

Vaping and Confused: Adult smoker and former smoker perceptions and use of e-cigarettes

INTRODUCTION

An increasing number of cigarette smokers are turning to electronic cigarettes to help them quit smoking. According to a recent survey by Truth Initiative, nearly half of current and recent former smokers age 21 and older have tried e-cigarettes, and most of those used e-cigarettes to try to quit or reduce their smoking. At the same time, consumers are uncertain about these products' effectiveness as a tool to quit smoking and are confused about their health effects.

This report explores current and former smokers' use and perceptions of e-cigarettes, based on a nationwide online survey of current smokers and recent former smokers age 21 and older. Global Strategy Group conducted the survey on behalf of Truth Initiative from October 5-12, 2016.

BACKGROUND

Electronic cigarettes have only been available in the United States for around a decade,ⁱ but have quickly grown in popularity.ⁱⁱ Data from the 2014 National Health Interview Survey (NHIS) showed that 12.6% of adults in the U.S. had ever used e-cigarettes, with current and former smokers comprising the vast majority of e-cigarette use.ⁱⁱⁱ The NHIS found that nearly half of current smokers (47.6%) and more than half of former smokers (55.4%) had ever used e-cigarettes. In contrast, only 3.2% of adults who had never smoked had used e-cigarettes.^{iv}

The term “electronic cigarette” or “e-cigarette” encompasses a variety of products sometimes referred to as Electronic Nicotine Delivery Systems (ENDS). These products—which also include vape pens, personal vaporizers, e-hookahs, e-pipes and e-cigars—are battery-operated devices that produce an aerosol or vapor instead of smoke. Our survey asked about all of these products as one category of “e-cigarettes” after providing a definition for survey respondents.^v In accordance with the survey, this report will also refer to all ENDS products as “e-cigarettes.”

Nearly half of current smokers and more than half of former smokers have tried e-cigarettes.

In 2016, the U.S. Food & Drug Administration (FDA) deemed e-cigarettes to be “tobacco products” under federal law.^{vi} This means that e-cigarettes now must meet FDA requirements regarding their manufacturing, marketing, and sale. For example, the sale of e-cigarettes to individuals under the age of 18 is now prohibited. Health warnings will be required on e-cigarette advertising beginning May 10, 2018.^{vii} Like other tobacco products, e-cigarettes may not be advertised as reducing the risk of tobacco-related disease unless the FDA approves the marketing of the product as a “modified risk tobacco product” (MRTP), which would require “showing that the product will or is expected to benefit the health of the population as a whole.”^{viii} In January 2017, the FDA issued a rule clarifying that before an e-cigarette could be legally marketed with smoking cessation claims, the FDA would first have to approve it as a medical drug or device.^{ix} Claiming that these approval pathways would be too expensive and time consuming, no e-cigarette manufacturer has applied for—and therefore no e-cigarettes have received—MRTP, drug, or device approval.^x In addition, although several studies have found e-cigarettes effective in helping some adult smokers to quit, more long-term studies are needed to evaluate e-cigarettes' overall health effects among the population and its effectiveness as a cessation tool.^{xi} Note that the new rule clarifying when tobacco products would be regulated as medical products has yet to go into effect. The FDA announced in March 2017 that the effective date had been delayed until March 19, 2018.^{xii}

