

The Harm Reduction Potential of Oral Tobacco Derived Nicotine Products

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Altria

— FAMILY OF COMPANIES —





Altria's Approach to Harm Reduction

Harm Reduction Potential of OTDNs

Reduced
Harm

Adult Tobacco
Consumer
Interest & Use

Accurate
Communications





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Tobacco Harm Reduction Framework

**Traditional
Strategies**



**Complement to
Existing Approach**



**Tobacco
Harm
Reduction
Framework**

ATC=Adult Tobacco Consumers



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Tobacco Harm Reduction Framework

**Traditional
Strategies**



**Complement to
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**Tobacco
Harm
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Framework**

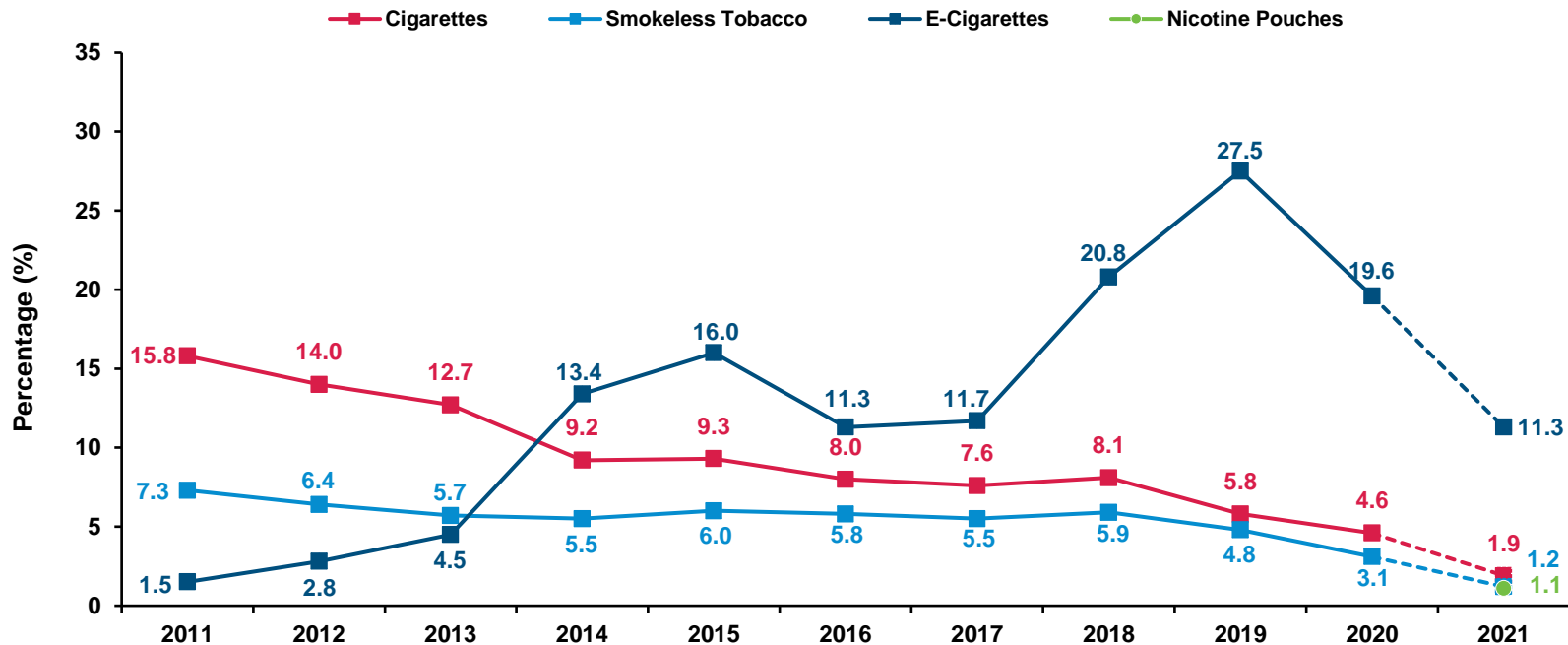
ATC=Adult Tobacco Consumers



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Current Tobacco Product Use Among High School Students, *National Youth Tobacco Survey, 2011-2021*



Sources: [Tobacco Product Use Among Middle and High School Students — United States, 2011–2018](#); [Tobacco Product Use and Associated Factors Among Middle and High School Students — United States, 2019](#); [Tobacco Product Use Among Middle and High School Students — United States, 2020](#), and [Tobacco Product Use and Associated Factors Among Middle and High School Students — United States, 2021](#).

Note: Any tobacco use is past 30-day use of cigarettes, cigars, smokeless tobacco, electronic cigarettes, hookahs, pipe tobacco, and/or bidis, in addition to heated tobacco products (2020–2021) and nicotine pouches (2021) on ≥ 1 day in the past 30 days.

Note: In 2014 and 2015, modifications were made to the e-cigarette measure to enhance its accuracy, which may limit the comparability of these estimates to those collected in previous years. In 2019, modifications were made to the survey, as well as the e-cigarette measure through inclusion of a brand example (JUUL); authors caution against comparisons to prior years. For smokeless tobacco, 2015 and prior years data are not comparable due to methodological changes into 2015. In 2015 smokeless tobacco includes chewing tobacco/snuff/dip, snus, and dissolvable tobacco because of limited sample sizes. Prior to 2015, smokeless tobacco included only chewing tobacco/snuff/dip. In 2021, the survey was conducted online during the COVID-19 pandemic with an overall lower participation rate than during previous years. Due to differences in data collections procedures, any comparison of the 2021 NYTS estimates to previous NYTS survey years that were primarily conducted on school campuses should be interpreted with caution. Dashed lines from 2020–2021 represent these differences.



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Tobacco Harm Reduction Framework

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**Complement to
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**Tobacco
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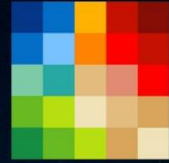
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Moving beyond smoking™



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Responsibly lead
the transition of adult smokers to a
SMOKE-FREE FUTURE

