Dabbling *with* E-Cigarettes: National Rates & Predictors of Discontinued Use

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{ABSTRACT}

Purpose: Adults' e-cigarette use potentially models smoking behavior and exposes non-smokers to harmful chemicals. Although e-cigarette use is increasing, many adult try them and discontinue use. This study examines rates of initiation and discontinuation among U.S. adults, reasons for initiating and discontinuing, and amount of use prior to discontinuation, and compares these outcomes by smoking status.

Methods: Respondents were recruited from a nationally representative dual-frame sample in 2014. Adults were asked about e-cigarette use and reasons for initiating and discontinuing use.

Results: Of 3,030 respondents, 523 (17.4%) had tried e-cigarettes, 64.9% of whom had discontinued use. Adults with lower levels of education were less likely to have discontinued, as were current smokers and recent former smokers compared to never smokers and long-term former smokers. Most (71%) former trial users (or "dabblers") reported using e-cigarettes 10 or fewer times. Recent former and current smokers, as well as white adults, more often reported higher lifetime use. Recent former and current smokers were more likely to endorse harm reduction and cessation as reasons for trying e-cigs. Among those who discontinued use, the most often cited reason was that they had been curious about trying them, and had no desire to continue using. Recent former smokers (76.8%) and current smokers (62.7%) were less likely to endorse this reason than never smokers (100%) or long-term former smokers (88.6%).

Conclusions: Two-thirds of adults who have tried e-cigarettes no longer use them, and most used them only a few times. It appears that many people who try e-cigarettes, particularly never smokers and long-term former smokers, do so out of curiosity, rather than an interest in harm reduction or circumventing smoking bans.

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{INTRODUCTION}

The increasing prevalence of e-cigarette use [1-5] poses an intriguing scenario for public health. On one hand, these products may hold potential for reducing the prevalence of combustible tobacco use.[6] The potential for harm reduction among smokers who switch from combustible cigarettes to a product that is likely much less harmful holds excitement for some public health researchers. On the other hand, any potential harm reduction benefit of electronic cigarettes should be balanced against the public health harm from never and former smokers initiating and maintaining e-cigarette use. We recently demonstrated that 20% of current e-cigarette users were nonsmokers when they started e-cigarette use.[5] That is, one fifth of the current e-cigarette market consists of people who were not smoking combustible tobacco when they began using these products. The potential harm reduction benefits of diverting smokers and susceptible nonsmokers to e-cigarettes are mitigated if these products attract new users who were not likely to initiate smoking.[7]

Concern over large increases in e-cigarette use might be diminished, however, if most initial use is rapidly discontinued. Two recent studies indicate high rates of discontinued use among both nonsmokers [8] and smokers, [8,9] although current smokers were less likely to discontinue use than former and never smokers. The majority of trial users discontinue use and typically due to lack of satisfaction or because trial was motivated by curiosity.[8-11] Among the most cited reasons for initiation were harm reduction,[8,9] cessation assistance,[8] ability to use these products in smokefree zones,[8,9] curiosity,[9,11] friend or family provided an e-cigarette,[9] and appeal of flavors.[11] Popular reasons for discontinuing use included lack of satisfaction compared to a cigarette [9,10] and trial was simply intended as experimentation.[9] Adolescents and young adults tended to cite concerns that e-cigarettes were uncool and posed health risks as reasons for stopping use.[11]

This study adds to the research on initiation and discontinuation of e-cigarette by comparing rates of and reasons for initiation and discontinuation among never smokers, smokers who quit before e-cigarettes were available, those who quit after the introduction of e-cigarettes, and current smokers. We also address amount of use prior to discontinuation and predictors of discontinuation e-cigarette use.

{METHODS}

We administered the dual-frame Social Climate Survey of Tobacco Control to a representative national sample of adults in 2014. The design included a Random Digit Dialing (RDD) frame and an internet panel frame developed from a probability sample of U.S. adults.5 Data were weighted to adjust for age, race, sex, and region.