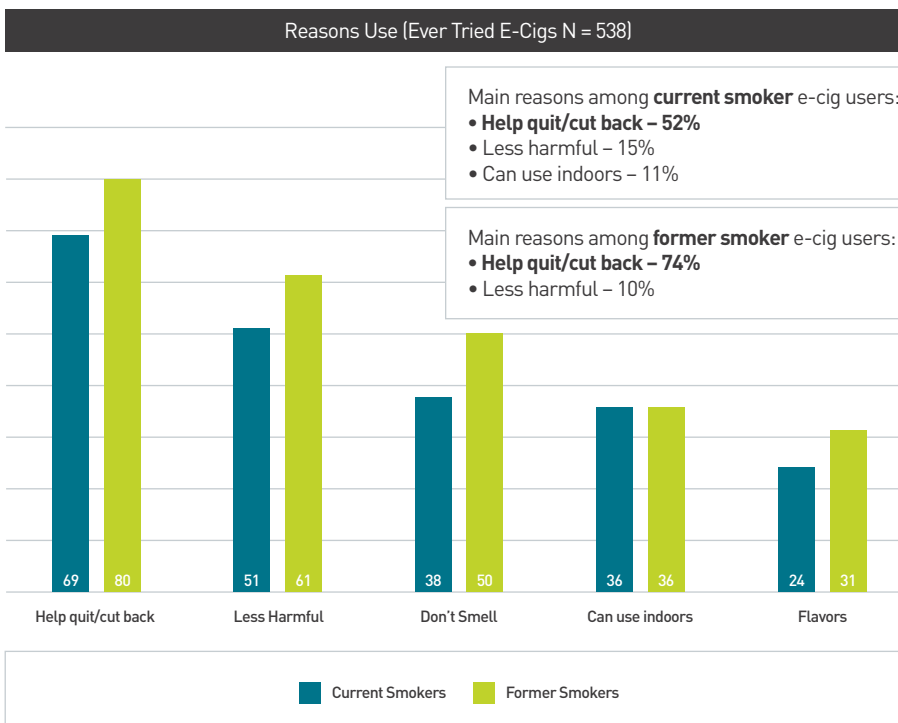
SURVEY RESULTS

A. PATTERNS OF USE

The Truth Initiative survey consisted of an online sample of 701 current smokers and 300 former smokers age 21 and older, weighted to be nationally representative. It included an unweighted sample of (a) 538 respondents who have tried e-cigarettes (335 current smokers and 204 former smokers); and (b) 247 current e-cigarette users (172 current smokers and 75 former smokers). Current smokers were defined as those who have smoked at least 100 cigarettes and currently smoke every day or some days. Former smokers were defined as those who have smoked at least 100 cigarettes, do not currently smoke, and completely quit smoking within the last 18 months.

The survey found that nearly half of current smokers (47%) and more than half of former smokers (55%) have tried e-cigarettes, consistent with the 2014 National Health Interview Survey. More than one-third of both groups (35%

Most use e-cigarettes to help quit or reduce smoking regular cigarettes.



of current smokers and 39% of former smokers) currently use e-cigarettes. This is a much higher current use rate than reflected in previous surveys.^{xiii} However, it's not clear whether regular e-cigarette use is actually increasing among these groups or if these differences in estimates are due to the use of different sampling methods for these surveys.

Compared to current smokers, former smokers were significantly more likely to report using e-cigarettes every day (31% vs. 9%). Former smokers were also more likely to say they have used e-cigarettes regularly over longer periods of time, with 20% of former smokers reporting that they had used e-cigarettes daily for more than a year, compared to only 5% of current smokers. These findings are consistent with other research indicating that

more regular users of e-cigarettes are more likely to have used them for quitting.^{xiv-xv} Our survey only polled former smokers who had quit within the past 18 months, but other surveys have suggested that e-cigarette use is more frequent among those who have recently quit, as compared to smokers who quit four or more years ago.^{xvi} This could be because former smokers taper off their e-cigarette use over time. It could also reflect the relatively recent appearance of e-cigarettes on the U.S. market.

