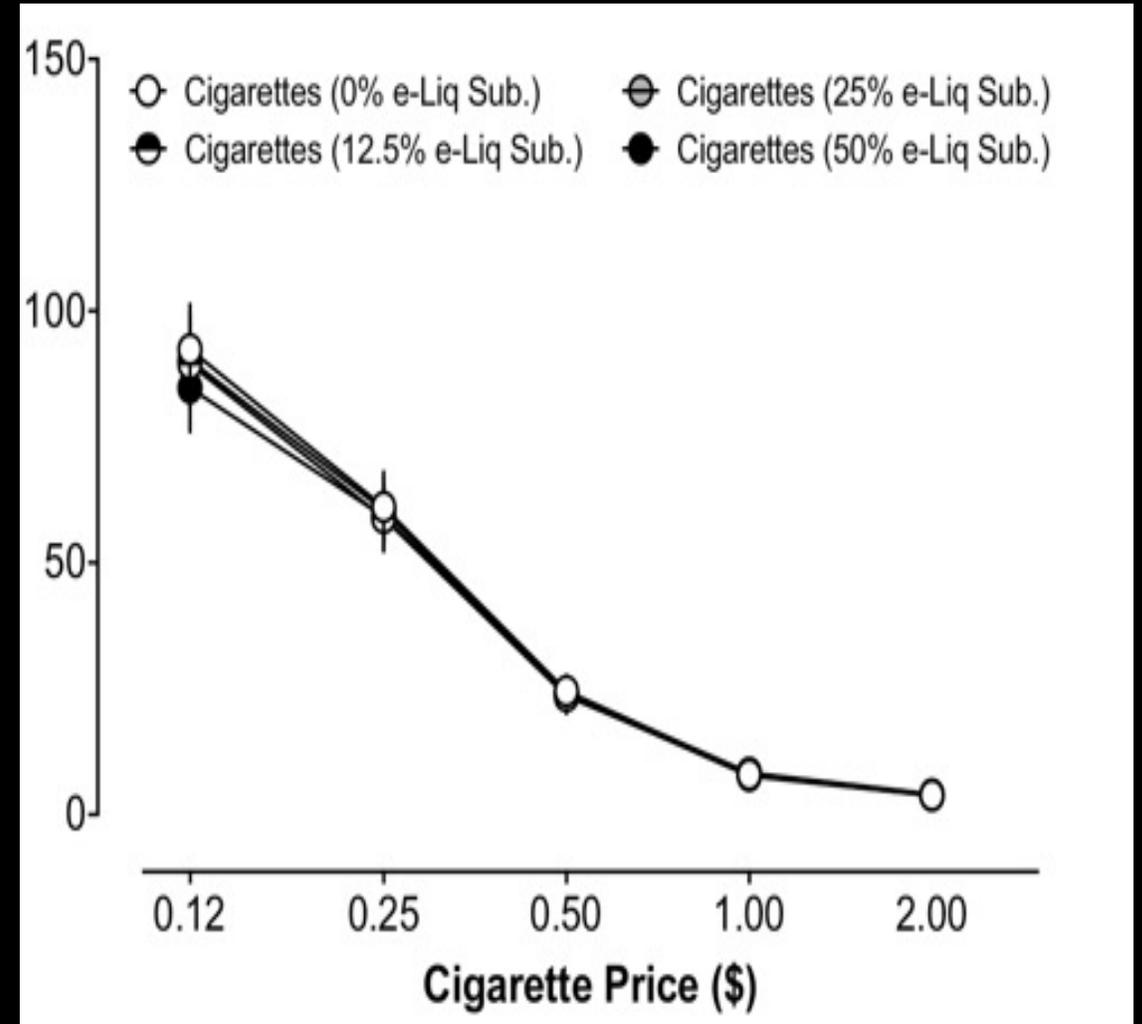
- Policies that could promote substitutability
 1. Tax conventional cigarettes (0%, 12.5%, 25%, & 50%)
 2. Subsidize e-Liquid (i.e., 0% ,12.5%, 25%, & 50%)