The Problem: Harm Caused from Cigarette Smoking

COMBUSTIBLE TOBACCO – MOST HAZARDOUS FORM OF TOBACCO



30.8 MILLION
US adult smokers¹

**OVERWHELMING
EVIDENCE**

**Cigarette smoking is addictive and
causes serious diseases including:**

Lung cancer | Emphysema | Cardiovascular disease

~443,000 U.S. Deaths Attributable Each Year to Cigarette Smoking*



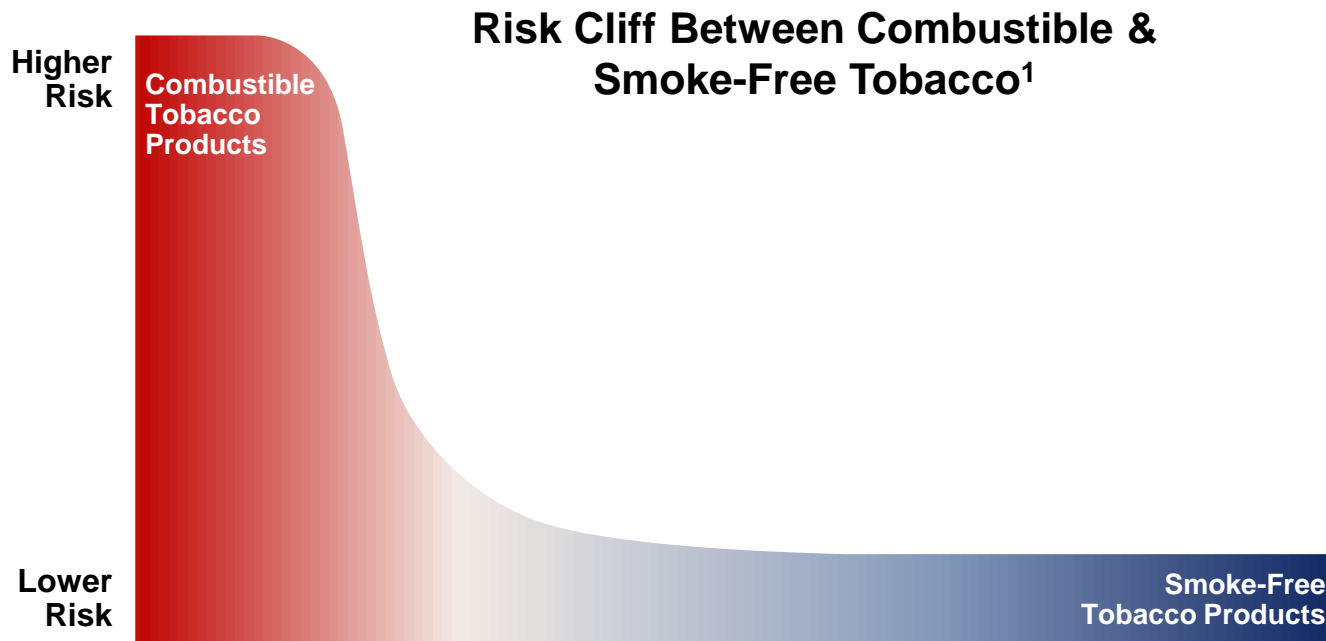
¹Tobacco product use among adults – United States 2020. *MMWR* March 2022; 71 (11) 397-405.

*Average annual number of deaths, 2000-2004.





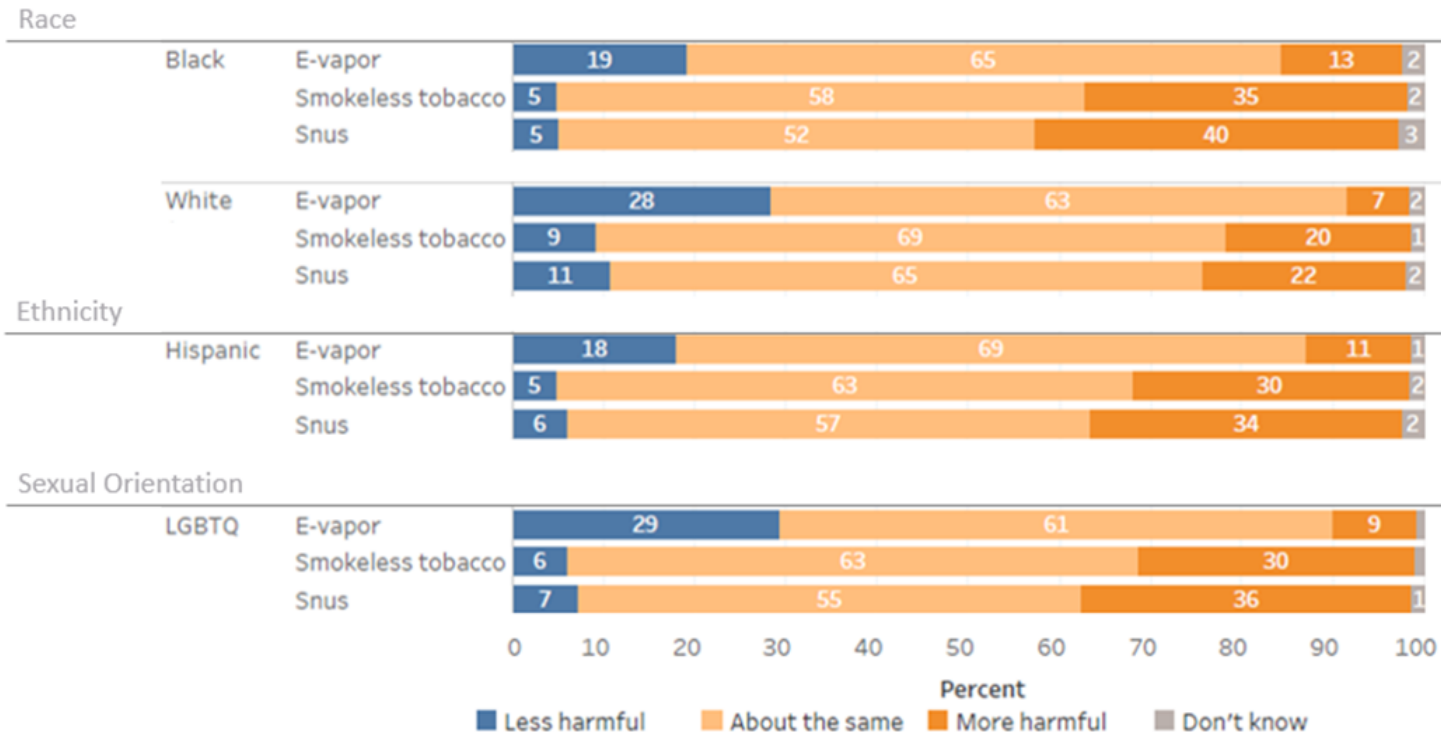
Risk Cliff



¹ Adapted from Nutt, et. Al Estimating the Harms of Nicotine-Containing Products Using the MCDA Approach. Eur. Addict Res 2014; 20:218-225.



