



April 27, 2021

Dr. Janet Woodcock, M.D.  
Acting Commissioner  
U.S. Food and Drug Administration  
10903 New Hampshire Ave.  
Silver Spring, MD 20993

Re: Premarket Tobacco Product Application for JUUL

Submitted by e-mail.

Dear Dr. Woodcock:

As you are aware, the Center for Tobacco Products (CTP) at the Food and Drug Administration (FDA) is reviewing Premarket Tobacco Product Applications (PMTAs) for e-cigarettes and other new tobacco products on the market as of the effective date of the deeming rule (August 8, 2016). In his “Perspective: FDA’s Progress on Review of Tobacco Product Applications Submitted by the Sept. 9, 2020 Deadline,” (FDA Progress Report), issued February 16, 2021, CTP Director Mitch Zeller makes it clear that the products accounting for the greatest market share will receive “first review.” According to the FDA Progress Report, this expedited treatment is justified because “[t]he continued marketing of these products has the potential to have the greatest public health impact – either positively or negatively – as they hold the largest overall market share and therefore likely used by the largest number of people.”

Because JUUL’s products continue to have the largest share of the e-cigarette market,<sup>1</sup> and therefore presumably are undergoing expedited review, we write at this time to express our conclusion that based on all of the publicly available evidence, no JUUL product currently on the market can meet the statutory public health standard. Therefore, they should not receive a marketing order.

JUUL’s products, like thousands of other tobacco products that are the subject of pending PMTAs, have been on the market for several years. Thus, FDA is not engaged in actual “premarket” review of JUUL’s products. Rather, FDA has a wealth of real-life experience and data concerning the actual impact of the full range of JUUL’s products on public health during their years on the market. The concerning real-life experience and data are what compel us to submit this letter prior to an FDA decision on a marketing order. As we document below, JUUL’s products have been largely responsible for the extraordinary growth in youth e-cigarette use and the growth in the percentage of youth who have become addicted to e-cigarettes—an epidemic which continues to this day—with no measurable public health benefit.

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<sup>1</sup> Nielsen Total US xAOC/Convenience Store Database & Goldman Sachs Global Investment Research. February 16, 2021.

JUUL’s products remain among the most popular brands among youth.<sup>2</sup> Additionally, a key prong of the public health standard is for the population assessment to take into account “the increased or decreased likelihood that existing users of tobacco products will stop using such products.” JUUL’s demonstrated sustained and continued adverse impact on youth is dispositive, but there is also a lack of publicly available studies that adequately demonstrate that JUUL products have resulted in a measurable decline in adult tobacco use.<sup>3</sup> Therefore, no current JUUL product can meet the public health standard under the Family Smoking Prevention and Tobacco Control Act (TCA).<sup>4</sup> Indeed, given JUUL’s disastrous real-world impact, any marketing order granted to JUUL would establish a precedent that would undermine decades of efforts to reduce youth tobacco use and pave the way for marketing orders for other e-cigarette and tobacco products that cannot meet the public health standard, causing grievous damage to public health for many years to come.

JUUL’s combination of appealing flavors, marketing strategies, and its technological innovations that deliver unprecedented levels of nicotine led to an explosive growth in youth e-cigarette use.<sup>5</sup> As the data summarized below shows, there is no question that the availability of flavors played a key role in JUUL’s popularity among youth. The 2020 Surgeon General Report on Smoking Cessation succinctly stated, “the role of flavors in promoting initiation of tobacco product use among youth is well established.”<sup>6</sup> The 2016 Surgeon General Report on e-cigarettes concluded that flavors are among the most commonly cited reasons for using e-cigarettes among youth and young adults.<sup>7</sup> And when JUUL was forced to remove a number of flavors, first mint, and then menthol flavors continued to fuel high level of youth use.

However, the explosion of youth usage of JUUL was driven by more than just flavors. It was also driven by the huge doses of nicotine contained in each JUUL pod and the new technology that delivered high levels of nicotine efficiently with minimal irritation<sup>8</sup> and greater satisfaction than free-base nicotine or other nicotine salt formulations.<sup>9</sup> Both widely sold versions of JUUL (the version that contains 5% nicotine by weight and the version that contains 3% nicotine by weight) contain and deliver levels of nicotine that exceed by a substantial margin, the levels of nicotine that are allowed in the European

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<sup>2</sup> Miech, R, et al., “Trends in Use and Perceptions of Nicotine Vaping Among US Youth from 2017 to 2020,” *JAMA Pediatrics*, published online December 15, 2020. Hammond D, et al., “Trends in smoking and vaping among youth and young adults in Canada, the US, and England,” Presented at the Society for Nicotine and Tobacco Research Annual Meeting 2021, February 25, 2021.

<sup>3</sup> It is important to note that, given the evidence of how addictive JUUL’s products are, if JUUL were ever to seek to market a product that is effective in helping smokers quit tobacco products entirely, or at least switch entirely away from cigarettes, there is an FDA pathway available through the Center for Drug Evaluation and Research (CDER) as a tobacco or smoking cessation product. This is the more appropriate route for a JUUL product because CDER has greater authority to restrict how and where JUUL’s products are marketed and sold to reduce the risk to youth.

<sup>4</sup> 21 U.S.C. §387j(c)(2)(A).

<sup>5</sup> Gottlieb, M. (2019). Regulation of E-Cigarettes in the United States and Its Role in a Youth Epidemic. *Children (Basel)*, 6(3), 40.

<sup>6</sup> HHS, Office of the Surgeon General, “Smoking Cessation: A Report of the Surgeon General,” 2020 <https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf>.

<sup>7</sup> HHS, *E-Cigarette Use Among Youth and Young Adults. A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2016.

<sup>8</sup> Office of the Surgeon General, “Surgeon General’s Advisory on E-Cigarette Use Among Youth,” December 18, 2018, <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>.

<sup>9</sup> JUUL patent: Bowen AX, Xing C, Inventors; Juul Labs, Inc., assignee. Nicotine salt formulations for aerosol devices and methods thereof. United States patent US 20,160,044,967. October 28, 2015.

Union.<sup>10</sup> Since the introduction of JUUL, youth are using products that effectively deliver extraordinary amounts of nicotine. Therefore, it is no surprise that the youth addiction experience in the United States is different than what is reported in the United Kingdom. In the U.S., approximately 40% of high school users use e-cigarettes frequently (20 or more days a month), and almost a quarter of them use e-cigarettes every day, indicating a high degree of nicotine dependence.<sup>11</sup> Further, many youth and young adult e-cigarette users now find themselves addicted and wanting to quit. One survey found that 60% of young e-cigarette users wanted to quit vaping within the next year.<sup>12</sup> This new design for nicotine delivery creates an unacceptable risk of addiction, particularly because youth are especially vulnerable to the addictive effects of nicotine, as reflected by the data showing the increasing proportion of youth using these products frequently.

The devastating combination of appealing flavors that appeal to youth, targeted marketing strategies, and technological innovations that deliver a powerful hit of nicotine, has caused enormous damage to public health, primarily through youth uptake. Because of this, no JUUL products currently on the market can meet the public health standard, and therefore, none should be authorized by CTP or be allowed to stay on the market.

Whether the statutory public health standard is met requires FDA to assess “the risks and benefits to the population as a whole, including users and nonusers of the tobacco product.”<sup>13</sup> In turn, this population-wide assessment must take into account, (A) “the increased or decreased likelihood that existing users of tobacco products will stop using such products,” and (B) “the increased or decreased likelihood that those who do not use tobacco products will start using such products.”<sup>14</sup> FDA has taken the position that the applicant must show that the marketing of the product will yield actual benefits to public health;<sup>15</sup> merely showing the absence of harm to public health is not sufficient. As the discussion below demonstrates, the real-world experience with JUUL shows that it cannot possibly meet the public health standard. This is a product responsible for the initiation of, and addiction to, tobacco products by millions of young people. In addition, this harm is compounded by the lack of evidence on a population basis that it has helped a significant number of smokers switch completely or stop using all tobacco products.

CTP is not the only center at FDA with authority over nicotine products. The Center for Drug Evaluation and Research (CDER) oversees products that are intended to help smokers quit. Importantly, as outlined in our May 9, 2019 letter to then Acting Commissioner Sharpless, JUUL’s claims of switching – quitting use of cigarettes while continuing to use JUUL – are in fact therapeutic claims for smoking cessation and should be regulated as such.<sup>16</sup> If JUUL has evidence that its products help smokers quit and

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<sup>10</sup> EUPHA, Facts and fiction on e-cigs, [https://eupha.org/repository/advocacy/EUPHA\\_facts\\_and\\_fiction\\_on\\_e-cigs.pdf](https://eupha.org/repository/advocacy/EUPHA_facts_and_fiction_on_e-cigs.pdf)

<sup>11</sup> Wang, TW, et al., “E-cigarette Use Among Middle and High School Students – United States, 2020,” MMWR, Volume 69, September 9, 2020, <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6937e1-H.pdf>.

<sup>12</sup> Truth Initiative, First-of-its-Kind truth® Campaign Follows Young Vapers Quit E-Cigarettes Live on Social Media, January 26, 2021, <https://truthinitiative.org/pres/press-release/first-its-kind-truth-campaign-follows-young-vapers-quit-e-cigarettes-live>.

<sup>13</sup> 21 U.S.C. §387j(c)(4).

<sup>14</sup> 21 U.S.C. §387j(c)(4)(A) and (B).

<sup>15</sup> Thus, FDA has stated that it will consider a product to meet the public health standard “where a PMTA contains sufficient valid scientific evidence to demonstrate that the potential risks and benefits of the marketing of the new tobacco product would have a net positive effect on the health of the population as a whole . . . .” Proposed PMTA Rule, 84 Fed. Reg. 50,581, 50,618.

<sup>16</sup> Public health groups’ letter to FDA detailing the “the marketing of JUUL e-cigarettes with express or implied claims that the products help users stop smoking . . . indicat[ing] the JUUL products are intended for use in the prevention of disease . . . and therefore should be considered drugs, devices, or combination drug/device products . . . without the requisite approval” (May 9, 2019), available at

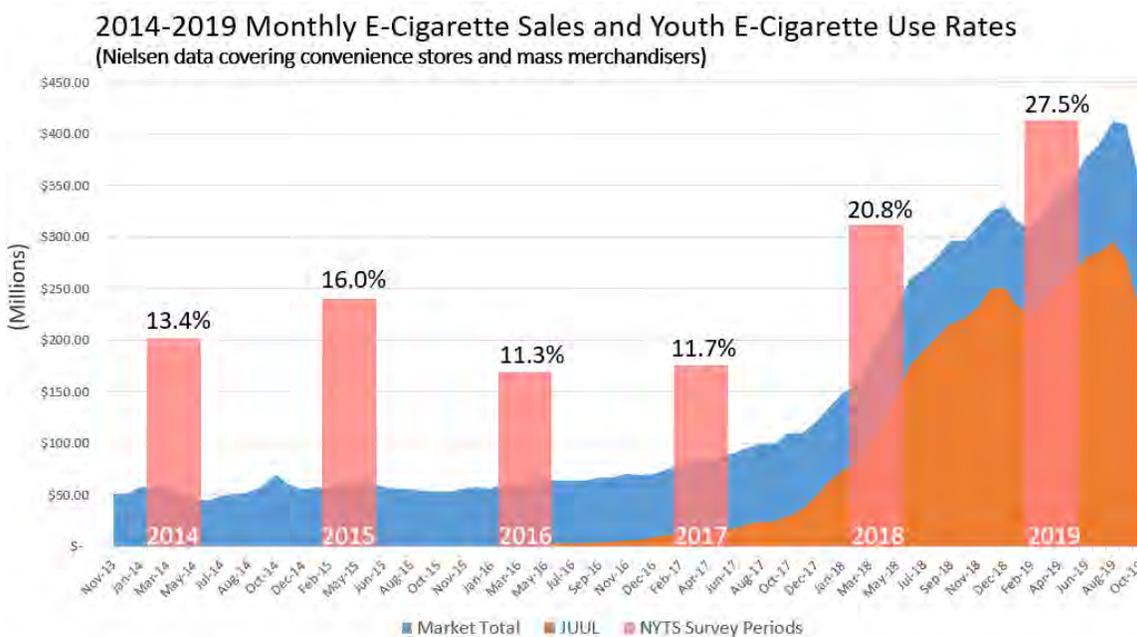
seeks to market its products for that therapeutic purpose, it should seek approval as a drug from CDER. CDER is better equipped to both evaluate the relative efficacy of products that are being marketed to help smokers quit and to ensure that those products do not lead to widespread abuse.