ETM 3: Taxes and Subsidies

Taxes

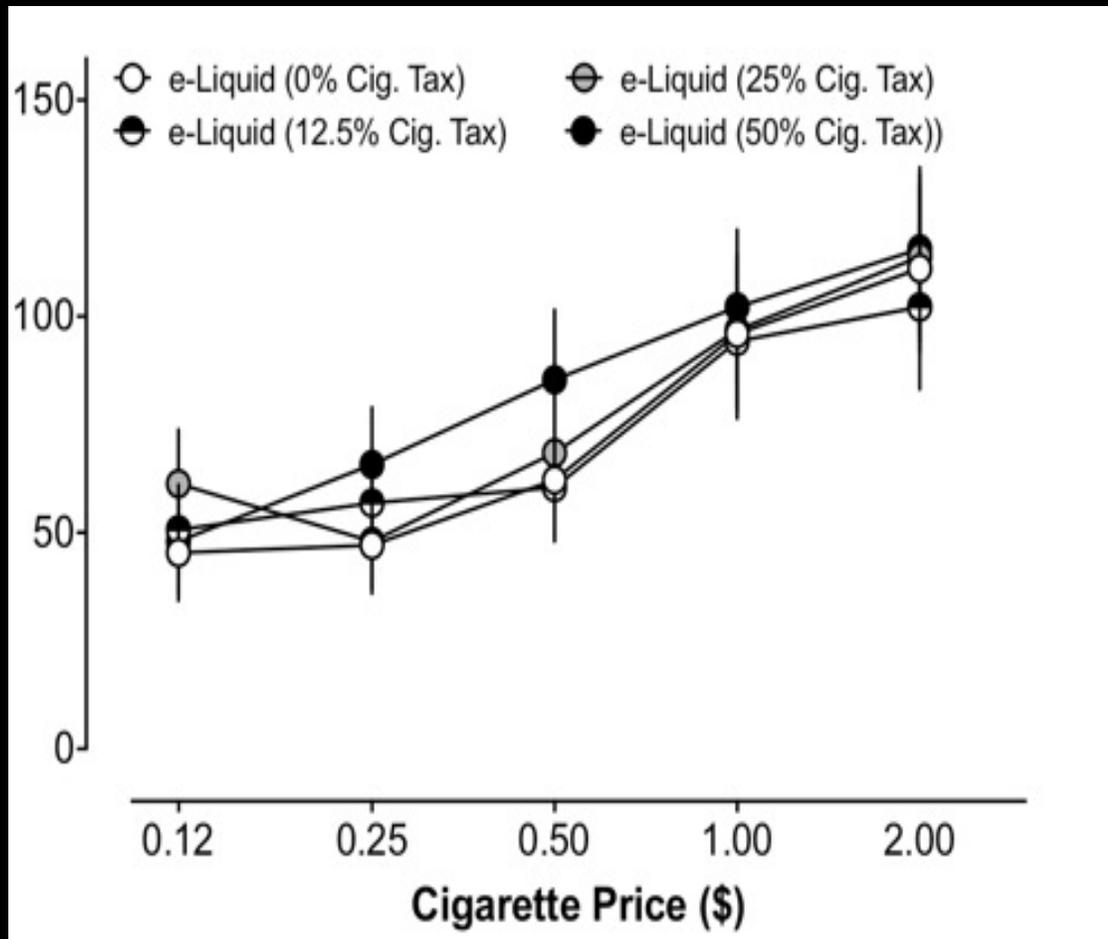


Subsidy

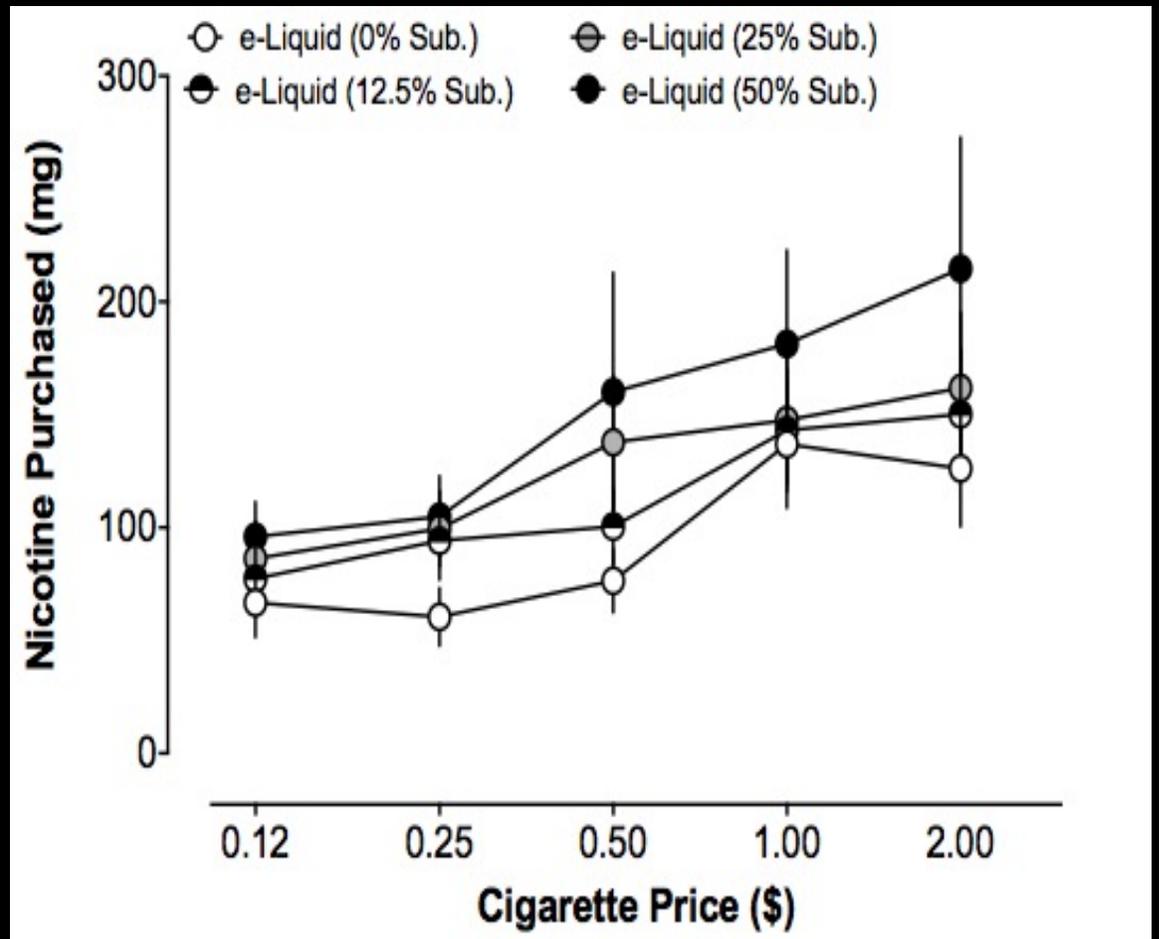


ETM 3: Taxes and Subsidies

Taxes

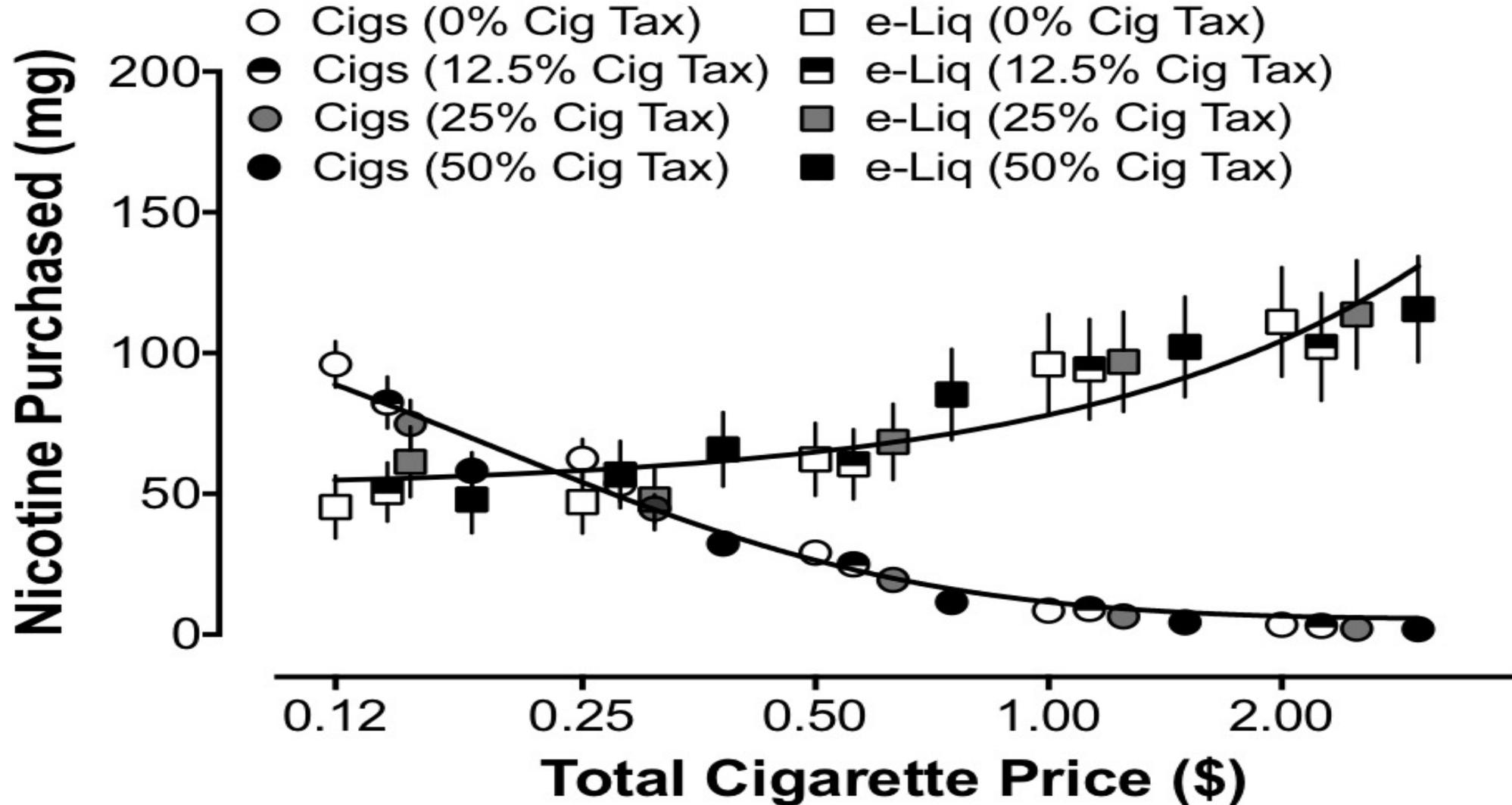


Subsidy



Experiment 2: Results

ETM Purchasing: Cigarette Taxation



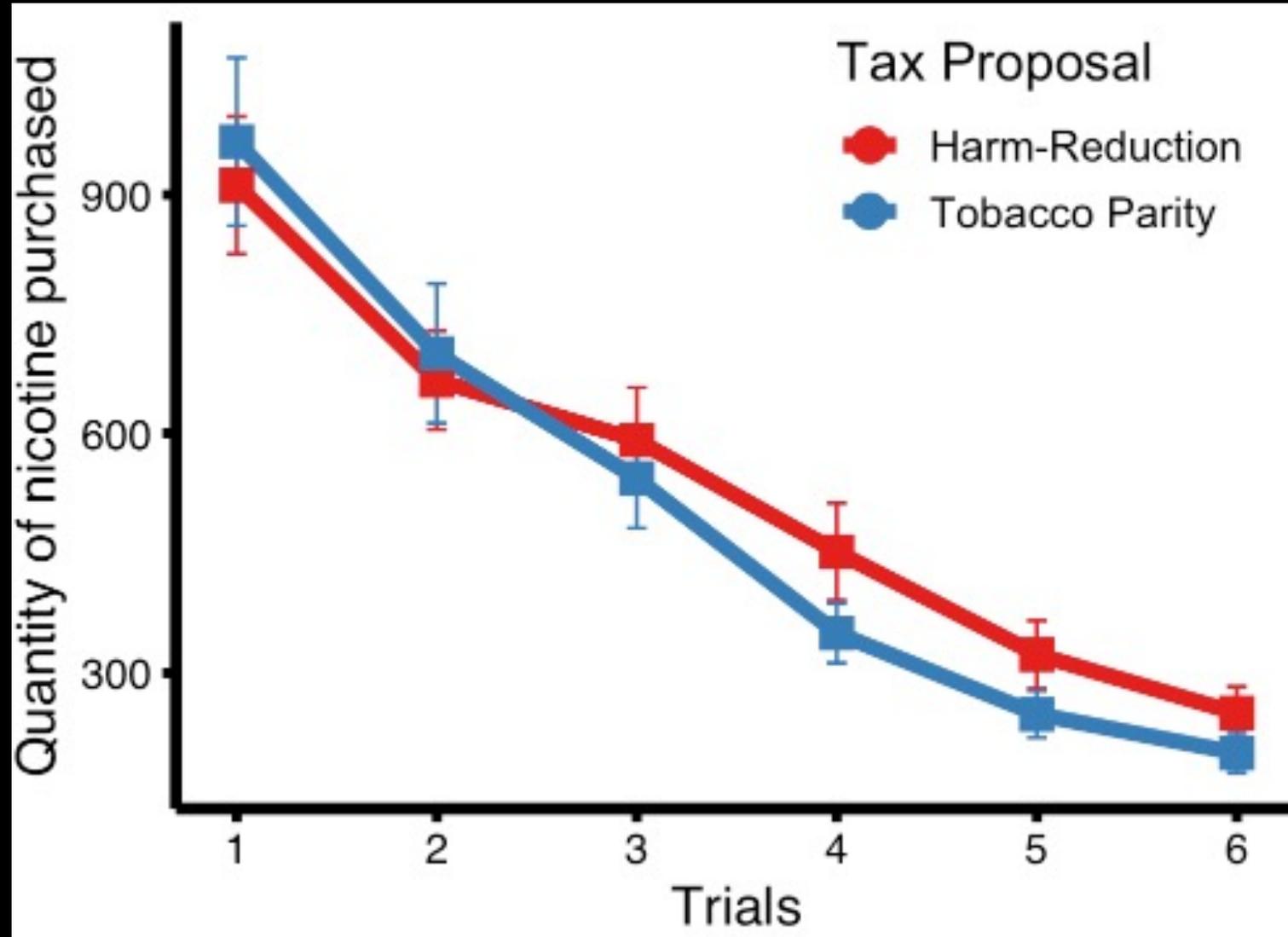
ETM 3: Taxes and Subsidies

- Cigarette price decreased cigarette and increased E-liquid purchasing
- Cigarette Taxes decreased cigarette purchasing marginally increased E-liquid purchasing
- E-liquid subsidy had no effect on cigarette purchasing and increased E-liquid purchasing at the 50% subsidy