Smokers are turning to e-cigarettes as a quit tool. The majority of those surveyed (52%) said that the “main reason” they use e-cigarettes is to quit or cut back their smoking, with 23% using e-cigarettes to quit, 19% using them to avoid smoking, and 10% using them to smoke fewer cigarettes. A full 80% of former smokers and 69% of current smokers cited reducing or quitting smoking as at least one reason for using e-cigarettes. These findings are consistent with previous surveys. For example, a 2014 survey found that, among current cigarette smokers, reasons for e-cigarette use included: quitting smoking (58.4%), reducing smoking (57.9%), and reducing health risks (51.9%).^{xvii} Note that using e-cigarettes to reduce (instead of quit) smoking is not an effective risk reduction strategy, as there is no safe level of smoking. Research has demonstrated that smoking even one cigarette a day can dramatically increase a person’s risk of early death.^{xviii} Cutting back on smoking may be a step to eventual quitting, however, as studies have shown that reducing smoking may increase the likelihood of future cessation.^{xix}

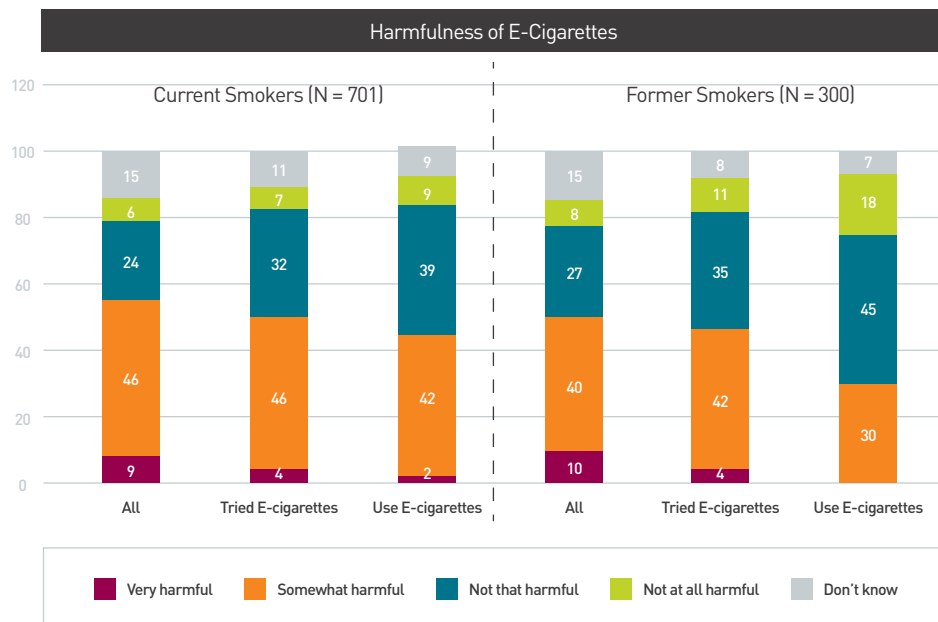
Respondents in our survey also reported using e-cigarettes because they:

- Might be less harmful than regular cigarettes (45%)
- Don’t smell (42%)
- Can be used where smoking isn’t allowed (36%)
- Come in flavors they like (27%)

