

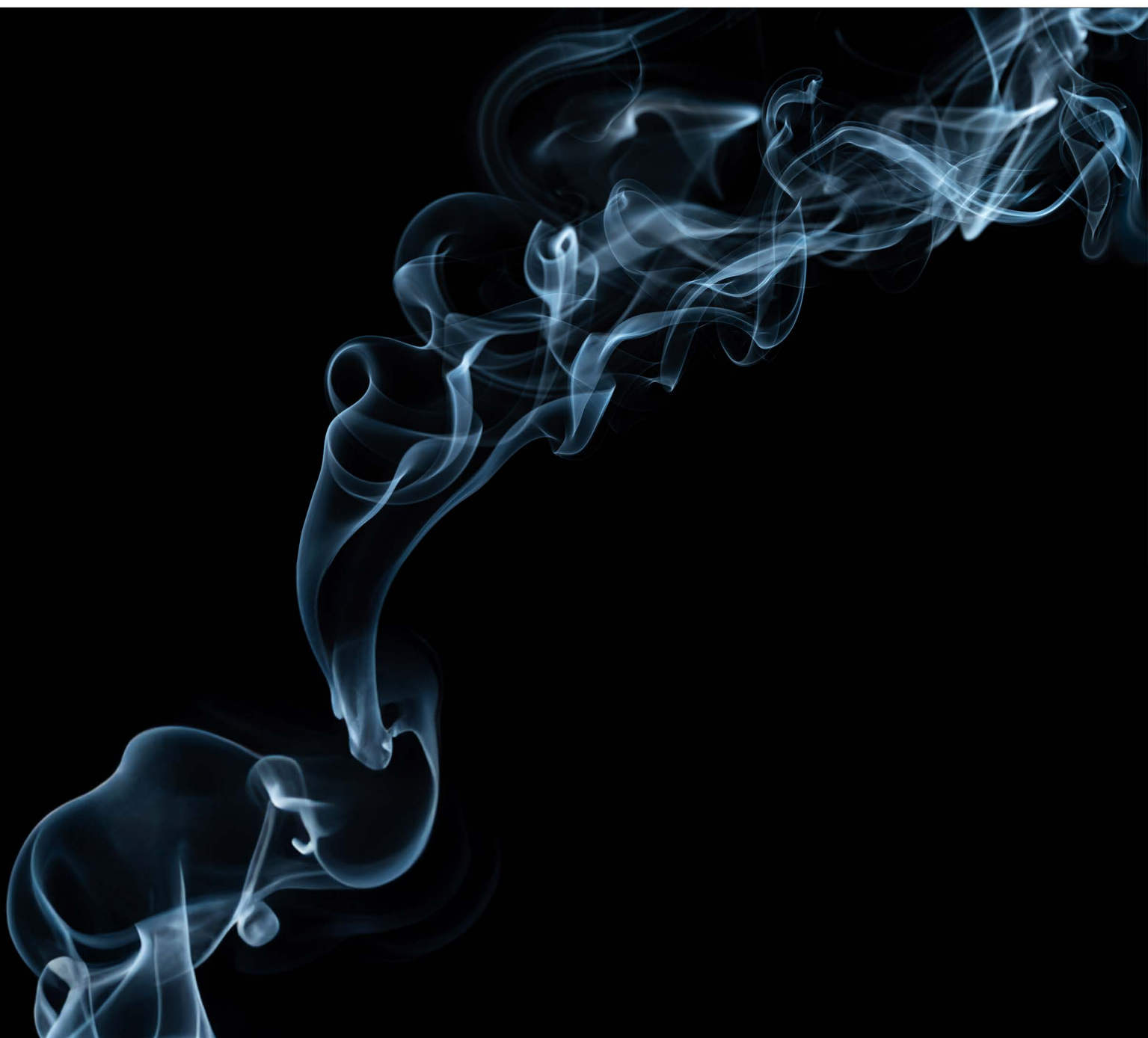


The American Consumer Institute  
Center for Citizen Research

# **Tobacco Harm Reduction and the Teen Epidemic: Health Impacts from Vaping**

*Steve Pociask & Justin Leventhal*

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# ***Tobacco Harm Reduction and the Teen Epidemic: Health Impacts from Vaping***

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## **Introduction**

Despite laws prohibiting all tobacco product use by those under 21 years of age, youth smoking and vaping continue. Over the past ten years, the average high school senior has smoked less, while vaping and e-cigarettes use has increased.<sup>1</sup> Although both smoking and vaping have health risks, as this white paper concludes, vaping and e-cigarettes are significantly less dangerous to users.

