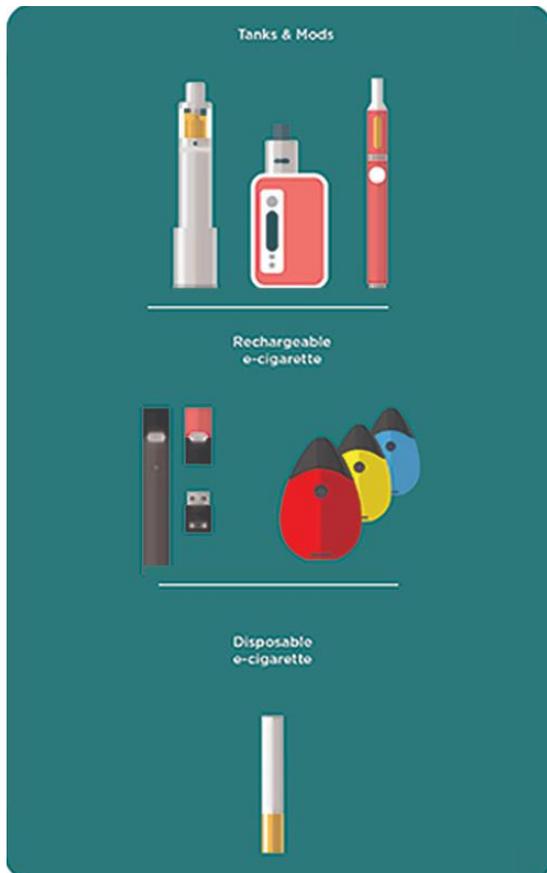


# E-cigarettes & Youth

## Preventing Youth and Young Adult Use



The U.S. Secretary of Health and Human Services (HHS), U.S. Surgeon General, and Commissioner of the Food and Drug Administration (FDA) have all declared youth e-cigarette use to be an epidemic.<sup>1</sup> E-cigarettes are the most used tobacco product among youth and, like any tobacco product, are unsafe.<sup>2</sup> E-cigarette use is also most common among younger adults.<sup>3</sup> Action is urgently needed to reverse these dangerous trends.



### WHAT ARE E-CIGARETTES

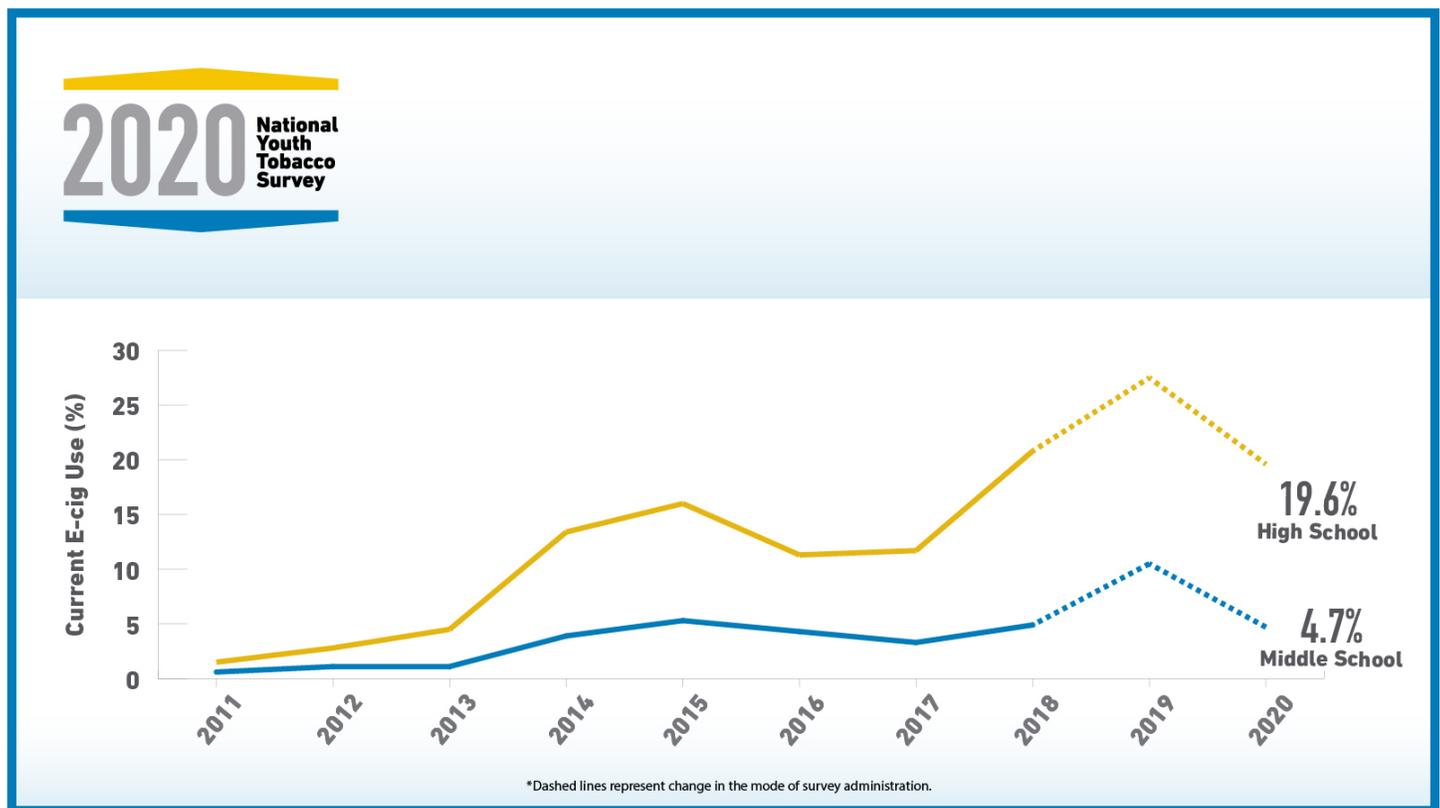
E-cigarettes are battery-operated devices that heat a liquid to inhale an aerosol usually made of nicotine and other chemicals.