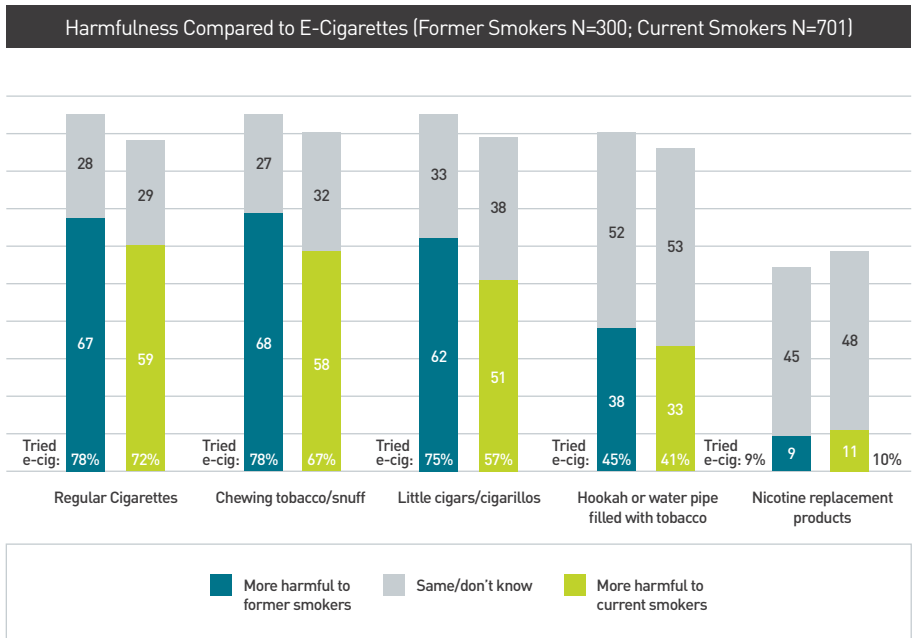
B. PERCEPTIONS OF HARM

The survey revealed a fair amount of uncertainty in people’s minds about the health effects of e-cigarettes. When asked about the harmfulness of e-cigarettes in general, a majority (54%) of survey respondents reported that e-cigarettes were harmful. However, only 9% believe they are “very harmful.” Former smokers who currently use e-cigarettes are the least likely to view them as harmful: only 30% believe e-cigarettes are harmful and none view these products as “very harmful.”

More than half believe e-cigarettes are harmful, though only 9% believe they are “very” harmful. Current e-cig users who are former smokers are significantly less likely to believe they are harmful.



E-cigarettes are considered significantly less harmful than other tobacco products but more harmful than nicotine replacements.



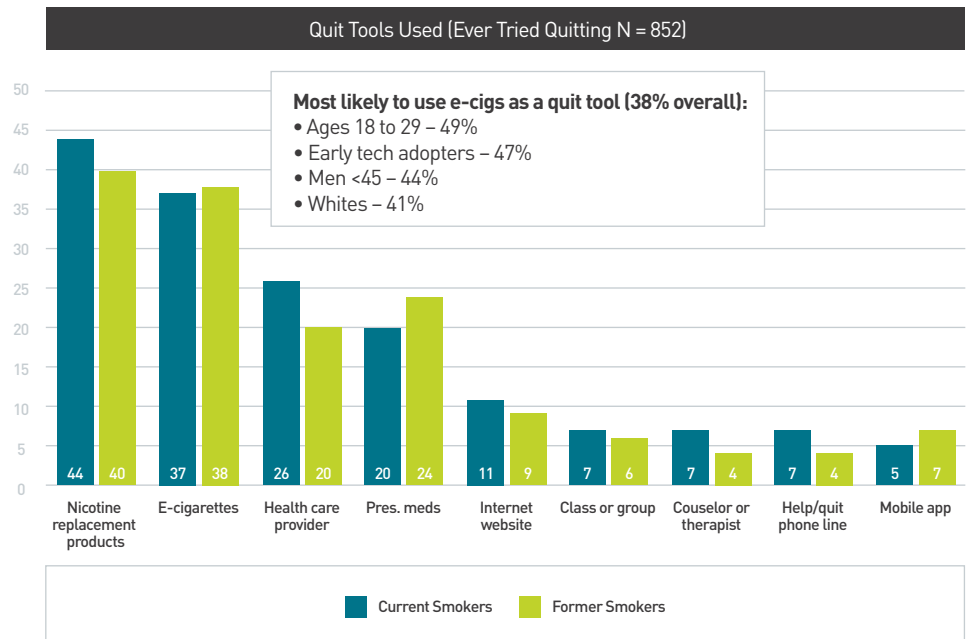
When comparing e-cigarettes with other tobacco products, the majority of respondents consider e-cigarettes significantly less harmful than other products, including traditional cigarettes, cigars, chewing tobacco, and hookah, but more harmful than nicotine replacement therapies (NRT). Close to two-thirds (62%) of those surveyed believe that traditional cigarettes are more harmful than e-cigarettes, 10% believe e-cigarettes are more harmful, 16% think the two products pose the same harm, and 13% said they didn't know which product was more harmful. Former smokers were more likely than current smokers to say traditional cigarettes were more harmful (67% vs. 59%).

