



Are E-Cigarette Regulations Jeopardizing the Public Health?

A Review of the Evidence and Policy Missteps

March 9, 2020



Are E-Cigarette Regulations Jeopardizing the Public Health?

A Review of the Evidence and Policy Missteps¹

Summary

In merely a decade, e-cigarettes have gone from fringe novelties to mainstream products used by millions of Americans. In response to rising teen use, policymakers in many jurisdictions have responded with burdensome taxes and regulations meant to mitigate this perceived public health threat. Yet, the reality is more nuanced. E-cigarettes are far less harmful than combustible cigarettes and constitute one of the most common -- and effective -- smoking cessation aids. Overzealous or poorly designed restrictions on vaping, combined with misleading information about e-cigarettes' true health risks, are deterring smokers from pursuing a potentially life-saving alternative. This report debunks common misunderstandings about e-cigarettes and highlights e-cigarettes' untapped potential to mitigate the harm done by combustible tobacco products.

Introduction

Electronic cigarettes (e-cigarettes) are devices -- often resembling cigarettes, cigars or pipes -- designed to deliver nicotine to users in the form of a vapor. A mere decade ago, e-cigarettes were a peripheral phenomenon in the U.S. that attracted little attention from policymakers. Since 2014, however, e-cigarettes have experienced a boom in popularity, and their growing impact on public health has generated intense debate.

¹ Liam Sigaud, Dr. Krisztina Pusok, Janson Q. Prieb and Steve Pociask are with the American Consumer Institute, Center for Citizen Research, a nonprofit educational and research organization. A special thanks to Guy Bentley, Director of Consumer Freedom Research at the Reason Foundation, for his helpful comments. For more information about the Institute, visit www.TheAmericanConsumer.Org or follow us on Tweeter @ConsumerPal.

Lawmakers and regulators around the U.S. must decide where e-cigarettes fit into a broader tobacco harm reduction strategy, and what policies are appropriate to protect the public while encouraging smokers to use e-cigarettes as healthier substitutes. In some countries, particularly the United Kingdom, public health officials have embraced e-cigarettes as effective smoking cessation aids. So far, policymakers in the U.S. have adopted a far more skeptical, even hostile, stance toward e-cigarettes.

The stakes are high. In 2017, 2.8% of U.S. adults (6.9 million) were current e-cigarette users.² In addition, last year, more than 3.6 million U.S. middle and high school students reported using e-cigarettes in the past 30 days, including 4.9% of middle school students and 20.8% of high school students.³

The Centers for Disease Control and Prevention (CDC) reports that more than 480,000 people in the U.S. die each year of smoking-related illnesses, and more than 16 million Americans are living with a disease caused by smoking.⁴ If e-cigarettes can reduce smoking rates, the public health gains -- particularly when compounded over long time spans -- could be substantial. On the other hand, some fear that vaping's surging popularity among teens could entice more young people to take up cigarette smoking.

The attack against e-cigarettes is going full steam ahead. Earlier this year, the Trump administration announced a ban on all flavored e-cigarette cartridges, excluding tobacco and menthol.⁵ Meanwhile, disposable and open-system e-cigarettes avoided the flavor ban, but that could change at any time, as the House recently passed legislation that would end all

² Teresa W. Wang, Kat Asman, Andrea S. Gentzke, et al., "Tobacco Product Use Among Adults — United States, 2017," Centers for Disease Control and Prevention, November 9, 2018, https://www.cdc.gov/mmwr/volumes/67/wr/mm6744a2.htm?s_cid=mm6744a2_w.

³ Karen A. Cullen, Bridget K. Ambrose, Andrea S. Gentzke et al., "Notes from the Field: Use of Electronic Cigarettes and Any Tobacco Product Among Middle and High School Students — United States, 2011–2018," Centers for Disease Control and Prevention, November 16, 2018, https://www.cdc.gov/mmwr/volumes/67/wr/mm6745a5.htm?s_cid=mm6745a5_w.

⁴ "Smoking & Tobacco Use: Fast Facts," Centers for Disease Control and Prevention, February 6, 2019, https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm.

