

An Experimental Model of the Tobacco Marketplace

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Funded by the US
National Cancer Institute
(P01 CA200512)



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Disclosure

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

Background

- Tobacco control would benefit from estimates of the impact of new policies and products.
- No current method can adequately estimate the effects of a new regulation or tobacco product on the patterns of consumption and substitution.

Purpose

Develop a new **experimental** method to:

- Examine the dynamic tobacco marketplace
- Forecast the effects of new products and policies

Experimental Tobacco Marketplace



Tobacco Marketplace

Catalog /

Your Cart

Empty

\$25.00 Remaining

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
1

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
1

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
1

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
1

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
1

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
1

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
1

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
1

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
1

Add To Cart



Nicorette Gum Cinnamon

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

\$0.80

Qty
1

Add To Cart



Nicorette Gum Mint

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

\$0.80

Qty
1

Add To Cart



Nicorette Gum Original

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

\$0.80

Qty
1

Add To Cart



Nicorette Lozenge Mint

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

\$0.60

Qty
1

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: mg nicotine

\$0.30

Qty
1

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
1

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

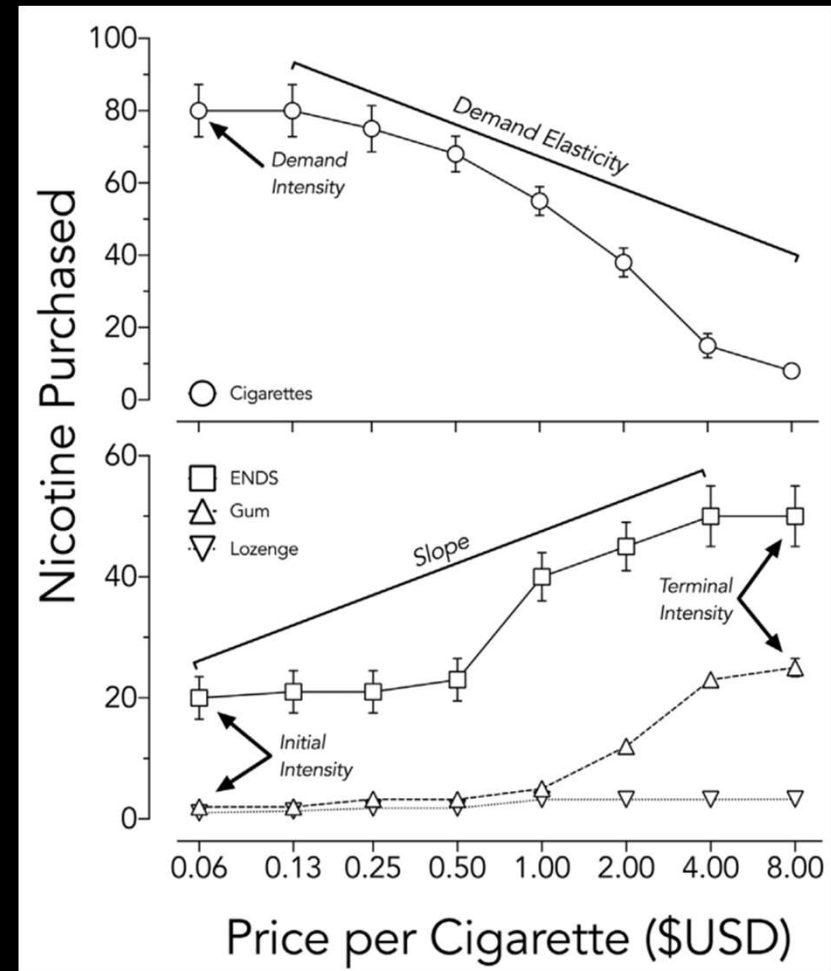
Qty
1

Add To Cart

Method

Key Measures

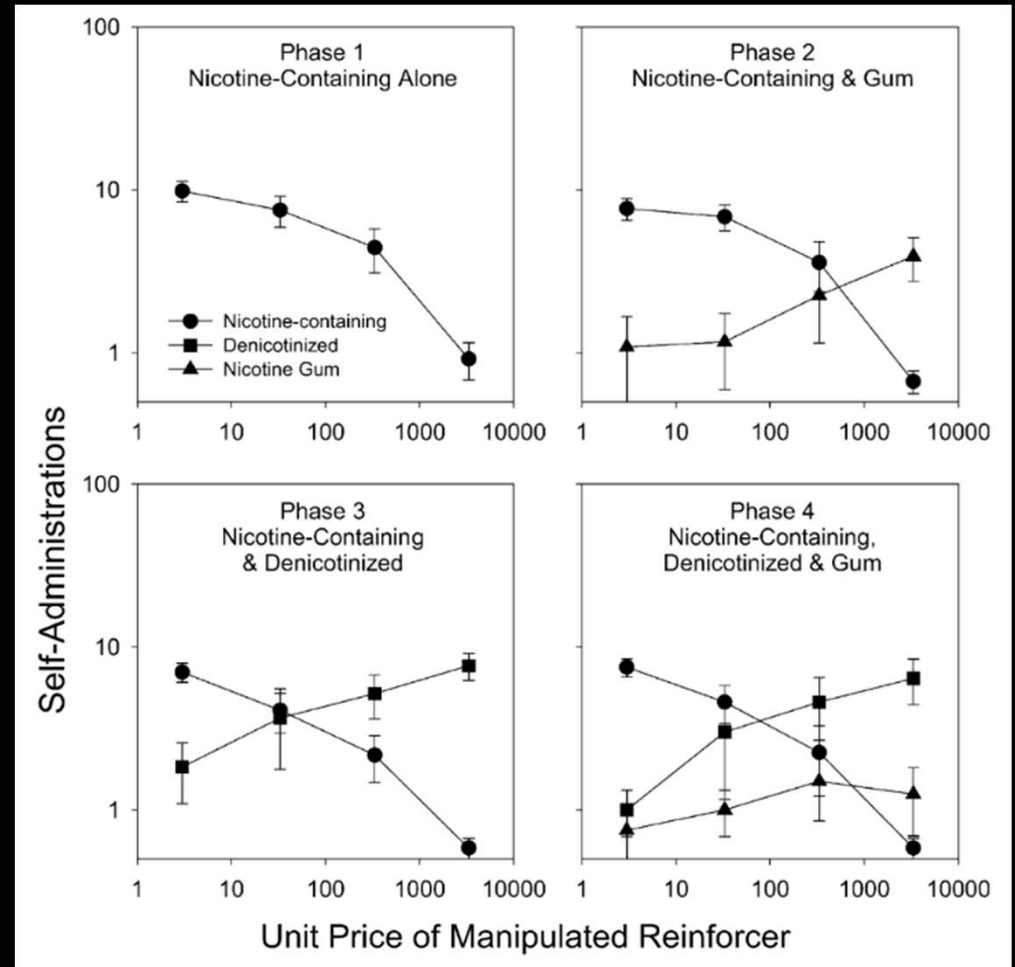
- Demand intensity
- Demand elasticity
- Substitution



Bickel, W. K., Pope, D. A., Kaplan, B. A., DeHart, W. B., Koffarnus, M. N., & Stein, J. S. (2018). Electronic cigarette substitution in the experimental tobacco marketplace: A review. *Preventive Medicine*, 117, 98–106.

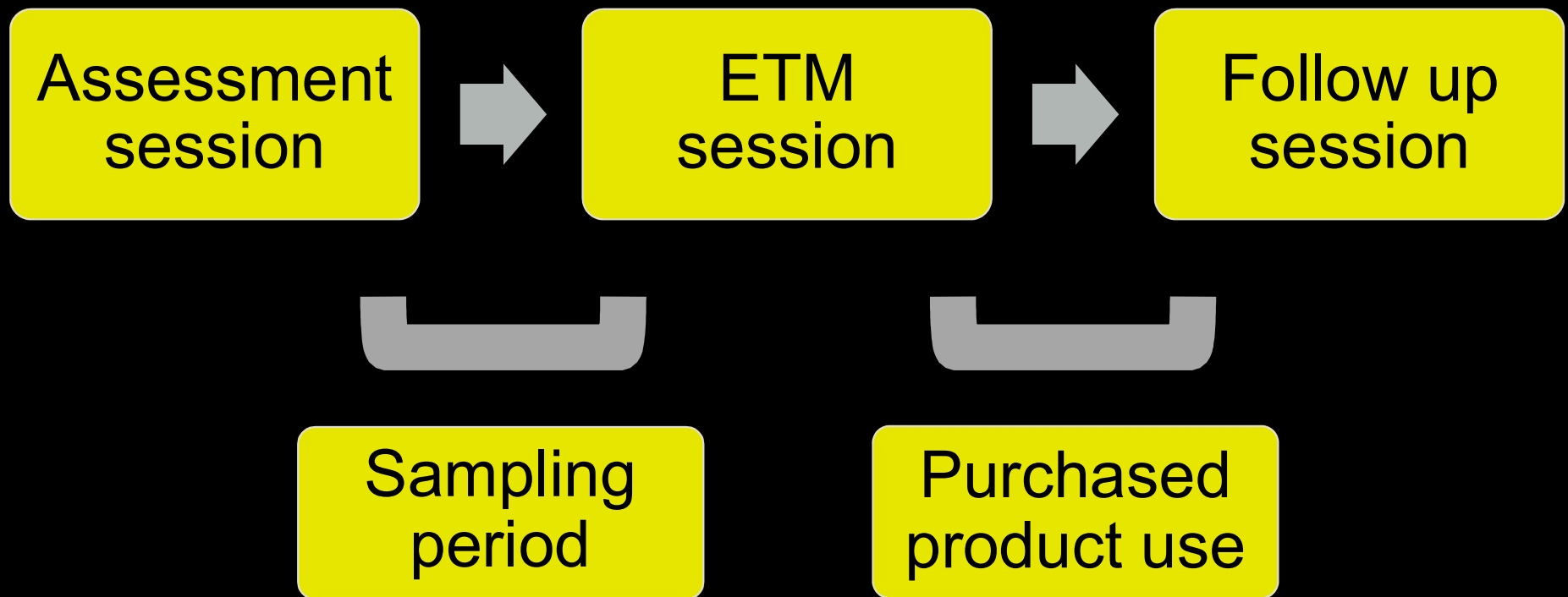
Why an Experimental Tobacco Marketplace?