As a result of the increase in teen vaping, policymakers have been quick to target these adult products with harsh restrictions, including attempts to ban menthol and flavored products, prohibit the sale of vaping products, impose hefty taxes, and restrict nicotine levels. On the regulatory side, the Food and Drug Administration (FDA) has an important role to play in balancing product risks and benefits. Yet, compared with smoking products, the FDA treats adult vaping and e-cigarette products with similar, and maybe even harsher, restrictions – claiming that vaping among teens has reached epidemic proportions. Companies hoping to get FDA approval of their new vaping products also face inordinately long delays and inaction.

What does this mean for the health of the population? Studies show vaping is significantly less harmful than smoking and that vaping can be twice as effective in helping smokers quit than other cessation products.<sup>2</sup> Therefore, when bans and restrictions are used to reduce teenage vaping, these policies produce negative outcomes for adult smokers. Failure by

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<sup>1</sup> This whitepaper uses the terms vaping products and e-cigarettes interchangeably.

<sup>2</sup> For example see “Nicotine Without Smoke: Tobacco Harm Reduction,” Royal College of Physicians, April 28, 2016, <http://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction>; and Jan Hoffman, “E-Cigarettes Are Effective at Helping Smokers Quit, a Study Says,” New York Times, January 30, 2019.

regulators and legislators to recognize a continuum of product risks oddly encourages more risky choices for adult and teenage consumers, thereby encouraging smoking and increasing health risks.

This whitepaper examines the extent to which regulatory and legislative reactions, or overreactions, to the increase in vaping represent misguided public policies. While additional action is needed to prevent youth access to all tobacco products, legislators and bureaucrats should be careful not to push adults and youth back to smoking, given the significant added health risks that this choice carries.

## Health Risks of Smoking and Vaping

There is no doubt about the health risks of smoking. It has been linked with cancer, emphysema, heart disease and more. By one estimate, the life expectancy for smokers is at least 10 years shorter than for nonsmokers.<sup>3</sup> While the Centers for Disease Control and Prevention (CDC) has done a good job making sure everyone is aware of the dangers of smoking, it has promoted some inaccurate information regarding e-cigarettes and vaping while ignoring modern research. The CDC correctly explains that vaping is not safe, but it also claims young people who use e-cigarettes may be more likely to smoke, even though data reveals fewer and fewer teens are smoking.<sup>4</sup>

The CDC does note that e-cigarettes expose people to fewer chemicals than traditional cigarettes, but it hasn't embraced modern research on the degree of harm reduction that e-cigarettes provide users, compared to traditional cigarettes. For example, the UK Royal College of Physicians found vaping to be 95 percent safer than smoking.<sup>5</sup> A separate study estimates

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<sup>3</sup> "Tobacco-Related Mortality," The Centers for Disease Control and Prevention, last reviewed April 28, 2020, [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/health\\_effects/tobacco\\_related\\_mortality/index.htm](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/tobacco_related_mortality/index.htm).

<sup>4</sup> "Quick Facts on the Risks of E-Cigarettes for Kids, Teens, and Young Adults," The Centers for Disease Control and Prevention, last reviewed November 10, 2022, [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html).