Perceived Harmfulness of Tobacco Products Compared to Smoking Cigarettes, PATH Wave 4 Adult Tobacco Users



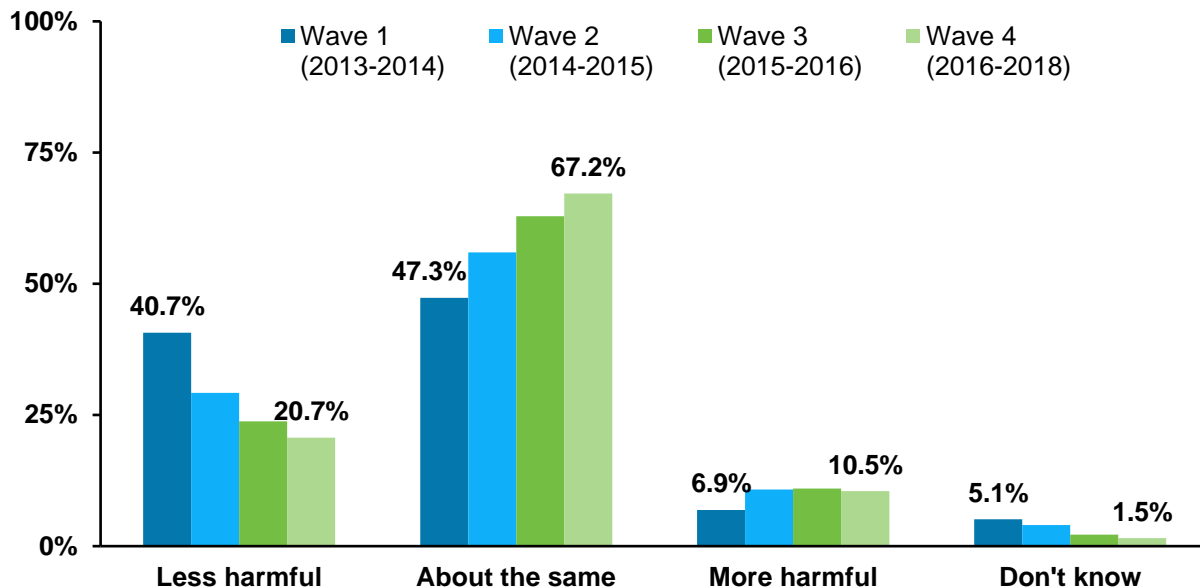
The vast majority of ATCs, believe that non-combustibles are **about the same or more harmful** than smoking.



Harm Misperceptions of E-Vapor¹



Is using e-cigarettes or other electronic nicotine products less harmful, about the same, or more harmful than smoking cigarettes?*

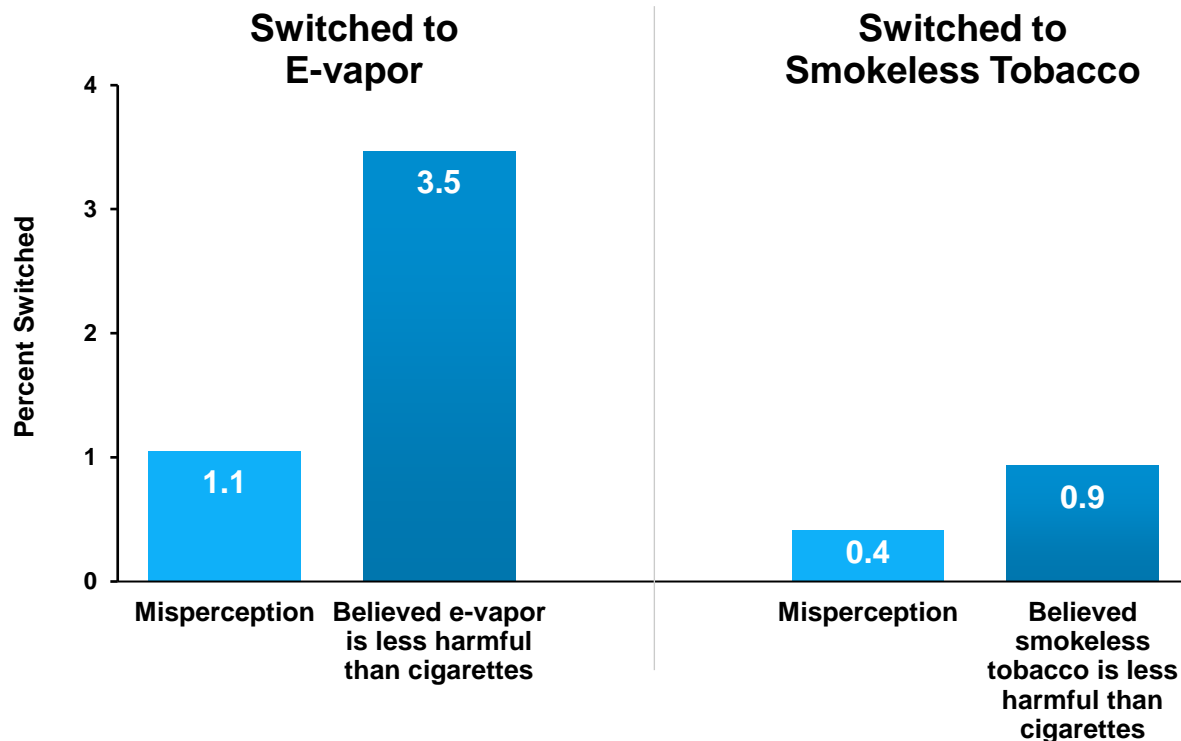


¹Based on ALCS analysis of PATH data December 2016 - January 2018;

Responses based on Wave 1 and Wave 2 question: "Is using e-cigarettes less harmful, about the same, or more harmful than smoking cigarettes?" At Wave 3 and 4 the question was changed to: "Is using e-cigarettes or other electronic nicotine products less harmful, about the same, or more harmful than smoking cigarettes?"



Percent of Smokers Who Switched to E-Vapor or Smokeless Tobacco the Following Year



KEY TAKEAWAY

Smokers with an accurate perception of risk are

2-3x
MORE LIKELY TO SWITCH

Analysis includes adult smokers who stopped smoking and used either e-vapor or smokeless tobacco from PATH Wave 3 to Wave 4.



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on!® Harm Reduction Opportunity

on!® nicotine pouches have the most variety of any nicotine pouches currently in the U.S. Market



All flavors are available for purchase through e-commerce. Select SKUs are available in retail.