Nicotine and other chemicals are the primary reasons e-cigarettes are considered harmful by those surveyed. Interestingly, for those who do not perceive e-cigarettes as harmful, it is the reduction in these chemicals that reduces risk perceptions. Respondents had mixed views about the health effects of e-cigarette vapor. Fifteen percent of respondents who think e-cigarettes are harmful cited the fact that "inhaling vapor damages the lungs," while 27% of those who think e-cigarettes are *not* harmful attribute that to the fact that "inhaling vapor is less harmful" than inhaling smoke. Among those who believe e-cigarettes are harmful, more than one-third (34%) cited the fact that e-cigarettes contain nicotine, while 22% noted that doctors and scientists have said they are harmful, 21% cited the news and media for their harm perception, and 9% noted that the products were sold by the tobacco industry. Of the 15% of respondents who said they were unsure about the health effects of e-cigarettes, a majority attributed their uncertainty to the lack of information about e-cigarettes and one-third to the existence of conflicting information about these products. This consumer confusion is not surprising given the lack of clarity in the published literature related to the health effects of e-cigarettes.

C. USE AS A QUIT TOOL

The survey shows that smokers are clearly turning to e-cigarettes as a quit tool. Among respondents who had tried quitting traditional cigarettes, more than one-third (38%) reported using e-cigarettes as a quit tool. These products were used almost as often as nicotine replacements, such as gum, patches and lozenges (42%), and more frequently than prescription medications (21%). Fewer than half (42%) of those polled believed e-cigarettes to be an effective quit tool, however, and only about half (49%) would recommend these products for quitting.

Among those who have tried quitting regular cigarettes, e-cigarettes are a common quit tool, used almost as often as nicotine replacements such as gum, patches and lozenges.



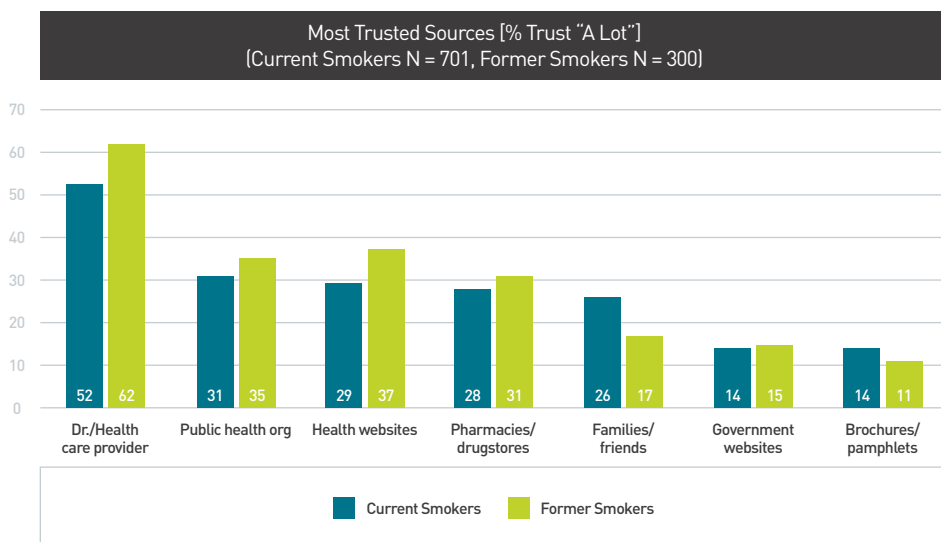
Nearly all (95%) of e-cigarette users who have recently quit smoking believe that e-cigarettes are effective quit tools, and 94% would recommend them for this purpose.