⁵ Jamie Ducharme, "Trump Administration Announces Stripped-Down Regulations on Flavored Vaping Products," *Time*, January 2, 2020, <https://time.com/5758004/flavored-vape-ban/>.

flavored e-cigarettes, including menthol flavors, regardless of device.⁶ The bill also includes various other restrictions and an excise tax on nicotine.⁷

Progress on enacting regulations does not seem to stop, as mounting pressure from the Food and Drug Administration (FDA) is forcing manufacturers like Juul to implement age locks on their products.⁸ Making matters even worse, companies will still need to submit a “Premarket Tobacco Application” (PMTA) to the FDA by May 12th or else be forced to close shop, no easy task as suggested by the first company to submit the application.⁹

Yet, the attack on e-cigarettes is not limited to the federal level. New Jersey, for instance, is set to ban all flavored e-cigarettes sales by April, 2020, forcing some 270 shops across the state to either move or close shop entirely.¹⁰ Meanwhile, Massachusetts passed a bill that would impose a 75 percent tax on e-cigarettes and banned all flavors (except those smoked on-site), thereby limiting access “puff shops.”¹¹ And in Colorado, a bill is being proposed that would do away with flavored e-cigarettes completely.¹² A number of municipalities and counties are also following suit.

An important shortfall of these legislative efforts is that they fail to address the illicit e-cigarettes market that caused this “vaping epidemic” in the first place. According to Public

⁶ H.R.2339 - Reversing the Youth Tobacco Epidemic Act of 2019, <https://www.congress.gov/bill/116th-congress/house-bill/2339>.

⁷ Spencer Platt, “House Passes Bill to Ban the Sale of Flavored e-cigarettes and Tobacco Products,” NBC News, February 28, 2020, <https://www.nbcnews.com/politics/politics-news/house-passes-bill-ban-sale-flavored-e-cigarettes-n1145186>.

⁸ Audrey Concklin, “Juul, facing FDA pressure, plans age lock,” Fox Business, February 25, 2020, <https://www.foxbusiness.com/technology/juul-age-lock-21>.

⁹ Jim McDonald, “The First Vape PMTA Has Been Submitted to the FDA,” October 14, 2019, <https://vaping360.com/vape-news/85364/the-first-vape-pmta-has-been-submitted-to-the-fda/>.

¹⁰ Tracy Tully, “Vape Shops Face a Choice: Close or Rebrand?” New York Times, February 19, 2020, <https://www.nytimes.com/2020/02/19/nyregion/new-jersey-vape-stores.html>.

¹¹ Vanessa Romo, “Massachusetts Governor Signs Law Severely Restricting Flavored Tobacco, Vape Products,” NPR, November 27, 2019, <https://www.npr.org/2019/11/27/783400051/massachusetts-governor-signs-law-severely-restricting-flavored-tobacco-vape-prod>.

¹² John Daley, “A New Bill Would Ban The Sale of All Flavored Nicotine Products,” February 21, 2020, CPR News, <https://www.cpr.org/2020/02/21/a-new-bill-would-ban-the-sale-of-all-flavored-nicotine-and-tobacco/>.

Health England, the risks of vaping are around 95 percent safer than smoking.¹³ Meanwhile, the vast majority of all illnesses and deaths have been linked to chemicals such as vitamin E acetate that is found in cartridges containing tetrahydrocannabinol (THC). This was not initially acknowledged by the CDC, which failed to release this information to the public for months. Despite CDC's recent correction, it seems the damage has already been considerable, as 66 percent of people now believe that legal vapes have caused these illnesses, a figure 10 points higher than compared to last September.¹⁴

Health Consequences of E-cigarette Use

Compared to non-smoking, e-cigarettes are by no means safe. In addition to nicotine, e-cigarette vapor can potentially contain heavy metals, toxic flavorings, and carcinogens. Studies of e-cigarette users have documented increased levels of oxidative stress, impaired respiratory function, and light-headedness, among other effects.¹⁵

While e-cigarettes are not without risk, experts agree that they pose a considerably lower threat to health than regular cigarettes. Since e-cigarettes do not combust tobacco, they do not produce the dangerous tars and disease-causing gasses associated with regular cigarettes. The doses of toxins contained in e-cigarettes are typically hundreds or thousands of times lower than in regular cigarettes.

A 2011 study in the *Journal of Health Policy* reviewed more than a dozen scientific reports and found that, other than tobacco-specific nitrosamines (TSNAs) and diethylene glycol

¹³ Public Health England, "E-cigarettes around 95% less harmful than tobacco estimates landmark review," August 19, 2015, <https://www.gov.uk/government/news/e-cigarettes-around-95-less-harmful-than-tobacco-estimates-landmark-review>.

¹⁴ Sara Wilson, "E-Cigarettes Increasingly Blamed for Lung Illnesses, as Evidence Points Elsewhere," Morning Consult, February 5, 2020, <https://morningconsult.com/2020/02/05/electronic-cigarettes-increasingly-blamed-by-public-for-lung-illnesses-even-as-evidence-points-elsewhere/>.

¹⁵ Charlotta Pisinger, "A systematic review of health effects of electronic cigarettes," World Health Organization, December 2015, https://www.who.int/tobacco/industry/product_regulation/BackgroundPapersENDS3_4November-.pdf.