Nicotine Use

Respondents were identified as never, current, or formers smokers using the standard two items. Respondents were asked "Have you ever heard of an e-cigarette before this survey?" Respondents who had heard of electronic cigarettes were asked, "Have you tried electronic cigarettes or e-cigarettes, even one or two times?" Respondents who reported yes were classified as having tried electronic cigarettes. Those who had tried electronic cigarettes were asked, "How often do you now vape or use e-cigarettes; every day, some days, or not at all?" Respondents who reported every day or some days were classified as current users, while those who reported not at all were classified as former trial users.

Reasons for Initiation of E-cigarette Use

All respondents who reported having tried e-cigarettes were asked the following questions. I use(d) e-cigarettes because 1) They are affordable, 2) E-cigarettes don't smell, and 3) E-cigarettes are more acceptable to non-tobacco users. Established former and current cigarette smokers were also asked if the following reasons for initiation applied 1) I can use e-cigarettes in places where smoking traditional cigarettes isn't allowed, 2) They are less harmful to me than traditional cigarettes, 3) They are less harmful to people around me than traditional cigarettes, 4) Using e-cigarettes can help me to quit smoking traditional cigarettes, and 5) Family and friends encourage me to use e-cigarettes instead of regular cigarettes.

Reasons for Discontinuation of E-cigarette Use

Respondents who had tried e-cigarettes, but reported no longer using them were asked the following question. The next questions are about the reasons people stop using e-cigarettes. Please select which reasons apply to you, 1) I was just curious to try them and had no desire to continue using them, 2) E-cigarettes are not satisfying, 3) E-cigarettes are too much hassle, 4) E-cigarettes look silly, and 5) E-cigarettes cost too much.

Lifetime Consumption of E-cigarettes

Respondents who had tried e-cigarettes were asked, about how many times have you used an e-cigarette in your entire life? Response options were 1-10, 11-20, 21-50, 51-99, at least a 100 or more. Those who reported 1 – 10 times were asked, can you tell me the number of times that you used an e-cigarette.

TABLE 1. PREDICTORS OF E-CIGARETTE TRIAL

	Percentage	Odds Ratio
Smoking Status* (n=2,983)		
Never smoker (n=1,815)	7.4%	1
Recent former smoker (n=184)	50.0%	14.8 (10.1-21.8)
Long-term former smoker (n=575)	7.1%	2.1 (1.4-3.1)
Current smoker (n=406)	62.3%	31.3 (22.5-43.5)
Region (n=2,976)		
Northeast (n=541)	14.0%	1
Midwest (n=643)	17.7%	1.3 (0.8-1.9)
South (n=1,097)	18.1%	1.2 (0.8-1.7)
West (n=695)	19.1%	1.3 (0.9-1.9)
Race (n=2,958)		
White (n=1,997)	18.2%	1
Black (n=350)	14.0%	0.4 (0.3-0.7)
Other (n=611)	16.7%	0.8 (0.6-1.2)
Age* (n=2,999)		
18-29 (n=695)	29.9%	1
30-44 (n=739)	20.0%	0.4 (0.3-0.5)
45-64 (n=1,035)	13.7%	0.2 (0.1-0.2)
65+ (n=530)	4.7%	0.1 (0.0-0.1)
Sex* (n=2,999)		
Male (n=1,451)	20.0%	1
Female (n=1,548)	15.1%	0.8 (.7-1.1)
Education* (n=2,987)		
Less than High School (n=367)	27.8%	1
High School (n=880)	21.4%	1.2 (0.8-1.7)
Some College (n=867)	17.0%	0.9 (0.6-1.3)
College Degree (n=873)	9.5%	0.7 (0.5-1.1)