<sup>5</sup> "Nicotine Without Smoke: Tobacco Harm Reduction," Royal College of Physicians, April 28, 2016, <http://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction>.

vaping to be even safer with only four percent of the risk of smoking.<sup>6</sup> This shouldn't come as a surprise. Cigarette smoke contains thousands of chemicals. Vapor from e-cigarettes contain far fewer harmful chemicals and at much lower doses – in some cases only a fraction of what can be found in cigarette smoke.<sup>7</sup>

While vaping is not free of health risks, the magnitude of those risks is far less than smoking. In 2018, a paper found that if vaping fully replaced smoking over 10 years in the U.S. as many as 6.6 million lives would be saved, amounting to an additional 86.7 million extra life years not prematurely lost.<sup>8</sup>

## Flaws In Current Federal and State Regulations

The CDC is not the only agency that has dropped the ball regarding vaping. The FDA's handling of vaping products has been riddled with problems ranging from a slow approval process to a lack of transparency and arbitrary decisions. The House Oversight Committee investigated the FDA's process for approval of e-cigarettes and found a litany of problems.<sup>9</sup> Adults have been left to guess what products are safe. This has been compounded by the FDA's failure to catch potentially dangerous unregulated products in the market.

The chance of teens obtaining access to unregulated products further increases relative risks. While preventing teen access to both vaping and smoking products is ideal, the FDA's slow

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<sup>6</sup> David J. Nutt, Lawrence D. Phillips, David Balfour, H. Valerie Curran, Martin Dockrell, Jonathan Foulds, Karl Fagerstrom, Kgosi Letlape, Anders Milton, Riccardo Polosa, John Ramsey and David Sweanor, "Estimating the Harms of Nicotine-Containing Products Using the MCDA Approach," *European Addiction Research*, April 3, 2014, <https://www.karger.com/Article/PDF/360220>.

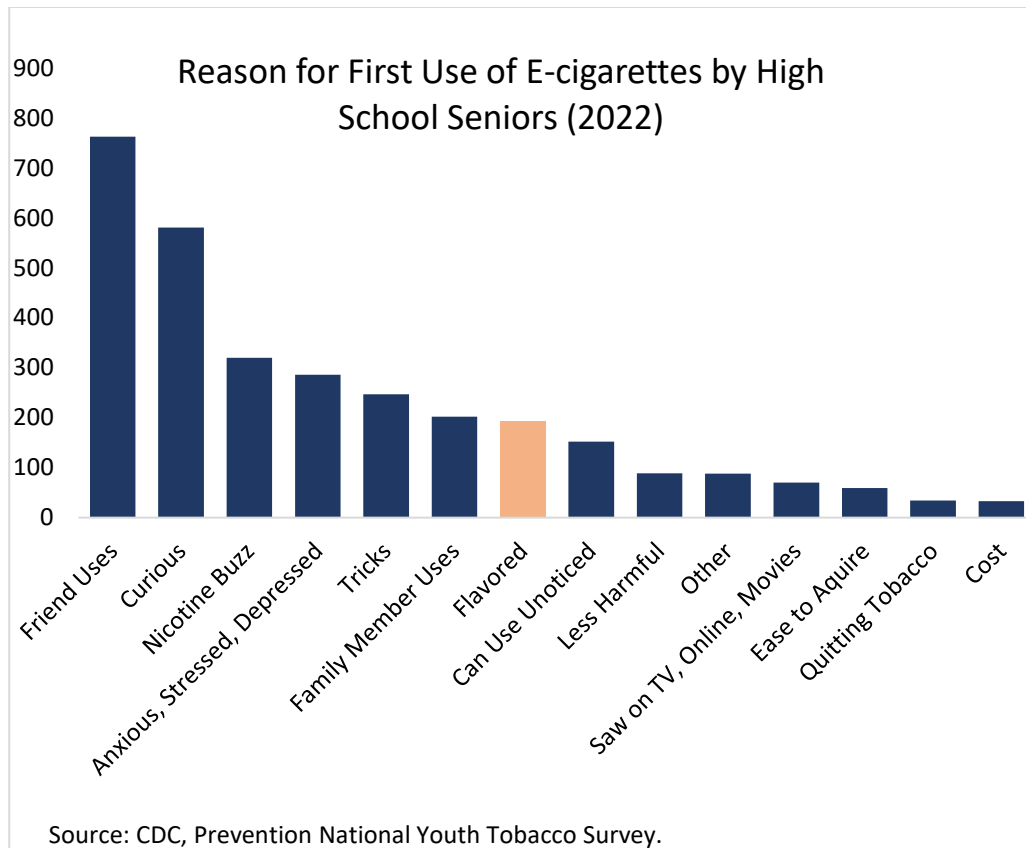
<sup>7</sup> Zachary Cahn and Michael Siegel, "Electronic Cigarettes as a Harm Reduction Strategy for Tobacco Control: A Step Forward or a Repeat of Past Mistakes?" *Journal of Public Health Policy*, December 9, 2010, <https://link.springer.com/article/10.1057/jphp.2010.41>.