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



Johnson, M. W., Bickel, W. K., & Kirshenbaum, A. P. (2004). Substitutes for tobacco smoking: a behavioral economic analysis of nicotine gum, denicotinized cigarettes, and nicotine-containing cigarettes. *Drug and Alcohol Dependence*, 74(3), 253–264.

Experimental Tobacco Marketplace



Experimental Tobacco Marketplace

1) increases in cigarette price and/or policy changes including :

- nicotine vaping products (NVP) nicotine concentration
- integrated tax policy

2) illegal purchasing after:

- a reduced nicotine standard for cigarettes
- NVP bans

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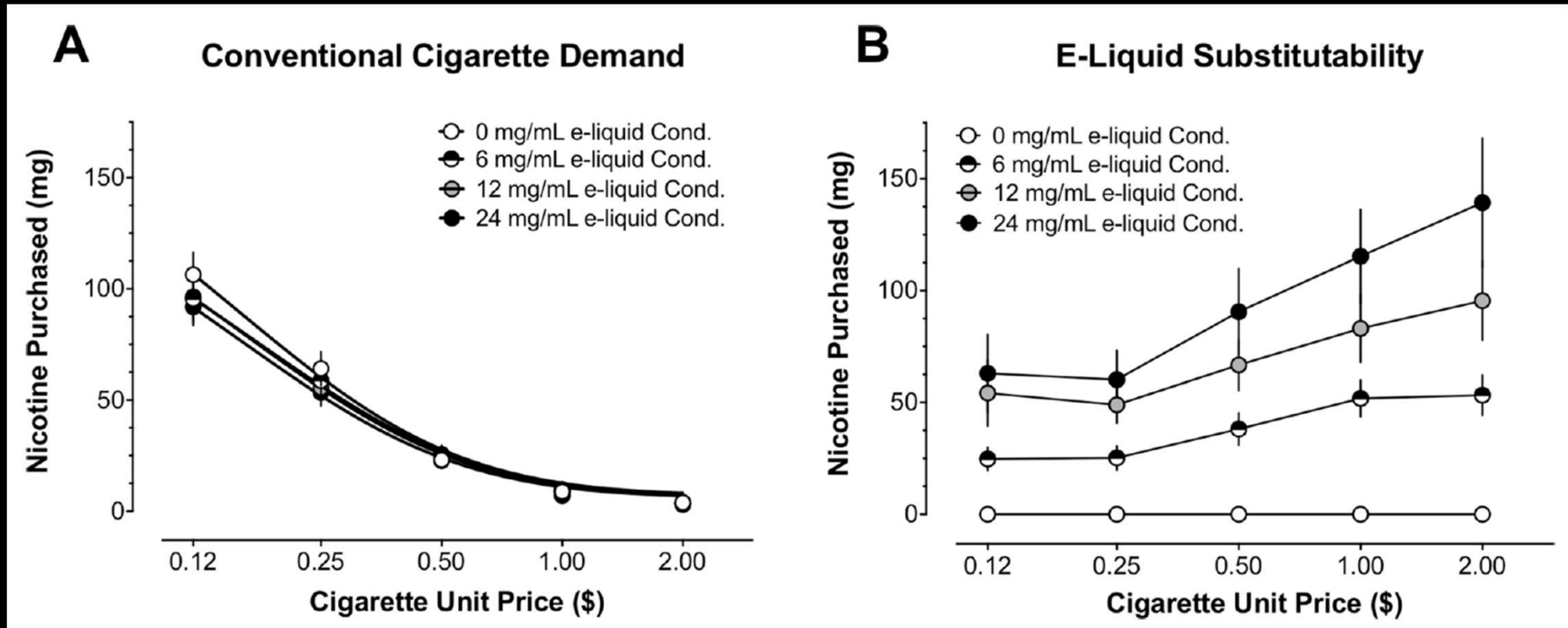
2) illegal purchasing after:

- a reduced nicotine standards for cigarettes
- NVP bans

Experiment 1: 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

Experiment 1: key findings



Pope, D. A., Poe, L., Stein, J. S., Kaplan, B. A., Heckman, B. W., Epstein, L. H., & Bickel, W. K. (2019). Experimental tobacco marketplace: substitutability of e-cigarette liquid for cigarettes as a function of nicotine strength. *Tobacco Control*, 28(2), 206–211.