## I. JUUL Has Been the Driving Force Behind the Youth E-Cigarette Epidemic

### A. Skyrocketing Youth E-Cigarette Use Was Directly Correlated with JUUL’s Growing Marketing Share

The skyrocketing rate of youth e-cigarette use that sparked national alarm was fueled by JUUL, which became the most popular e-cigarette during the peak of the youth epidemic. In mid-2016, the dollar sales share for JUUL products was less than 5%, but by the end of 2017, JUUL sales had surpassed all other companies’ products, including the e-cigarette brands manufactured by the major tobacco companies.<sup>17</sup> At its peak popularity in late 2018 and early 2019, JUUL sales comprised over 70% of the market.<sup>18</sup>

As shown in the graph below, JUUL’s rise directly coincided with, and was responsible for, an unprecedented surge in youth e-cigarette use. According to the National Youth Tobacco Survey (NYTS), high school e-cigarette use increased by 135% from 2017 to 2019 (from 11.7% to 27.5%), an increase of over 3 million students in just two years.<sup>19</sup> Researchers at the University of Michigan who conduct another national youth survey, the Monitoring the Future Study, found that the increase in youth nicotine



Data courtesy of the Public Health Law Center Tobacco Control Legal Consortium and from the Wells Fargo Nielsen Tobacco All Channel Data Reports  
Nielsen All-Channel Data from sales from convenience stores and mass merchandisers; does not include online sales or sales from tobacco and vape shops. The “All Others” category is used as a proxy for JUUL in the Nielsen market data from June 2016 through May 2017, separate JUUL data were not available until June 2017.

[https://www.tobaccofreekids.org/assets/content/what\\_we\\_do/federal\\_issues/fda/2019\\_05\\_09\\_Letter\\_FDA\\_re\\_JUUL\\_cessation\\_claims.pdf](https://www.tobaccofreekids.org/assets/content/what_we_do/federal_issues/fda/2019_05_09_Letter_FDA_re_JUUL_cessation_claims.pdf).

<sup>17</sup> Nielsen Total US xAOC/Convenience Database & Wells Fargo Securities, LLC, in Wells Fargo Securities. Tracked data includes mass channel and convenience stores; does not include online sales or sales from tobacco and vape shops.

<sup>18</sup> *Id.*

<sup>19</sup> Wang, TW, et al., *Tobacco Product Use and Associated Factors Among Middle and High School Students—United States, 2019*, MMWR, 68(12): December 6, 2019, <https://www.cdc.gov/mmwr/volumes/68/ss/pdfs/ss6812a1-H.pdf>.

vaping from 2017 to 2018 was the single largest one year increase in youth use of any substance in the survey's 43-year history.<sup>20</sup> According to the CDC, "The rise in e-cigarette use during 2017-2018 is likely because of the recent popularity of e-cigarettes shaped like a USB flash drive, such as JUUL; these products can be used discreetly, have a high nicotine content, and come in flavors that appeal to youths."<sup>21</sup>

While high school e-cigarette use declined in 2020 to 19.6%, an alarming 3.6 million kids are still using e-cigarettes<sup>22</sup> – the same number as when the U.S. Surgeon General first called youth e-cigarette use an "epidemic" in 2018.<sup>23</sup> According to the Monitoring the Future survey, administered in the first quarter of 2020, JUUL was the most popular e-cigarette brand among 10th and 12th grade e-cigarette users, preferred by 41.1% of users.<sup>24</sup> The International Tobacco Control (ITC) Youth Tobacco & Vaping Survey from August 2020 found that JUUL was the second most popular brand among 16-19 year-old e-cigarette users.<sup>25</sup>

Prior to the introduction of e-cigarettes, especially JUUL, we had seen an ongoing decline in the number of youth using tobacco. While youth cigarette smoking is now at a record low, youth e-cigarette use has undermined progress in reducing youth tobacco use. Even with a decline in the use of e-cigarettes from 2019 to 2020, the prior years' surge in e-cigarette use has meant there has been no progress in reducing overall tobacco use in a decade.<sup>26</sup>

#### B. JUUL's Irresponsible Marketing Launch Has Had Lasting Impacts on Youth Use

There were multiple reasons that JUUL was used by and is still so popular among youth. Its marketing was one reason. Although JUUL has curtailed its marketing efforts in recent years in response to public criticism and government investigations, review of JUUL's PMTA would be incomplete without consideration of the ongoing impact of JUUL's original marketing campaign and the threat that JUUL will reintroduce similar marketing efforts. When JUUL first launched in 2015, the company used colorful, eye-catching designs and youth-oriented imagery and themes, such as young people dancing and using JUUL. JUUL's original marketing campaign included billboards in New York City's Times Square, YouTube videos, advertising in Vice Magazine, launch parties and a sampling tour.<sup>27</sup> Social media continued to fuel JUUL's popularity, with lasting effects. JUUL was one of the first major e-cigarette brands to rely heavily on social media, including the use of "influencers," to market and promote its products. A report published by Stanford University researchers concluded that JUUL's marketing launch was, "**patently youth-oriented**" and closely resembled the themes and tactics that the tobacco industry had successfully used by for decades.<sup>28</sup> (See **Appendix 1** for examples of JUUL's marketing).

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<sup>20</sup> University of Michigan, *Monitoring the Future Study*, 2018. <http://monitoringthefuture.org/data/18data/18drtbl3.pdf>.

<sup>21</sup> CDC, "Use of Electronic Cigarettes and Any Tobacco Product Among Middle and High School Students—United States, 2011-2018," *MMWR*, 67(45):1276-1277. [https://www.cdc.gov/mmwr/volumes/67/wr/mm6745a5.htm?s\\_cid=mm6745a5\\_w](https://www.cdc.gov/mmwr/volumes/67/wr/mm6745a5.htm?s_cid=mm6745a5_w).

<sup>22</sup> *Supra* note 11.

<sup>23</sup> *Supra* note 8.

<sup>24</sup> Miech, R, et al., *supra* note 2.

<sup>25</sup> Hammond D, et al., *supra* note 2.

<sup>26</sup> Gentzke, A, et al., "Tobacco Product Use Among Middle and High School Students—United States, 2020," *MMWR* 69(50): 1881-1888, December 18, 2020, <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6950a1-H.pdf>.

<sup>27</sup> Richtel, M & Kaplan, S, "Did JUUL Lure Teenagers and Get 'Customers for Life?'" *The New York Times*, August 27, 2018, <https://www.nytimes.com/2018/08/27/science/juul-vaping-teen-marketing.html>.

<sup>28</sup> Jackler, RK, et al., "JUUL Advertising Over its First Three Years," [http://tobacco.stanford.edu/tobacco\\_main/publications/JUUL\\_Marketing\\_Stanford.pdf](http://tobacco.stanford.edu/tobacco_main/publications/JUUL_Marketing_Stanford.pdf).

It is worth noting that over 700 lawsuits against JUUL Labs (JLI) have been filed across the country, claiming that the company marketed its products to youth, promoted nicotine use, and failed to warn that its nicotine products are more addictive than cigarettes. In addition, 39 state attorneys general are leading a multi-state investigation into JUUL's health claims and marketing tactics targeting minors and 15 state attorneys general have sued JUUL for targeting youth in their states.

JUUL's youth-friendly marketing unequivocally boosted its popularity among youth, although its design, method of nicotine delivery and flavorings also played a significant role. As former FDA Commissioner Scott Gottlieb stated, "*They cleaned [their marketing] up and it's currently focused on adult smokers...But you can't un-ring the bell and undo what was done since they launched.*"<sup>29</sup> Of further concern is that JUUL has repeatedly failed to take responsibility for the impact of its marketing. Ashley Gould, former Chief Administrative Officer of JUUL Labs, said that the explosion of youth users "*was not anticipated and completely unexpected to us.*"<sup>30</sup>

### C. JUUL's Kid-Friendly Flavors and Sleek Design Create an Unacceptable Appeal to Youth

JUUL's marketing was only one part of the problem. Research shows that flavors play a key role in youth use of e-cigarettes, and flavors clearly played an important role in JUUL's popularity among youth. According to the NYTS, 3 million youth—82.9% of youth e-cigarette users—report they are using flavored products.<sup>31</sup> An earlier survey from the FDA's Population Assessment of Tobacco and Health (PATH) study found that 97% of current youth e-cigarette users reported using a flavored e-cigarette in the past month and that 70% of current youth e-cigarette users say they use e-cigarettes "because they come in flavors I like."<sup>32</sup> JUUL's popularity shifted the e-cigarette market towards flavored products. Until JUUL was introduced into the market, tobacco flavored e-cigarettes were the single most widely sold flavor.<sup>33</sup>

The PMTA for JUUL seeks authorization for products with at least one non-tobacco flavor—menthol—but the evidence and experience is clear that all e-cigarette flavors, including menthol, appeal to youth. Research clearly shows that if any JUUL flavors are left on the market, kids will shift from one flavor to another. In late 2018, amid pressure from regulators over the popularity of JUUL's product—especially its mango flavor—JUUL pulled all of its flavors except tobacco, mint and menthol from retail shelves.<sup>34</sup> From 2018 to 2019, youth use of fruit flavors fell, while youth use of mint and menthol flavors increased by 50%.<sup>35</sup> Among 10<sup>th</sup> and 12<sup>th</sup> grade JUUL users, mint was the most popular flavor in 2019.<sup>36</sup>

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<sup>29</sup> Paul, D, "North Carolina sues JUUL, setting up a fresh legal fight for the embattled e-cigarette company," *Washington Post*, May 15, 2019, [https://www.washingtonpost.com/health/2019/05/15/north-carolina-sues-juul-setting-up-fresh-legal-fight-embattled-e-cigarette-company/?noredirect=on&utm\\_term=.b49e601ae199](https://www.washingtonpost.com/health/2019/05/15/north-carolina-sues-juul-setting-up-fresh-legal-fight-embattled-e-cigarette-company/?noredirect=on&utm_term=.b49e601ae199).

<sup>30</sup> Ramanathan, L, "We killed the cigarette. What we got in return is mango-flavored nicotine in 'party mode,'" *The Washington Post*, August 8, 2018, [https://www.washingtonpost.com/lifestyle/style/we-killed-the-cigarette-what-we-got-in-return-is-mango-flavored-nicotine-in-party-mode/2018/08/08/bf4db3a8-8b8a-11e8-8aca-86e88ae760d8\\_story.html](https://www.washingtonpost.com/lifestyle/style/we-killed-the-cigarette-what-we-got-in-return-is-mango-flavored-nicotine-in-party-mode/2018/08/08/bf4db3a8-8b8a-11e8-8aca-86e88ae760d8_story.html).

<sup>31</sup> *Supra* note 11.

<sup>32</sup> FDA, "Modifications to Compliance Policy for Certain Deemed Products: Guidance for Industry, Draft Guidance," March 13, 2019, <https://www.federalregister.gov/documents/2019/03/14/2019-04765/modifications-to-compliance-policy-for-certain-deemed-tobacco-products-draft-guidance-for-industry>.

<sup>33</sup> Romberg, AR, et al., *Patterns of Nicotine Concentrations in Electronic Cigarettes Sold in the United States, 2013-2018*, 203 *Drug and Alcohol Dependence* 1 (2019). See also, CDC Foundation, *Monitoring U.S. E-Cigarette Sales: National Trends*, December 2020, <https://www.cdcfoundation.org/E-CigaretteSales-DataBrief-Dec27?inline>.