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Scientific Framework

CONSTITUENT REDUCTION



THE PRODUCT

- Chemistry Manufacturing and Controls
- Product Stability
- Harmful or Potentially Harmful Constituents (HPHC)

INDIVIDUAL RISK REDUCTION



EXPOSURE and HEALTH RISK

- Health risk assessment (absolute and relative)
- Chemical Analyses
- Human Studies
- Human Factors Assessment
- Risk Assessment

POPULATION HARM REDUCTION



IMPACT on the POPULATION

- Risk perceptions (absolute and relative)
- Impact of product on users
- Impact on non-users
- Overall impact on the population
- Environmental Assessment



Scientific Framework

CONSTITUENT REDUCTION

Product
Design and
Control

Chemical
and Physical
Characterization



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INDIVIDUAL RISK REDUCTION

Toxicology
and Risk
Assessment

Studies in
Adult Human
Subjects



EXPOSURE and HEALTH RISK

- Health risk assessment (absolute and relative)
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POPULATION HARM REDUCTION

Perception
and Behavior
Assessment

Risks and
Benefits to
Health of the
Population



IMPACT on the POPULATION

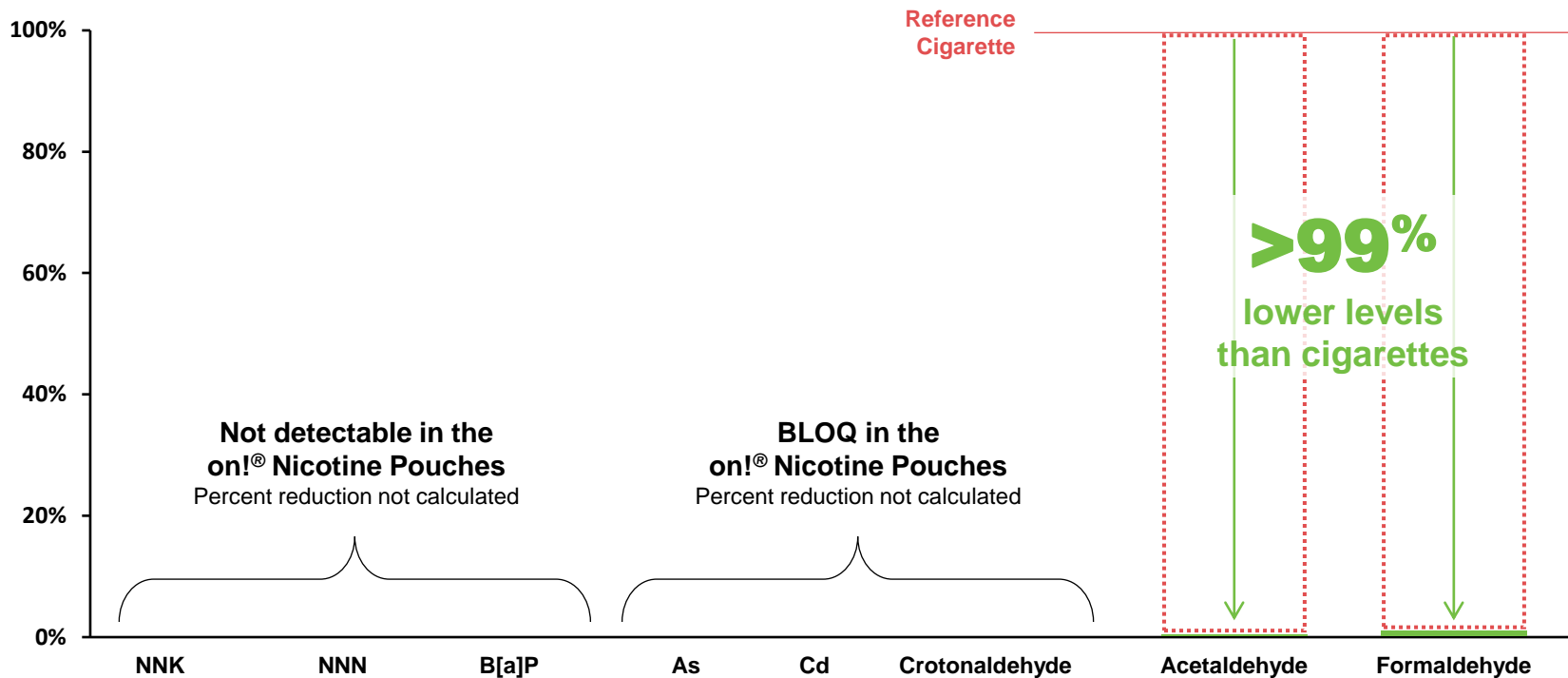
- Risk perceptions (absolute and relative)
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Percent Reduction in HPHC Levels in on!® Nicotine Pouches Compared to Cigarettes



CONSTITUENT REDUCTION



Data source: Percent reductions based on average HPHC levels in 4 mg on! Mint product compared to cigarette mainstream smoke levels measured under ISO conditions.



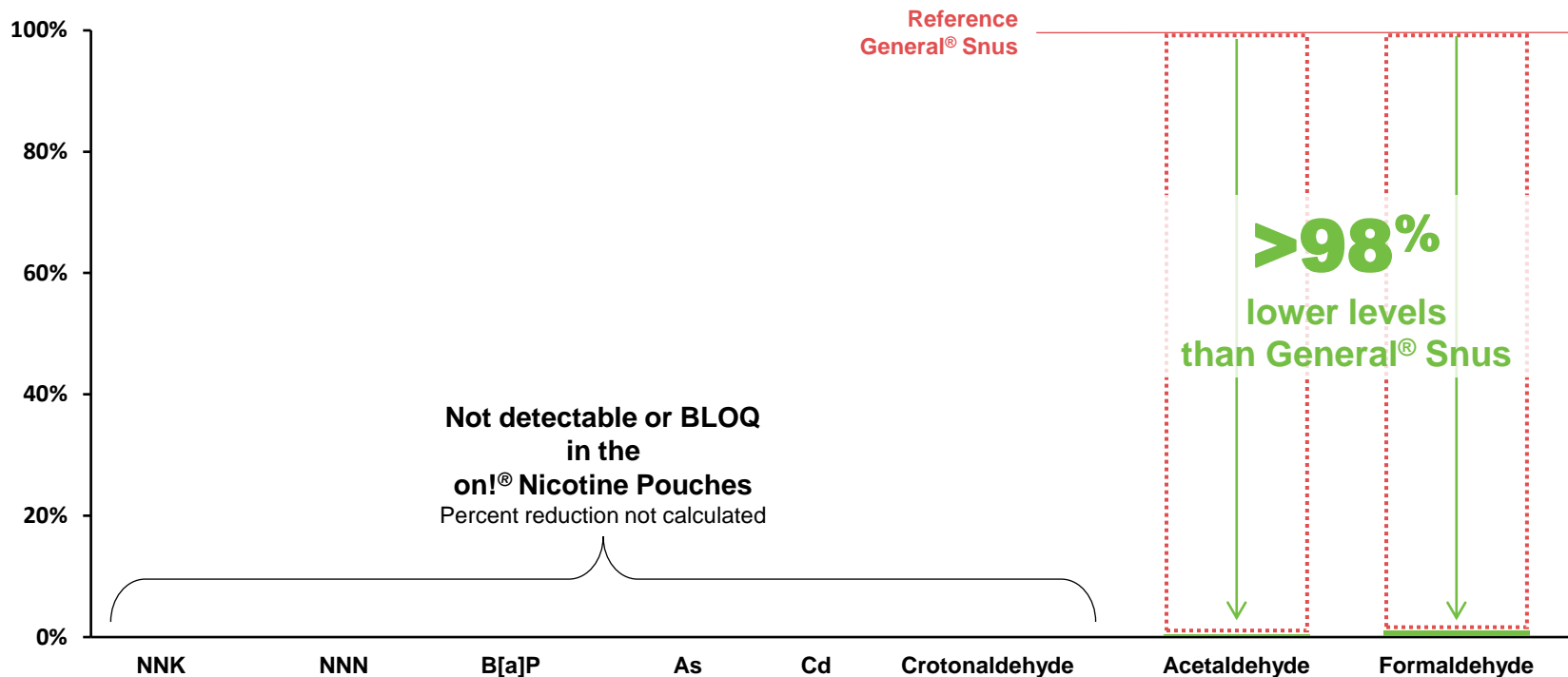
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HPHCs in on!® Nicotine Pouches are Absent or Substantially Reduced Compared to General® Snus