(DEG) which were found in trace amounts in some products, “few, if any, chemicals at levels detected in electronic cigarettes raise serious health concerns.”¹⁶ The study goes on to state:

“Although the existing research does not warrant a conclusion that electronic cigarettes are safe in absolute terms and further clinical studies are needed to comprehensively assess the safety of electronic cigarettes, a preponderance of the available evidence shows them to be much safer than tobacco cigarettes and comparable in toxicity to conventional nicotine replacement products.”¹⁷

In 2015, Public Health England conducted a systematic review of the evidence and concluded that e-cigarettes are at least 95 percent less harmful than conventional cigarettes.¹⁸ Other health organizations, including the Royal College of Physicians,¹⁹ National Academies of Science, Engineering, and Medicine,²⁰ and American Cancer Society,²¹ have also acknowledged that vaping is a safer alternative for adult cigarette smokers. One 2018 study written by a team of authors from the Georgetown University Medical Center estimated that \$6.6 million lives could be saving in the U.S. over the next 10 years.²² More empirical evidence will be provided later in this report.

So, while non-smokers would be ill-advised to take up vaping, smokers could reap significant health benefits from switching to e-cigarettes.

¹⁶ Zachary Cahn and Michael Siegel, “Electronic cigarettes as a harm reduction strategy for tobacco control: A step forward or a repeat of past mistakes?,” *Journal of Public Health Policy*, February 2011, <https://link.springer.com/article/10.1057/jphp.2010.41>.

¹⁷ Ibid.

¹⁸ “E-cigarettes around 95% less harmful than tobacco estimates landmark review,” Public Health England, August 19, 2015, <https://www.gov.uk/government/news/e-cigarettes-around-95-less-harmful-than-tobacco-estimates-landmark-review>.

¹⁹ “Nicotine without smoke: Tobacco harm reduction,” Royal College of Physicians, April 28, 2016, <https://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction-0>.

²⁰ “Public Health Consequences of E-Cigarettes,” National Academies of Sciences, Engineering, and Medicine, 2018, <https://www.nap.edu/catalog/24952/public-health-consequences-of-e-cigarettes>.

²¹ “American Cancer Society Position Statement on Electronic Cigarettes,” American Cancer Society, February 15, 2018, <https://www.cancer.org/healthy/stay-away-from-tobacco/e-cigarette-position-statement.html>.

²² David T. Levy, Ron Borland, Eric N Lindblom, et al., “Potential deaths averted in USA by replacing cigarettes with e-cigarettes,” *Tobacco Control*, 2018, <https://tobaccocontrol.bmj.com/content/27/1/18>.

Misinformation About E-cigarettes' Health Risks

Despite the findings of prominent scientific authorities, the public remains deeply skeptical of e-cigarettes, according to data from two multiyear cross-sectional nationally representative surveys—the Tobacco Products and Risk Perceptions Surveys (TPRPS) and the Health Information National Trends Surveys (HINTS).²³ In 2017, the TPRPS indicated that 36.4 percent of American adults believed e-cigarettes were as harmful as regular cigarettes, while 4.3 percent believed e-cigarettes were more harmful than regular cigarettes. The HINTS found that 55.6 percent of American adults in 2017 believed e-cigarettes were as harmful as regular cigarettes, and 9.9 percent believed e-cigarettes were more harmful.

Moreover, the proportion of U.S. adults who perceived e-cigarettes to be as harmful as or more harmful than cigarettes increased substantially from 2012 to 2017, even as countervailing scientific evidence grew.²⁴ These misperceptions were also observed in a March 2020 empirical study by Public Health England:

“Perceptions of harm from vaping among smokers are increasingly out of line with the evidence. The proportion who thought vaping was less harmful than cigarettes declined from 45% in 2014 to 34% in 2019. These misperceptions are particularly common among smokers who do not vape.”²⁵

The public can hardly be blamed for having erroneous views, however, given the barrage of misleading or incomplete information peddled by a host of public health organizations and even government agencies. The National Institute on Drug Abuse for Teens, for example, posts on its website, “Aren’t E-Cigs Better Than Traditional Cigarettes? We don’t

²³ Jidong Huang, Bo Feng, Scott R. Weaver, et al., “Changing Perceptions of Harm of e-Cigarette vs Cigarette Use Among Adults in 2 US National Surveys From 2012 to 2017,” *Journal of the American Medical Association*, March 29, 2019, <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2729471>.

²⁴ Ibid.