<sup>34</sup> JUUL Labs, "JUUL Labs Action Plan," November 13, 2018, <https://newsroom.juul.com/2018/11/13/juul-labs-action-plan/>

<sup>35</sup> Cullen, KA, et al., "e-Cigarette Use Among Youth in the United States, 2019" *JAMA*, published online November 5, 2019..

<sup>36</sup> Leventhal, AM, et al., "Flavors of e-Cigarettes Used by Youths in the United States," *JAMA*, published online November 5, 2019.

After release of this data, JUUL then announced that it was ending the sale of its mint pods in addition to online sales of its other restricted flavors, leaving only its tobacco and menthol flavors available.<sup>37</sup>

Shortly after JUUL's actions, the FDA announced it would prioritize enforcement of flavored cartridge-based products like JUUL, except for tobacco and menthol flavors, essentially mimicking JUUL's own policy. FDA's decision to exempt menthol from its Enforcement Guidance gave companies like JUUL a pathway to continue to hook over one million youth with menthol-flavored products alone. In 2020, 37% of youth e-cigarette users, including 44.5% of users of pre-filled pods or cartridge systems like JUUL, reported using menthol-flavored products.<sup>38</sup> E-cigarette sales data show a similar pattern, with menthol-flavored e-cigarette sales increasing by 59% from January 26, 2020 to December 27, 2020 and sales of menthol-flavored cartridge-based products like JUUL increased by 62% over this same time. Menthol is now the top selling e-cigarette flavor, comprising 42% of the market as of December 2020.<sup>39</sup> (See **Appendix 2** for e-cigarette sales trends by flavor). These trends come as no surprise since the tobacco industry has known for decades that menthol appeals to youth. The FDA has previously concluded in its report on menthol cigarettes, that menthol increases the number of teens who start smoking and who become regular smokers.<sup>40</sup>

JUUL delivers this flavored nicotine hit in a sleek, high-tech device that resembles a USB flash drive. In news stories and anecdotes from across this country, youth report that this discreet design makes it look "cool" and easy to disguise the product from parents and teachers, with some users even "JUULing" during class.

#### D. JUUL Pioneered a Nicotine Formulation that Has Led to High Levels of Youth Addiction and Creates an Unacceptable Risk of Youth Addiction

Another important factor in the JUUL-fueled youth e-cigarette epidemic is the massive amounts of nicotine contained in JUUL pods. JUUL popularized a new generation of high-tech e-cigarettes that smoothly and effortlessly deliver a high dose of nicotine in attractive flavors. Nicotine is a highly addictive drug that can have lasting damaging effects on adolescent brain development. In particular, nicotine use can harm the parts of the adolescent brain responsible for attention, learning, mood and impulse control.<sup>41</sup> The Surgeon General concluded that, "The use of products containing nicotine in any form among youth, including in e-cigarettes, is unsafe."<sup>42</sup>

The introduction of JUUL's use of nicotine salts and new technology dramatically increased the risk of youth addiction and makes much of what was known about youth addiction, and the impact of nicotine on youth, out of date. It is the reason the data shows a rapid growth in the percentage of youth who use these products frequently and become addicted. There is a growing body of evidence that many

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<sup>37</sup> JUUL Labs, "JUUL Labs Stops the Sale of Mint JUULPods in the United States," <https://newsroom.juul.com/juul-labs-stops-the-sale-of-mint-juulpods-in-the-united-states/>, November 7, 2019.

<sup>38</sup> *Supra* note 11.

<sup>39</sup> CDC Foundation, *supra* note 33. See also <https://www.cdcfoundation.org/E-CigaretteSales-AggregateData-Dec27>.

<sup>40</sup> FDA, *Preliminary Scientific Evaluation of the Possible Public Health Effects of Menthol versus Nonmenthol Cigarettes* (2013).  
<sup>41</sup> HHS, *The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General*, CDC, Office of Smoking and Health (OSH), 2014, <http://www.surgeongeneral.gov/library/reports/50-years-of-progress/index.html>. See also: CDC Office on Smoking and Health, "Quick Facts on the Risks of E-cigarettes for Kids, Teens, and Young Adults," March 2019. Accessed August 9, 2019.

<sup>42</sup> *Supra* note 7.

youth who use these products become more intensely addicted, and show more signs of intense dependence, than we have previously seen.

JUUL pioneered an e-liquid formulation that delivers nicotine more effectively and with less irritation than earlier e-cigarette models.<sup>43</sup> This is a function both of the high levels of nicotine in JUUL and the way that nicotine is delivered to the user. Researchers estimate that JUUL, which contains the nicotine equivalent of a pack of 20 cigarettes in each 5% nicotine pod, is three or more times as powerful as most e-cigarettes on the market prior to 2015.<sup>44</sup> According to the company, the nicotine in JUUL is made from “nicotine salts found in leaf tobacco, rather than free-base nicotine,” in order to “accommodate cigarette-like strength nicotine levels.”<sup>45</sup>

JUUL’s competitors, seeking to emulate the company’s success, have since flooded the U.S. market with similar high nicotine e-cigarettes, resulting in what some researchers have referred to as a “nicotine arms race.”<sup>46</sup> The 5% nicotine pods sold by JUUL and its competitors far exceed nicotine level limits set by many other countries. An analysis of e-cigarette sales in Nielsen-tracked channels found that products with 5% nicotine or higher increased from 0% of dollar sales in 2013 to 31.8% in 2017, and then doubled to 66.4% in 2018.<sup>47</sup>

Since its initial introduction of 5% nicotine pods, JUUL released pods at 3% nicotine level.<sup>48</sup> While research on the impact of this lower level of nicotine on use rates and addictive potential in the U.S. is not available, evidence from outside of the U.S., particularly where nicotine content in e-liquids has been restricted by law, has shown that JUUL adjusted its devices to still deliver high levels of nicotine with lower concentration pods.<sup>49</sup> Although JUUL has publicly stated that its PMTA includes both 5% and 3% nicotine pods, other characteristics of the products included in JUUL’s PMTAs are not yet public. There is concern, however, that JUUL could alter the pod or device characteristics to make their products addictive even at lower nicotine levels, such as changing the wick, as was done in certain models of the devices sold in Europe, or battery power.<sup>50</sup>

According to the Surgeon General, the use of nicotine salts allows users to inhale high levels of nicotine more easily and with less irritation than e-cigarettes that use free-base nicotine. As a result, the JUUL technology makes it easier for young people to initiate the use of nicotine with these products.<sup>51</sup> News reports from across the country have documented stories of youth struggling to break their addiction to JUUL. National survey data confirms a growing crisis of youth addiction. Kids are no longer just experimenting with e-cigarettes, but are using them frequently, an indicator of serious addiction. In 2020, 38.9% of high school users (up from 34.2% in 2019) and 20% of middle school users (up from 18%

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<sup>43</sup> *Supra* note 8.

<sup>44</sup> Jackler, RK, Ramamurthi, D, “Nicotine arms race: JUUL and the high-nicotine product market” *Tobacco Control*, published online February 6, 2019.

<sup>45</sup> Pax Labs, Inc. (former name of JUUL Labs), *Pax Labs, Inc. Granted U.S. Patent for Nicotine Salt E-Cigarette*, December 22, 2015, [https://www.juulvapor.com/media/wysiwyg/JUUL/JUUL\\_USPTO\\_Patent\\_Press\\_Release\\_15-1216.pdf](https://www.juulvapor.com/media/wysiwyg/JUUL/JUUL_USPTO_Patent_Press_Release_15-1216.pdf).

<sup>46</sup> *Supra* note 44.

<sup>47</sup> Romberg, *supra* note 33.

<sup>48</sup> LaVito, A, “Leading e-cig maker JUUL to sell lower-nicotine pods as scrutiny ratchets higher,” *CNBC*, July 12, 2018, <https://www.cnn.com/2018/07/11/juul-to-introduce-lower-nicotine-pods-for-some-of-its-flavors.html>.

<sup>49</sup> Mallock, N, et al., “Trendy e-cigarettes enter Europe: chemical characterization of JUUL pods and its aerosols,” *Archives of Toxicology* 94:1985-1994, 2020.

<sup>50</sup> Leventhal AM, Mason TB, Kirkpatrick MG, Anderson MK, Levine MD. E-cigarette device power moderates the effects of non-tobacco flavors and nicotine on product appeal in young adults. *Addictive behaviors*. 2020 Aug 1;107:106403

<sup>51</sup> *Supra* note 8.

in 2019) were frequent users of e-cigarettes, reporting use on at least 20 of the preceding 30 days. (See **Appendix 3** for youth trends in frequency of use). Alarming, 22.5% of high school users and 9.4% of middle school users reported daily use. This amounts to 1.3 million middle and high school students who were frequent users of e-cigarettes, including over 730,000 daily users.<sup>52</sup> It is notable that today not only do more youth use e-cigarettes than cigarettes, but a greater percentage of youth who use e-cigarettes do so with a level of frequency indicative of addiction. In addition, data from the ITC Youth Tobacco and Vaping Survey found that between 2017 and 2019, the proportion of past 30-day teen e-cigarette users reporting strong urges to use e-cigarettes on most days or more often increased.<sup>53</sup>

Adolescents are more likely to experience nicotine dependence at lower levels of exposure than adults and exhibit symptoms of dependence after just minimal exposure and within a relatively short period of time.<sup>54</sup> One study estimated that youth could meet the threshold for nicotine addiction by consuming just one quarter of a JUUL pod per day.<sup>55</sup> Thus, JUUL has caused not just a youth e-cigarette epidemic, but a youth addiction epidemic.

Adding to the concern about the impact of youth use of high nicotine JUUL products is the growing evidence base that youth use of e-cigarettes is associated with increased risk of trying combustible cigarettes. A 2018 National Academies of Science, Engineering and Medicine (NASEM) report found the effect of e-cigarette use on cigarette smoking initiation to be causal, concluding that, “There is substantial evidence that e-cigarette use increases risk of ever using combustible tobacco cigarettes among youth and young adults.”<sup>56</sup> Several analyses using FDA’s PATH study also show an association between e-cigarette use and subsequent cigarette smoking. One recent study estimates that 17.9% of youth combustible cigarette initiation and 22.6% of current youth smoking can be attributed to ever e-cigarette use.<sup>57</sup> An analysis of youth and young adults (ages 12-24) participating in Waves 1-4 of the PATH study found that e-cigarette use increased the risk of later daily cigarette smoking by threefold.<sup>58</sup> In addition, several studies find that the link between e-cigarette use and smoking initiation is stronger for those who had *lower* risk factors for smoking at baseline.<sup>59</sup> Newer research confirms that the association between e-cigarette use and cigarette smoking extends to the latest generation of high nicotine e-cigarettes, like JUUL, that have fueled the youth e-cigarette epidemic. An analysis of 2017-2019 data from the Truth Longitudinal Cohort found that compared with youth and young adults who had never used an e-cigarette, those who had used JUUL or any other e-cigarettes had significantly higher odds of

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<sup>52</sup> *Supra* note 11.

<sup>53</sup> Hammond D, et al. Indicators of dependence and efforts to quit vaping and smoking among youth in Canada, England and the USA. *Tobacco Control*. 2021 Jan 31.

<sup>54</sup> HHS, *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General*, 2010; HHS, *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*, 2012.

<sup>55</sup> *Supra* note 44.

<sup>56</sup> National Academies of Sciences, Engineering, and Medicine. 2018. *Public health consequences of e-cigarettes*. Washington, DC: The National Academies Press. <http://nationalacademies.org/hmd/Reports/2018/public-health-consequences-of-e-cigarettes.aspx>.

<sup>57</sup> Stokes, A, et al., “Racial/Ethnic Differences in Associations of Noncigarette Tobacco Product Use with Subsequent Initiation of Cigarettes in US Youths,” *Nicotine & Tobacco Research*, published online September 20, 2020.