The numbers are quite different among former smokers who currently use e-cigarettes. Nearly all (95%) of these respondents think e-cigarettes are effective at helping smokers quit and 94% would recommend them for this purpose, suggesting that e-cigarettes are a satisfying quit product for those who have successfully used them for that purpose. However, it is important to remember that this group represents a minority (39%) of the former smokers surveyed and the former smoking sample included only individuals who had quit smoking within the last 18 months.

D. MEDIA AWARENESS

The survey included a number of questions to measure how consumers obtain information about e-cigarettes. Over half (51%) of the sample had seen messages about the health effects of e-cigarettes—with most respondents seeing messages online or on television. While the vast majority (76%) of respondents had sought out general health information, fewer than half (44%) reported actively searching for e-cigarette information. Of those who had searched for information about e-cigarettes, 27% had looked online, usually looking at health or news websites or social media. This last finding is perhaps not surprising, given the evidence on social media marketing efforts of e-cigarette manufacturers.^{xx} Only 13% of respondents had sought information about e-cigarettes from their health care provider.

Concerns about the quality of information are likely due to sources being primarily online when doctors and public health orgs are the most trusted sources.



The most actively sought-after information about e-cigarettes were their health effects (61%), using e-cigarettes to quit or reduce smoking (49%), and chemical ingredients (43%). Most respondents agreed that information about e-cigarettes was easy to find (67%) and understand (65%), but there were concerns about the quality of the information (46%), and some (32%) experienced frustration during their search. While respondents ranked health care providers as their most trusted source of information about e-cigarettes (55% trust information from them “a lot” and 29% trust information from them “some”), relatively few (13%) had asked their

provider about these products. Other trusted sources of information included the following:

- Public health organizations – 32% trust “a lot” + 40% trust “some”
- Health websites – 32% trust “a lot” + 44% trust “some”
- Pharmacies – 29% trust “a lot” + 40% trust “some”
- Family/friends – 24% trust “a lot” + 38% trust “some”

Interestingly, respondents reported relatively low trust in several traditional sources of information. Only 14% of respondents trust government websites, only 9% trust news websites, and only 8% trust newspapers “a lot.” These data are consistent with other polling reflecting a declining trust in traditional news sources.^{xxi}

CONCLUSIONS

Our survey reveals several pieces of good news, and also presents significant opportunities.

The positive findings include that:

1. Most current and former smokers correctly perceive e-cigarettes to be less harmful than traditional cigarettes.
2. A majority of those using e-cigarettes are using them to quit smoking.

The survey also highlighted opportunities for public education, which include:

1. Increasing consumers' understanding about the relative risk posed by e-cigarettes, as confusion exists among a noteworthy minority of those surveyed about the harm these products pose.
2. Clarifying the health risks of nicotine, as a number of respondents view e-cigarettes' harm as stemming from nicotine. It is unclear from this research whether these concerns relate to nicotine's addiction liability or disease risk. Explaining the actual health effects of nicotine might promote increased use of nicotine products for cessation purposes.
3. Improving the dissemination of information about e-cigarettes from trusted sources, such as health care providers and public health organizations.

In light of the findings from this study as well as other data, further research is urgently needed in several key areas, including:

1. High-quality randomized controlled trials and rigorous observational research to examine the efficacy of e-cigarettes for cessation.
2. Longitudinal observational studies to understand the long-term health effects and potential harm from e-cigarettes.
3. Research to develop effective strategies for communicating the relative risks of e-cigarettes versus combustibles (i.e. traditional cigarettes) for cessation among smokers. Such research should also examine possible unintended consequences of e-cigarette messaging to avoid promoting uptake among non-smokers.
4. We also note that e-cigarettes are not a unitary category. There are wide differences among products, and those differences certainly will affect, for example, the efficacy of particular devices for smoking cessation and potential negative health effects. There is clearly an opportunity for effective regulation of e-cigarettes that will help customers and health authorities reach informed conclusions.