* Bivariate analyses resulted in Chi-Square value associated with a p<.05

TABLE 2. PREDICTORS OF DISCONTINUING E-CIGARETTE USE

	Percentage	Odds Ratio
Smoking Status* (n=512)		
Never smoker (n=130)	73.8%	1
Recent former smoker (n=92)	59.8%	0.7 (0.3-1.4)
Long-term former smoker (n=41)	92.7%	6.2 (1.5-24.8)
Current smoker (n=249)	57.0%	0.7 (0.4-1.3)
Region (n=514)		
Northeast (n=75)	69.3%	1
Midwest (n=113)	69.0%	1.4 (0.7-2.8)
South (n=193)	58.0%	1.0 (0.5-1.8)
West (n=133)	69.2%	1.8 (0.9-3.8)
Race (n=505)		
White (n=358)	62.3%	1
Black (n=49)	69.4%	1.6 (0.8-3.2)
Other (n=98)	74.5%	1.4 (0.8-2.5)
Age (n=511)		
18-29 (n=204)	67.6%	1
30-44 (n=146)	58.2%	0.6 (0.3-1.2)
45+ (n=164)	67.1%	1.1 (0.5-2.1)
Sex (n=515)		
Male (n=285)	62.8%	1
Female (n=230)	67.4%	1.1 (.7-1.6)
Education* (n=513)		
Less than High School (n=98)	41.8%	1
High School (n=186)	71.0%	3.5 (2.0-6.2)
Some College (n=147)	63.9%	2.7 (1.5-4.7)
College Degree (n=82)	78.0%	5.1 (2.5-10.5)

* Bivariate analyses resulted in Chi-Square value associated with a p<.05

TABLE 3. PERCENT OF TRIAL USERS WHO USED E-CIGARETTES 10 OR LESS TIMES BEFORE DISCONTINUING USE

	Percentage
Smoking Status* (n=295)	
Never smoker (n=90)	84.4%
Recent former smoker (n=52)	42.3%
Long-term former smoker (n=35)	77.1%
Current smoker (n=118)	70.3%
Region* (n=295)	
Northeast (n=43)	79.1%
Midwest (n=68)	73.5%
South (n=104)	65.4%
West (n=80)	71.3%
Race* (n=294)	
White (n=200)	66.0%
Black (n=29)	93.1%
Other (n=65)	73.8%
Age (n=296)	
18-29 (n=121)	71.9%
30-44 (n=73)	67.1%
45+ (n=102)	72.5%
Sex (n=298)	
Male (n=155)	68.4%
Female (n=143)	72.7%
Education (n=297)	
Less than High School (n=38)	73.7%
High School (n=121)	68.6%
Some College (n=81)	71.6%
College Degree (n=57)	70.2%