<sup>58</sup> Pierce, JP, et al., “Use of E-Cigarettes and Other Tobacco Products and Progression to Daily Cigarette Smoking,” *Pediatrics*, 147(2), published online January 11, 2021.

<sup>59</sup> Barrington-Trimis, JL, et al., “E-Cigarettes and Future Cigarette Use,” *Pediatrics*, 138(1), published online July 2016. Wills, TA, et al., “E-cigarette use is differentially related to smoking onset among lower risk adolescents,” *Tobacco Control*, published online August 19, 2016. Berry, KM, et al., “Association of Electronic Cigarette Use with Subsequent Initiation of Tobacco Cigarettes in US Youths,” *JAMA Network Open*, 2(2), published online February 1, 2019.

ever cigarette use one year later. Those who had specifically used JUUL in 2018 also had significantly higher odds of current cigarette use one year later.<sup>60</sup>

## II. The Harm to Youth is Dispositive, But There is Also Inadequate Scientific Evidence that JUUL Helps Smokers Switch Completely or Stop the Use of All Tobacco Products

One prong of the public health standard is for the population assessment to take into account “the increased or decreased likelihood that existing users of tobacco products will stop using such products.” As shown below, there is a lack of evidence that JUUL products lead to an increase in quitting cigarettes by switching to JUUL, and certainly no evidence that use of JUUL leads to cessation of all tobacco products.

JUUL also has not been approved as a smoking cessation drug by FDA’s CDER, and any therapeutic claim, such as switching, quitting, or cessation, should be regulated by CDER under FDA’s drug authority.

### A. U.S. Public Health Authorities Agree that There is Insufficient Evidence to Recommend Any E-Cigarettes for Cessation, Including Flavored E-Cigarettes that Appeal to Youth

Public health authorities in the U.S., including the CDC, the Surgeon General, the U.S. Preventive Services Task Force (USPSTF) and the NASEM have all concluded that there is not enough evidence to recommend any e-cigarettes for tobacco cessation.<sup>61</sup> The 2020 Surgeon General Report on Smoking Cessation concluded that, “there is presently inadequate evidence to conclude that e-cigarettes, in general, increase smoking cessation.”<sup>62</sup> In a court brief from 2019, the FDA itself stated that, “the claim that vaping helps smokers quit in meaningful numbers remains unproven.”<sup>63</sup> In addition, the U.S. Preventive Services Task Force recently updated its recommendation statement on tobacco smoking cessation in adults, concluding that, “the current evidence is insufficient to assess the balance of benefits and harms of electronic cigarettes (e-cigarettes) for tobacco cessation in adults ... The USPSTF recommends that clinicians direct patients who use tobacco to other tobacco cessation interventions with proven effectiveness and established safety.”<sup>64</sup>

### B. There is No Credible Evidence that Adults Need Flavors, Including Menthol, to Quit Smoking

While there is insufficient evidence on the overall effectiveness of e-cigarettes for smoking cessation, the evidence is even less sufficient to conclude that *flavored* e-cigarettes, which appeal to youth, are more effective than unflavored or tobacco-flavored e-cigarettes at helping smokers to quit smoking. Just because some adults may like flavors or report using a flavored product when they switched, it does not mean flavors are needed to help them quit smoking.

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<sup>60</sup> Hair, EC, et al., “Association between e-cigarette use and future combustible cigarette use: Evidence from a prospective cohort of youth and young adults, 2017–2019,” *Addictive Behaviors* 112:106593, 2021.

<sup>61</sup> *Supra* notes 6, 56. NASEM, *Public Health Consequences of E-Cigarettes*, 2018. United States Preventive Services Task Force, “Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons, Final Recommendation Statement”, 2021 <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/tobacco-use-in-adults-and-pregnant-women-counseling-and-interventions>.

<sup>62</sup> *Supra* note 6.

<sup>63</sup> American Academy of Pediatrics et al., v. U.S. Food & Drug Administration, et al. Government’s Opposition to the Motions for Stay Pending Appeal and Consent to the motion to Expedite Review, December 31, 2019.

<sup>64</sup> United States Preventive Services Task Force, *supra* note 61.

The population data does not support the conclusion that the use of flavors is either necessary for, or even correlates with, higher reductions in adult tobacco use. Before JUUL became the most popular e-cigarette, sales data indicated that tobacco was, by far, the most popular e-cigarette flavor. As recently as 2015, sales data indicated that 49% of e-cigarettes unit sales were for tobacco-flavored products.<sup>65</sup> As JUUL gained popularity, it shifted the market to increased use of flavored products, but during JUUL's peak growth from 2017 to 2019, there was no acceleration in adult smoking declines.<sup>66</sup> The growth in the sales of flavored products was associated with the growth in youth e-cigarette use, but not in increased adult e-cigarette use or decreased adult cigarette smoking.

The PMTA for JUUL seeks authorization for menthol (as well as tobacco) flavored products, but there is inadequate evidence that menthol e-cigarettes provide unique benefit to menthol smokers or that they are needed to help menthol smokers quit smoking. A recent study published by FDA researchers found that many adult e-cigarette users use multiple flavors and that menthol smokers are more likely to use mint- or menthol-flavored e-cigarettes than non-menthol smokers.<sup>67</sup> However, this does not demonstrate that flavors are necessary to help smokers quit smoking, or even that, in a controlled situation, adult smokers who use flavors are more likely to quit smoking than smokers who use other products. Even in the study, few menthol smokers *exclusively* used menthol-flavored e-cigarettes. In fact, mint and menthol are not the most popular e-cigarette flavor category among menthol smokers. Among menthol smokers, only one out of five users who have switched to e-cigarettes exclusively use mint- or menthol-flavored products.

A study paid for and presented by JUUL at the 2021 Society for Research on Nicotine and Tobacco (SRNT) annual conference presented data that, according to JUUL, showed that menthol smokers rated tobacco-flavored JUUL pods as having lower appeal as compared to non-menthol smokers.<sup>68</sup> This study also does not provide adequate evidence that menthol e-cigarettes are more effective at helping menthol smokers quit smoking or show that the availability of menthol e-cigarettes increase the number of menthol smokers who quit smoking. This study did not assess any differences in the appeal of menthol-flavored JUUL pods or potential differential impact on smoking cessation behavior. Thus, it provides no evidence that JUUL's menthol-flavored pods have a measurable benefit in increasing the number of menthol smokers who are able to quit smoking cigarettes. In contrast, there is indisputable evidence that menthol-flavored e-cigarettes are popular among youth.

If any e-cigarette, including a menthol e-cigarette, can be shown to be effective for smoking or tobacco cessation, its manufacturer should submit evidence of this therapeutic benefit to CDER. Randomized controlled trials are necessary to isolate any potential cessation benefit of particular flavors or products. No e-cigarette manufacturer has published a single randomized controlled trial on the effectiveness of their product for cessation, let alone the efficacy of *flavored* e-cigarettes, including menthol. Additionally, the FDA has not found any e-cigarette product safe and effective in helping

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<sup>65</sup> CDC Foundation, *supra* note 33.

<sup>66</sup> Cornelius, ME, "Tobacco Product Use Among Adults — United States, 2019," *MMWR* 69(46):1736-1742, November 20, 2020, <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6946a4-H.pdf>.

<sup>67</sup> Rostron, BL, et al., "ENDS Flavor Preference by Menthol Cigarette Smoking Status among US Adults, 2018-2019," *International Journal of Environmental Research and Public Health*, 2021, 18, 240.

<sup>68</sup> Goldenson, NI, et al., "Differences in the Appeal of the JUUL System in Four Flavors between Smokers of Mentholated and Nonmentholated Combustible Cigarettes," poster presented at 2021 Society of Research on Nicotine and Tobacco (SRNT) annual conference, <https://www.juulabscience.com/wp-content/uploads/sites/8/2021/02/SRNT-2021-Differences-in-the-Appeal-of-the-JUUL-System-in-Four-Flavors-between-Smokers-of-Mentholated-and-Nonmentholated-Combustible-Cigarettes.pdf>.

smokers quit. nor has there been, to the best of our knowledge, an application for FDA approval of an e-cigarette product as safe and effective for smoking or tobacco cessation.

### C. There is No Credible Evidence That JUUL Helps Smokers Quit Smoking

To date, there has not been a single published randomized controlled trial on the impact of JUUL on smoking or tobacco cessation. While JUUL Labs, Inc. has published longitudinal research analyzing smoking cessation among adult JUUL users, longitudinal studies do not provide causal evidence that JUUL is effective for smoking or tobacco cessation and cannot determine whether users who quit smoking, or all tobacco use, using flavored JUUL pods, would be unable to quit smoking, or all tobacco use, with tobacco-flavored e-cigarettes or FDA-approved cessation methods. In addition, JUUL's studies have numerous methodological limitations.

Participants in JUUL's six- and twelve-month longitudinal studies<sup>69</sup> were not a random sample of adult smokers and tended to be younger, more educated, and smoke fewer cigarettes than the average smoker. Participants were a convenience sample of JUUL users who purchased a starter kit (which are no longer available for sale) and were recruited at the point-of-purchase (online or in stores). It is unknown if starter kit purchasers are representative of all JUUL users. Importantly, because survey participants self-select into JUUL's studies, it is likely that they are more motivated to quit smoking and more enthusiastic about the product than other smokers and/or other JUUL users. JUUL reported that its recruitment efforts included email invitations to 37,536 starter kit online purchasers and recruitment materials placed in 500,000 starter kits sold in stores, meaning that even in JUUL's largest data set, their response rate is only 4%. Additionally, many participants did not complete the full study, further reducing the generalizability of findings. The 6-month study found that 40% of participants had dropped out of the study and less than half completed both the 3-month and 6-month surveys. While JUUL's analyses did not find any baseline differences in demographics or smoking behavior among those who dropped out and those who completed follow-up surveys, this does not necessarily mean that their smoking trajectories would be the same, nor does it tell us if the data are missing at random. JUUL attempted to contact non-responders to assess reasons for drop out and smoking status and found that 46% reported no past-30-day cigarette smoking; however, the generalizability of these findings is invalidated by the paltry response rate of only 7%.<sup>70</sup> Finally, these longitudinal studies show higher cigarette smoking abstinence among light smokers and those whose quit intentions were already high at baseline, indicating that JUUL may be most helpful for a population of smokers who could quit without assistance or who would be able to successfully quit smoking cigarettes using FDA-approved cessation methods.

A recent poster presented by researchers linked to JUUL at the 2021 SRNT annual conference suggested that use of products like JUUL may be more efficacious for adult smokers who were unable to successfully quit using FDA-approved cessation medications. However, this longitudinal observational study is severely limited by the self-reported nature of the study, as addressed by the authors. The study's findings rely on the assumption that adult smokers who had purchased a JUUL starter kit quit smoking because of JUUL, without any assessment of why smokers quit. Similarly, since the study is an

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<sup>69</sup> Russell, C, et al., "Factors associated with past 30-day abstinence from cigarette smoking in adult established smokers who used a JUUL vaporizer for 6 months," *Harm Reduction Journal*, 16(59), 2019. *Supra* note 68.

<sup>70</sup> Shiffman, S, et al., "Analyses of Loss to Follow-Up in a Longitudinal Study of Smokers Using JUUL System ENDS," poster presented at 2021 SRNT annual conference, <https://www.juullabscience.com/wp-content/uploads/sites/8/2021/02/SRNT-2021-Analyses-of-Loss-to-Follow-Up-in-a-Longitudinal-Study-of-Smokers-Using-JUUL-System-ENDS.pdf>.

observational study of only adult smokers who purchased a JUUL starter kit, it is unclear if switch rates between those unable to successfully quit smoking using FDA-approved cessation medications and those with no past-year quit attempts, or even adult smokers who had not purchased a JUUL starter kit, were significantly different.<sup>71</sup> Other research suggests that exclusive use of JUUL for smoking cessation is relatively low. A 2018 online survey of a probability-based panel of US adults aged 18-64 found that among former smokers, 21.2% had used e-cigarettes and/or nicotine replacement therapy (NRT) to help them quit smoking, but only 2.2% had exclusively used JUUL compared to 10.3% who used NRT only, and 6.9% used other e-cigarettes only to quit smoking.<sup>72</sup> In that same study, among current smokers with a quit attempt, 24.0% used any product (NRT or e-cigarettes) to quit smoking, compared to 1.1% who used JUUL only.