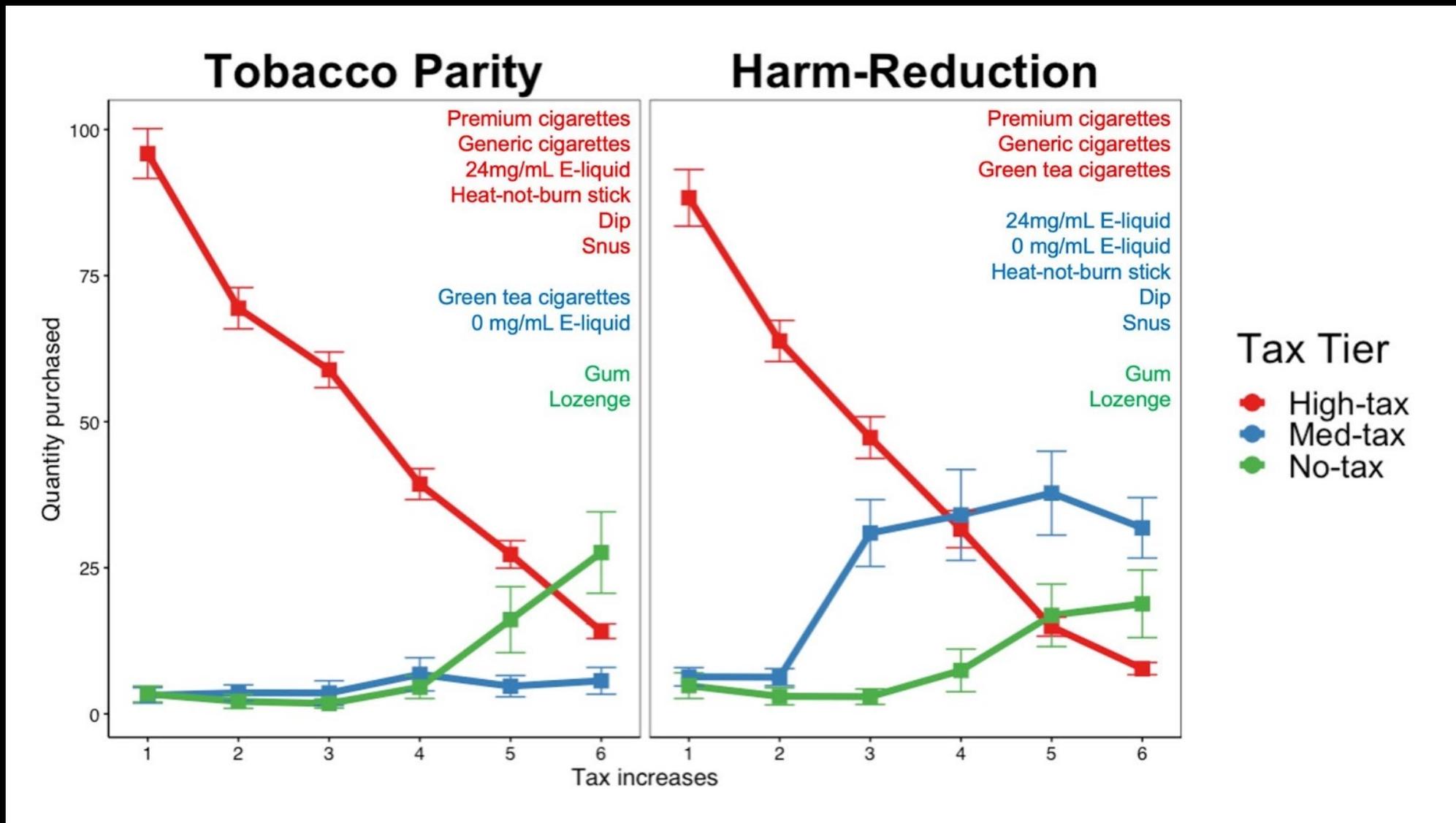
ETM 4: Integrated tax policy

- Taxes are effective in decreasing cigarette smoking
- Taxes across states are heterogeneous
- Several have suggested integrated tax policies
 - Tobacco Parity Tax (WHO, Campaign for Tobacco-Free kids)
 - Harm Reduction Tax (Chaloupka & Warner)

ETM 4: Integrated tax policy



ETM 4: Integrated tax policy

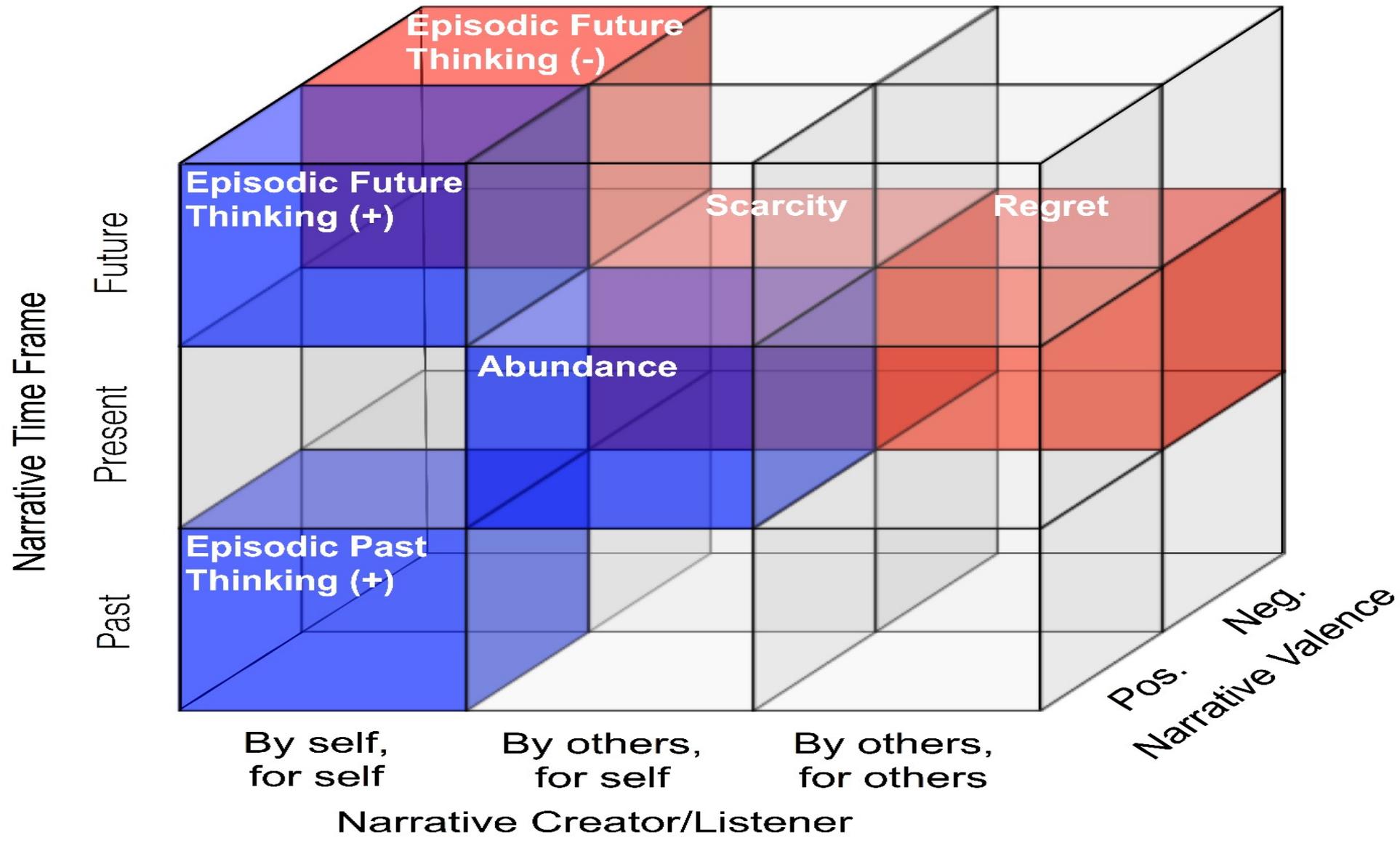


Freitas-Lemos, R.; Keith, D. R.; Tegge, A. N., Stein, J. S., Cummings, K. M., Bickel, W. K.(2021) Estimating the impact of Tobacco-Parity and Harm-Reduction Tax Proposals using the Experimental Tobacco Marketplace. Journal of Environmental Research and Public Health

ETM 4: Conclusion

- Tobacco-Parity
 - decreased purchasing of all tobacco products
 - increased purchasing of medicinal nicotine
- Harm-Reduction
 - decreased purchasing of combustible products
 - resulted in greater purchases of ENDS and smokeless tobacco.
- Total nicotine(mg) purchased was not significantly different between proposals
 - Higher taxes yielded lower demand

ETM 5: Narratives



Methods

- Narratives

- Positive

- Jesse, your best friend ... smokes about as many cigarettes as you do in a day. She called to tell you that she has not been feeling very well. Jesse tells you she went to the doctor ... the doctor drew blood for some tests ... she received her results and it was only the flu and that she is feeling much better. She is extremely happy ...