- E-cigarettes can come in many shapes and sizes, resembling other tobacco products, or look like everyday items like USB drives. E-cigarettes that are easy to conceal, like those that look like USB drives, are popular with youth.
- E-cigarettes can be disposable, one-time use products, or rechargeable, and can come in mod or tank systems that allow for more customization. Cartridges or pods of e-liquids are used in the devices.
- E-cigarettes can have other names including e-cigs, e-pen, e-hookah, mods, and Juul – a brand with high youth popularity.
- Using an e-cigarette can also be called “vaping” or “Juuling.”

Source: CDC.

### E-CIGARETTE USE

Nationwide, the use of e-cigarettes by youth have rapidly increased. In 2011, 1.5% of high school students and 0.6% of middle school students reported using e-cigarettes.<sup>4</sup> By 2019, those numbers rose dramatically to 27.5% of high school students and 10.5% of middle school students.<sup>5</sup> By 2020 there was a slight decrease with 19.6% of high school students and 4.7 % of middle school students reporting current e-cigarette use.<sup>6</sup> But almost 3.6 million kids in the U.S. in 2020 were still current e-cigarette users.

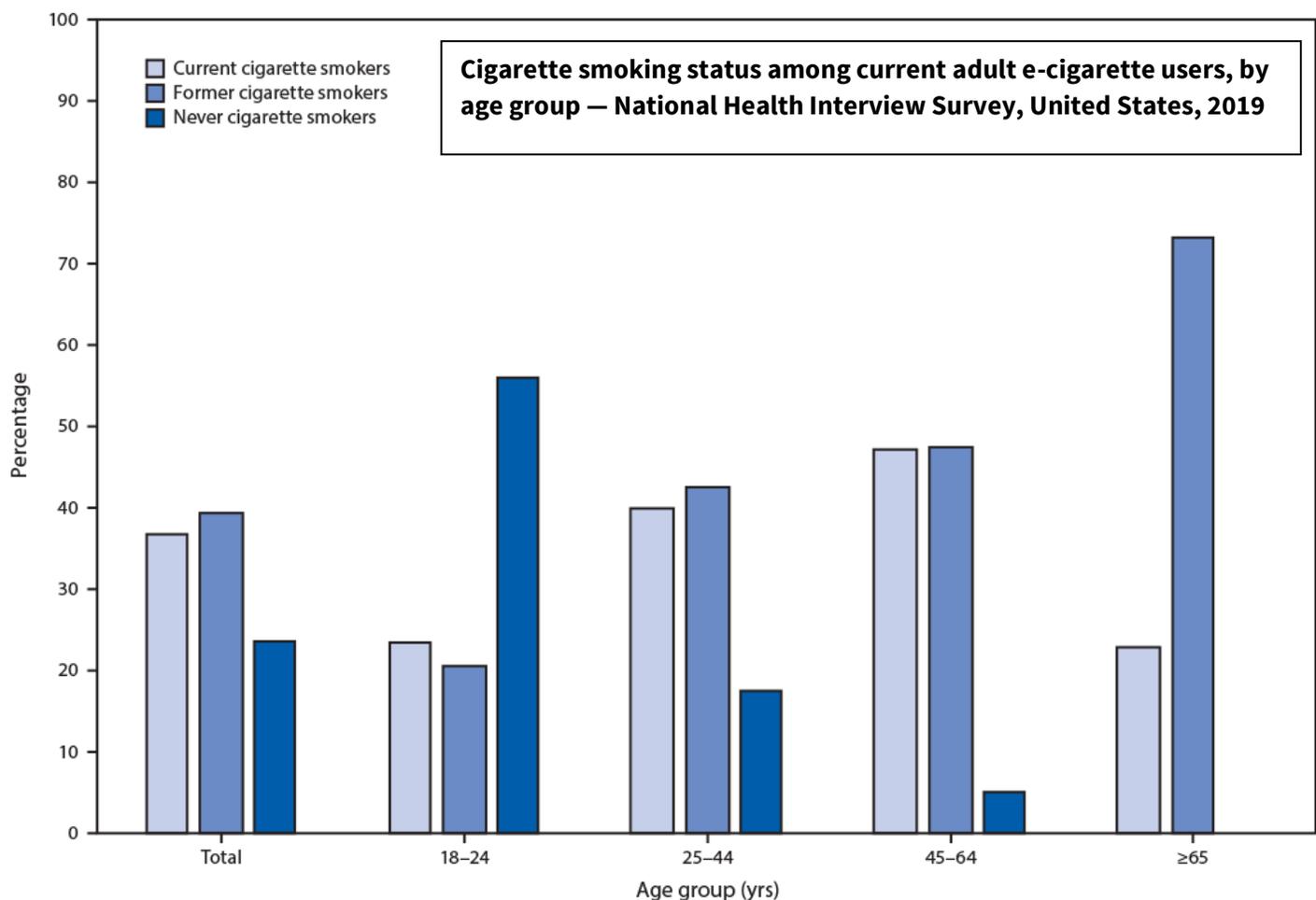


Source: FDA. <https://www.fda.gov/tobacco-products/youth-and-tobacco/get-latest-facts-teen-tobacco-use>

Frequency of e-cigarette use can be an indication of dependence. Among high school students who currently use e-cigarettes, 38.9% used on 20 or more of the past 30 days and 22.5% use daily.<sup>7</sup> Among middle school students who currently use e-cigarettes, 20.0% used e-cigarettes on 20 or more of the past 30 days and 9.4% use daily.