JUUL may also use its dual use data to claim that most dual users of JUUL and combustible cigarettes will eventually stop using cigarettes. A poster presented by JUUL at the 2021 SRNT annual conference showed that dual use declined over time while exclusive use of JUUL and no use of JUUL or cigarettes increased, so that 12 months later over 50% of respondents reported “switched from cigarettes.”<sup>73</sup> However, the data also showed a continuous increase in exclusive cigarette smoking over time, even if it was among a minority of users. It is important to note that the research does not clarify whether switching includes those who switched completely to JUUL, switched to JUUL and other products, or quit all tobacco use. The poster also stated misleading information that “Reductions in CC [combustible cigarette] consumption likely have harm reduction implications,” when CDC continues to state, “Smoking even a few cigarettes a day can be dangerous.”<sup>74</sup> Further, other research shows that light and intermittent smokers are at risk for cardiovascular diseases, lung cancer and lower respiratory tract infections, among other things.<sup>75</sup> In addition, other research on the trajectories of dual users shows different results over a longer period of time. A recently published study using data from PATH found that most dual users went back to exclusive cigarette smoking after 24 months, so the 12-month follow-up from JUUL may not be sufficient to show what happens in the long-term.<sup>76</sup>

It is important to note that all of the studies outlined above that were commissioned by JUUL are analyses of JUUL users who were established adult smokers aged 21 and older. It is unknown what proportion of JUUL users meet these criteria, but given JUUL’s popularity among youth and young adults—many of whom are nonsmokers—these studies clearly are not representative of the larger population of JUUL users. In contrast to the unproven impact on smoking cessation, the rise of JUUL is unequivocally associated with a rapid and dramatic increase in youth e-cigarette use and no acceleration

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<sup>71</sup> *Id.*

<sup>72</sup> Patel, M, et al., “Smoking cessation among US adults: use of e-cigarettes, including JUUL, and NRT use,” *Tobacco Control*, published online September 21, 2020.

<sup>73</sup> Le, G, et al, “Longitudinal Study of Dual Use of Combustible Cigarettes and the JUUL® System in Adult Current Smokers at 12 Months,” poster presented at 2021 SRNT annual conference, <https://www.juullabscience.com/wp-content/uploads/sites/8/2021/02/SRNT-2021-Longitudinal-Study-of-Dual-Use-of-Combustible-Cigarettes-and-the-JUUL%C2%AE-System-in-Adult-Current-Smokers.pdf>.

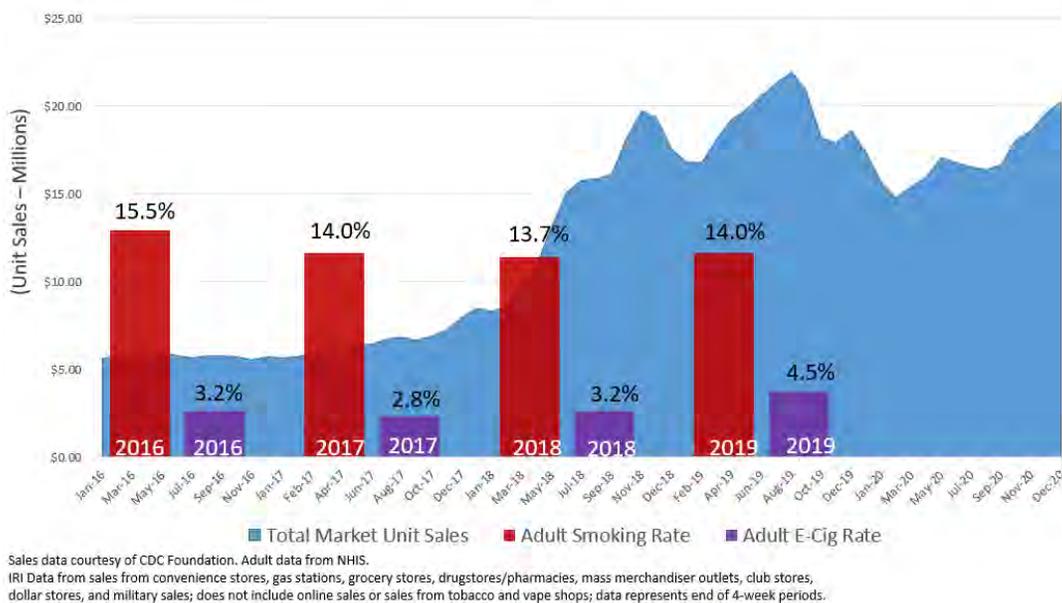
<sup>74</sup> CDC, Dual Use of Tobacco Products, last updated February 15, 2021, <https://www.cdc.gov/tobacco/campaign/tips/diseases/dual-tobacco-use.html>.

<sup>75</sup> Schane, RE, Ling, PM, & Glantz, SA, “Health Effects of Light and Intermittent Smoking: A Review,” *Circulation* 121(3):1518-1522, 2010. Tverdal, A and Bjartveit, K, “Health Consequences of Smoking 1-4 Cigarettes per Day,” *Tobacco control* 14(5), 2005. Hackshaw, A, et al., “Low cigarette consumption and risk of coronary heart disease and stroke: meta-analysis of 141 cohort studies in 55 study reports,” *BMJ* 360:j5855, <http://doi.org/10.1136/bmj.j5855>, 2018.

<sup>76</sup> Harlow, AF, et al., “Association of device type, flavours and vaping behaviour with tobacco product transitions among adult electronic cigarette users in the USA,” *Tobacco Control*, published online first, doi: 10.1136/tobaccocontrol-2020-055999, January 21, 2021.

in adult smoking declines (see chart below). JUUL may claim that adult smokers are their target audience, but e-cigarettes are largely a product used by the young, with insignificant uptake among older adults. About 25% of all e-cigarette users in the U.S. are youth, and 44% are under age 25.<sup>77</sup> Further, more than half of 18-24 year-old e-cigarette users (56.0%) have never smoked cigarettes.<sup>78</sup> Trend analysis showed that between 2014 and 2018, the increase in young adult (18-29 years old) e-cigarette users who had never been cigarette smokers “represented the largest absolute increase in e-cigarette users (additional 0.87 million users) among all age groups.”<sup>79</sup> Uptake of e-cigarettes among older adults remains low.<sup>80</sup> Data from the National Health Interview Survey (NHIS) show that in 2019, only 4.5% of adults currently used e-cigarettes.<sup>81</sup> JUUL also claims that they seek to help adult smokers switch, yet many adult e-cigarette users report using both e-cigarettes and cigarettes.<sup>82</sup>

**Monthly E-Cigarette Unit Sales vs. Adult Smoking and E-Cigarette Use Rates**  
(IRI data covering convenience stores and mass merchandisers)



Further, new research confirms that JUUL’s products are not widely used by adult e-cigarette users. According to the 2018 ITC Four Country Smoking and Vaping Survey, JUUL is the preferred

<sup>77</sup> 3.6 million middle and high school students are current e-cigarette users and 10.9 million adults are current e-cigarette users (about 2.3 million of whom are young adults). *Supra* note 66. Number of young adult e-cigarette users calculated using 2019 American Community Survey 1-Year Estimates, <https://www.census.gov/programs-surveys/acs>. *Supra* note 11..

<sup>78</sup> *Supra* note 66.

<sup>79</sup> Bandi, P, et al., “Trends in E-Cigarette Use by Age Group and Combustible Cigarette Smoking Histories, U.S. Adults, 2014–2018,” *American Journal of Preventive Medicine* S0749-3797(20)30380-9, Online ahead of print, doi: 10.1016/j.amepre.2020.07.026, September 24, 2020.

<sup>80</sup> *Supra* note 78.

<sup>81</sup> *Id.*

<sup>82</sup> *Id.*

brand of only 5.6% of adult e-cigarette users in the U.S.<sup>83</sup> Despite JUUL’s sharp increase in popularity among adolescents and rising market share, the study did not find a significant shift in adult use of cartridge systems like JUUL from 2016 to 2018. This provides further evidence to suggest that JUUL’s growth was driven by youth use rather than adult use.

The cessation research funded by JUUL is not quality research and should not be used in the PMTA decision making process. It does not use random samples and does not clearly define the aims of the study. In January 2021, the USPSTF completed and published a systematic review of evidence on tobacco cessation interventions for adults. The researchers concluded “[d]ata on the effectiveness and safety of electronic cigarettes for smoking cessation among adults are limited.”<sup>84</sup> Our organizations encourage you to look at that systematic review as you evaluate JUUL’s cessation claims.

JUUL is addicting kids, putting their health at risk and threatening decades of progress in reducing youth tobacco use. As former FDA Commissioner Scott Gottlieb noted in June 2018, *“If by opening a path for e-cigs to be an alternative for adult smokers, all we end up doing is hooking a new generation of kids on nicotine, we’ll have failed in our purpose. We’ll have swapped one public health tragedy for a new one.”*<sup>85</sup> FDA must not make that mistake by granting marketing authorization to JUUL.

### III. Altria’s Dominance Over JUUL Reinforces the Likelihood of Adverse Public Health Consequences from Continued Marketing of JUUL

FDA consideration of a PMTA for JUUL must also take into account the implications of Altria’s position of current influence over the further development and marketing of JUUL. In December of 2018, Altria and JLI entered into a transaction whereby Altria would purchase a 35% non-voting stake in JLI, which Altria could convert into voting shares upon receiving premerger review approval. The acquisition would bring together the two companies that have marketed the tobacco products most popular among young people, Marlboro cigarettes and JUUL e-cigarettes.

The FTC has filed a Complaint challenging the transaction as anticompetitive, charging that, as a condition of completing the transaction, Altria agreed to exit the e-cigarette market.<sup>86</sup> In addition, the FTC is investigating Altria’s role in JLI’s decision to replace its CEO Kevin Burns with longtime Altria executive K.C. Crosthwaite.<sup>87</sup> Within days of assuming his new responsibilities at JUUL, Crosthwaite hired his Altria colleague Joe Murillo as JLI’s chief regulatory officer. It is apparent that Altria now is in a position to exert considerable control over every aspect of JLI’s activities even before the stock purchase transaction is completed. Given Altria’s shameful history of marketing cigarettes to young

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<sup>83</sup> Felicione, NJ, et al., “Characteristics and changes over time of nicotine vaping products used by vapers in the 2016 and 2018 ITC Four Country Smoking and Vaping Surveys,” *Tobacco Control*, published online April 5, 2021.

<sup>84</sup> Patnode CD, Henderson JT, Melnikow J, Coppola EL, Durbin S, Thomas R. Interventions for Tobacco Cessation in Adults, Including Pregnant Persons: An Evidence Update for the U.S. Preventive Services Task Force: Evidence Synthesis No. 196. AHRQ publication No. 20-05264-EF-1. Rockville, MD: Agency for Healthcare Research and Quality; 2021. <https://www.ncbi.nlm.nih.gov/books/NBK567066/>.

<sup>85</sup> Dr. Scott Gottlieb Remarks to the American Society of Clinical Oncology (ASCO) Annual Meeting, June 2, 2018 <https://www.fda.gov/news-events/speeches-fda-officials/remarks-american-society-clinical-oncology-asco-annual-meeting-06022018>.

<sup>86</sup> FTC Press Release, “FTC Sues to Unwind Altria’s \$12.8 Billion Investment in Competitor JUUL, April 1, 2020.

<https://www.ftc.gov/news-events/press-releases/2020/04/ftc-sues-unwind-altrias-128-billion-investment-competitor-juul>.