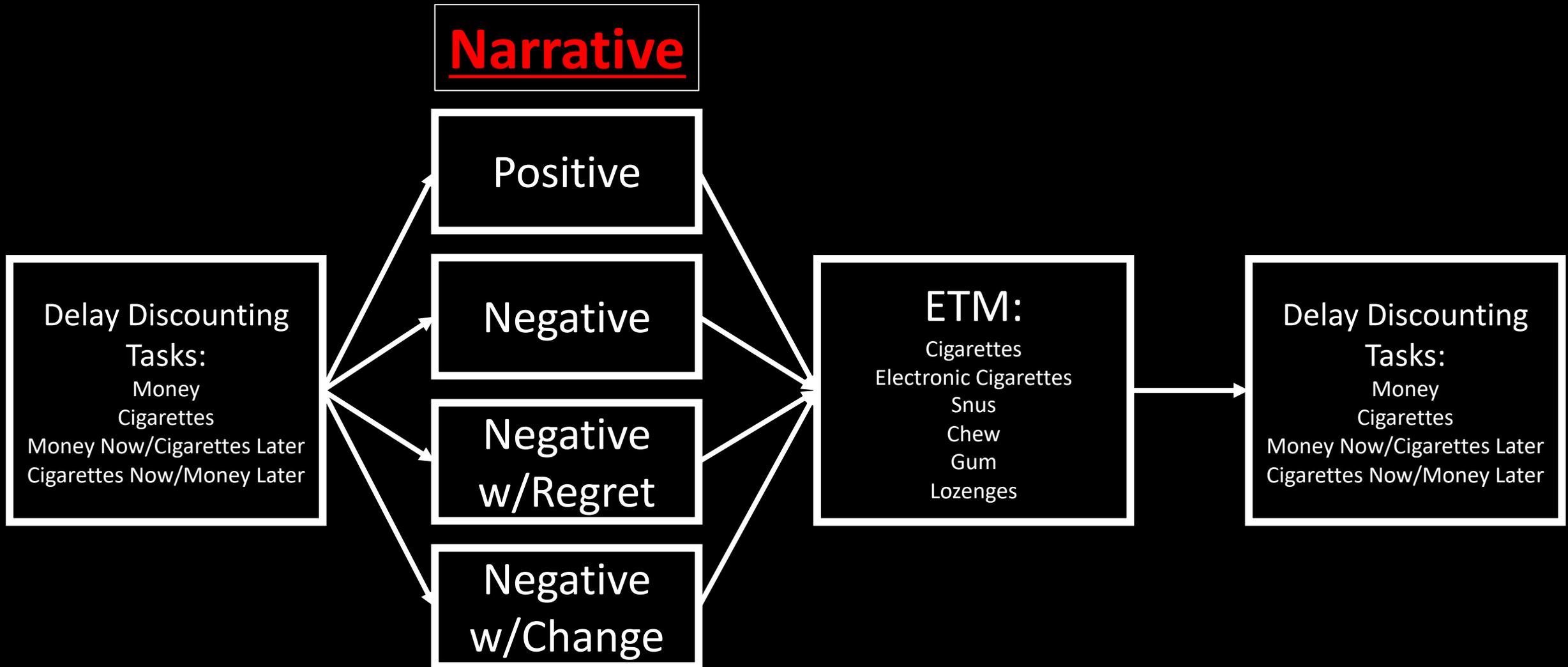
Methods

- Narratives cont'd

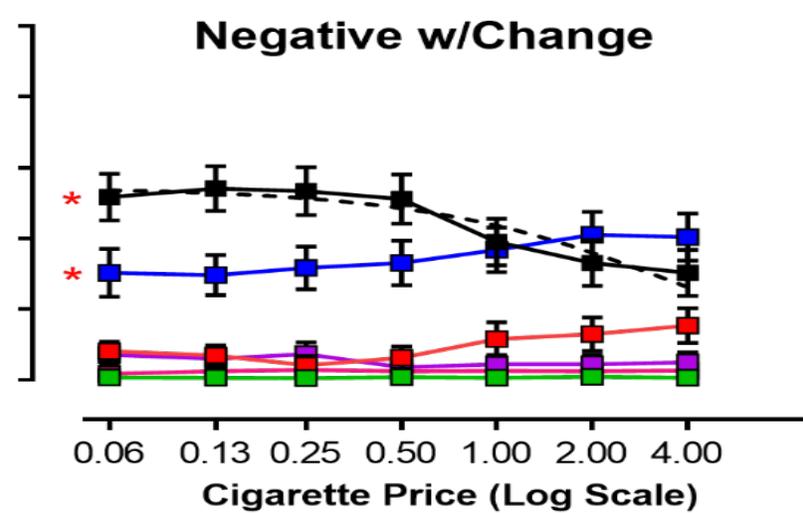
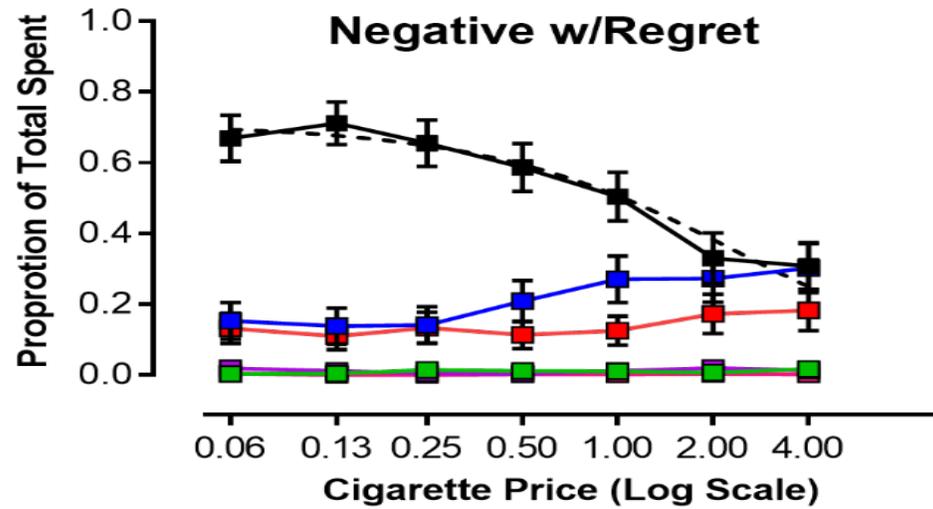
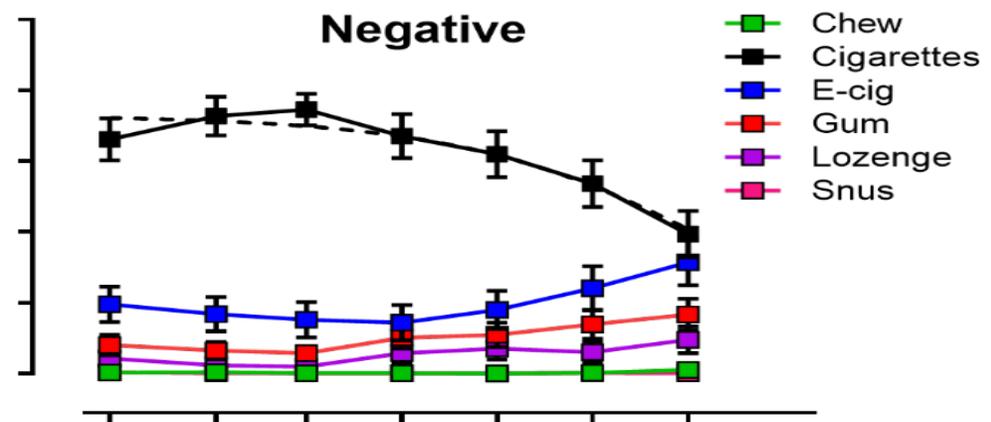
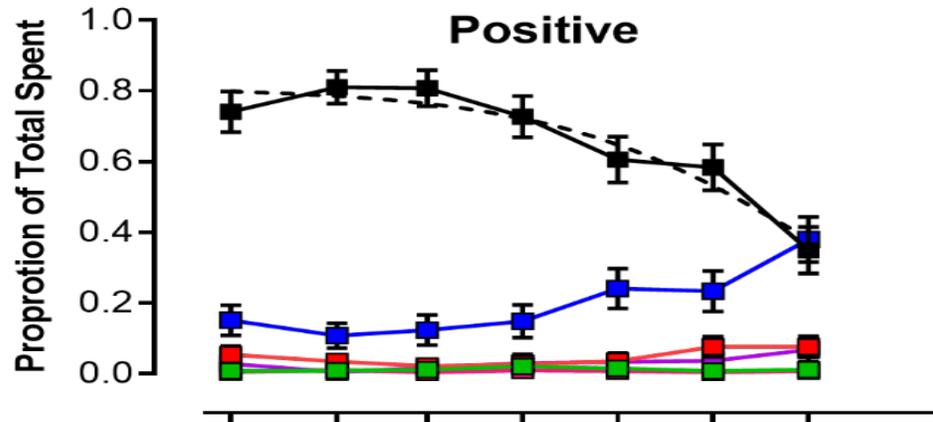
- Negative