Students also use a variety of e-cigarette types.<sup>8</sup> Among high school students who currently use e-cigarettes, 48.5% used prefilled pods or cartridges, 26.5% used disposables, and 14.5% used tank systems. Among middle school students who currently use e-cigarettes, 41.3% used prefilled pods or cartridges, 21.5% used disposables, and 15.2% used tank systems. From 2019 to 2020, the use of disposable e-cigarettes increased approximately 1,000% (from 2.4% to 26.5%) among high school students who currently use e-cigarettes and approximately 400% (from 3.0% to 15.2%) among middle school students who currently use e-cigarettes. It is important to track how youth product popularity changes if policymakers are considering regulating types of products differently.

E-cigarettes are also the most commonly used tobacco product among young adults aged 18-25 (9.3% of young adults reporting using e-cigarettes); and young adults were more likely to use e-cigarettes than older age groups.<sup>9</sup> In fact, current e-cigarette use declined with age. Young adults who have never smoked cigarettes were also more likely to have used e-cigarettes as compared to older adults. Contrary to claims from e-cigarette manufacturers that these products transition people off of cigarettes, 56% of young adults who were current users of e-cigarettes in 2019 had never smoked cigarettes.



Source: CDC. [https://www.cdc.gov/mmwr/volumes/69/wr/mm6946a4.htm?s\\_cid=mm6946a4\\_w#suggestedcitation](https://www.cdc.gov/mmwr/volumes/69/wr/mm6946a4.htm?s_cid=mm6946a4_w#suggestedcitation)

## FLAVORS ENCOURAGE E-CIGARETTE USE

Flavors are a key tactic the tobacco industry lures new users, especially youth, into using their highly addictive products. Among all students who currently use e-cigarettes, 82.9% used flavored e-cigarettes, including 84.7% of high school users and 73.9% of middle school users.<sup>10</sup> In other words, almost three million middle and high school students are current users of flavored e-cigarettes.