<sup>87</sup> Angelica LaVito, “Altria confirms FTC investigation of JUUL as agency scrutinizes role in executive shake-up at vaping company,” CNBC, Oct. 31, 2019, <https://www.cnbc.com/2019/10/31/altria-confirms-ftc-probe-of-juul-as-agency-scrutinizes-executive-shakeup.html>.

people, the relationship between the two companies only reinforces the likelihood that JUUL will continue to have serious consequences for public health, particularly for the young.

Marlboro, marketed for decades by Altria and its corporate predecessor, Philip Morris, Inc. (Philip Morris), has long been, and still is, the most smoked cigarette by adolescents.<sup>88</sup> A 2006 study showed that Philip Morris earned more revenue from cigarettes smoked by American kids than all other tobacco companies combined.<sup>89</sup> An internal Philip Morris document explained that “[T]he success of Marlboro Red during its most rapid growth period was because it became the brand of choice among teenagers who then stuck with it as they grew older.”<sup>90</sup>

In 2006, the U.S. District Court for the District of Columbia, based on voluminous evidence, including internal company documents, found that Philip Morris, Altria and other tobacco companies had violated federal civil racketeering laws by engaging in a conspiracy to defraud the public by lying about the health risks of smoking and their marketing to children over a period spanning more than 50 years.<sup>91</sup> Indeed, as to Philip Morris, the Court found that the company “has conducted extensive consumer research to help inform and shape marketing campaigns that appeal to their youngest potential smokers.”<sup>92</sup> According to one internal Phillip Morris document, “It is important to know as much as possible about teenage smoking patterns and attitudes. Today’s teenager is tomorrow’s potential regular customer, and the overwhelming majority of smokers first begin to smoke while in their teens . . . The smoking patterns of teenagers are particularly important to Philip Morris. . . [I]t is during the teenage years that the initial brand choice is made.”<sup>93</sup>

Moreover, the Court found that remedies to “prevent and restrain” violations of the federal racketeering laws were appropriate because the defendant companies, including Altria, were continuing their fraudulent conduct and were likely to continue it into the future. As to their marketing to youth, the Court wrote:

. . . Defendants continue to engage in many practices which target youth, and deny that they do so. . . Defendants continue to track youth behavior and preferences and market to youth using imagery which appeals to the needs and desires of adolescents. Defendants are well aware the over eighty percent of adult smokers began smoking before the age of 18, and therefore know that securing the youth market is critical to their survival.

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<sup>88</sup> SAMHSA’s public online data analysis system (PDAS), National Survey on Drug Use and Health, 2015.

[http://pdas.samhsa.gov/#/survey/NSDUH-2015-DS0001/crosstab/?row=CIG30BR2&column=CATAG2&weight=ANALWT\\_C&results\\_received=true](http://pdas.samhsa.gov/#/survey/NSDUH-2015-DS0001/crosstab/?row=CIG30BR2&column=CATAG2&weight=ANALWT_C&results_received=true).

Another survey, the 2016 NYTS, found that 78.7% of high school students prefer these three brands. CDC, “Cigarette Brand Preference and Pro-Tobacco Advertising Among Middle and High School Students—United States, 2012-2016,” *MMWR*, 67(4): 119-124, February 2, 2018, <https://www.cdc.gov/mmwr/volumes/67/wr/pdfs/mm6704a3-H.pdf>.

<sup>89</sup> Heaton, C. “Youth smoking prevention and tobacco industry revenue,” *Tobacco Control* 15:103-106, 2006.

<sup>90</sup> *Special Report, “Young Smokers: Prevalence, Trends, Implications, and Related Demographic Trends,”* March 31, 1981, Bates No. 1000390803/55 (“Special Report”).

<sup>91</sup> *United States v. Philip Morris, U.S.A., Inc.*, 449 F.Supp.2d 1 (D.D.C. 2006), *aff’d in relevant part*, 566 F.3d 1095 (D.C. Cir. 2009), *cert. denied*, 130 S.Ct. 3501 (2010). The Court found that “Defendant Altria effectively and actively controls the activities of all of its subsidiaries, including Defendant Philip Morris USA, Inc. and Philip Morris International . . .” and thus “Altria has participated in the . . . conspiracy.” 449 F.Supp. at 907-908.

<sup>92</sup> *Id.* at 589.

<sup>93</sup> *Special Report, supra* note 90.

*There is therefore no reason, especially given their long history of denial and deceit, to trust their assurances that they will not continue committing RICO violations denying their marketing to youth.*<sup>94</sup>

There is little doubt that Altria, found liable for racketeering activity in part because it lied about marketing its cigarettes to children, and found likely to continue this racketeering activity into the future, now undoubtedly is exercising dominant control over JLI. This effectively combines Altria's decades of experience in marketing tobacco products to young people with JLI's extraordinary ability to design e-cigarettes with features perfectly adapted to appeal to digital-age youth and market those products through the communication avenues now certain to reach the most young people and cause them to become social media "brand ambassadors" to other young people.

Moreover, with Marlboro cigarettes as its most profitable product, Altria has every incentive to use its new position of influence over JLI to ensure that its e-cigarettes are designed and marketed in a way that constitutes no real threat to the market for cigarettes. Indeed, with evidence emerging that youth who use e-cigarettes are more likely than non-e-cigarette users to smoke cigarettes,<sup>95</sup> this migration is likely to be seen by JLI/Altria as the optimum result of the youth nicotine epidemic.

#### IV. CONCLUSION

The PMTA process asks FDA to authorize products as "appropriate for the protection of the public health." JUUL products have caused, and are still causing, immeasurable damage to public health, particularly to the health of the nation's children. The evidence is overwhelming that JUUL's products, technological innovations, sleek design and marketing have led to a level of use and addiction that was previously unimaginable. JUUL changed the market; its introduction was accompanied by a massive growth in youth use, with little or no growth in the percentage of adult users, with long-term consequences of unknown proportions.

These problems continued despite repeated promises of reform by JUUL. First, it made a promise to curtail certain marketing practices (that it never admitted impacted youth) and then said it would withdraw certain sweet flavors. When youth use continued at epidemic proportions, and youth simply switched to JUUL's mint and menthol products, JUUL then was forced to withdraw its mint products, but the results were predictable – youth quickly switched to menthol.

The proven risk to youth from the products now on the market and the lack of evidence that smokers quit smoking by switching completely to JUUL, or use JUUL to stop the use of all tobacco products, make it impossible for JUUL's current products to meet the statutory public health standard. FDA cannot protect our nation's public health if it continues to allow JUUL's products to be sold as a consumer product. JUUL has demonstrated that its repeated promises of reform are inadequate to protect America's youth and that FDA's efforts have been inadequate to protect our nation's children.

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<sup>94</sup> *United States v. Philip Morris. U.S.A., Inc.*, 449 F.Supp. at 912 (emphasis added).

<sup>95</sup> *Supra* note 56. Berry, KM, et al., *supra* note 59. Stokes, A, et al., *supra* note 57. Hair, EC, et al., *supra* note 60.

Former FDA Commissioners David Kessler and Scott Gottlieb agree that the evidence does not support premarket authorization for JUUL. According to Dr. Gottlieb, “As for cartridge-based e-cigs, widespread use by kids will make it hard for those brands to prove a “net public health benefit.”<sup>96</sup> In another interview Dr. Gottlieb was even more explicit, “They have so much historical youth use with their product. I don’t know how JUUL gets through an application process.”<sup>97</sup> Dr. Kessler has similarly concluded that, “To win the go-ahead as so-called new tobacco products, the e-cigarettes must ‘protect the public health.’ If JUUL’s design facilitates use by young nonsmokers, it will likely fail under that standard.”<sup>98</sup>

The products’ sleek, concealable design, stylish image, flavors, intensely addictive product chemistry, and sophisticated marketing targeting youth will continue to fuel youth e-cigarette use, as long as JUUL products are allowed to stay on the market. The company has the alternative pathway to market JUUL through a new drug application to CDER if its intent is to help adults quit smoking, where it will be required to demonstrate that its products are safe and effective for that purpose and the dangers and risks associated with their marketing can be controlled. CDER has greater ability to control where the product is sold, and how the product is marketed, to ensure that it is targeted at and used by adult smokers.

Respectfully submitted,

American Academy of Pediatrics

American Cancer Society Cancer Action Network

American Heart Association

American Lung Association

Campaign for Tobacco-Free Kids

Truth Initiative

Cc: Mitch Zeller, Director, Center for Tobacco Products

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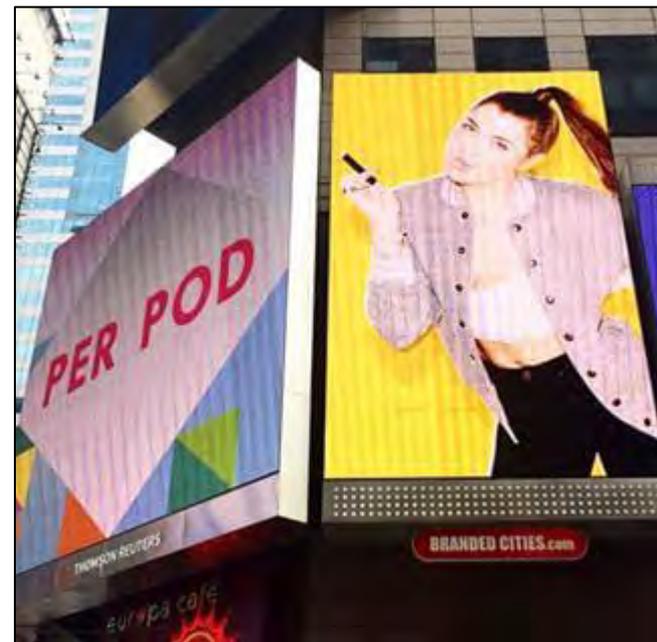
<sup>96</sup> Gottlieb, S, “The FDA’s Challenge on E-Cigs,” *Wall Street Journal*, June 24, 2019, <https://www.wsj.com/articles/the-fdas-challenge-on-e-cigs-11561415893>.

<sup>97</sup> Bursztynsky, J, “Ex-FDA chief Scott Gottlieb: ‘JUUL is going to be in a hard spot to ever get their product approved,’” *CNBC.com*, June 21, 2019, <https://www.cnbc.com/2019/06/21/former-fda-chief-scott-gottlieb-juul-in-tough-spot-to-get-approval.html>.

<sup>98</sup> Kessler, DA, “JUUL Says It Doesn’t Target Kids, But It’s E-Cigarettes Pull Them In,” *New York Times*, July 31, 2019, <https://www.nytimes.com/2019/07/31/opinion/juul-kids.html>.