²⁵ Ann McNeill, Leonie Brose, et al, “Vaping in England: An Evidence Update Including Mental Health and Pregnancy,” Commissioned by Public Health England, March 2020, p. 13. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869401/Vaping_in_England_evidence_update_March_2020.pdf.

know.”²⁶ Earlier this year, the Pennsylvania Department of Health tweeted, “E-cigarettes, e-cigs, e-hookahs, mods, vape pens or vapes—whatever you call them, they are NOT safer than other tobacco products.”²⁷

Similarly, the FDA states that “All tobacco products are harmful to your health, despite what they taste, smell, or look like,” without making any distinction between the relative risks of different products.²⁸ “Scientists have been working hard to debunk the belief that e-cigarettes are less harmful than traditional cigarettes,” the American Lung Association announced in a recent blog post, citing a study that found that nicotine from e-cigarettes can impair airway functions -- much like combustible cigarette smoking does.²⁹ The American Lung Association failed to point out e-cigarettes do not cause a host of other health issues associated with combustible cigarette smoking.

There is also some growing evidence that the ongoing release of advertisements exaggerating the dangers of e-cigarettes may be having adverse consequences on the public. Specifically, government-sponsored health advertisements targeting teenagers of the dangers of vaping may actually be heightening their curiosity and increasing the use of these products among youth.³⁰ Consumers deserve to have the right information to make decisions about their health.

The purveyors of this misinformation might argue that scare tactics are justified as a means of discouraging non-smokers, particularly among young people, from trying e-cigarettes in the first place. But while smoking initiation through e-cigarette use is a valid concern,

²⁶ Sara Bellum, “E-Cig Popularity on the Rise,” National Institute on Drug Abuse for Teens, November 7, 2013, <https://teens.drugabuse.gov/blog/post/e-cig-popularity-rise>.

²⁷ Michelle Minton, “Anti-E-Cigarette Puritans Put Lives at Risk,” Competitive Enterprise Institute, March 6, 2019, https://cei.org/sites/default/files/Michelle_Minton_-_Anti-E-Cigarette_Puritans_Put_Lives_at_Risk.pdf.

²⁸ “Tobacco-Related Health Fraud,” U.S. Food and Drug Administration, January 18, 2018, <https://www.fda.gov/tobacco-products/health-information/health-fraud#reference>.

²⁹ “Another Gross Reason to Put Down the E-Cigarettes,” American Lung Association, June 27, 2019, <https://www.lung.org/about-us/blog/2019/06/another-gross-reason.html>.

³⁰ Michael McGrady, “Do Anti-Vaping Ads and Media Actually Encourage Youth Vaping? *Filter*,” February 26, 2020, <https://filtermag.org/ads-encourage-youth-vaping/>; and Michelle Minton, “Blame Anti-Tobacco Advocates for Youth Vaping *Epidemic*,” Competitive Enterprise Institute, December 20, 2019, <https://cei.org/blog/blame-anti-tobacco-advocates-youth-vaping-epidemic>.

spreading misleading information about e-cigarette risks also discourages smokers from trying safer alternatives. In a recent article, writer Cheantay Jensen explains how, after replacing her smoking habit with e-cigarettes a few years ago and ridding herself of her smoker's cough and unpleasant tobacco odors, she has transitioned back to regular cigarettes, partly motivated by the belief that the products were equally harmful. "E-cigarettes are supposedly safer for you," she says, "although in this case I may just be trading the risk of cancer for the peril of heart disease."³¹

Not only does the hysteria surrounding e-cigarettes' risks endanger smokers and jeopardize public health, it also undermines the credibility of health authorities on other important issues like the coronavirus and vaccines. The American public should be told the truth about e-cigarettes.

E-cigarettes, Teens, and Smoking Initiation

For years, many media outlets and public health organizations have been declaring an "epidemic" of e-cigarette use among adolescents. Politicians have often repeated these claims to justify numerous restrictions on e-cigarettes. But, while the surge in e-cigarette use among American teens is troubling, defenders of e-cigarette alarmism too often omit key contextual facts.

The headline figure is jarring: E-cigarette use among teens has increased more than ten-fold since 2011. Moreover, research indicates that the use of e-cigarettes, particularly among young people, increases the risk of subsequent combustible cigarette smoking.³² Yet this research is fraught with methodological caveats. Without conducting a controlled experiment, it is exceedingly difficult to know with confidence that an individual would not have taken up cigarette smoking in the absence of e-cigarettes.

³¹ Cheantay Jensen, "I'm smoking cigarettes to quit my vaping habit... Yeah, I know," The Hi-lo, July 7, 2019, <https://lbpost.com/hi-lo/im-smoking-cigarettes-to-quit-my-vaping-habit-yeah-i-know/>.