Experiment 1: 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 best substitute

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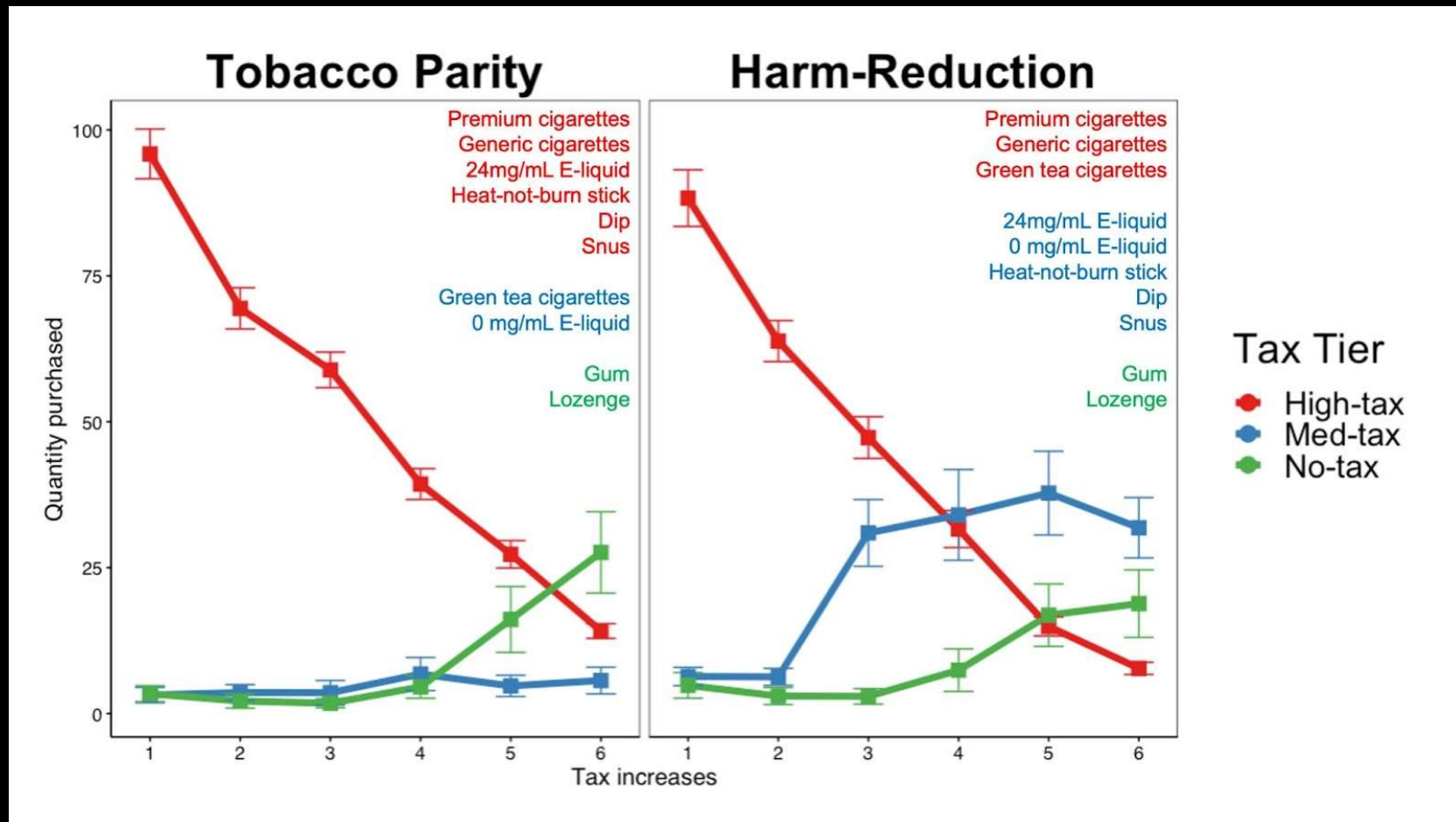
2) illegal purchasing after:

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Experiment 2: Integrated tax policy