CONSTITUENT REDUCTION



As=Arsenic; B[a]P=Benzo[a]pyrene; BLOQ=Below Limit of Quantitation; Cd=Cadmium; NNK=4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone; NNN=N-nitrososornicotine.
Source: Percent reductions based on average HPHC levels in 4 mg on! Mint product compared to the average HPHC levels for the eight MRTPT authorized General® Snus products.



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Product Design and Control

Chemical and Physical Characterization



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Toxicology and Risk Assessment

Studies in Adult Human Subjects



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POPULATION HARM REDUCTION

Perception and Behavior Assessment

Risks and Benefits to Health of the Population



IMPACT on the POPULATION

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Risk Assessment of Non-Tobacco Ingredients Demonstrates Levels Below Acceptable Daily Intake

Our Risk Assessment of Non-Tobacco Ingredients indicates
Exposure is Below Acceptable Daily Intake Values as Established by Authoritative Bodies*



on!® Nicotine Pouches contain tobacco derived nicotine which meets European Pharmacopeia standards



Most ingredients are designated as “Generally Recognized as Safe” (GRAS) for use in food, beverages or chewing gum and are present at levels that result in human exposure deemed acceptable for use in foods



Toxicological risk assessment of non-tobacco ingredients is based on published clinical and nonclinical literature



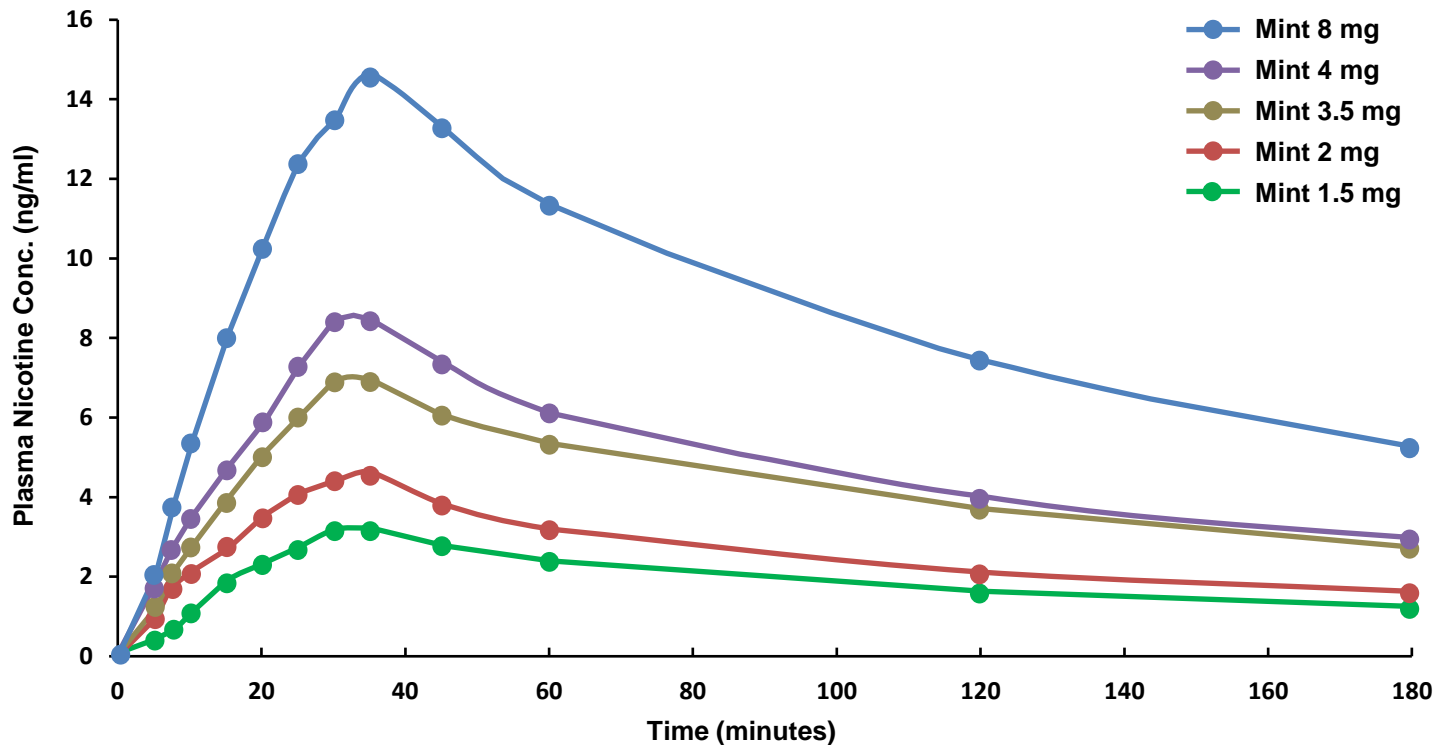
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*e.g., JECFA (Joint Economic Committee of the WHO/FAO on Food Additives), EFSA (European Food Safety Authority), US FDA