<sup>8</sup> David T. Levy, Ron Borland, Eric N. Lindblom, Maciej L. Goniewicz, Rafael Meza, Theodore R. Holford, Zhe Yuan, Yuying Luo, Richard J. O'Connor, Raymond Niaura and David B. Abrams, "Potential Deaths Averted in USA by Replacing Cigarettes with E-Cigarettes," *Tobacco Control*, October 2, 2017, <https://tobaccocontrol.bmj.com/content/tobaccocontrol/27/1/18.full.pdf>.

<sup>9</sup> Letter to FDA regarding Premarket Tobacco Product Applications from the United States House of Representatives Committee on Oversight and Accountability, Chairman James Comer, March 20, 2023, <https://oversight.house.gov/wp-content/uploads/2023/03/Letter-to-FDA-re-Premarket-Tobacco-Product-Applications-1.pdf>.

approval process may work to encourage the use of unregulated products, which in turn increases the risk to underage users. Transparency matters for safety, as does finding better ways to prevent youth access.

Curtailing adult use of vaping products as a means of reducing teen use is a misguided and risky health policy. Targeting flavored e-cigarettes is a prime example of this, where flavored e-cigarettes were banned in some states, and hundreds of localities, in an attempt to prevent youth use and the FDA has indicated its reluctant to approve these products.<sup>10</sup> However, there’s little evidence that flavored vaping products target youth users. As shown in the chart below, flavors are not an important reason students decide to vape.



<sup>10</sup> Jim McDonald, “Vape Bans: E-Cigarette Restrictions in the U.S. and Worldwide,” *Vaping360*, April 23, 2023, <https://vaping360.com/learn/countries-where-vaping-is-banned-illegal/>; and Laura Bach, “States & Localities That Have Restricted the Sale of Flavored Tobacco Products,” Campaign for Tobacco-Free Kids, October 20, 2021, <https://www.tobaccofreekids.org/assets/factsheets/0398.pdf>.

To be clear, removing e-cigarette flavors doesn't help youth in the U.S., because it may not produce any noticeable increase in the number of youth smokers.<sup>11</sup> Because flavored e-cigarettes have helped adults quit smoking,<sup>12</sup> banning them to protect youth, could have life altering consequences for adult consumers. As one prominent study found:

“Relative to vaping tobacco flavors, vaping nontobacco-flavored e-cigarettes was not associated with increased youth smoking initiation but was associated with an increase in the odds of adult smoking cessation.”<sup>13</sup>

## A Substitute

Restricting, banning, and taxing vaping products will increase the number of smokers, because both vaping and smoking are a means to the same end – nicotine. While policymakers may want to curtail teen use of vaping products, the imposition of misguided regulatory policies could increase smoking, thereby harming adults and teens alike.

Studies show that vaping and e-cigarette products are close substitutes for traditional cigarette products.<sup>14</sup> An extensive statistical study by a team of economists found that a one

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<sup>11</sup> Lauren R. Pacek, Olga Rass, Maggie M. Sweitzer, Jason A. Oliver and F. Joseph McClernon, “Young Adult Dual User’s Anticipated Responses to Hypothetical E-cigarette Market Restrictions,” *Substance Use and Misuse*, 2019, pp. 2033-2042, <https://pubmed.ncbi.nlm.nih.gov/31305213>.

<sup>12</sup> Yoonseo Mok, Jihyoun Jeon, David T Levy and Rafael Meza, “Associations Between E-cigarette Use and E-cigarette Flavors with Cigarette Smoking Quit Attempts and Quit Success: Evidence from a U.S. Large, Nationally Representative 2018-2019 Survey,” *Nicotine and Tobacco Research*, October 7, 2022.