By age, the most used flavors of e-cigarettes among high school students who were currently using e-cigarette were fruit (73.1%), mint (55.8%), and menthol (37.0%), followed by desserts, candy and other sweets (36.4%). Among middle school students who were currently using e-cigarettes, the most used flavors were fruit (75.6%), dessert, candy, and other sweets (47.2%), and mint (46.5%) followed by menthol (23.5%).

By product type, among youth who use pre-filled pod- or cartridge-based products, the most used flavors were fruit (66.0%), mint (57.5%), and menthol (44.5%), followed by desserts, candy and other sweets (35.6%). Among youth who used disposable e-cigarettes, the most used flavors were fruit (82.7%), mint (51.9%), desserts, candy and other sweets (41.7%), followed by menthol (23.3%).

Importantly, menthol is derived from mint products and can be found naturally or developed synthetically.<sup>11</sup> While these reports asked youth separately about mint and menthol, the user may not necessarily distinguish between

these flavors since one is a derivative of the other. **Policies to prohibit flavors in tobacco products, including e-cigarettes, should not distinguish between mint and menthol and instead include all flavors.**

## E-CIGARETTE USE ASSOCIATED WITH COMBUSTIBLE CIGARETTE USE

The 2016 Surgeon General’s Report concluded that “e-cigarette use is strongly associated with the use of other tobacco products among youth and young adults, particularly combustible tobacco products.<sup>12</sup>” In 2018, a National Academies of Science, Engineering, and Medicine report concluded that: “There is substantial evidence that e-cigarette use increases risk of ever using combustible tobacco cigarettes among youth and young adults.<sup>13</sup>” Furthermore, the report concluded that there was moderate evidence that e-cigarette use increases the intensity and frequency of cigarette smoking.

More recent studies have quantified the association between e-cigarette and cigarette use among youth. A 2019 study concluded that youth who use e-cigarettes are more than 4 times as likely to try cigarettes and nearly 3 times as likely to currently smoke cigarettes than those youth who never tried e-cigarettes.<sup>14</sup> Cigarette use by the end of the study was higher among prior e-cigarette users (20.5%) and prior users of other tobacco products (21.1%), compared with those who had not used tobacco before (3.8%). Also concerning, the link between prior e-cigarette use and trying cigarette smoking was stronger for youth who would be considered “low-risk” for smoking. The researchers estimated that more than 43,000 current smokers ages 12-15 years got their start with e-cigarettes.

A 2021 study analyzed longitudinal data from the PATH study to look at youth and young adults who progressed to daily cigarette smoking from 2013-2014 to 2017.<sup>15</sup> Youth who had ever tried an e-cigarette were three times more at risk of later daily cigarette smoking than those youth who had never used an e-cigarette.

## E-CIGARETTES & MARIJUANA

E-cigarettes can be used to inhale marijuana as well as nicotine. Not surprisingly, youth use of e-cigarettes for marijuana has a similar trend to youth use of e-cigarettes for nicotine. In fact, “vaping” of marijuana increased from 2017 to 2019 by two-fold among 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders and remained level in 2020.<sup>xxvii</sup> There is some evidence that youth who use e-cigarettes and other tobacco products are more likely to use marijuana than youth who don’t use tobacco products.<sup>xxviii</sup>

Like nicotine, marijuana can have a negative and lasting impact on brain development, including cognitive impairment.<sup>xxix</sup> In addition, 2019 saw a multistate outbreak of e-cigarette, or vaping, product use–associated lung injuries (EVALI) which resulted in dozens of deaths. Most patients with EVALI reported using an e-cigarette product containing THC, the main psychotropic ingredient in marijuana, but some reported vaping nicotine alone. Vitamin E acetate was identified as a chemical of concern among people with EVALI, although no conclusive cause was determined. The CDC and FDA recommend no youth use an e-cigarette product.<sup>xxx</sup>

## ADVERSE HEALTH EFFECTS OF E-CIGARETTES

E-cigarettes can vary in the amount of nicotine present, and they often contain nicotine at much higher levels than cigarettes.<sup>16</sup> Nicotine exposure during adolescence and young adulthood can affect the developing brain and may have lasting effects on cognitive function, decision-making, and impulse control.<sup>17</sup> The brain develops until about age 25. Exposure to nicotine during adolescence puts the user at greater risk for a lifelong addiction, as the developing brain is more susceptible to addiction than an adult brain. In addition, nicotine exposure, through maternal use, can

also negatively affect fetal development leading to sudden infant death syndrome (SIDS), brain alterations, deficits in auditory processing, and obesity.

