E-vapor Product Appeal Among Tobacco Users and Non-users and the Role of Flavor in Tobacco Harm Reduction

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Our long-term goal at Altria is to achieve a leadership position in innovative and reduced risk tobacco products.
Harm Reduction Opportunities

~40 MM Adult Cigarette Smokers

~5 MM Adult Smokeless Consumers

~10 MM Adult E-Vapor Consumers

*Source: 18+ATCT 12MM ending December 2017
Numbers may not foot due to rounding
Tobacco Harm Reduction Product Platforms

E-Vapor

- MARK TEN

Oral Tobacco/ Nicotine Products

- Verve

Heated Tobacco Products

- IQOS

Altria
MarkTen® E-Vapor Products Portfolio

### Product Images

- **Caribbean Oasis**
- **Mardi Gras**
- **Smooth Menthol**
- **Winter Mint**
- **Vineyard Blend**
- **Harvest Blend**
- **Classic**
- **Menthol**

**Warning:** This product contains nicotine. Nicotine is an addictive chemical.
Role of Flavors in Tobacco Harm Reduction

Before Product Trial → Appeal = Perceptions and Behavioral Intentions (PBI) Study

After Trial and Use → Switching behaviors = Actual Use Study

Impact on Non-Users → Unintended consequences = PBI study
The Role of Appeal in Flavor Selection Before Trial

Research Question:
What role, if any, do flavor options play in appeal of ENDS products among tobacco users and non-users?

- We conducted a quasi-experimental online survey (perceptions and behavioral intentions study) with 4,210 adult tobacco users and non-users.
- We assessed product appeal of 14 flavor varieties and characterized use intentions among non-users who selected a MarkTen® (M10) e-vapor use product as appealing.
Perceptions and Behavioral Intentions Study: Methodology

- Quantitative, online study (02/23/17 – 04/24/17)

- 4,210 adult users and nonusers
  1. Cigarette Smokers (planning to quit; n=841)
  2. Cigarette Smokers (not planning to quit; n=847)
  3. E-vapor Users (n=841)
     - Dual Users (smoke cigarettes and use e-vapor/e-cigarettes; n=622) & Exclusive e-vapor users (n=219)
     - Closed system users (n=260) & Open system users (n=337)
     - Users of both closed and open systems (n=244)
  4. Former tobacco users (n=841)
  5. Never tobacco users (n=840)

- Special Population: Legal Age to 24 year olds
  - Users (includes Cigarette Smokers and E-vapor Users; n=843)
  - Non-Users (includes Former and Never Users; n=838)
Perceptions and Behavioral Intentions Study: Design

RESPONDENT SAMPLE
(Current, Former, and Never Tobacco Users)

SCREENER
(Intentions to quit smoking & tobacco, intentions to use cigarettes & other nicotine products)

PRE-TEST
(Intentions to try, use, dual use, switch; Risk perceptions)

Random Assignment Quota-Filled

PROMOTIONAL MATERIALS:
FULL EXPOSURE
(Digital video spot, print materials, picture of lineup of EV products)

PROMOTIONAL MATERIALS:
REDUCED EXPOSURE
(Picture of lineup of EV products)

POST-TEST
(Intentions to try, use, dual use, switch; Risk perceptions; Appeal assessment)

SURVEY EXIT QUESTIONS AND DEBRIEF
(Demographic and psychographic questions, and debrief)
Flavor Portfolio Maximizes Appeal of MarkTen<sup>®</sup> Products Among Adult Smokers and Vapers

| Smooth Menthol | 16% | 13% | 18% |
| Bold Menthol | 14% | 16% | 17% |
| Smooth Classic | 13% | 15% | 15% |
| Smooth Cream | 12% | 10% | 19% |
| Menthol | 12% | 14% | 14% |
| Classic | 11% | 12% | 13% |
| Oasis | 11% | 11% | 23% |
| Winter Mint | 11% | 12% | 20% |
| Fusion | 11% | 10% | 19% |
| Classic | 10% | 13% | 16% |
| Blend | 9% | 11% | 14% |
| Mardi Gras | 9% | 8% | 14% |
| Harvest Blend | 7% | 5% | 6% |
| Vineyard Blend | 6% | 4% | 12% |
| None | 29% | 26% | 9% |

*No statistical significance testing*
*Not all participants rated a product as appealing*

Source: Perceptions and Behavioral Intentions Study for Products Currently Marketed as MarkTen<sup>®</sup> E-vapor (ALCS-CMI-16-13-EV)
## Adult Non-tobacco Users Do Not Find MarkTen® Flavors Appealing

Which of the following products are most appealing to you? (select up to 3)