<sup>13</sup> Abigail S. Friedman and SiQing Xu, “Associations of Flavored e-Cigarette Uptake With Subsequent Smoking Initiation and Cessation, JAMA Network Open, June 2020, [Associations of Flavored e-Cigarette Uptake With Subsequent Smoking Initiation and Cessation - PubMed \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/34444444/).

<sup>14</sup> Frank J. Chaloupka, “Taxing E-Cigarettes—Options & Potential Impact,” Council of State Governments Policy Workshop, December 12, 2015, <https://knowledgecenter.csg.org/kc/system/files/Chaloupka.pdf>; R. Abouk, R., C. J. Courtemanche, D. M. Dave, B. Feng, A. S. Friedman, J. C. Maclean, M. F. Pesko, J. J. Sabia and S. Safford, “Intended and Unintended Effects of E-cigarette Taxes on Youth Tobacco Use,” September 2021, National Bureau of Economic Research, [https://www.nber.org/system/files/working\\_papers/w29216/w29216.pdf](https://www.nber.org/system/files/working_papers/w29216/w29216.pdf); and M. F. Pesko, C. J. Courtemanche, J. C. Maclean, “The effects of traditional cigarette and e-cigarette tax rates on adult tobacco product use,” *Journal of Risk and Uncertainty*, July 2020, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7880200/>.

percent increase in e-cigarette prices would lead to nearly a one-half percent increase in the much larger market for cigarette sales – effectively pushing e-cigarette users back to the pack.<sup>15</sup>

Conversely, the same study found that a one percent increase in cigarette prices would lead to over a one percent increase in e-cigarette sales.<sup>16</sup> In other words, public policy can encourage many tobacco smokers to move to safer products – products that have a better track record of cessation from smoking. Conversely, targeting teen vaping by putting restrictions on adult vaping products can push all users (adults and teens) back to the pack.

Price is an important factor affecting youth choice, and price is affected by taxes, which vary by state.<sup>17</sup> As taxes and regulatory costs make e-cigarettes increasingly expensive, more adults and youth will turn to traditional cigarettes, thereby endangering public health.<sup>18</sup> While states frequently use taxes as a means of pushing people away from costly habits like smoking, states that do should consider reducing taxes on vaping products.

Based on these cross-elastic effects, public policy could be better directed to saving lives by leading smokers to safer products, rather than encouraging them to smoke or leading them to an underground market that peddles unsafe and unapproved e-cigarette and vaping products. Taxes, like many other regulatory restrictions on e-cigarette products, aren't an effective public policy tool, because they don't encourage smokers to quit, and don't improve the health of consumers. Taxing vaping products produces government revenue, but costs lives.

Based on the findings that e-cigarettes are near economic substitutes for cigarettes and coupled with the comparative health risks between smoking and vaping products, consumers will go back to smoking when faced with increased regulations, restrictions, bans, and higher taxes. While regulations on e-cigarettes may have the small beneficial effect of discouraging

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<sup>15</sup> Chad D. Cotti, Charles J. Courtemanche, et al, “The Effects of E-Cigarette Taxes on E-Cigarette Prices and Tobacco Product Sales: Evidence from Retail Panel Data,” National Bureau of Economic Research, Cambridge, MA, revised April 2021, <https://www.nber.org/papers/w26724>.

<sup>16</sup> Ibid, p. 29.