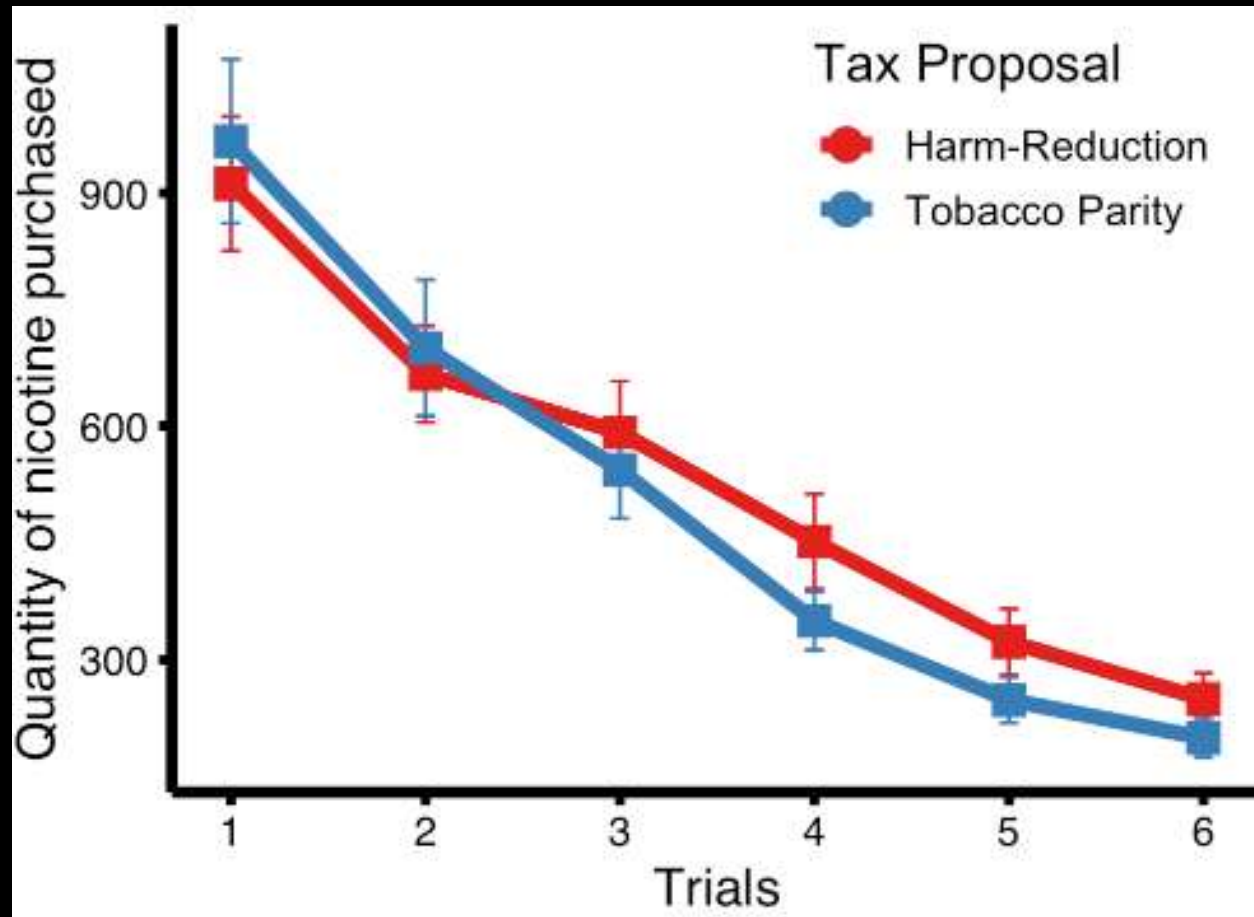
- 35 online smokers (within-subject)
- Tobacco-Parity and Harm-Reduction tax proposals
- Purchased across 6 multiplicative tax factors

Experiment 2: key findings



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

Experiment 2: key findings



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

Experiment 2: Conclusion

- Total nicotine(mg) purchased from tobacco/medicinal products was not significantly different between proposals
 - Higher taxes yielded lower demand
- 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.

