

# PATH Data: Harm Reduction is Teens' Top Reason for Using e-cigarettes

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## Background

- E-cigarettes are safer than smoking, but have raised concern about use by teens
- Role of flavors in e-cigarettes has attracted particular concern
- PATH data assessed reasons for e-cigarette use in a representative sample
- Ambrose et al reported “because they come in flavors I like” was the leading reason given for e-cigarette use
- BUT.....
- Layout of reasons divided harm reduction into two options (to self and other), possibly obscuring endorsement for harm reduction
- Teens could endorse multiple options, perhaps suggesting patterns of motives

## Objectives

- Quantify and characterize harm-reduction motives for teen e-cigarette use
- Consider overlapping endorsement of motives
- Characterize profiles by endorsed motives

## Methods

### Data

- FDA/NIDA PATH survey, Wave I
- Representative US survey
- 13,651 respondents aged 12-17
- 3.1% (n=418) reported past-30-day e-cigarette use
- Users were asked their reasons for using e-cigarettes, endorsing 1 or more from a list (table 1)

### Analysis

- Respondents who did not endorse any motive (n=11) or had missing data (n=13) were excluded, yielding N=394 past-30-day e-cigarette users.
- Computed Harm Reduction motive (reduce harm to self and others)
- Examined overlap among motives
- Explored underlying structure of motive endorsement using cluster analysis to identify samples with similar motives profiles
- Explored respondent differences by motives endorsed

## Results

### Motive Endorsement

#### Leading motives (N=418) – see Table 1

- Harm Reduction is the leading motive for e-cigarette use (88%), endorsed significantly more often than Flavors (81%).
- “Helps people to quit smoking” (“Quitting”) also highly endorsed (60%)
- Top-3 reasons were: Harm Reduction, Flavors, Quitting

#### Co-endorsement of multiple motives

- 93% endorsed more than one motive; mean number of motives=6.1 (SE=0.1)
- Of those endorsing the top 3 motives – Harm Reduction, Flavors, or Quitting
  - 88% endorsed more than one of the Top-3;
  - 53% endorsed all Top-3 motives
- Of those endorsing Flavors
  - 92% also endorsed Harm Reduction
  - 63% also endorsed Quitting
  - Just 1.8% *only* endorsed Flavors
- Of those endorsing Harm Reduction
  - 85% also endorsed Flavors
  - 66% also endorsed Quitting
  - Just 1.3% *only* endorsed Harm Reduction
- Of those endorsing Quitting
  - 98% also endorsed Harm Reduction
  - 86% also endorsed Flavors
  - Just 0.5% *only* endorsed Quitting

### Structure of Motives

#### Cluster analysis (N=394)

- Cluster analysis was used to identify subgroups with differing motives
- The Top-3 motives were excluded, as their almost universal endorsement undermined differentiation among individuals or groups
- Table 2 shows the endorsement of motives in a 4-cluster solution.
- Notably**, >80% of respondents in each cluster endorsed Harm Reduction motives
- Cluster 2 was marked by having low engagement on multiple fronts: less endorsement of all motives, low prevalence of smoking and low frequency of smoking and vaping, but the lowest use of flavored e-cigarettes.
- Cluster 3 had high endorsement of multiple motives
- Cluster 4 endorsed social motives for vaping, and had the highest proportion of females
- Cluster 1, the most numerous, emphasized motives related to covert use of e-cigarettes. It was the oldest group, with the highest prevalence and frequency of smoking and highest frequency of vaping

Table 1. Top 3 reasons for using e-cigarettes

Reason for Use (“I use e-cigarettes because...”)	% (95% CI)
<b>Harm Reduction</b> (to self and others)	88.2 (85.3-91.1)
They might be less harmful <i>to me</i> than cigarettes	79.1 (75.2-83.0)
They might be less harmful <i>to people around me</i> than cigarettes	78.1 (74.3-81.8)
They come in flavors I like	81.5 (77.9-85.0)
They help people to quit smoking cigarettes	59.5 (54.6-64.5)