E-cigarette aerosol poses potential risk to both users and nonusers. The most recent Surgeon General’s report concluded that “e-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine.<sup>18</sup>” Studies have found the aerosol to contain ultrafine particles that can be inhaled deeply into the lungs, heavy metals, volatile organic compounds and cancer-causing chemicals, among other potentially harmful chemicals.<sup>19,20,21</sup> E-cigarettes can vary on whether or how much of these chemicals are present in the products, and such information is often not known to consumers.<sup>22</sup>

## INDUSTRY TARGETTING YOUTH & YOUNG ADULTS

E-cigarette manufacturers are using the same marketing practices effectively used by other tobacco manufacturers to target youth and mislead consumers about the effects of their products.<sup>23</sup> These practices include celebrity endorsements, sports and musical sponsorships, use of images of e-cigarettes as rebellious, glamorous and cool, and the use of flavorings in their products.<sup>24</sup> Particularly troubling is that e-cigarettes are not subject to the legal restrictions to which cigarettes and other tobacco products are required to adhere. E-cigarettes are widely advertised on television, radio, online, in print magazines, including those with high youth readership, and at sports and music events.

Therefore, it is no surprise that youth are exposed to e-cigarette advertising. In 2019, 69.3% of middle and high school students – 18.2 million youth - reported seeing e-cigarette advertising and promotions.<sup>25</sup> Almost two-thirds of students reported seeing these advertisements in retail stores (58.4%), 44.6% on the Internet, 26.2% on TV, streaming or movies, and 34.8% in newspapers and magazines. Recent research shows that youth exposed to e-cigarette advertising are more likely to ever and currently use e-cigarettes, with a dose-response effect, even among youth who had never used an e-cigarette.<sup>26</sup>

## ACS CAN’S POSITION

**The epidemic of e-cigarette use by youth and young adults, aggressive marketing tactics by their manufacturers, including the use of flavors appealing to youth, and under-regulation of these products requires the public health community to take action to protect youth, young adults, and the public at-large. ACS CAN supports evidence-based strategies to reduce youth use of e-cigarettes:**

- ❖ **Strong Federal Regulation:** The FDA should use its full authority over all tobacco products, including e-cigarettes to:
  - Enforce premarket review
  - Restrict the marketing of these products to youth.
  - Prohibit all flavors because of their appeal to youth.
  - Enforce the prohibition on unsubstantiated health claims, and
  - Require sound scientific evidence when evaluating marketing applications and proposing product standards for the protection of public health.
- ❖ **Strengthen State and Local Tobacco Control Measures:** Many states and localities are enacting regulations on the sale and use of e-cigarettes. E-cigarettes should be included in evidence-based state and local tobacco control laws.
  - E-cigarettes should be defined as tobacco products and included in the definitions of smoking to:
    - Prohibit e-cigarette use where smoking and/or tobacco use is prohibited.

- End the sale of all flavored tobacco products including e-cigarettes.
  - Include e-cigarettes in tobacco sales restrictions, including retailer licensing requirements.
  - Tax e-cigarettes based on their price at a rate parallel to the tax on cigarettes and all other tobacco products.
- Include education about e-cigarettes in all evidence-based state tobacco control programs.

<sup>1</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> Statement from FDA Commissioner Scott Gottlieb, M.D., on new steps to address epidemic of youth e-cigarette use. September 12, 2018.

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<sup>2</sup> Wang TW, Neff LJ, Park-Lee E, Ren C, Cullen KA, King BA. E-cigarette Use Among Middle and High School Students — United States, 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:1310–1312.

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<sup>4</sup> Gentzke AS, Creamer M, Cullen KA, et al. Vital Signs: Tobacco Product Use Among Middle and High School Students — United States, 2011–2018. *MMWR Morb Mortal Wkly Rep* 2019;68:157–164.

<sup>5</sup> Wang TW, Gentzke AS, Creamer MR, et al. Tobacco Product Use and Associated Factors Among Middle and High School Students — United States, 2019. *MMWR Surveill Summ* 2019;68(No. SS-12):1–22.

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