- She tells you she received her results ... she has a high level of toxins in her blood as a result of cigarette smoking. Jesse now has to undergo expensive treatment and may face a lower life-expectancy and has a greater likelihood of having high blood pressure, heart attacks, or blood cancers.

Methods



ETM 5: Narratives



ETM 5: Narratives

- Narratives describing negative outcomes with regret or change were more effective in producing substitution
- Narratives can be used to alter the relative preference of conventional cigarettes and E-cigarettes.

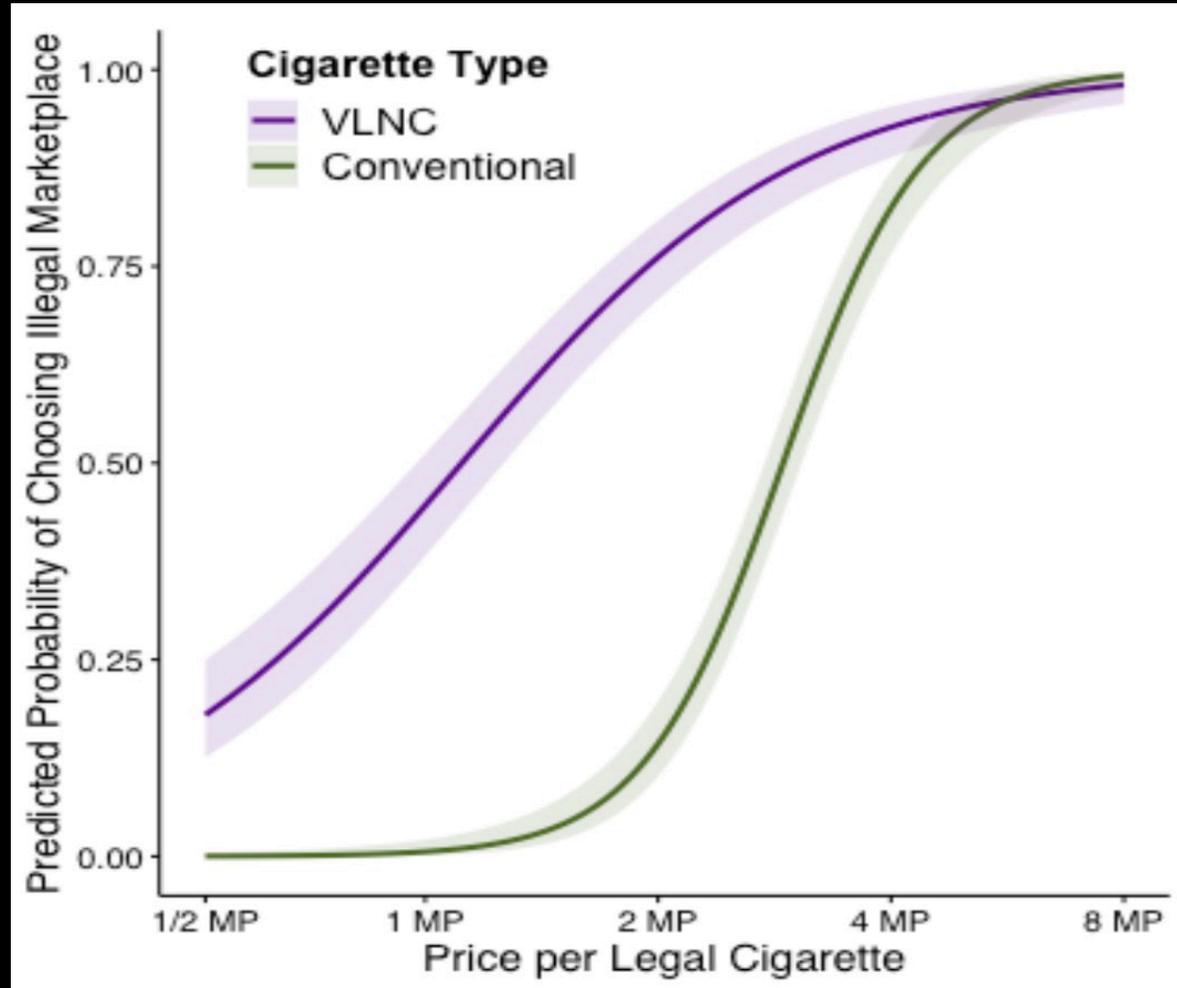
Illegal Experimental Tobacco Marketplace

- Illicit trade in tobacco products is ongoing
- Available via internet purchase
- Products may contain adulterants not found in commercial products
- The efficacy of mitigation strategies is unknown
- Absence of empirical models

ETM 6: Effects reduced nicotine standards on Illegal Purchases

- 52 online smokers (between subjects)
- Very low nicotine cigarette x control
- Marketplace preference across 5 price trials