* Bivariate analyses resulted in Chi-Square value associated with a p<.05

FIGURE 1. REASONS FOR INITIATION BY SMOKING STATUS

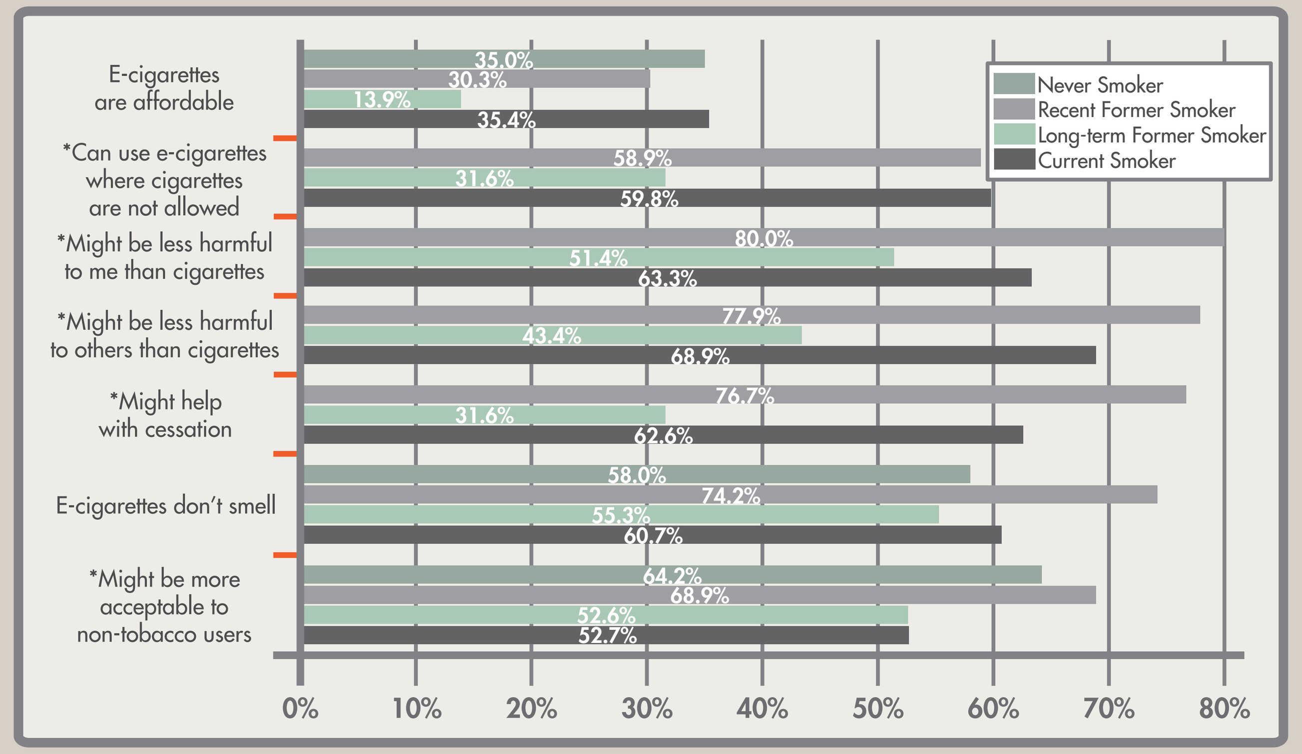
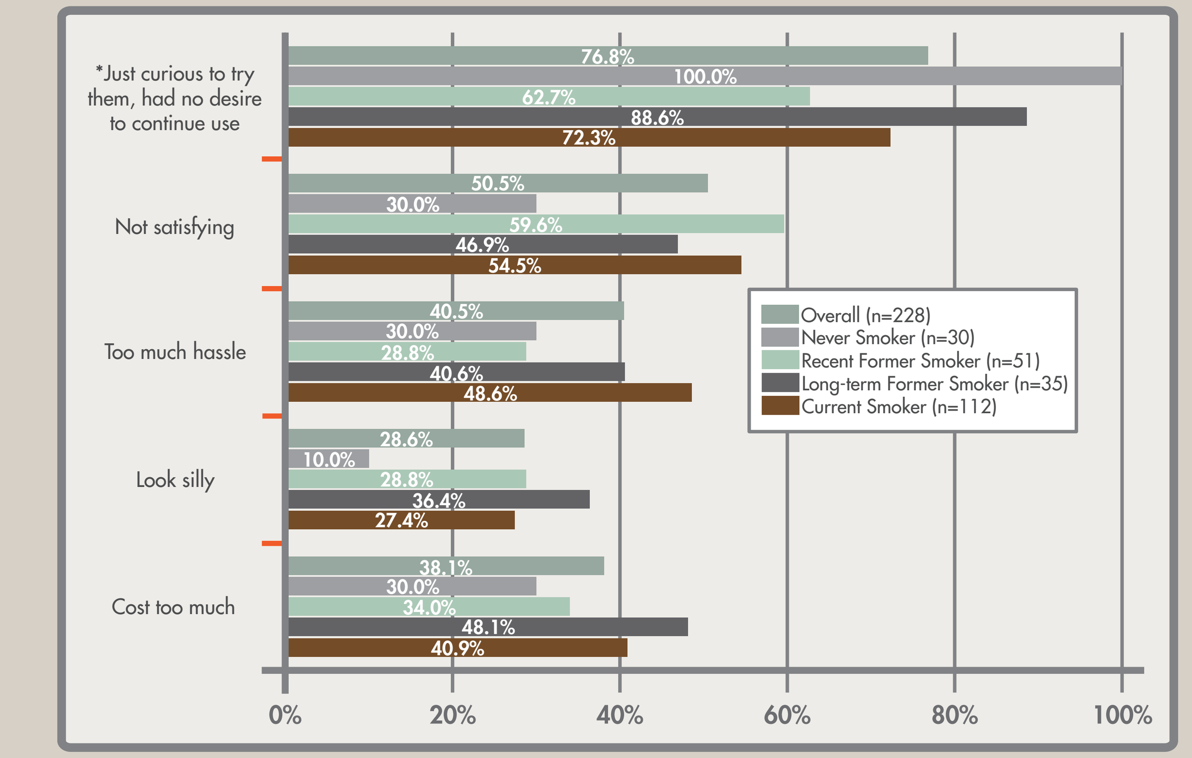