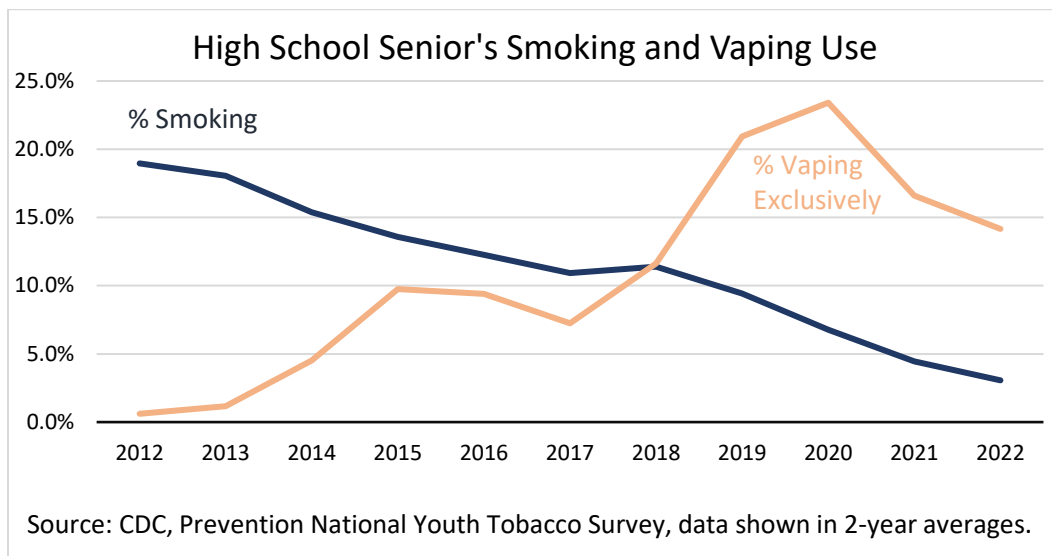
<sup>17</sup> Jeanne Thompson, “Vape & E-Cig Tax by State,” IGEN, updated May 2023, <https://igentax.com/vape-tax-state/>.

<sup>18</sup> Steve Pociask and Liam Sigaud, “How Regulations Endanger the Public Health,” The American Consumer Institute Center for Citizen Research, January 2022, <https://tobaccoreporter.com/wp-content/uploads/sites/2/2022/01/E-Cig-Policy-Report.pdf?x75099>.

some nonsmoking teens from vaping, they also encourage teens and adults to smoke, and deter smokers from switching to safer alternatives, which will unquestionably cost lives.

## Data on High School Senior Tobacco Product Use

The CDC has suggested that vaping is a gateway to smoking,<sup>19</sup> but these fears are unfounded. As shown in the chart below, teenage vaping hasn't led to an increase in smoking. Instead, youth smoking rates have plummeted as vaping has increased.<sup>20</sup> In 2011, 19.5% of high school seniors had smoked in the past 30 days while only 1.4% had vaped in the past 30 days.<sup>21</sup> By 2022, these numbers had swapped positions with only 3.4% of high school seniors having smoked in the past 30 days while 18.3% had reported vaping in the past 30 days. Recently, both vaping and smoking have declined, potentially due to a reporting bias during COVID, when some students worked from home, or maybe vaping contributed to gradual cessation of use.



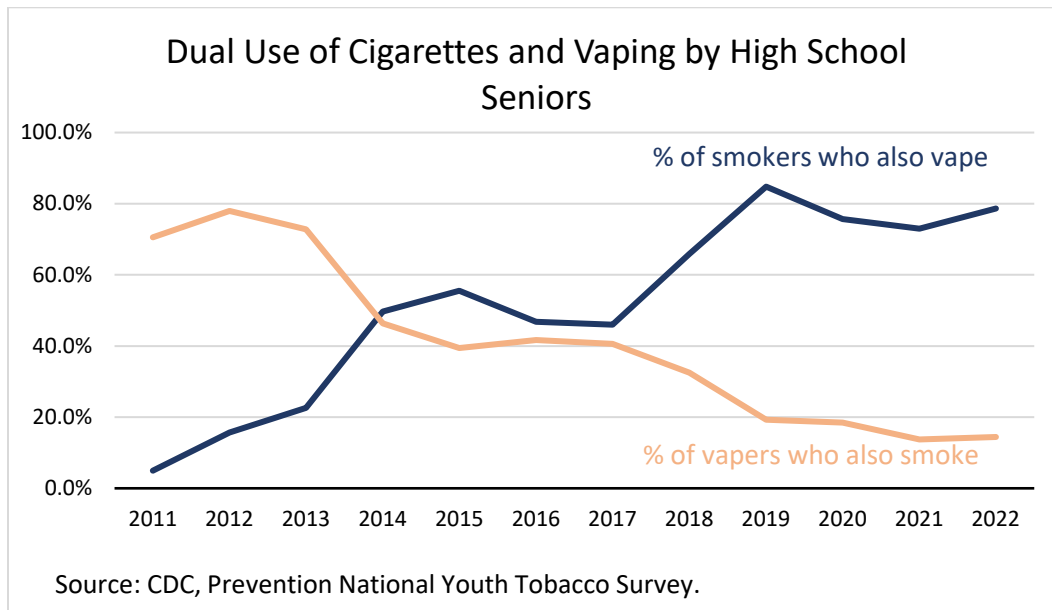
<sup>19</sup> “Quick Facts on the Risks of E-Cigarettes for Kids, Teens, and Young Adults,” The Centers for Disease Control and Prevention, last reviewed November 10, 2022, [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html).