³² Kaitlyn M. Berry, Jessica L. Fetterman, Emelia J. Benjamin, et al., "Association of Electronic Cigarette Use With Subsequent Initiation of Tobacco Cigarettes in US Youths," *Journal of the American Medical Association*, February 1, 2019, <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2723425>.

It is also crucial to distinguish between teens for whom e-cigarettes may be the first step toward combustible tobacco products and teens for whom e-cigarettes replace a pre-existing propensity for combustible products. In attempting to prevent the former, policymakers may be impeding the latter, and doing more harm than good. Indeed, among teens who use e-cigarettes regularly, almost all are (or were) smokers, suggesting that vaping may be an effective substitute for smoking among adolescents. The 2015 National Youth Tobacco Survey, for example, revealed that only 0.3 percent of non-smoking adolescents regularly vaped.³³ A paper in the *American Journal of Preventive Medicine* found that non-smoking high school students are highly unlikely to use e-cigarettes; only six percent of 12th graders who had never smoked had used e-cigarettes in the past 30 days, and less than one percent used e-cigarettes regularly.³⁴

The vast majority of habitual teen vapers are current or former smokers for whom e-cigarettes are a safer alternative to the products they currently or previously used. The substantial increase in e-cigarette use among middle- and high-schoolers over the last decade has coincided with a steep decline in cigarette smoking among students, as the Center Against Government Waste reports:

“...from 2011 to 2017, cigarette smoking declined by almost 50 percent among middle and high school students. For middle school students it was 2.1 percent in 2017, down from 4.3 percent in 2011. For high school students, it was 7.6 percent in 2017, down from 15.8 percent in 2011. It appears some students that used to engage in the risky behavior of smoking cigarettes are moving to using less risky [vaping] products.”³⁵

³³ Konstantinos Farsalinos, Venera Tomaselli, and Riccardo Polosa, “Frequency of Use and Smoking Status of U.S. Adolescent E-Cigarette Users in 2015,” *American Journal of Preventive Medicine*, June 2018, [https://www.ajpmonline.org/article/S0749-3797\(18\)31626-X/fulltext](https://www.ajpmonline.org/article/S0749-3797(18)31626-X/fulltext).

³⁴ Kenneth E. Warner, “Frequency of E-Cigarette Use and Cigarette Smoking by American Students in 2014,” *American Journal of Preventive Medicine*, August 2016, <https://www.ajpmonline.org/article/S0749-3797%2815%2900782-5/abstract>.

³⁵ Tom Schatz, “Comment on FDA’s Proposed Rule Regarding Tobacco Product Flavors,” Citizens Against Government Waste, July 11, 2018, <https://www.cagw.org/legislative-affairs/agency-comments/comment-fdas-proposed-rule-regarding-tobacco-product-flavors>.

This finding was bolstered with a March 2020 study released by the Public Health of England, an executive agency of England's Department of Health and Social Care.³⁶ The empirically-based study concluded that underage vaping by nonsmokers was rare, which supports the correlation that the rise in vaping leads to a decline in smoking among teens. Debunking the teen vaping myth, the Public Health of England report states:

"Current vaping is mainly concentrated in young people who have experience of smoking. Less than 1% of young people who have never smoked are current vapers."³⁷

A paper published last year bolsters this view. It analyzed several national datasets on smoking behavior and found that, after controlling for previous trends, the downward trajectory in both current use and more established cigarette use substantially accelerated among youth and young adults in the U.S. once vaping became popular in 2014.³⁸

To the extent that e-cigarettes are being used by teens as a substitute for smoking, these products are having a decidedly positive effect on youth. Further, since children whose parents smoke are far more likely to smoke themselves, lowering the smoking rate among adults will likely reduce smoking among teens, helping to break this generational cycle.³⁹

Preventing non-smoking youth from using e-cigarettes is a worthy goal, but poorly designed policies may also make it harder for teen smokers to access a safer alternative. For

³⁶ Ann McNeill, Leonie Brose, et al, "Vaping in England: An Evidence Update Including Mental Health and Pregnancy," Commissioned by Public Health England, March 2020, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869401/Vaping_in_England_evidence_update_March_2020.pdf.

³⁷ Ibid, p. 11.

³⁸ David T. Levy, Kenneth E. Warner, K. Michael Cummings, et al., "Examining the relationship of vaping to smoking initiation among US youth and young adults: a reality check," *Tobacco Control*, November 20, 2018, <https://tobaccocontrol.bmj.com/content/early/2018/10/31/tobaccocontrol-2018-054446>.