Experimental Tobacco Marketplace

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- integrated tax policy

2) illegal purchasing after:

- a reduced nicotine standards for cigarettes
- NVP bans

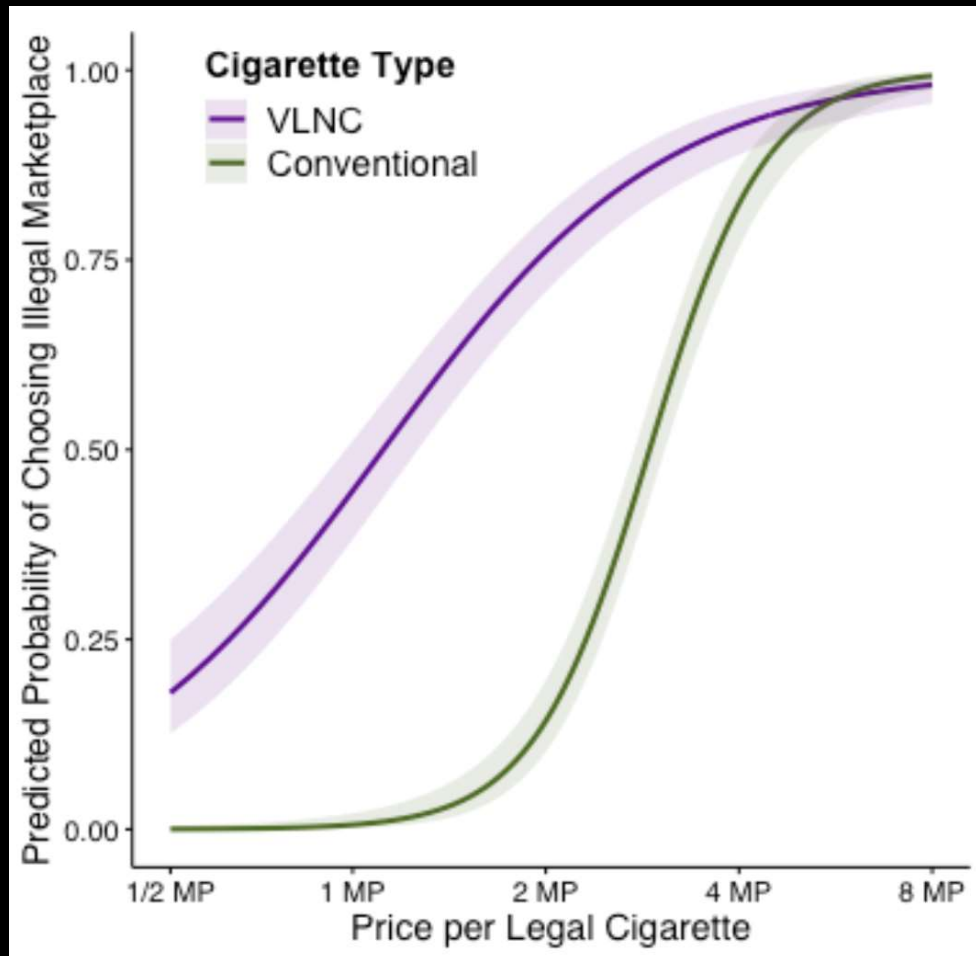
Illegal Experimental Tobacco Marketplace

- 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

Experiment 3: Effects reduced nicotine standards on Illegal Purchases

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

Experiment 3: key findings



Freitas Lemos, R, Stein, J.S., Tegge, A.N., Kaplan, B.A., Bickel, W.K. The Illegal Experimental Tobacco Marketplace II: Effects of a reduced-nicotine standards for cigarettes (manuscript in preparation)

Experiment 3: Conclusion

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

Experimental Tobacco Marketplace

1) increases in cigarette price and/or policy changes including :