<sup>20</sup> “E-cigarettes around 95% less harmful than tobacco estimates landmark review,” Public Health England, August 19, 2015, <https://www.gov.uk/government/news/e-cigarettes-around-95-less-harmful-than-tobacco-estimates-landmark-review>.

<sup>21</sup> “Historical NYTS Data and Documentation,” The Centers for Disease Control and Prevention, last reviewed March 15, 2023, [https://www.cdc.gov/tobacco/data\\_statistics/surveys/nyts/data/index.html](https://www.cdc.gov/tobacco/data_statistics/surveys/nyts/data/index.html).



The idea that vaping leads to smoking is also not borne out in the data regarding dual use of cigarettes and e-cigarettes. Students who vape are moving away from dual use of cigarettes. From 2011 to 2022 the percentage of high school seniors who smoke *and* vape decreased as a proportion of e-cigarette users. As shown below, students who vape tend not to smoke cigarettes as well.

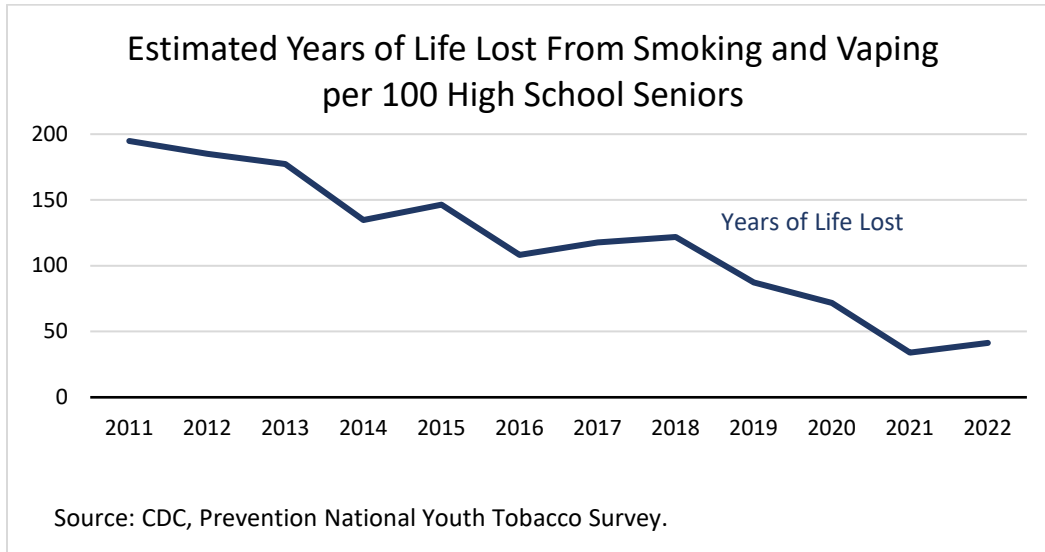


## Total Risk/Exposure

While many policymakers and regulators call for bans, restrictions, and taxes on vaping products, under the guise of a teen epidemic, the empirical evidence does not support this position. As shown earlier, the number of teenage smokers markedly declined, offset by some increase in vaping. While vaping isn't totally safe, and certainly shouldn't be available to nonadults, the CDC and FDA should recognize the total risk to society that is present. If there is a teen epidemic, should we presume that teens are more at risk than before? This is a testable hypothesis.