<table>
<thead>
<tr>
<th>Product</th>
<th>Former users (N = 417)</th>
<th>Never users (N = 425)</th>
<th>LA-24 Non-users (N = 410)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth Menthol</td>
<td>8%</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Bold Menthol</td>
<td>5%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Smooth Classic</td>
<td>5%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Smooth Cream</td>
<td>6%</td>
<td>7%</td>
<td>7%</td>
</tr>
<tr>
<td>Menthol</td>
<td>5%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Classic</td>
<td>4%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Oasis</td>
<td>8%</td>
<td>3%</td>
<td>8%</td>
</tr>
<tr>
<td>Winter Mint</td>
<td>4%</td>
<td>3%</td>
<td>7%</td>
</tr>
<tr>
<td>Fusion</td>
<td>7%</td>
<td>4%</td>
<td>7%</td>
</tr>
<tr>
<td>Classic</td>
<td>4%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Blend</td>
<td>6%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Mardi Gras</td>
<td>5%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Harvest Blend</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Vineyard Blend</td>
<td>5%</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>None</td>
<td>63%</td>
<td>81%</td>
<td>73%</td>
</tr>
</tbody>
</table>

No statistical significance testing
Not all participants rated a product as appealing

Source: Perceptions and Behavioral Intentions Study for Products Currently Marketed as MarkTen® E-vapor (ALCS-CMI-16-13-EV)
No Impact of Appeal on Intentions to Use

Full Exposure

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former Users (n=153)</td>
<td>3.7</td>
<td>3.6</td>
</tr>
<tr>
<td>Never Users (n=82)</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>LA-24 Non-Users (n=111)</td>
<td>3.3</td>
<td>3.0*</td>
</tr>
</tbody>
</table>

* Indicates a stat. sig. diff. between pre and post

Reduced Exposure

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former Users (n=148)</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Never Users (n=82)</td>
<td>3.6</td>
<td>3.5</td>
</tr>
<tr>
<td>LA-24 Non-Users (n=117)</td>
<td>3.2</td>
<td>3.1</td>
</tr>
</tbody>
</table>
We conducted an 8-week, 2-phase, actual use study with 614 adult cigarette smokers not planning to quit.

We characterized MarkTen® (M10) e-vapor use behavior and its influence on other tobacco use behavior.

We examined the potential role of flavor variety (14 flavors) on behavioral outcomes.

Research Question:
What role, if any, do flavor options play in switching behavior associated with ENDS?
Actual Use Study: Sample Disposition & Methods

Screening N = 2,065

2,027 Enrolled: 2-week Trial
- 441 Lost to Follow-up
- 406 Product-Related
- 78 Time Commitment

1,102: 6-week Trial
- 377 Noncompliant
- 8 Outliers

Final Per Protocol
- 721

Adult Cigarette Smokers = 344
Adult Dual E-Vapor/Cigarette Users = 270
Exclusive E-Vapor Users= 107 (not reported here)

Lost to follow up: Did not return, even after re-contact
Product-related: Did not use during trial or did not score ≥ 4 on intentions to use
Noncompliant: Missed 5 or more daily surveys in a row or missed > 2 Day 7 surveys
Actual Use Study: Overview

Study Overview

- > 3 Intentions to Try
- No plans to quit smoking in next 3 months
- > 4 Intentions to Use

Recruitment
Tobacco Users, LA+

Screening

2-Week Trial Period
1 variety per day
Daily Diary

Post-Trial Visit

6-Weeks Extended Use
Weekly site visits
Free-choice of product
Daily Entries

Study End Survey

Consumer Insights & Engagement
TSRC
09/18/2018
Final
14 Flavors Were Needed to Meet Preferences* During Trial

**Total Unduplicated Reach and Frequency Analysis (TURF)**

Top Liking Rating (7-point) during Phase 1

*based on highest rating of liking
Participants that Switched Completely Used More Flavors

Number of Flavors Used by Behavioral Outcome

- **Smoked Same # Cigarettes**
  - N = 61

- **Decreased\(^a\) Cigarettes**
  - N = 257

- **Switched\(^b\) from Cigarettes to MarkTen**
  - N = 208

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<table>
<thead>
<tr>
<th></th>
<th>Same</th>
<th>Decrease</th>
<th>Switched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean #Varieties</td>
<td>5.48</td>
<td>5.92</td>
<td>6.42</td>
</tr>
<tr>
<td>S.D.</td>
<td>2.62</td>
<td>2.97</td>
<td>3.07</td>
</tr>
</tbody>
</table>

\(^a\): Decreased by 20% or greater by week 6 (Phase 2)

\(^b\): No cigarettes during week 6 (Phase 2) and still using MarkTen®
Overall Conclusions

- ENDS products present an opportunity to reduce the harm from cigarette smoking
  - Flavor portfolio maximizes appeal of MarkTen® products among adult smokers and vapers
  - Adult non-users do not find MarkTen® flavors appealing
  - A wide variety of flavor options is necessary to capture all adult smokers’ preferences
  - Access to a variety of flavor options appears to play a role in adult cigarette smokers’ switching behavior and smoking reduction
For additional information visit our science website at Altria.com/ALCS-Science.