ETM 6: Effects reduced nicotine standards on Illegal Purchases



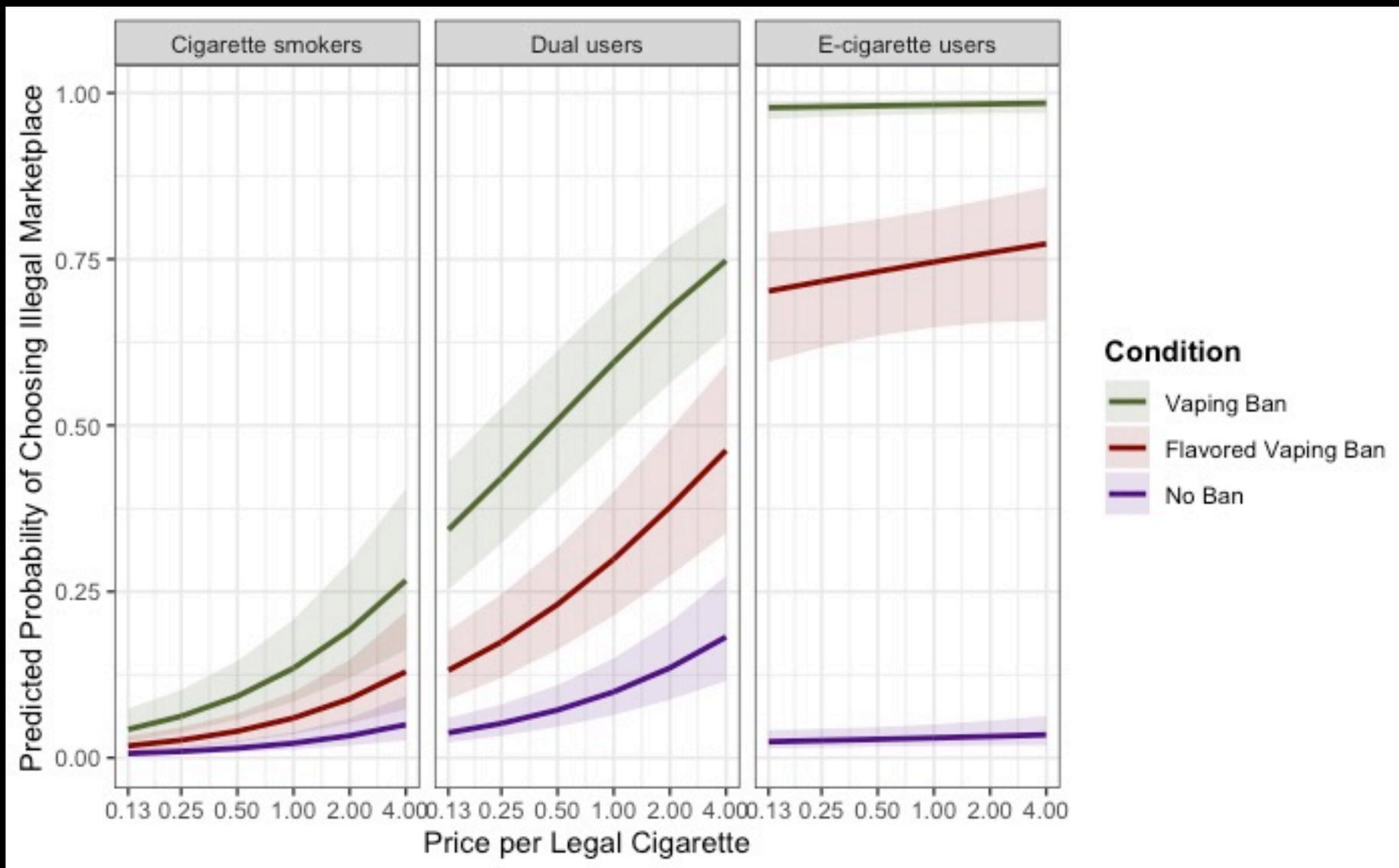
ETM 6: Effects reduced nicotine standards on Illegal Purchases

- Price and product standards can alter substitutability between legal and illegal marketplaces and products.

ETM 7: Effects of Vaping Bans on Illegal Purchases

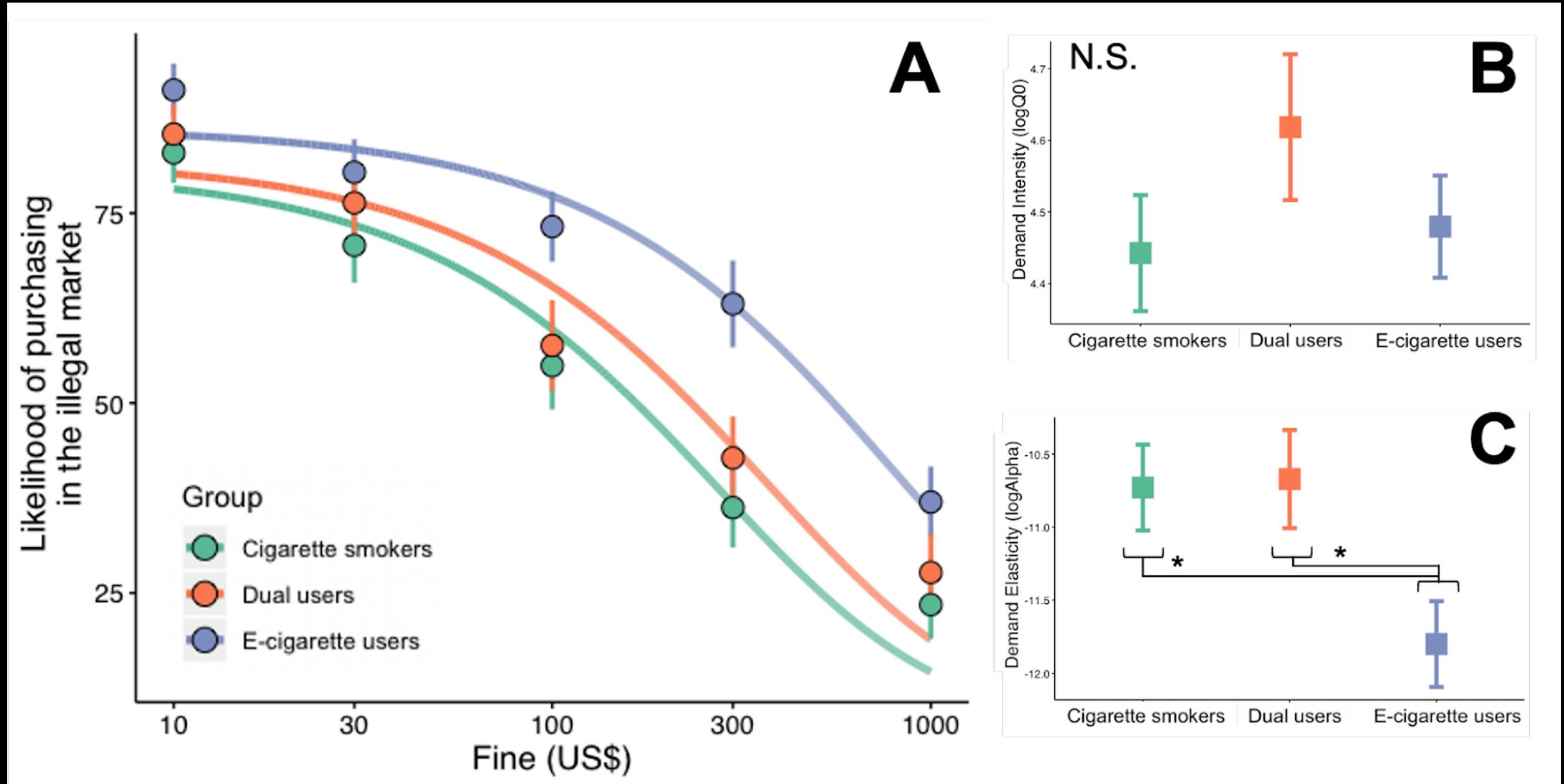
- 150 online smokers, e-cigarette users, and dual users (within-between subjects)
- No ban, vaping ban, and flavored vaping ban
- Monetary fines

ETM 7: Effects of Vaping Bans on Illegal Purchases



Freitas-Lemos, R., Stein, J. S., Tegge, A. N., Kaplan, B. A., Heckman, B. W., Cummings, K. M., & Bickel, W. K. (n.d.). The Illegal Experimental Tobacco Marketplace I: Effects of Vaping Product Bans. *Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco*. <https://doi.org/10.1093/ntr/ntab088>

ETM 7: Effects of Vaping Bans on Illegal Purchases



ETM 7: Effects of Vaping Bans on Illegal Purchases

- Bans increased illegal purchases
 - Exclusive e-cigarette smokers largest effect
- Increasing cigarette price increased illegal purchasing
 - Exclusive cigarette smokers and dual users
- Vaping ban > flavor ban
- Monetary fines suppressed illegal purchasing
 - Exclusive e-cigarette users being the most resistant