The on!® Portfolio Delivers a Wide Range of Nicotine



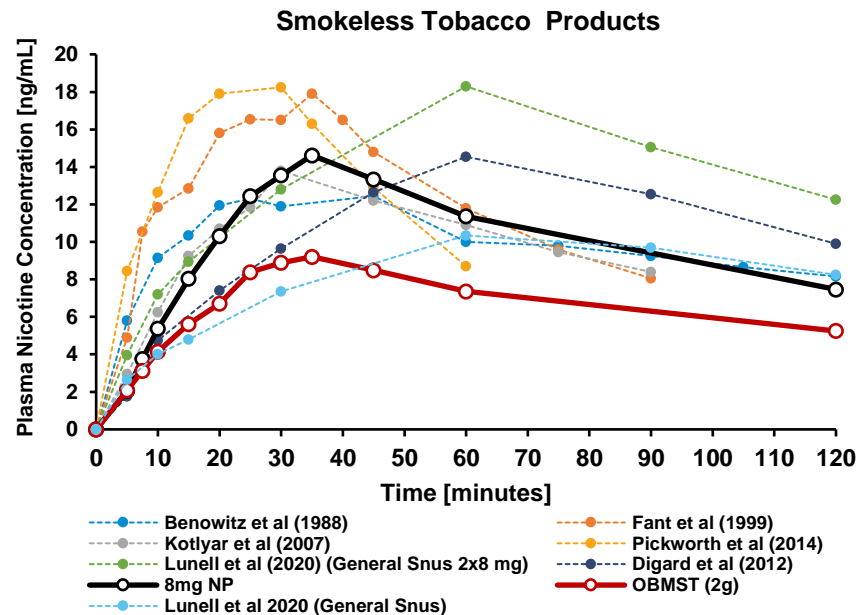
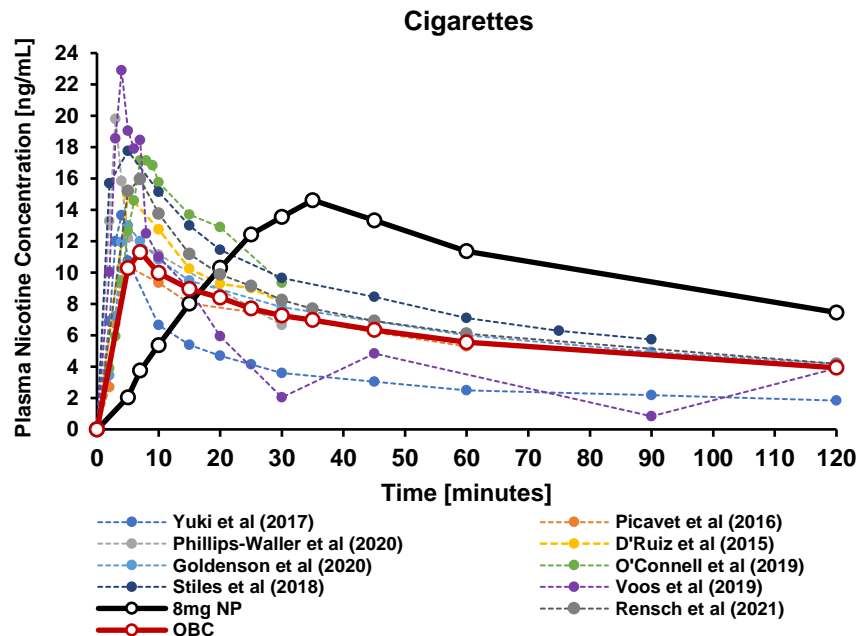
INDIVIDUAL RISK REDUCTION



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Abuse Potential is Lower Than or Similar to That of Cigarettes or ST Products and Not Impacted by Flavor

Plasma Nicotine Values Over Time During Use of the 8mg NP and Representative Published data



The plasma pharmacokinetic profiles from the published literature (dotted lines) are reported from estimated values based on figures in the publications. For consistency, all data has been baseline adjusted. Results from this study (solid lines) are presented; only the 8 mg NP nicotine PK profile is presented because the 8 mg NP exhibited the higher nicotine PK relative to the lower nicotine level NPs. NP=nicotine pouch; OBC=own brand cigarette; OBMST=own brand moist smokeless tobacco; ST=Smokeless tobacco.





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Perception and Behavior Assessment

Risks and Benefits to Health of the Population



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Perception & Behavioral Intentions Study Among Users and Nonusers



POPULATION HARM REDUCTION

Participants



Tobacco Users



Tobacco Nonusers

Exposure to Promotional Materials



Measures

Intentions to Use



Purchase Interest



Likelihood to Use

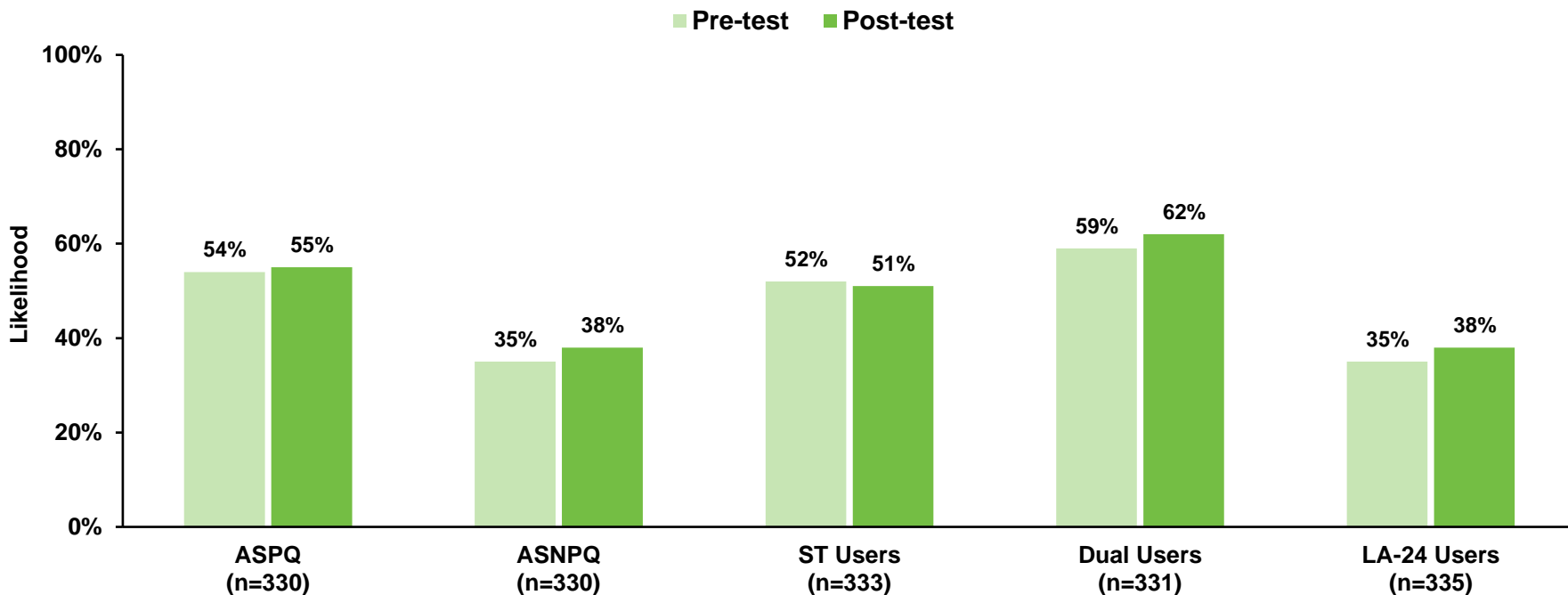


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Moderate to Large Proportion of Adult Tobacco Users Classified as Likely to Use on!® Nicotine Pouches



POPULATION HARM REDUCTION



Results shown in the chart are from participants assigned to Reduced Exposure condition. Similar results were observed among tobacco user groups assigned to Full Exposure Condition. Likelihood to use the on!® product was based on an intention composite score >3.5 and answered Yes to the purchase intent question.