³⁹ Denise B. Kandel, Pamela C. Griesler, and Mei-Chen Hu, "Intergenerational Patterns of Smoking and Nicotine Dependence Among US Adolescents," *American Journal of Public Health*, November 2015, <https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2015.302775>.

those smokers should transitioned from combustible products to vaping, bans and taxes will likely send them “back to the pack.”⁴⁰

Smoking Cessation: The Role of E-cigarettes

While many public health organizations remain hostile to e-cigarettes, others have begun to acknowledge that vaping can be an effective smoking cessation method. The CDC acknowledges: “E-cigarettes have the potential to benefit adult smokers who are not pregnant if used as a complete substitute for regular cigarettes and other smoked tobacco products.”⁴¹

Indeed, though e-cigarettes are not FDA-approved as smoking cessation devices, vaping is widely used by smokers in the U.S. in their efforts to quit. According to a survey conducted from 2014 to 2016, substituting some or all combustible cigarettes with e-cigarettes was used by a greater percentage of smokers than the nicotine patch, nicotine gum, or any other cessation aids approved by the FDA.⁴²

Smokers are turning to e-cigarettes in record numbers seeking a safer source of nicotine. A peer-reviewed study in 2016 found that one-third of U.S. smokers used e-cigarettes in their last quit attempt, and that vaping has contributed to a 50% increase in the rate of smokers using cessation aids.⁴³

Although few scientific studies of e-cigarettes’ efficacy as smoking cessation aids have been conducted, the evidence so far is promising. In a recent randomized trial, the gold standard in scientific research, British researchers recruited about 900 smokers who expressed an interest in quitting and randomly assigned half to use e-cigarettes and the other half to use

⁴⁰ Liam Sigaud and Steve Pociask, “A Vaping Ban Will Send Smokers Back to the Pack,” Wall Street Journal, September 12, 2019, <https://www.wsj.com/articles/a-vaping-ban-will-send-smokers-back-to-the-pack-11568325386>.

⁴¹ “Electronic Cigarettes,” Centers for Disease Control and Prevention, March 11, 2019, https://www.cdc.gov/tobacco/basic_information/e-cigarettes/.

⁴² Ralph S. Caraballo, Paul R. Shafer, Deesha Patel, et al., “Quit Methods Used by US Adult Cigarette Smokers, 2014–2016,” Centers for Disease Control and Prevention, April 2017, https://www.cdc.gov/pcd/issues/2017/pdf/16_0600.pdf.

⁴³ Yue-Lin Zhuang, Sharon E Cummins, Jessica Y Sun, et al., “Long-term e-cigarette use and smoking cessation: a longitudinal study with US population,” *Tobacco Control*, July 3, 2016, <https://pdfs.semanticscholar.org/f22e/666734b20d102e29a2f743bcac39d5f83fe4.pdf>.

traditional nicotine replacement products. All of the participants received weekly individual counseling for four weeks, and smoking cessation was assessed after one year. Among those using e-cigarettes, 18% had stopped smoking after a year, while only 9.9% of those using nicotine replacement therapy had quit -- making e-cigarettes nearly twice as effective as FDA-approved smoking cessation aids.⁴⁴

In another U.K. study last year, researchers interviewed 40 participants who had previously smoked. After being introduced to e-cigarettes, three were no longer using either tobacco or e-cigarettes, 31 had switched entirely to vaping, five were using both tobacco and e-cigarettes, and only one was exclusively smoking. "E-cigarettes meet the needs of some ex-smokers by substituting physical, psychological, social, cultural and identity-related aspects of tobacco addiction. Some vapers reported that they found vaping pleasurable and enjoyable—being more than a substitute but actually preferred, over time, to tobacco smoking," wrote the study's authors.⁴⁵

This month, a report by a government agency, the Public Health of England, an agency of England's Department of Health and Social Care, reported that most consumers who vape do so in order to stop smoking.⁴⁶

In 2014, researchers in Belgium introduced e-cigarettes to 48 smokers who had never vaped and were unwilling to quit smoking. The results showed that vaping was as effective as smoking a cigarette in reducing nicotine cravings. Eight months after the start of the study, 21%

⁴⁴ Peter Hajek, Anna Phillips-Waller, Dunja Przulj, et al., "A Randomized Trial of E-Cigarettes versus Nicotine-Replacement Therapy," *New England Journal of Medicine*, February 14, 2019, <https://www.nejm.org/doi/full/10.1056/NEJMoa1808779?query=TOC>.

⁴⁵ Caitlin Notley, Emma Ward, Lynne Dawkins, et al., "The unique contribution of e-cigarettes for tobacco harm reduction in supporting smoking relapse prevention," *Harm Reduction Journal*, June 20, 2018, <https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-018-0237-7>.