ETM 8: Vaping Bans on Illegal Purchases: comparison across countries

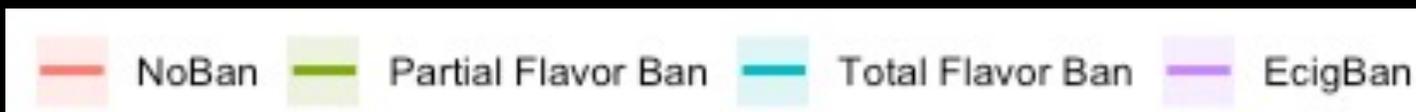
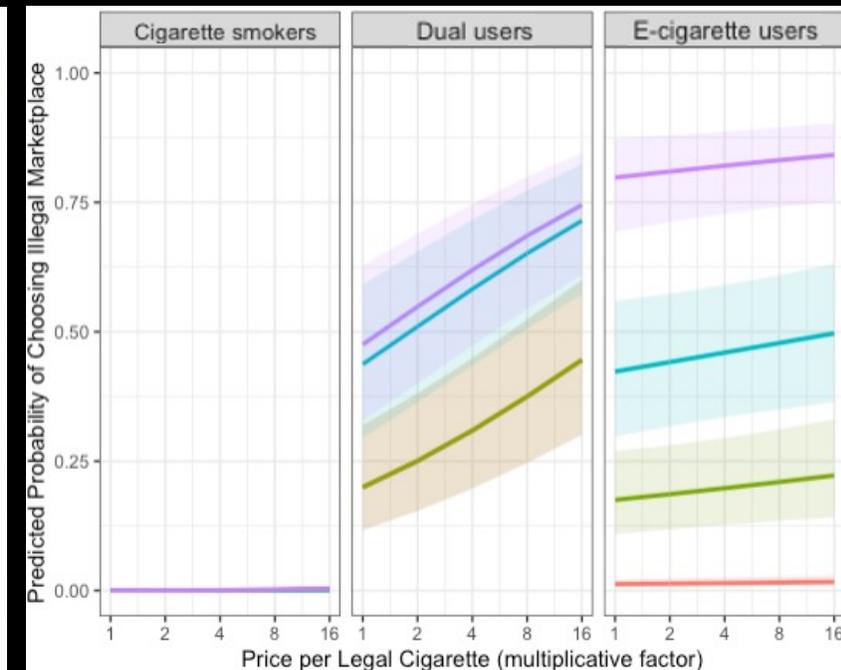
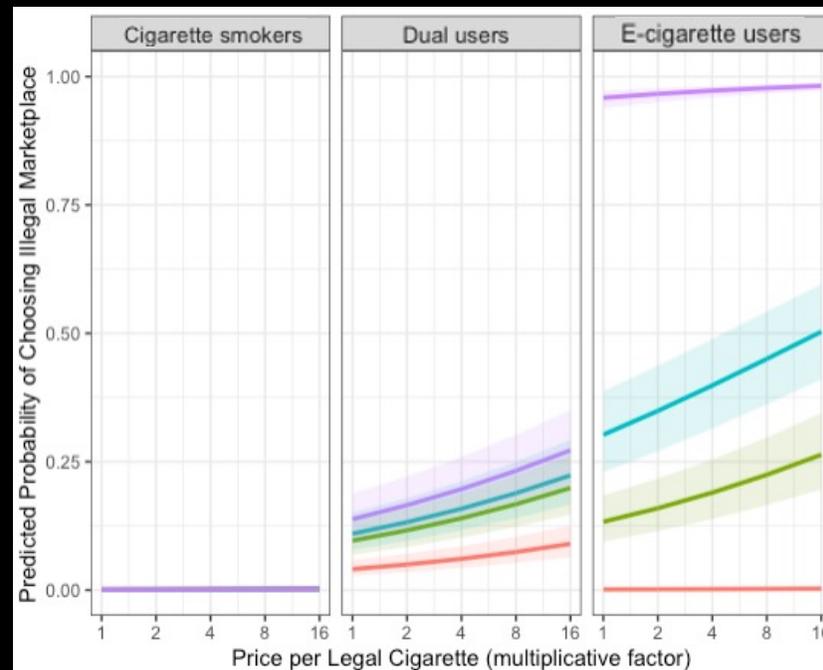
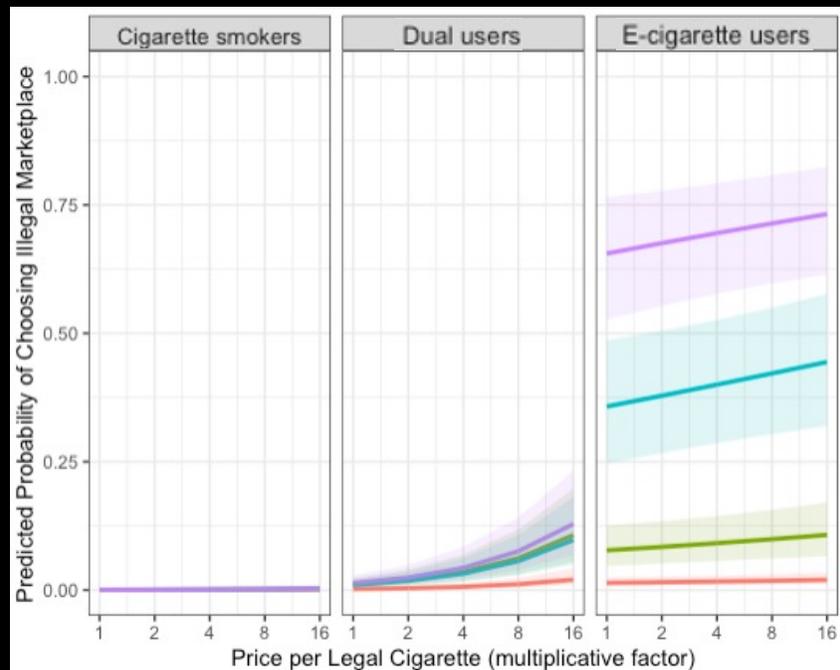
- 452 smokers, e-cigarette users, and dual users from the US, CA and EN (ITC project)
- No ban, vaping ban, total flavor vaping ban and partial flavor ban
- Marketplace preference

ETM 8: Vaping Bans on Illegal Purchases: comparison across countries

EN

US

CA



Freitas-Lemos, R., Stein, J. S., Tegge, A. N., Kaplan, B. A., Heckman, B. W., Cummings, K. M., & Bickel, W. K. (n.d.). The Illegal Experimental Tobacco Marketplace III: Effects of Vaping product Bans. Findings from the 2020 International Tobacco Control Project (manuscript in preparation)

The Experimental Tobacco Marketplace

- Nicotine dose
- Taxes & Subsidy
- Integrated Tax Proposals
- Narratives/Messaging
- VLNC standard on illegal purchase
- Flavor bans on Illegal purchase
- E-cig ban on Illegal purchase
- International comparison of bans on illegal purchase

Conclusion

- The ETM is a robust highly flexible methodology for the study of the interaction of diverse tobacco products.

Conclusions

- The ETM is a robust highly flexible methodology for the study of the interaction of diverse tobacco products.
 - Policy impact on tobacco purchasing
 - Can be adapted to address a variety of questions
 - Assesses generality of policy across different countries
 - Tool for tobacco control and regulatory science

Thanks

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