# Appendix 1. JUUL Marketing Examples

## Billboards in Times Square, New York City



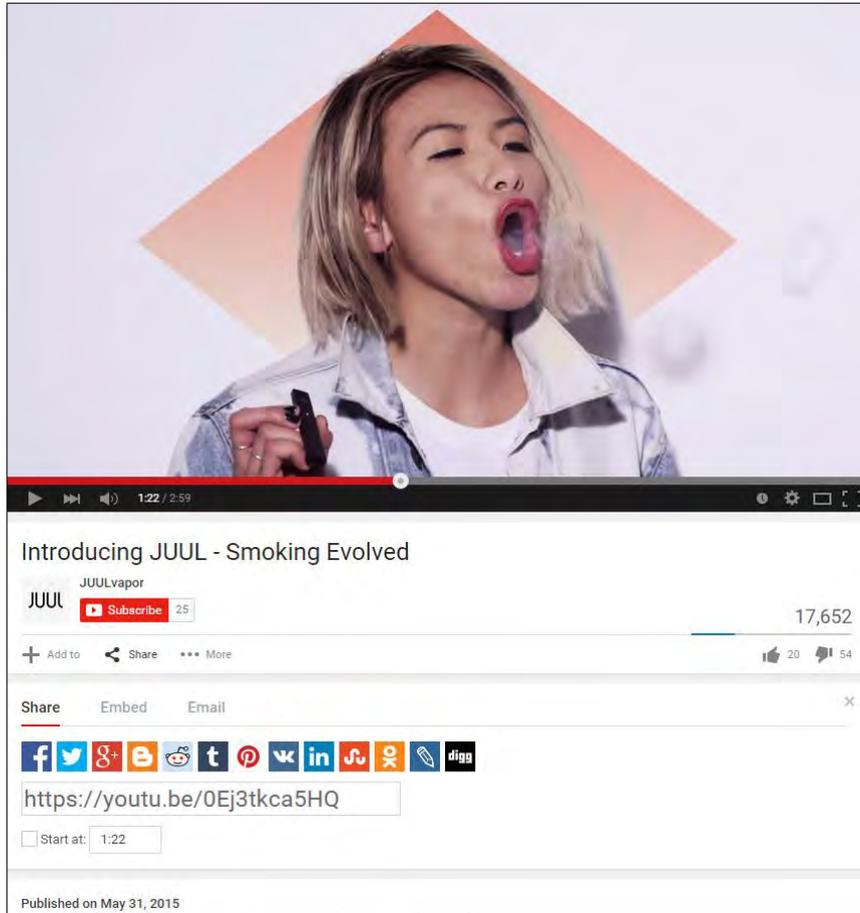
Times Square, New York City, <https://www.spencer-pederson.com/work-1/2017/2/23/juul-go-to-market>

# Vice Magazine Advertising



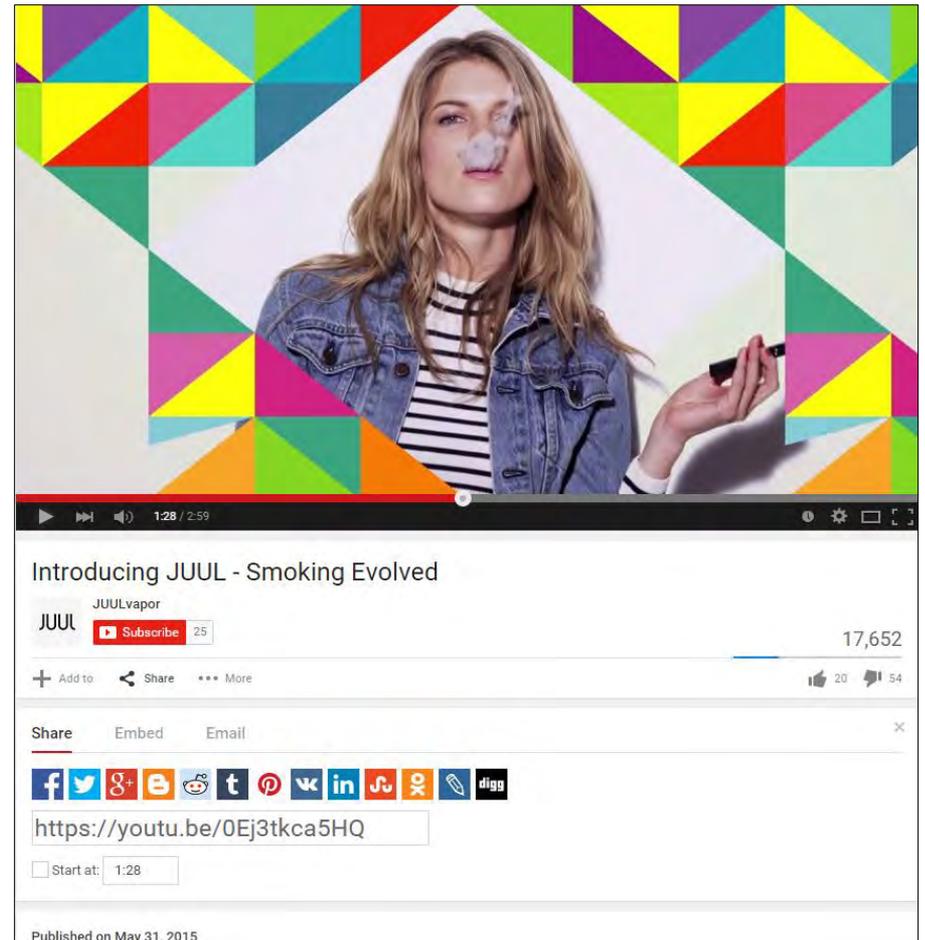
Vice Magazine 2015, <http://cultideas.com/case-study/juul> and <http://gaia.adage.com/images/bin/image/jumbo/juulvicespreadFinalpage001.jpg>

# YouTube Ads



A screenshot of a YouTube video player. The video shows a woman with blonde hair, wearing a denim jacket, exhaling a large plume of white vapor from a JUUL e-cigarette. The background is a plain white wall with a large, faint orange diamond shape. The video player interface includes a progress bar at 1:22 / 2:59, the title "Introducing JUUL - Smoking Evolved", the channel name "JUULvapor", a "Subscribe" button with 25 subscribers, and 17,652 views. Below the video are social sharing options for Facebook, Twitter, Google+, Email, and a list of social media icons. The URL is <https://youtu.be/0Ej3tkca5HQ>. The video was published on May 31, 2015.

PAX Labs' Juul e-cigarette, May 31, 2015,  
<https://www.youtube.com/watch?v=0Ej3tkca5HQ>



A screenshot of a YouTube video player. The video shows a woman with blonde hair, wearing a denim jacket over a striped shirt, holding a JUUL e-cigarette. The background is a vibrant, colorful geometric pattern of triangles in various colors (red, yellow, green, blue, purple, pink). The video player interface includes a progress bar at 1:28 / 2:59, the title "Introducing JUUL - Smoking Evolved", the channel name "JUULvapor", a "Subscribe" button with 25 subscribers, and 17,652 views. Below the video are social sharing options for Facebook, Twitter, Google+, Email, and a list of social media icons. The URL is <https://youtu.be/0Ej3tkca5HQ>. The video was published on May 31, 2015.

# JUUL Launch Party



<http://ads.gawkerassets.com/creative/ads/live/Juul/Launch%20Party/carousel/carousel.html>



June 4, 2015

<https://twitter.com/JUULvapor/status/606656253885038592>

# JUUL Influencer Program

## Join the JUUL Influencers

JUUL's mission is to improve the lives of the world's one billion adult smokers, including many of our family, friends and colleagues.

If you're a current smoker or one that just switched to JUUL, we would love to have you join the JUUL Influencers crew to introduce other adult smokers in your life to JUUL.

Please select the application below that best suits you.

Note: both applications require applicants to be a current or recent smoker and to be at least 21 years old.

Content Creators

(Includes: Blogs, Vlogs, Social Media)

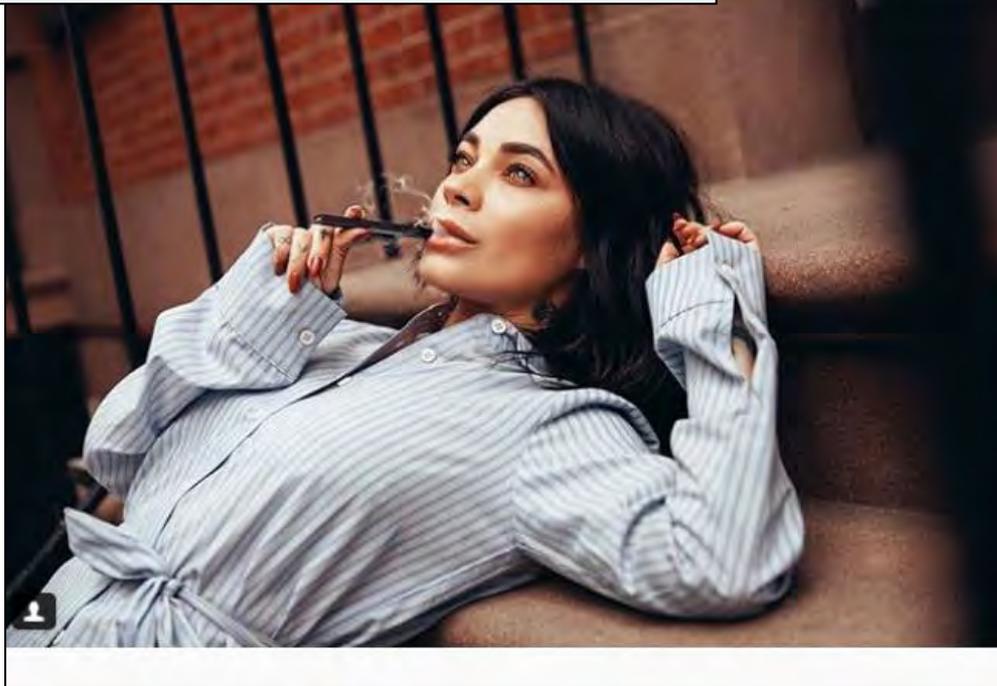
[Apply Here](#)

Word-of-Mouth Ambassadors

(Includes: Offline Movers & Shakers)

[Apply Here](#)

Accessed 3.9.18, <https://www.juulvapor.com/influencers>



christinazayas • [Follow](#)  
New York, New York

christinazayas When smoking cigarettes is not an option, I've turned to @juulvapor. Read why, via the link in my bio! #JUULmoment #ad ➡

[Load more comments](#)

soheatherblog Love this look!!

liiraven Love the look

priscillathecreator I love his shot of you

cosmicchristine Love this look and going to try this out



1,515 likes

NOVEMBER 13, 2017

[Add a comment...](#)

November 13, 2017 <https://www.instagram.com/p/BbcjDW3nMuO/?taken-by=christinazayas>

# Testimonials

**JUUL** **JUUL**   
@JUULvapor Follow

"I don't think I would ever pick up a cigarette ever again, whether it was a break up or whatever... I don't think I would ever do it again it's just not something I would want." - Nora made the #SwitchToJUUL - view her story and more at [juul.com/community](http://juul.com/community)

**WARNING:**  
This product contains nicotine. Nicotine is an addictive chemical.



**NORA, 29**  
JUUL customer since 2014

1:00 PM - 30 Oct 2018

4 Likes 

   4 

Nora is the rapper and actress known as Awkwafina, who starred in box office hits Oceans 8 and Crazy Rich Asians



**awkwafina**  SoHo Follow

awkwafina More from this month's issue of @nylonmag Young Hollywood issue, shot by the amazing @jonathangrassi  
REGRAM: @jonathangrassi @nylonmag  
STYLIST: @wendymcnett  
BEAUTY: @akmakeup\_art  
HAIR: @thedavidcruz

Load more comments

casi.moss 

gay.denim You are so cute     @awkwafina 

lowkey\_dreamer Yeah you smoke that electric cigarette! Vape that shit! 

jessict Your Instagram stories are the best! 

pinedamn GIRL CRUSH 

d.hutto She's a natural model. 

4,218 likes  
APRIL 28, 2017

Add a comment... 