NOTES

- i Consumer Advocates for Smoke-Free Alternatives Association (CASAA), *A Historical Timeline of Electronic Cigarettes*, <http://casaa.org/historical-timeline-of-electronic-cigarettes/> (accessed February 10, 2017) (reporting that the first documentary evidence of e-cigarettes being imported to the United States was in August 2006).
- ii Schoenborn CA, Gindi RM. Electronic cigarette use among adults: United States, 2014. NCHS data brief, no. 217. Hyattsville, MD: National Center for Health Statistics. 2015, available at <https://www.cdc.gov/nchs/data/databriefs/db217.pdf> ("Results from several studies suggest recent rapid increases in e-cigarette use.")
- iii Schoenborn CA, Gindi RM. Electronic cigarette use among adults: United States, 2014. NCHS data brief, no. 217. Hyattsville, MD: National Center for Health Statistics. 2015, available at <https://www.cdc.gov/nchs/data/databriefs/db217.pdf>.
- iv Schoenborn CA, Gindi RM. Electronic cigarette use among adults: United States, 2014. NCHS data brief, no. 217. Hyattsville, MD: National Center for Health Statistics. 2015, available at <https://www.cdc.gov/nchs/data/databriefs/db217.pdf>.
- v The individuals surveyed were told: "Throughout this survey, there are references to 'e-cigarettes.' When a question refers to e-cigarettes, we mean any battery-powered cigarette or pen that contains liquid nicotine, and produces vapor instead of smoke. Please keep in mind that we are referencing not only electronic cigarettes but also vape-pens, hookah-pens, e-hookahs, and e-vaporizers."
- vi Deeming Tobacco Products To Be Subject to the Federal Food, Drug, and Cosmetic Act, as Amended by the Family Smoking Prevention and Tobacco Control Act; Restrictions on the Sale and Distribution of Tobacco Products and Required Warning Statements for Tobacco Products, 81 Fed. Reg. 28973 (May 10, 2016) (to be codified at 21 CFR Parts 1100, 1140, and 1143).
- vii Deeming Tobacco Products To Be Subject to the Federal Food, Drug, and Cosmetic Act, as Amended by the Family Smoking Prevention and Tobacco Control Act; Restrictions on the Sale and Distribution of Tobacco Products and Required Warning Statements for Tobacco Products, 81 Fed. Reg. 28973 (May 10, 2016) (to be codified at 21 CFR Parts 1100, 1140, and 1143).
- viii U.S. Food & Drug Administration, Modified Risk Tobacco Products, <https://www.fda.gov/TobaccoProducts/Labeling/MarketingandAdvertising/ucm304465.htm> (accessed April 6, 2017).
- ix Clarification of When Products Made or Derived From Tobacco Are Regulated as Drugs, Devices, or Combination Products; Amendments to Regulations Regarding "Intended Uses", 82 Fed. Reg. 2193 (January 9, 2017) (to be codified at 21 C.F.R. pts. 201, 801 & 1100).
- x U.S. Food & Drug Administration, Summary of MRTP Application Actions, <https://www.fda.gov/TobaccoProducts/Labeling/TobaccoProductReviewEvaluation/ucm304465.htm> (accessed April 6, 2017); Clarification of When Products Made or Derived From Tobacco Are Regulated as Drugs, Devices, or Combination Products; Amendments to Regulations Regarding "Intended Uses", 82 Fed. Reg. 2193, 2203 (January 9, 2017) (to be codified at 21 C.F.R. pts. 201, 801 & 1100).
- xi Hartmann-Boyce J, McRobbie H, Bullen C, Begh R, Stead LF, Hajek P. Electronic cigarettes for smoking cessation. *Cochrane Database of Systematic Reviews* 2016, Issue 9. Art. No.: CD010216. DOI: 10.1002/14651858.CD010216.pub3; Glasser AM, Collins L, Pearson JL, et al. Overview of Electronic Nicotine Delivery Systems: A Systematic Review. *Am J Prev Med.* 2017 Feb;52(2):e33-e66.
- xii The FDA announced it was delaying the effective date of the rule after receiving a petition from the pharmaceutical and biotechnology industries objecting to changes the rule made to the legal definition of "intended uses," which applies to drugs and devices generally and not just to tobacco products. Clarification of When Products Made or Derived From Tobacco Are Regulated as Drugs, Devices, or Combination Products; Amendments to Regulations Regarding "Intended Uses"; Further Delayed Effective Date; Request for Comments, 82 Fed. Reg. 14319 (March 20, 2017) (to be codified at 21 C.F.R. pts. 201, 801 & 1100) (delaying effective date until March 19, 2018); February 8, 2017 petition submitted by Ropes & Gray and Sidley Austin LLP on behalf of the Medical Information Working Group, the Pharmaceutical Research and Manufacturers of America, and the Biotechnology Innovation Organization, available in Docket Nos. FDA-2011-P-0512, FDA-2013-P-1079, FDA-2015-N-2002, and FDA-2016-N-1149 at <https://www.regulations.gov>.
- xiii In the 2014 National Health Interview Survey, only 15.9% of current smokers and 22.0% of former smokers reported current use of e-cigarettes. Schoenborn CA, Gindi RM. Electronic cigarette use among adults: United States, 2014. NCHS data brief, no. 217. Hyattsville, MD: National Center for Health Statistics. 2015, available at <https://www.cdc.gov/nchs/data/databriefs/db217.pdf>.
- xiv Saddleson ML, Kozlowski LT, Giovino GA, et al. Enjoyment and other reasons for electronic cigarette use: Results from college students in New York. *Addictive Behaviors.* 2016;54:33-39.
- xv Farsalinos K, Romagna G, Tsiapras D, Kyrzopoulos S, Voudris V. Characteristics, perceived side effects and benefits of electronic cigarette use: A worldwide survey of more than 19,000 consumers. *International Journal of Environmental Research and Public Health.* 2014;11(4):4356.