ASNPQ=adult smokers planning to quit; ASNPQ=adult smokers not planning to quit; LA=Legal age to purchase tobacco; ST=smokeless tobacco.

Source: Section 9A.6, *PBI Study Report*, Appendix 9A.6-34, Table 11 and 88.

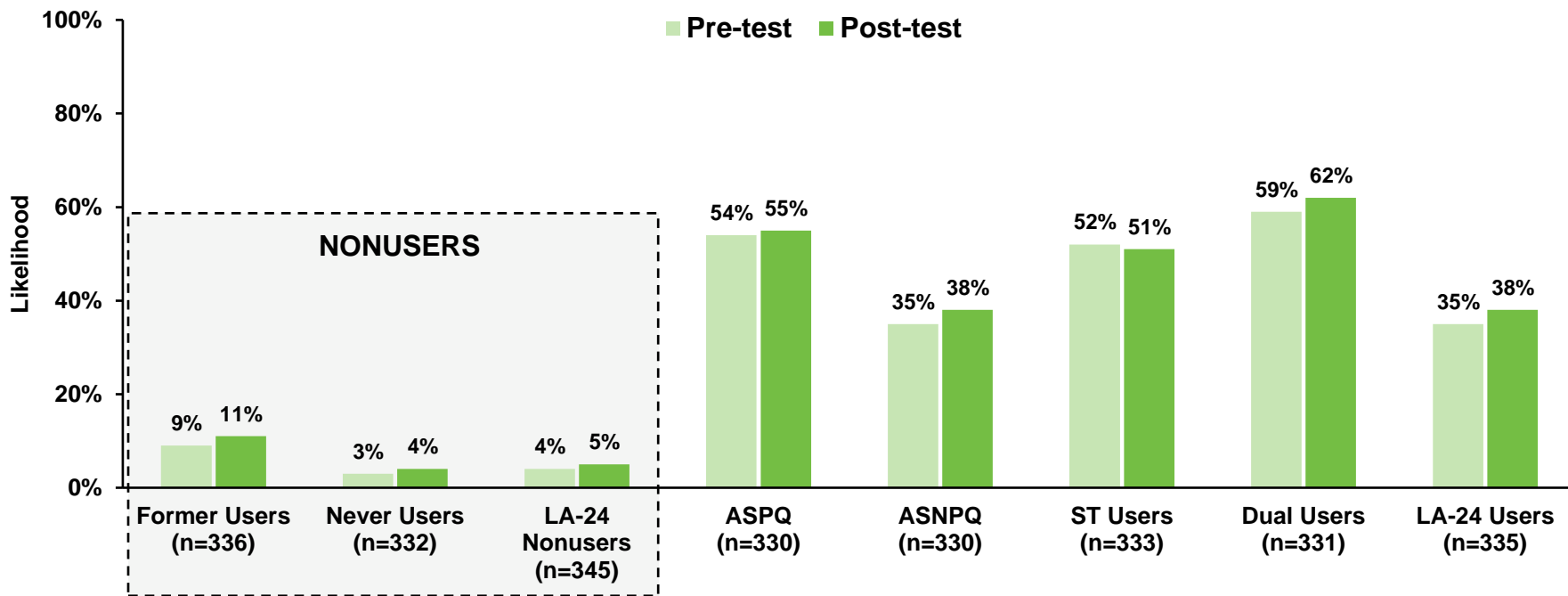


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Small Proportions of Adult Tobacco Nonusers Classified as Likely to Use on!® Nicotine Pouches



POPULATION HARM REDUCTION



Results shown in the chart are from participants assigned to Reduced Exposure condition. Similar results were observed among tobacco user groups assigned to Full Exposure Condition. Likelihood to use the on!® product was based on an intention composite score >3.5 and answered Yes to the purchase intent question. ASNPQ=adult smokers planning to quit; ASNPQ=adult smokers not planning to quit; ST=smokeless tobacco; DU=dual user of cigarettes and smokeless tobacco; LA=Legal age to purchase tobacco. Source: Section 9A.6, PBI Study Report, Appendix 9A.6-34, Table 11 and 88.



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Actual Use Study of on!® Nicotine Pouches



POPULATION HARM REDUCTION

Participants



Tobacco Users
Interested in Using on!®
Nicotine Pouches and
not planning to quit

Free Selection of Product



Daily and Weekly Diaries



Outcomes

**Complete
Switching**

**Reduction in
Cigarette or
Smokeless
Tobacco Use**



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Large Proportions of Adult Tobacco Users Switched or Reduced Traditional Tobacco Usage