⁴⁶ Ann McNeill, Leonie Brose, et al, "Vaping in England: An Evidence Update Including Metal Health and Pregnancy," Commissioned by Public Health England, March 2020, p. 13. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869401/Vaping_in_England_evidence_update_March_2020.pdf.

of all participants were completely abstinent from conventional cigarettes, while 23% had dramatically cut down on their smoking.⁴⁷

In addition to these academic studies, public health surveys also indicate that e-cigarettes serve as a healthier substitute to a deadly habit. U.S. government surveys show that 2.6 million former smokers were vapers in 2016, nearly 90 percent of whom had quit smoking in the previous five years.⁴⁸ In addition, current smoking rates in the U.S. are at record lows for both adolescents and adults, the culmination of a sustained, decade-long decline which closely mirrors the rise in popularity of e-cigarettes.⁴⁹

Taxpayers stand to benefit as e-cigarettes replace combustible tobacco products. One estimate found that if all smokers on Medicaid, the federal/state health program for low-income Americans, had switched to e-cigarettes in 2012, Medicaid would have saved \$48 billion – more than 10 percent of total Medicaid spending for that year – in smoking-related medical treatment.⁵⁰ Another analysis calculated that if just 1 percent of smokers permanently switched to e-cigarettes, Medicaid would save \$2.8 billion over 25 years.⁵¹

Public Policy Implications

The rise of e-cigarette use in the U.S. has attracted regulations from all levels of government. While well-intentioned, many of these laws may be doing more harm than good.

⁴⁷ Karolien Adriaens, Dinska Van Gucht, Paul Declerck, et al., “Effectiveness of the Electronic Cigarette: An Eight-Week Flemish Study with Six-Month Follow-up on Smoking Reduction, Craving and Experienced Benefits and Complaints,” *International Journal of Environmental Research and Public Health*, November 2014, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4245610/>.

⁴⁸ Brad Rodu, “2016 CDC Data Shows E-Cigarette Use Declines Again,” *Tobacco Truth*, September 27, 2017, <https://rodutobaccotruth.blogspot.com/2017/09/2016-cdc-data-shows-e-cigarette-use.html>.

⁴⁹ William T. Godshall, Comments to the Food and Drug Administration Center for Tobacco Products, Consumer Advocates for Smoke-free Alternatives Association, December 2015, <http://www.casaa.org/wp-content/uploads/GodshallFDAcomment-December-2015.pdf>.

⁵⁰ J. Scott Moody, “E-Cigarettes Poised to Save Medicaid Billions,” Heartland Institute, March 31, 2015, https://www.heartland.org/template-assets/documents/publications/20150331_sbsmediciadecigarettes033115.pdf.

⁵¹ Richard B. Belzer, “Expected Savings to Medicaid for Substituting Electronic for Tobacco Cigarettes,” R Street Institute, December 2017, <http://2o9ub0417chl2lg6m43em6psi2i.wpengine.netdna-cdn.com/wp-content/uploads/2018/01/124-6.pdf>.

1. Limits on E-liquid Flavors and Teen Use

Some policymakers worry that the proliferation and aggressive marketing of flavored e-cigarettes may attract young non-smokers. There is some mixed evidence to support this concern. One study documented that flavors entice youth to initiate and continue using e-cigarettes.⁵² As a result, efforts to ban or restrict flavored e-liquids have gained momentum. However, restricting the availability of e-liquid flavors -- by limiting flavors to tobacco/menthol, for example -- could have unintended consequences.

A survey of non-smoking teens in 2015 found that they had very low interest in e-cigarettes (0.4 on a 0-10 scale, on average), and the availability of different flavors had no impact on their level of interest. The study also found that interest in e-cigarettes among adult smokers did vary by flavor, suggesting that sweeping measures to reduce the availability of flavored e-cigarettes might impose high costs on adult smokers and deliver few benefits to teen non-smokers.⁵³

Meanwhile, a survey of young adults who use both e-cigarettes and combustible cigarettes indicated that bans on e-liquid flavors would lead to reductions in e-cigarette use and simultaneous increases in combustible cigarette use.⁵⁴

Another study published in the *Journal of Harm Reduction* in 2018 found: “Adult frequent e-cigarette users in the USA who have completely switched from smoking cigarettes to using e-cigarettes are increasingly likely to have initiated e-cigarette use with non-tobacco flavors and to have transitioned from tobacco to non-tobacco flavors over time. Restricting

⁵² “E-Cigarette Use Among Youth and Young Adults,” Office of the Surgeon General, 2016, https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf.

⁵³ Shiffman S., Sembower M.A., Pillitteri J.L., et al., “The Impact of Flavor Descriptors on Nonsmoking Teens' and Adult Smokers' Interest in Electronic Cigarettes,” Society for Research on Nicotine and Tobacco, October 2015, <https://www.ncbi.nlm.nih.gov/pubmed/25566782>.