Combining data on high school seniors' cigarette and e-cigarette use with findings that vaping is only five percent as dangerous as smoking and that, on average, 10 years of life are lost from smoking, some basic estimations can be made. The switch from smoking to vaping

among high school seniors has saved approximately 153 years of life per 100 high school students, assuming all students would have continued their pattern of use or non-use.<sup>22</sup> The chart below shows the total annual estimated loss of life from smoking and vaping for high school seniors.



The data clearly shows that, as students trade smoking for vaping, total exposure to risk falls precipitously. Even though more students vape now than smoke by a wide margin, smoking still represents 81 percent of the projected years of life lost. In other words, there's no teen epidemic. If the CDC and FDA were truly concerned with teenage risk, they would continue their focus on reducing smoking.

Clearly, not all students will continue to use nicotine products their entire lives, but even if half of both groups quit, over four times as many years of life would be lost from cigarettes than vaping, despite much lower use of cigarettes. While zero youth nicotine use is ideal, given the health differences between smoking and vaping, students switching to vaping represents improvement over the *status quo*. Equally troubling is that those calling for higher costs and regulations are also impacting adult risk and safety by pushing many users back to ignited products.

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<sup>22</sup> The figure of 100 high school students includes those who use cigarettes and e-cigarettes, as well as those who use neither. Estimates assume all students continue the same use behavior past age 40.

Children should neither be smoking nor vaping, but history has shown that some are going to regardless of our current efforts to stop them. Better enforcement of youth tobacco bans is necessary, but it's also necessary to consider whether our laws make cigarettes more appealing to those kids that do slip through the cracks. As regulations make e-cigarettes more expensive and less readily available, the youth that do use nicotine-based products are incentivized to smoke even though it is less safe. While high-school students should do neither, our laws and regulations should not push them to more harmful options.

## Conclusion

Teens should neither vape nor smoke. While e-cigarettes have been shown to be safer than traditional tobacco cigarettes, they do still have some health risks. It's healthier not to smoke or vape at all. Unfortunately, some high school students choose to use nicotine products anyway and find ways around the laws. While more needs to be done to prevent this, we shouldn't push those that use vaping products to more dangerous ignited smoking products.

The CDC, FDA, state and local governments, regulators, and legislators are key players in protecting teens from cigarettes. However, they are currently not living up to the task. The CDC should present the public with accurate health information on the difference between vaping and smoking. The FDA should base its actions on science, which would recognize the continuum of risk between products, instead of treating vaping as equally harmful or riskier than smoking. In addition, vaping products are a more effective way to help some smokers quit<sup>23</sup> -- twice as effective as patches and other cessation products.<sup>24</sup> Broad state and local restrictions and taxes are driving users back to the pack.

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<sup>23</sup> Kenneth E. Warner, Neal L. Benowitz, Ann McNeill and Nancy A. Rigotti, "Nicotine e-cigarettes as a tool for smoking cessation," *Nature Medicine*, 2023, 520 – 524, <https://www.nature.com/articles/s41591-022-02201-7>. The authors "found that flavored e-cigarettes use is associated with smoking cessation in adults. In addition, a cross-sectional study using data of adults from Canada and the U.S. also found increase odds of making a quit attempt when using flavored e-cigarettes."

<sup>24</sup> Jan Hoffman, "E-Cigarettes Are Effective at Helping Smokers Quit, a Study Says," *New York Times*, January 30, 2019.

As this paper shows, while vaping has increased among high school seniors, the total risk to these teens has been sharply reduced in recent years. Those citing a teen epidemic as justification for regulations are taking a position that is not supported by the empirical evidence and espousing views that do more harm than good. The FDA should both streamline the approval process for vaping and e-cigarette products and publish an easily accessible list of approved products.

Vaping continues to replace smoking without increasing youth use of nicotine products. Until we can find a way to bring down the total number of youth nicotine users, the switch to a safer method is a net gain for their health. Meanwhile, state and federal regulations should not encourage smoking. While smoking has sharply declined, across all teenage users, it still accounts for over 80% of risk, compared to vaping.