- nicotine vaping products (NVP) nicotine concentration
- integrated tax policy

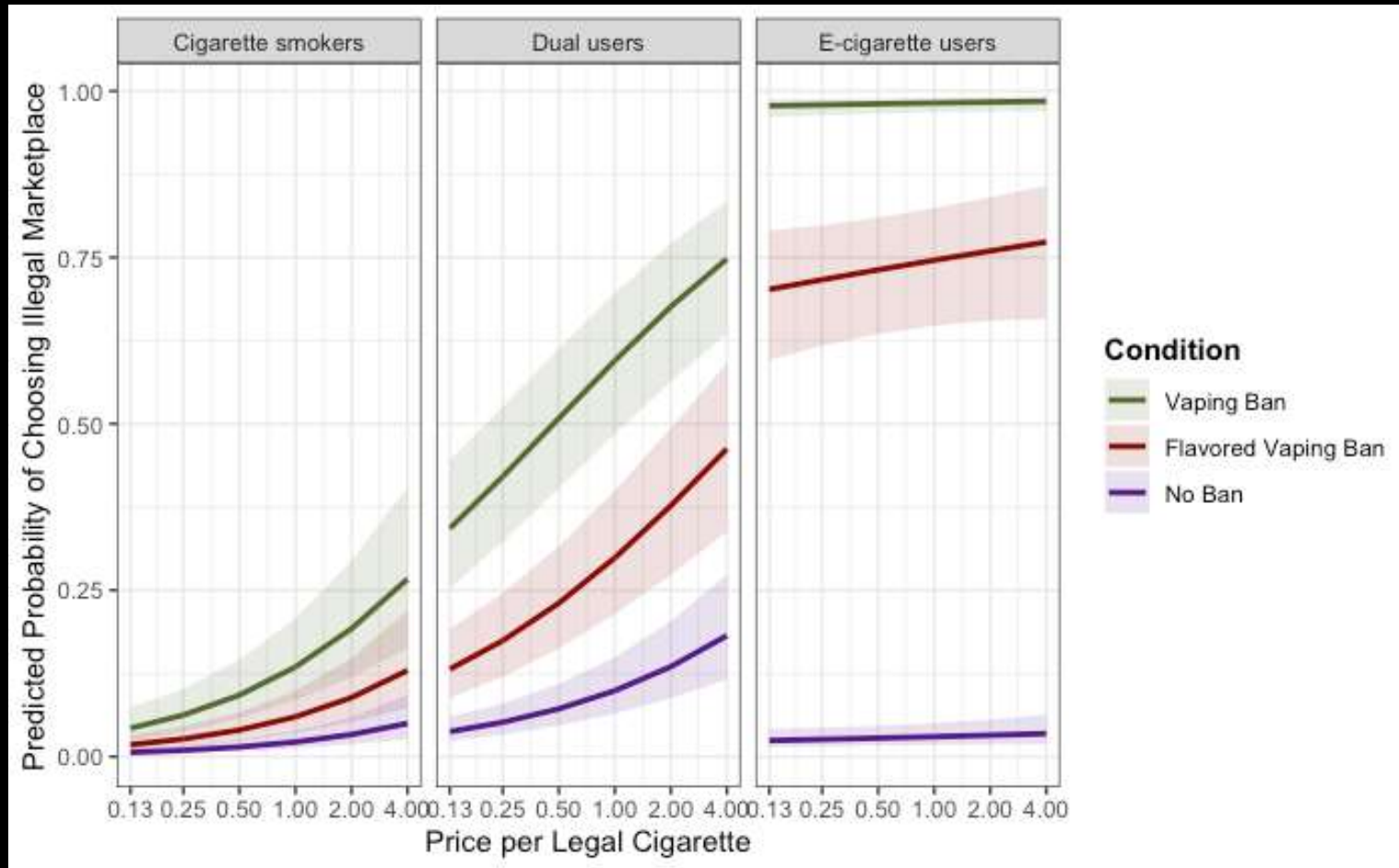
2) illegal purchasing after:

- a reduced nicotine standards for cigarettes
- **NVP bans**

Experiment 4: Effects of Vaping Bans on Illegal Purchases

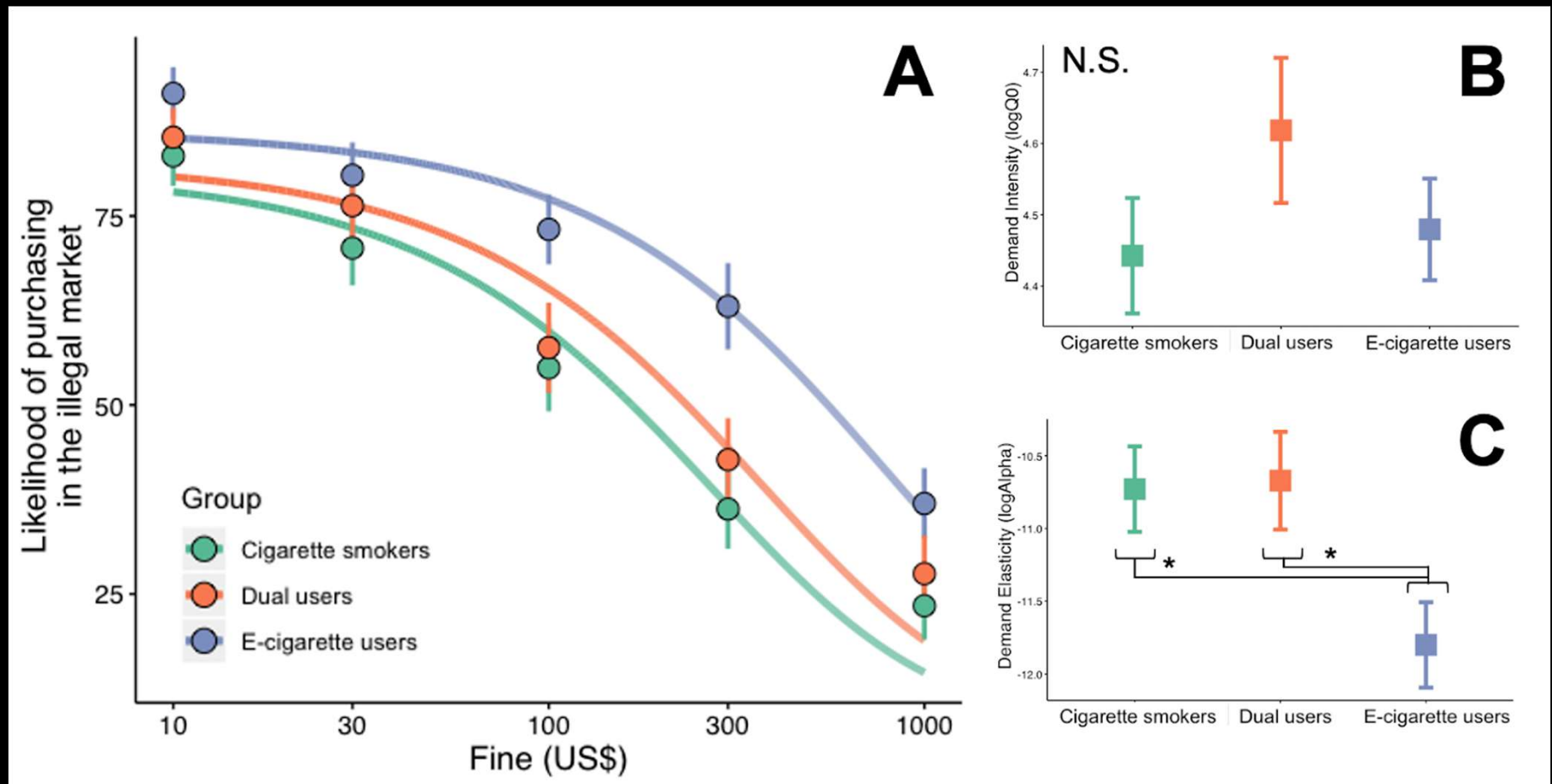
- 150 online smokers, e-cigarette users, and dual users (within-between subjects)
- No ban, vaping ban, and flavored vaping ban
- Monetary fines