⁵⁴ Lauren R. Pacek, “What Would You Do If...?: Analysis of Young Adult Dual User’s Anticipated Responses to Hypothetical E-cigarette Market Restrictions,” Duke University, 2017, https://www.rti.org/sites/default/files/related-content-files/pacek_ppt.pdf.

access to non-tobacco e-cigarette flavors may discourage smokers from attempting to switch to e-cigarettes.”⁵⁵

2. Taxes

More than a dozen states have implemented special taxes on e-cigarettes, typically in order to bring them in line with taxes on combustible tobacco products.⁵⁶ But while tax parity might seem fair, proposals to jack up prices on e-cigarettes threaten to undermine policymakers’ broader goals of improving public health.

The primary objective of high taxes on tobacco products is to reduce consumer demand and curb the significant costs, including nearly \$170 billion in direct medical care and more than \$156 billion in lost productivity, associated with smoking.⁵⁷ Cigarette taxes, like other “sin taxes,” aim to change consumer behavior and mitigate the spillover effects of harmful habits.

Imposing similar taxes on e-cigarettes runs counter to this logic, since the aggregate public health impact of e-cigarettes, compared to smoking, is positive. For example, a recent study found that, even under pessimistic assumptions, e-cigarettes will deliver significant public health benefits over the next half-century, extending the aggregate longevity of the U.S. population by 580,000 years.⁵⁸

Consumers are sensitive to price. Economists estimate that a 10% increase in price reduces sales of disposable e-cigarettes by approximately 12%, and by about 19% for reusable

⁵⁵ Mitchell Nides, Tiffany Dickson, Neil McKeganey, et al., “Changing Patterns of First E-Cigarette Flavor Used and Current Flavors Used by 20,836 Adult Frequent E-Cig Users,” *Harm Reduction Journal*, June 28, 2018, <https://harmreductionjournal.biomedcentral.com/articles/10.1186/s12954-018-0238-6>.

⁵⁶ “States with Laws Taxing E-Cigarettes,” June 15, 2019, Mitchell Hamline School of Law: Public Health Law Center, <https://www.publichealthlawcenter.org/sites/default/files/States-with-Laws-Taxing-ECigarettes-June152019.pdf>.

⁵⁷ “Economic Trends in Tobacco,” Centers for Disease Control and Prevention, July 23, 2019, https://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm.

⁵⁸ Warner K.E. and Mendez D., “E-cigarettes: Comparing the Possible Risks of Increasing Smoking Initiation with the Potential Benefits of Increasing Smoking Cessation,” *Nicotine and Tobacco Research*, 2019, <https://www.ncbi.nlm.nih.gov/pubmed/29617887>.

e-cigarettes.⁵⁹ High taxes on e-cigarettes have the beneficial effect of discouraging some non-smoking teens from vaping, but also deter cigarette smokers from switching to these safer alternatives.

Conclusion

In many U.S. jurisdictions, policymakers have been openly hostile to e-cigarettes, casting them as dangerous gateways to tobacco smoking. Laws to discourage e-cigarette use have cropped up everywhere, from restrictions on retailers to higher taxes and flavor bans. In June 2019, San Francisco went even further, effectively banning e-cigarettes entirely.⁶⁰

While some targeted regulatory actions -- to discourage non-smoking teens from taking up vaping, for example -- are justified, the demonization of e-cigarettes in the U.S. is counterproductive. As part of a tobacco harm reduction strategy, the potential public health benefits from e-cigarettes are substantial. As noted earlier, a 2018 study in the journal *Tobacco Control* projected that if cigarette use were largely replaced by vaping over a 10-year period in the U.S., it would prevent as many as 6.6 million premature deaths.⁶¹

Too often, policymakers have acted without carefully weighing the costs and benefits of their actions. Knee-jerk opposition to e-cigarettes, often fueled by misleading information, curbs their use as a smoking cessation aid by millions of adults.

⁵⁹ Frank J. Chaloupka, "Taxing E-Cigarettes—Options & Potential Impact," Council of State Governments Policy Workshop, December 12, 2015, <https://knowledgecenter.csg.org/kc/system/files/Chaloupka.pdf>.

⁶⁰ Michael Nedelman, "San Francisco passes ban on e-cigarette sales, a US first," CNN, June 25, 2019, <https://www.cnn.com/2019/06/25/health/san-francisco-e-cigarette-ban-sales-bn/index.html>.

⁶¹ David T. Levy, Ron Borland, Eric N Lindblom, et al., "Potential deaths averted in USA by replacing cigarettes with e-cigarettes," *Tobacco Control*, 2018, <https://tobaccocontrol.bmj.com/content/27/1/18>.