-
- xvi Delnevo CD, Giovenco DP, Steinberg MB, et al. Patterns of electronic cigarette use among adults in the United States. *Nicotine Tob Res.* 2016;18(5):715-719; and Schoenborn CA, Gindi RM. *Electronic Cigarette Use Among Adults: United States, 2014*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics; October 2015.
- xvii Rutten LJ, Blak KD, Agunwamba AA, Grana RAWilson PM, Ebbert JO, Okamoto J, Leischow SJ. Use of e-cigarettes among current smokers: Associations among reasons for use, quit intentions, and current tobacco use, *Nicotine Tob Res* 2015 Oct;17(10):1228-34.
- xviii Inoue-Choi M, Liao L, Reyes-Guzman C, Hartge P, Caporaso N, Freedman N. Association of long-term low-intensity smoking with all-cause and cause-specific mortality in the NIH-AARP Diet and Health Study. *JAMA Internal Medicine*. December 5, 2016. DOI: 10.1001/jamainternmed.2016.7511 (finding that those “who consistently smoked an average of less than one cigarette per day over their lifetimes had a 64 percent higher risk of earlier death than never smokers, and those who smoked between one and 10 cigarettes a day had an 87 percent higher risk of earlier death than never smokers.”)
- xix Begh R, Lindson-Hawley N, Aveyard P. Does reduced smoking if you can't stop make any difference? *BMC Medicine*. 2015;13:257.; Hughes JR, Carpenter MJ. Does smoking reduction increase future cessation and decrease disease risk? A qualitative review. *Nicotine Tob Res.* 2006 Dec;8(6):739-49.
- xx Huang J, Kornfield R, Szczypka G, Emery SL. A cross-sectional examination of marketing of electronic cigarettes on Twitter, 2014;23:iii26–iii30 6.
- xxi See, e.g., Art Swift, *Americans' Trust in Mass Media Sinks to New Low*, Gallup, Sept. 14, 2016, available at <http://www.gallup.com/poll/195542/americans-trust-mass-media-sinks-new-low.aspx> (accessed April 6, 2017).