Adult Smokers
n=399

28%

Adult Dippers
n=353

72%

**SWITCHED
COMPLETELY**
to on![®]
Nicotine Pouches



Adult Smokers
n=399

39%

**Reduced cigarette consumption by
50% or more**

Adult Dippers
n=353

14%

Reduced ST use by 50% or more

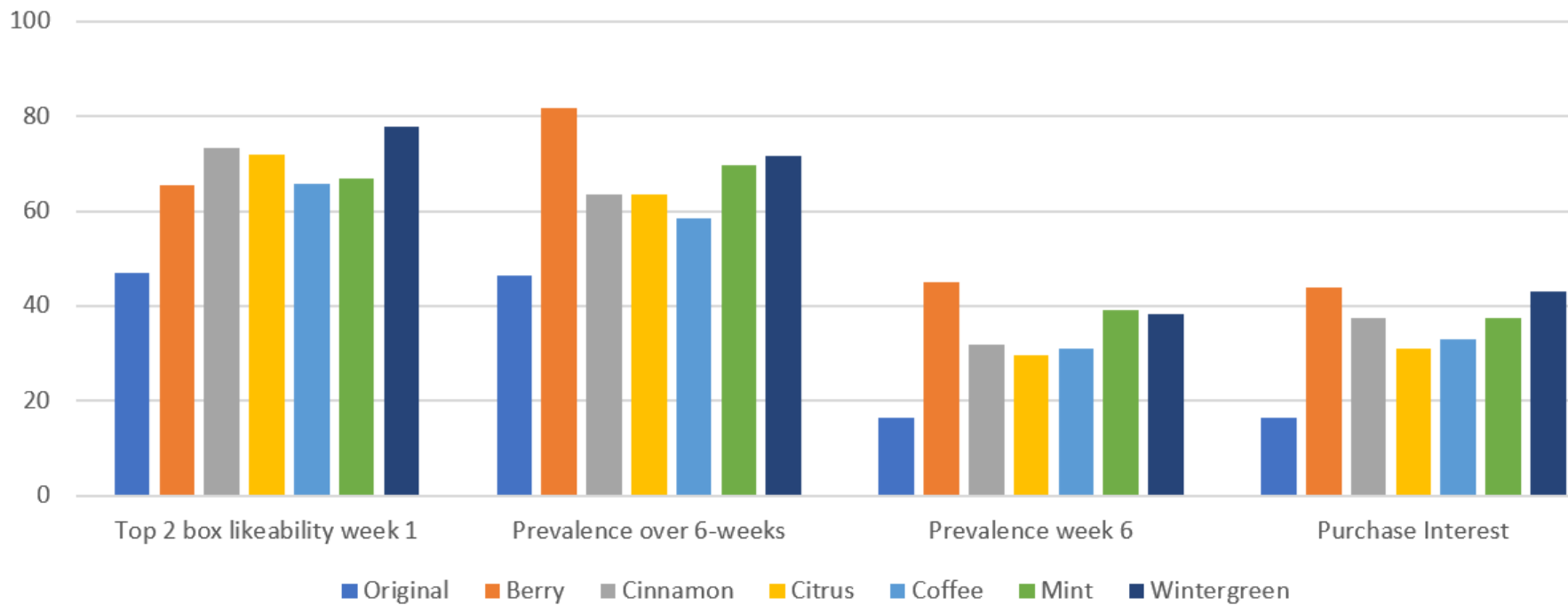
ST: Smokeless Tobacco.



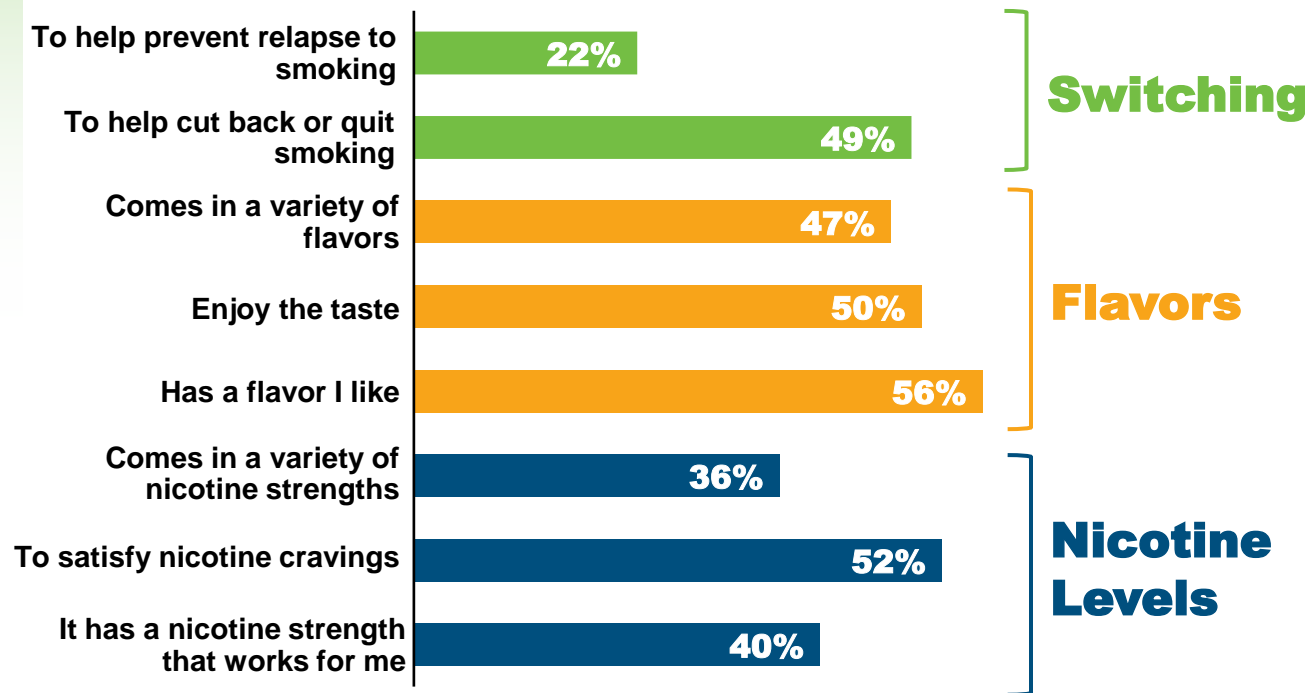
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Interest and Use of All Flavor Varieties

Product Likeability, Prevalence, and Purchase Interest by Variety Among Adult Smokers



Reasons for Future Use of on!® Nicotine Pouches Among Adult Smokers Likely to Use on!® Nicotine Pouches



Percentage of adult smokers who endorsed each reason why they would use on!® in the future





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Scientific Evidence Included in Our MRTPA



CHEMICAL ANALYSES
(HPHCs and Stability)



TOXICOLOGICAL RISK
ASSESSMENTS



BIOMARKERS
OF EXPOSURE STUDY



ACTUAL USE



EPIDEMIOLOGY

on!® Nicotine Pouches, as they are actually used by consumers, **WILL SIGNIFICANTLY REDUCE HARM and the risk of tobacco-related disease to individual tobacco users**

Evidence for Modified Risk Tobacco Product Application

on!® Nicotine Pouches, as they are actually used by consumers, **WILL BENEFIT THE HEALTH of the population as a whole taking into account both tobacco product users and nonusers.**

IMPACT ON
USERS

IMPACT ON
NON-USERS

NET BENEFIT
TO THE POPULATION

POSTMARKET
SURVEILLANCE



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MRTPA Path Forward

**OVERCOME MISPERCEPTIONS
AND BARRIERS TO TRANSITION**



**OPTIMIZE CLAIM
COMMUNICATIONS**



**SUBMIT MRTPAS
TO ACCELERATE TRANSITION**



Advancing Tobacco Harm Reduction



CHOICES

A variety of FDA authorized reduced risk products for adult tobacco consumers



COMMUNICATION

Accurate, non-misleading information about reduced risk products, authorized by FDA, directed to adult tobacco consumers



CONSISTENCY

A consistent message from public health authorities in addition to FDA-authorized claims from manufacturers





Any **Questions?**