Harm reduction is the most frequently endorsed reason, significantly more than flavors

p=0.002

### Cluster analysis of endorsed reasons for using e-cigarettes

Table 2. Motives endorsed, by cluster

V. High High Low V. Low

Colors indicate relatively high or low endorsement of motives

	Social example	High engage	Low engage	Covert smoking
N	48	86	98	162
<b>Reasons included in cluster analysis</b>				
Use where cigs not allowed	19% <sup>b</sup>	92% <sup>c</sup>	4% <sup>a</sup>	93% <sup>c</sup>
Public figures use	61% <sup>b</sup>	96% <sup>c</sup>	13% <sup>a</sup>	17% <sup>a</sup>
People important to me	100% <sup>c</sup>	56% <sup>b</sup>	14% <sup>a</sup>	19% <sup>a</sup>
Affordable	63% <sup>c</sup>	91% <sup>d</sup>	20% <sup>a</sup>	43% <sup>b</sup>
Socializing	43% <sup>b</sup>	66% <sup>c</sup>	13% <sup>a</sup>	49% <sup>b</sup>
Don't bother non-tob users	36% <sup>a</sup>	70% <sup>b</sup>	40% <sup>a</sup>	63% <sup>b</sup>
Like smoking a cigarette	16% <sup>a</sup>	40% <sup>b</sup>	16% <sup>a</sup>	38% <sup>b</sup>
Do not smell	41% <sup>a</sup>	60% <sup>a</sup>	45% <sup>a</sup>	77% <sup>b</sup>
Appealing advertising	30% <sup>b</sup>	52% <sup>c</sup>	7% <sup>a</sup>	9% <sup>a</sup>
# reasons endorsed	6.2 <sup>b</sup>	8.9 <sup>c</sup>	3.7 <sup>a</sup>	6.5 <sup>b</sup>
<b>Top-3 reasons (not included in clustering)</b>				
Harm reduction	85% <sup>a,b</sup>	97% <sup>c</sup>	82% <sup>a</sup>	94% <sup>b,c</sup>
Helps quit smoking	52% <sup>a,b</sup>	78% <sup>c</sup>	39% <sup>a</sup>	68% <sup>b,c</sup>
Flavors	80% <sup>a</sup>	95% <sup>b</sup>	76% <sup>a</sup>	85% <sup>a</sup>

Different superscripts denote significant differences among the clusters (p<0.05)

Table 3. Demographics and product use, by cluster

Reasons included in cluster analysis	Covert smoking	Low engage	High engage	Social example
<b>Demographics</b>				
Age (% 12-14 years of age)	11% <sup>a</sup>	16%	20%	21%
Gender (% female)	31%	40%	37%	59% <sup>a</sup>
Ethnicity (% white)	71%	63%	60%	70%
Ethnicity (% African American)	5% <sup>a</sup>	12%	12%	6% <sup>a</sup>
<b>Smoking and e-cigarette use</b>				
Past-30-day smoking	57%	28% <sup>a</sup>	45%	42%
# days smoked in past 30 days	15.8 <sup>a</sup>	11.7	11.0	11.2
# cigarettes/day on day smoked	4.5	3.9	3.8	4.0
# days used e-cig in past 30 days	7.6	3.5 <sup>a</sup>	7.1	4.3 <sup>a</sup>
# e-cigarette cartridges / day	1.0	0.8	0.8	1.0
% used flavored e-cigarettes	87%	91% <sup>a</sup>	82%	80%

Superscripts indicate cluster (or combination of clusters) marked are significantly different (p<0.05) from combination of remaining clusters

## Summary/Conclusions

- Harm Reduction (harm to self and to others) is the most common reason for teen use of cigarettes
- Harm Reduction, Quitting, and Flavors are the Top 3 endorsed motives: at least one is endorsed by 95% of teen e-cigarette users
- Teens commonly endorse multiple reasons for using e-cigarettes, rendering the analysis of motives complex
- A cluster analysis indicates that patterns of motives differ by smoking status and by frequency of e-cigarette use
- Overall, teens' motives for using e-cigarettes are complex and multifaceted, and perhaps not well-captured by PATH's simple dichotomous yes/no endorsement of multiple motives
- More research on teen (and adult) motives for using e-cigarettes may better clarify the motivations for e-cigarette use

### Disclosures

PinneyAssociates provides consulting services on tobacco harm minimization (including nicotine replacement therapy and digital vapor products) to Nicovum USA, RJ Reynolds Vapor Company, and RAI Services Company, all subsidiaries of Reynolds American Inc. In the past three years, PinneyAssociates has consulted to NJOY on electronic cigarettes. JGG/SS also own an interest in intellectual property for a novel nicotine medication an option for which has been sold to Nicovum USA.

### References

- Ambrose BK, Day HR, Rostron B, Conway KP, Borek N, Hyland A, Villanti AC. Flavored Tobacco Product Use Among US Youth Aged 12-17 Years, 2013-2014. JAMA. 2015 Nov 3;314(17):1871-3. doi: 10.1001/jama.2015.13802.