FIGURE 2. REASONS FOR DISCONTINUING USE OF E-CIGARETTES



{RESULTS}

The sample included 3,030 U.S. adults. The co-operation rate for the RDD frame (n=1,511) was 86.9%, and the final completion rate for the panel frame (n=1,518) was 56.0%. Overall, 17.4% of U.S. adults have tried e-cigarettes. Former and current cigarette smokers, younger adults, males, and adults with lower levels of education were the most likely to have tried e-cigarettes (See Table 1). Among adults who have tried e-cigarettes, 64.9% discontinued use (See Table 2). Most individuals (70.0%) who discontinued use reported low lifetime use of e-cigarettes (10 or fewer times) (See Table 3).

Reasons for Initiation

Current users were more likely than dabblers to endorse the following reasons for initiation and trial: e-cigarettes are affordable (53.1% vs. 21.9%), can use e-cigarettes where cigarettes are not allowed (72.9% vs. 46.8%), might be less harmful to me than cigarettes (80.4% vs. 55.9%), might be less harmful to others than cigarettes (88.1% vs. 56.4%), might helps with cessation (76.8% vs. 54.3%), e-cigarettes don't smell (64.6% vs. 54.6%), and might be more acceptable to non-tobacco users (72.1% vs. 50.8%), p<.05 for all comparisons. Recent former smokers tended to be the most likely to endorse these reasons for initiation (See Figure 1). Endorsement of affordability and lack of smell did not vary across smoking status, but recent former and current smokers had the highest level of endorsement for the remaining five reasons.

Reasons for Discontinuation

Dabblers endorsed the following reasons for discontinued use: just curious to try them, had no desire to continue use (76.8%), not satisfying (50.5%), too much hassle (40.5%), look silly (26.6%), and cost too much (38.1%). We compared endorsement of these reasons across smoking status. Never smokers were the most likely to endorse curiosity as a reason for trial (100%) and recent former smokers were the least likely to do so (62.7%); long-term former smokers (88.6%) and current smokers (72.3%) fell in between, p<.05. There were no differences for the other reasons for discontinuation (See Figure 2).

{DISCUSSION}

Previous research finding increases in e-cigarette trial and current use among nonsmoking adolescents [1,2] and adults, [3-5] raises public health concerns. However, almost two-thirds of adults who have tried e-cigarettes no longer use them, and most used them only a few times. Compared to those who maintain use, dabblers were less likely to be motivated to try e-cigarettes by interest in harm reduction or circumventing smoking bans. We also found that current smokers and former smokers who quit before e-cigarettes became widely available were less likely to endorse harm reduction reasons for trial than those who quit smoking after e-cigarettes were available. The most supported reason for discontinuing use was curiosity. It appears that many dabblers tried e-cigarettes out of curiosity with no intent of continued use, although recent former smokers were the least motivated by curiosity.

As product marketing becomes more pervasive, cost comes down, population use normalizes behavior, and companies design more satisfying e-products, the rates of discontinuing use may become lower. Currently, most trial users discontinue e-cigarette use after only a few trials, however, more than a quarter of never smokers continue use and are therefore subject to health risks that would not have existed without their e-cigarette use. Understanding the phenomenon of e-cigarette dabbling will help the public health community assess the magnitude of the population level risk of converting nicotine naive to nicotine addicted individuals.

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