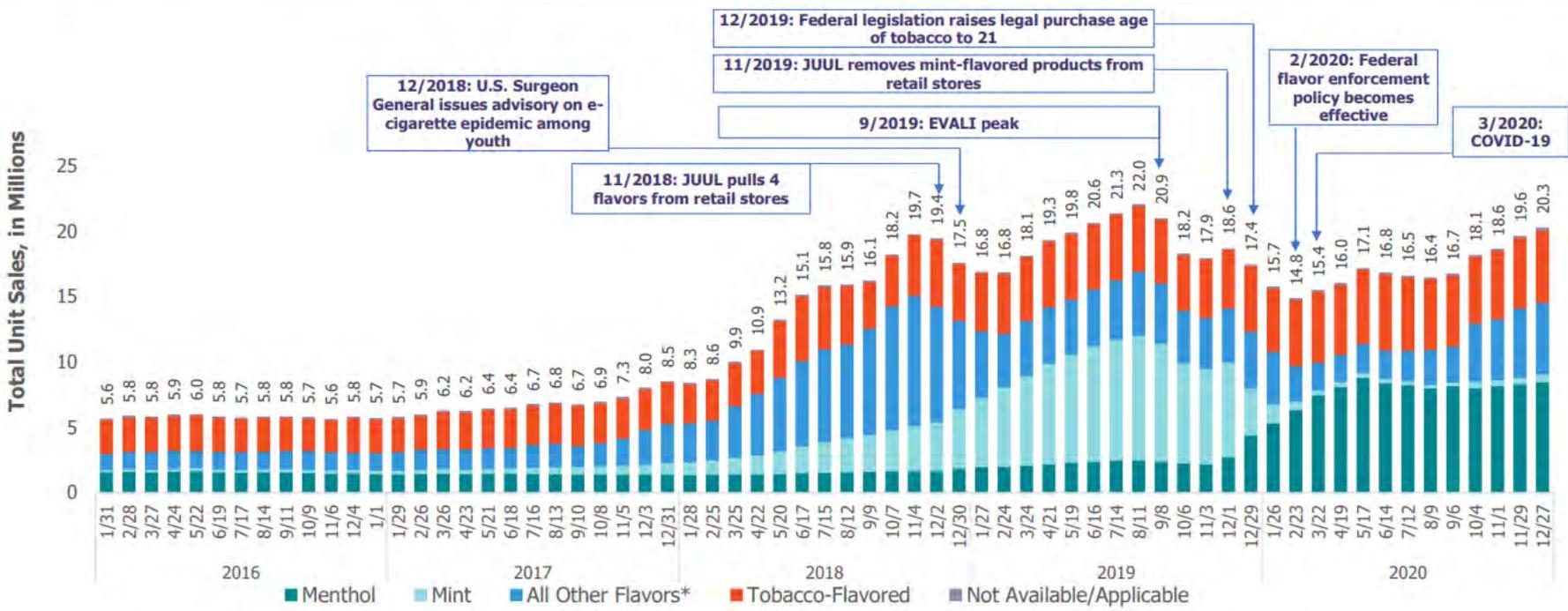
October 30, 2018,

<https://twitter.com/JUULvapor/status/1057331314305712128>

# Appendix 2. JUUL Sales Drove Shifts in Market Share of Flavored Products

Data Brief | December 2020

## National E-Cigarette Unit Sales by Flavor, 4 Week Estimates 1/2016 – 12/2020\*

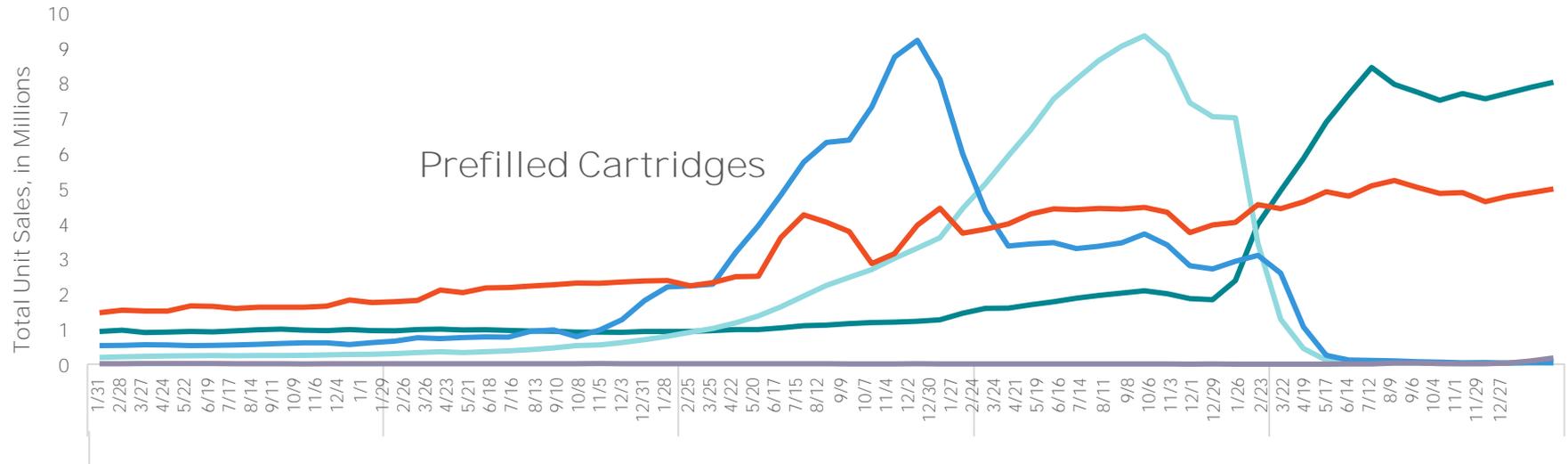


\*Sales data does not reflect sales from vape shops or online retailers; dates represent end of 4-week periods; All Other Flavors category includes fruit, clove/spice, chocolate, alcoholic drink (such as wine, cognac, or other cocktails), candy/desserts/other sweets, some other flavor; e-cigarette accessories and devices sold without e-liquids were excluded (11.5% of total sales).

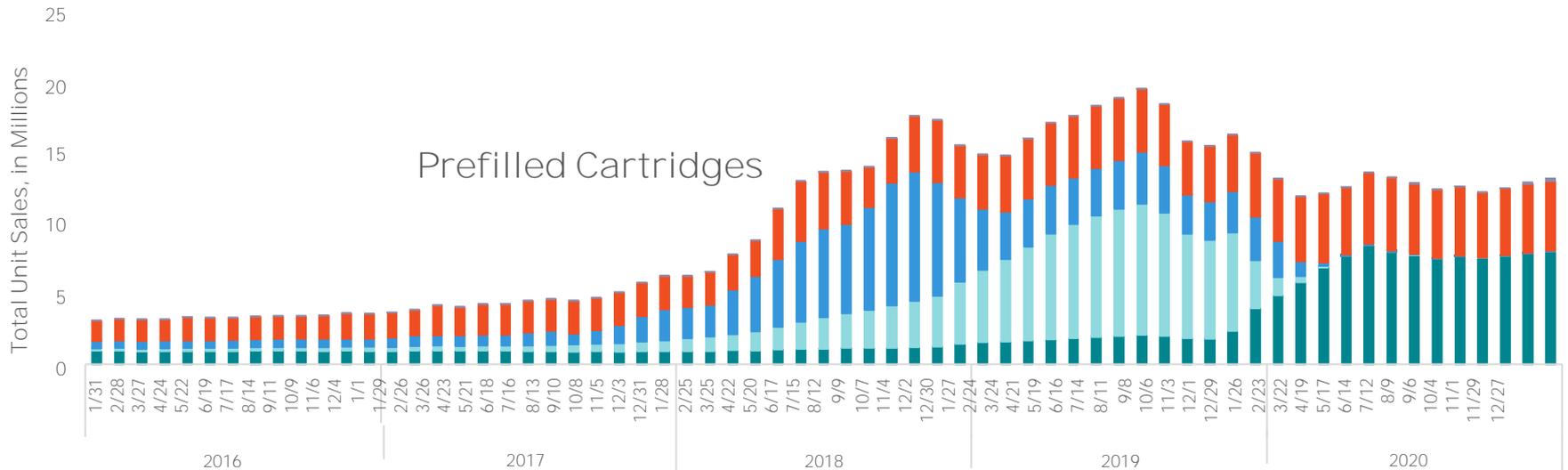
All estimates and analyses in this data brief based on Information Resources, Inc., Multi-Outlet + Convenience data are by the author and not by Information Resources, Inc. Financial support was provided by Bloomberg Philanthropies through a grant to the CDC Foundation.



National E-Cigarette Unit Sales by Product Type and Flavor , 4 Week Estimates 1/2016 - 12/2020



National E-Cigarette Unit Sales by Product Type and Flavor , 4 Week Estimates 1/2016 – 12/2020

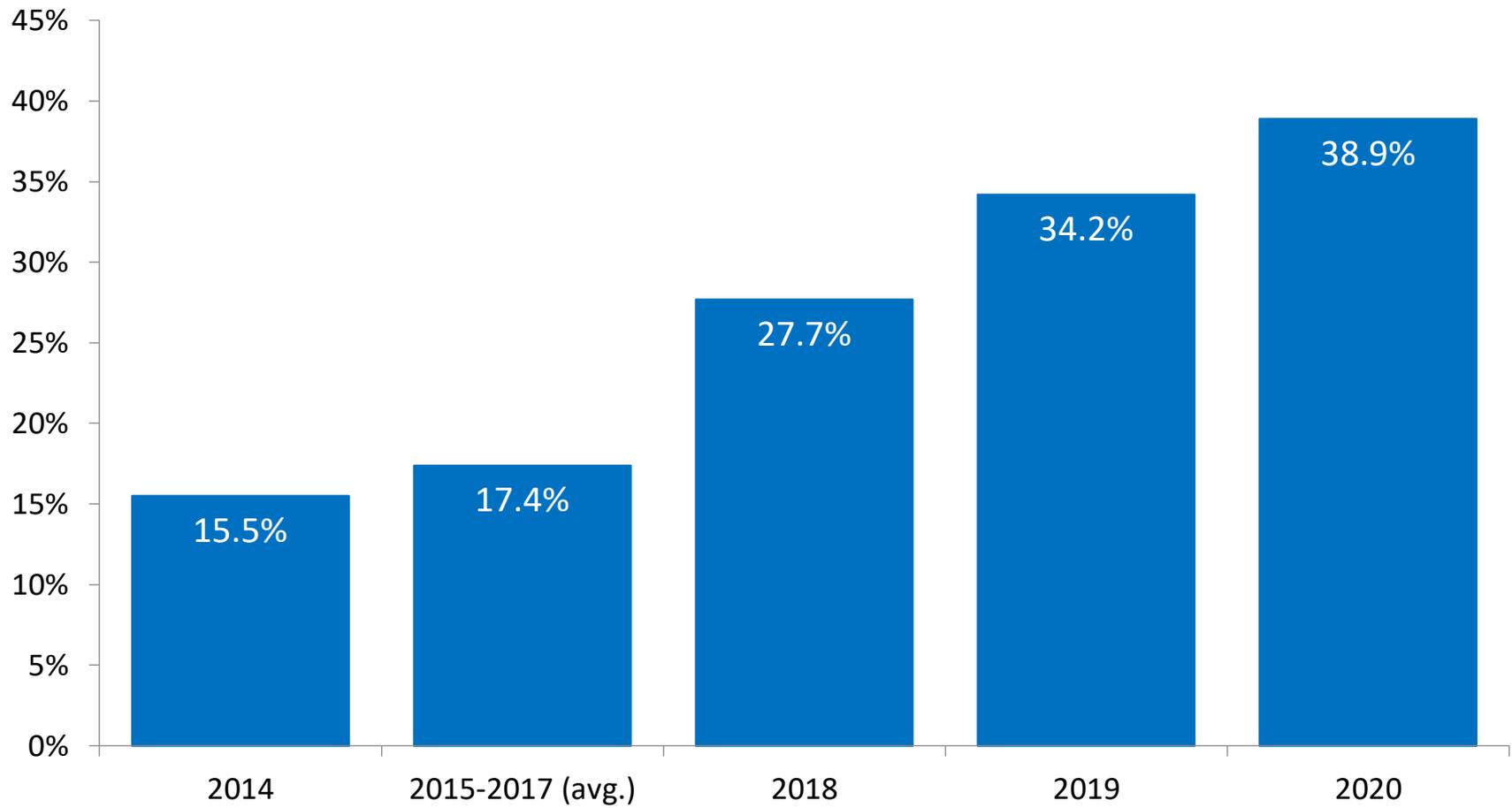


■ Menthol   
 ■ Mint   
 ■ All Other Flavors\*   
 ■ Tobacco-Flavored   
 ■ Not Available/Applicable

All estimates and analyses in this data brief based on Information Resources, Inc., Multi-Outlet + Convenience data are by the author and not by Information Resources, Inc. Financial support was provided by Bloomberg Philanthropies through a grant to the CDC Foundation.

# Appendix 3. An Increasing Proportion of Youth E-Cigarette Users are Frequent Users

## Frequent (20+ days/month) E-Cigarette Use Among High School E-Cigarette Users 2014-2020



Source: CDC, National Youth Tobacco Survey (NYTS)