Experiment 4: key findings



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>

Experiment 4: key findings



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>

Experiment 4: Conclusion

- 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

Experiment 5: Effects of Vaping Bans on Illegal Purchases – a systematic extension

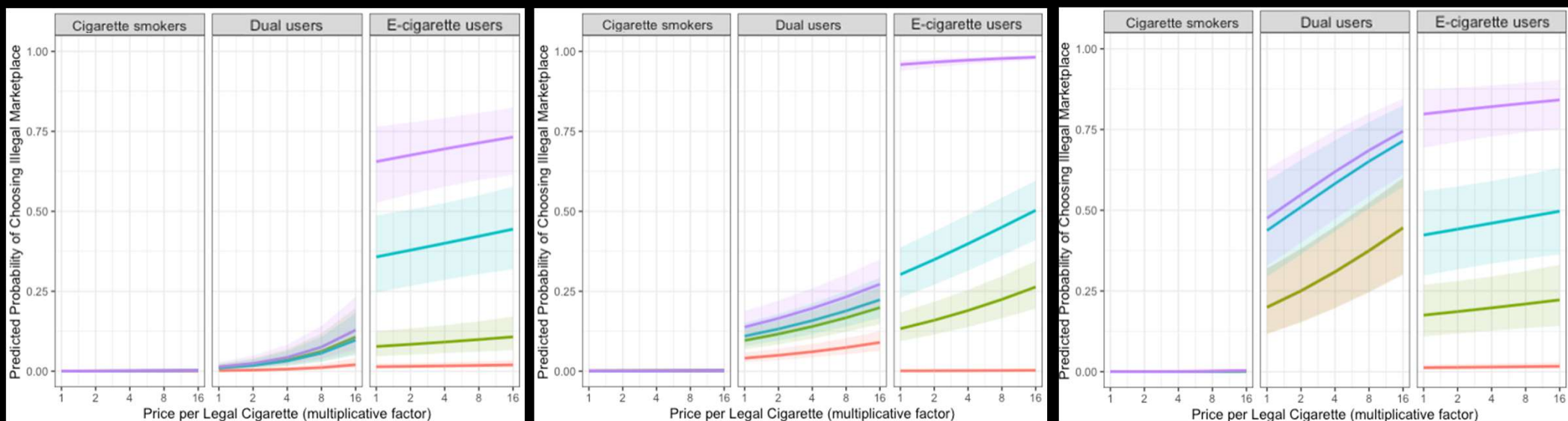
- 452 smokers, e-cigarette users, and dual users from the US, CA and EN (ITC project)
- No ban, vaping ban, total flavor vaping ban and partial flavor ban
- Marketplace preference

Experiment 5: Preliminary analysis

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)

Conclusions

The ETM:

- Assesses policy impact on tobacco product demand and substitution
- Can be adapted to address a variety of questions
- Assesses generality of policy across different countries
- May be a useful tool for tobacco control and regulatory science