

Taking the measure of youth addiction to nicotine in the USA

Martin Jarvis

Department of Behavioural Science & Health
University College London

martin.jarvis@ucl.ac.uk

Declaration of interests & acknowledgments

This work was unfunded. I have no competing interests to declare.

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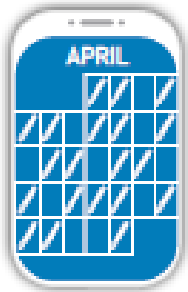
The youth epidemic of nicotine addiction

- “Epidemic of youth addiction to nicotine” narrative advanced by FDA/CDC since 2018 has provided the underpinning for US policy to restrict e-cigarette composition and marketing
- Findings from the National Youth Tobacco Survey, conducted jointly by FDA/CDC , called in evidence
- “These data shock my conscience....I will not allow a generation of children to become addicted to nicotine through e-cigarettes”
- “This is an exploding epidemic. We’ll continue to put the full scope of our regulatory tools against this mounting public health crisis”

Scott Gottlieb, FDA Commissioner

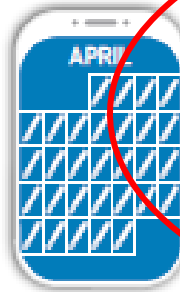
FDA Infographic on NYTS 2020 November 19th 2020

Among high school current e-cig users:



38.9%
use e-cigs
frequently*

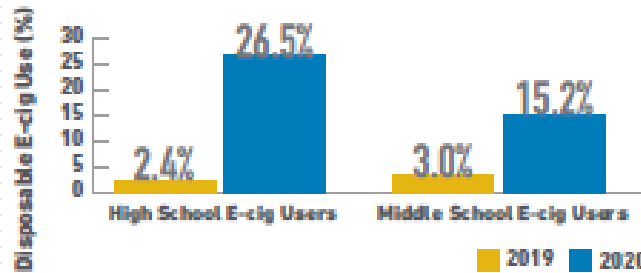
22.5%
use e-cigs
daily



Disturbingly high rates of frequent and daily e-cig use suggest

STRONG DEPENDENCE ON NICOTINE

Disposable e-cig use **SURGED**



More than **8 out of 10** current youth e-cig users use flavored e-cigs



Despite the positive change from last year, youth use of e-cigarettes remains a **PUBLIC HEALTH CRISIS** affecting children, families, schools and communities. FDA will continue to address this crisis by:

- ✓ Enforcing minimum age of 21 to purchase tobacco products
- ✓ Educating the public
- ✓ Prioritizing enforcement against youth-appealing products
- ✓ Conducting thorough product reviews

CENTER FOR TOBACCO PRODUCTS

Source: Wang TW, Mall LJ, Pokras E, Ben C, Collins MA, King BA. E-cigarette Use Among Middle and High School Students—United States, 2019. MMWR Morbidity and Mortality Weekly Report. 2020;69:1310–1312.

Note: All numbers presented here are estimates.

TP-165

www.fda.gov/tobacco



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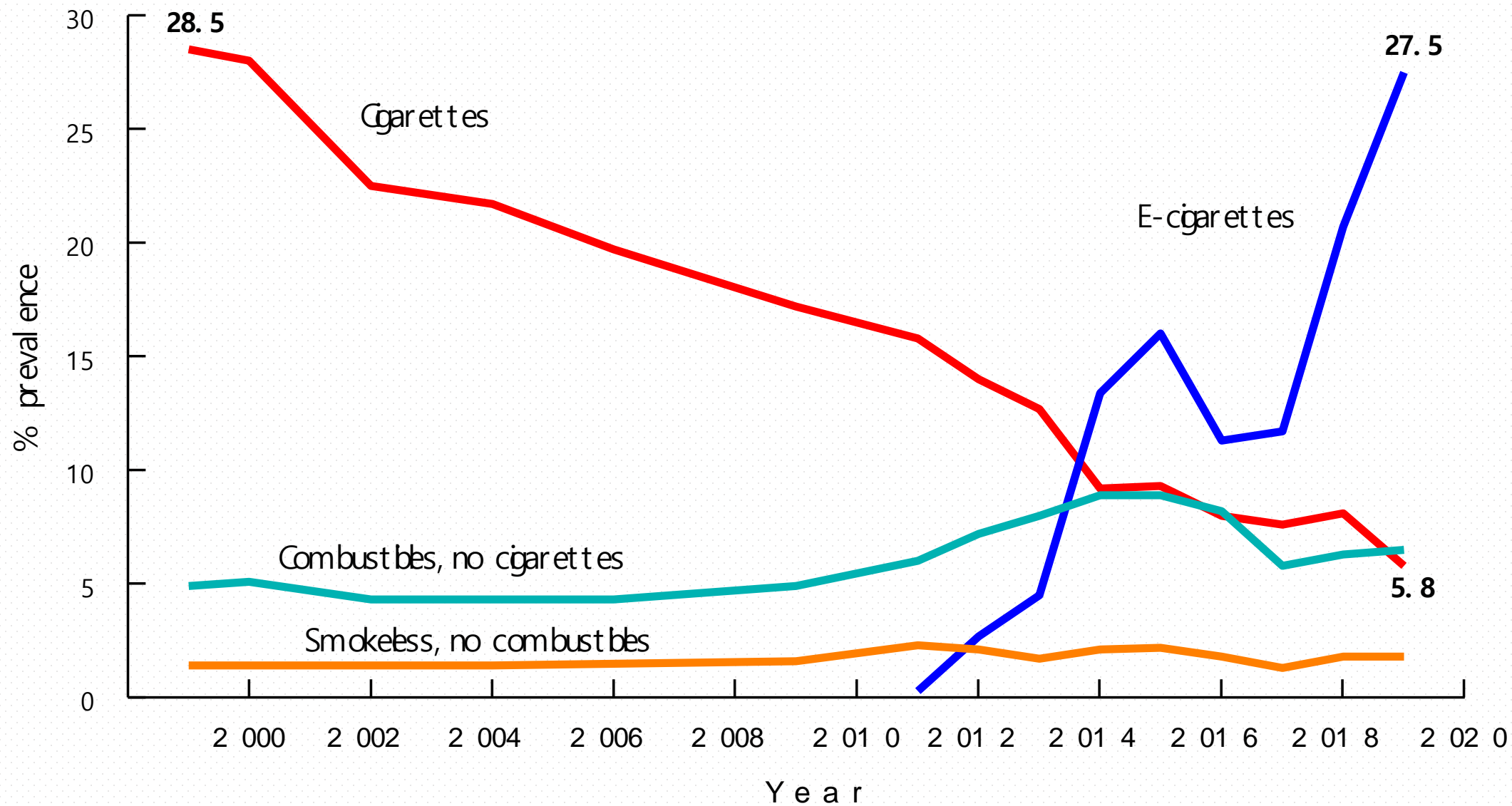


FDA

NYTS and the youth epidemic

- Epidemic of youth nicotine addiction evidenced by rapid increase in past-30 day e-cigarette use from 11.7% in 2017, to 20.7% in 2018, and 27.5% in 2019
- E-cigarette use considered in isolation from use of other tobacco products: no contextualisation
- Dramatic decline in cigarette use largely ignored
- Data from NYTS on self-report measures of dependence not analysed or presented

Tobacco product use in US high school students: NYTS

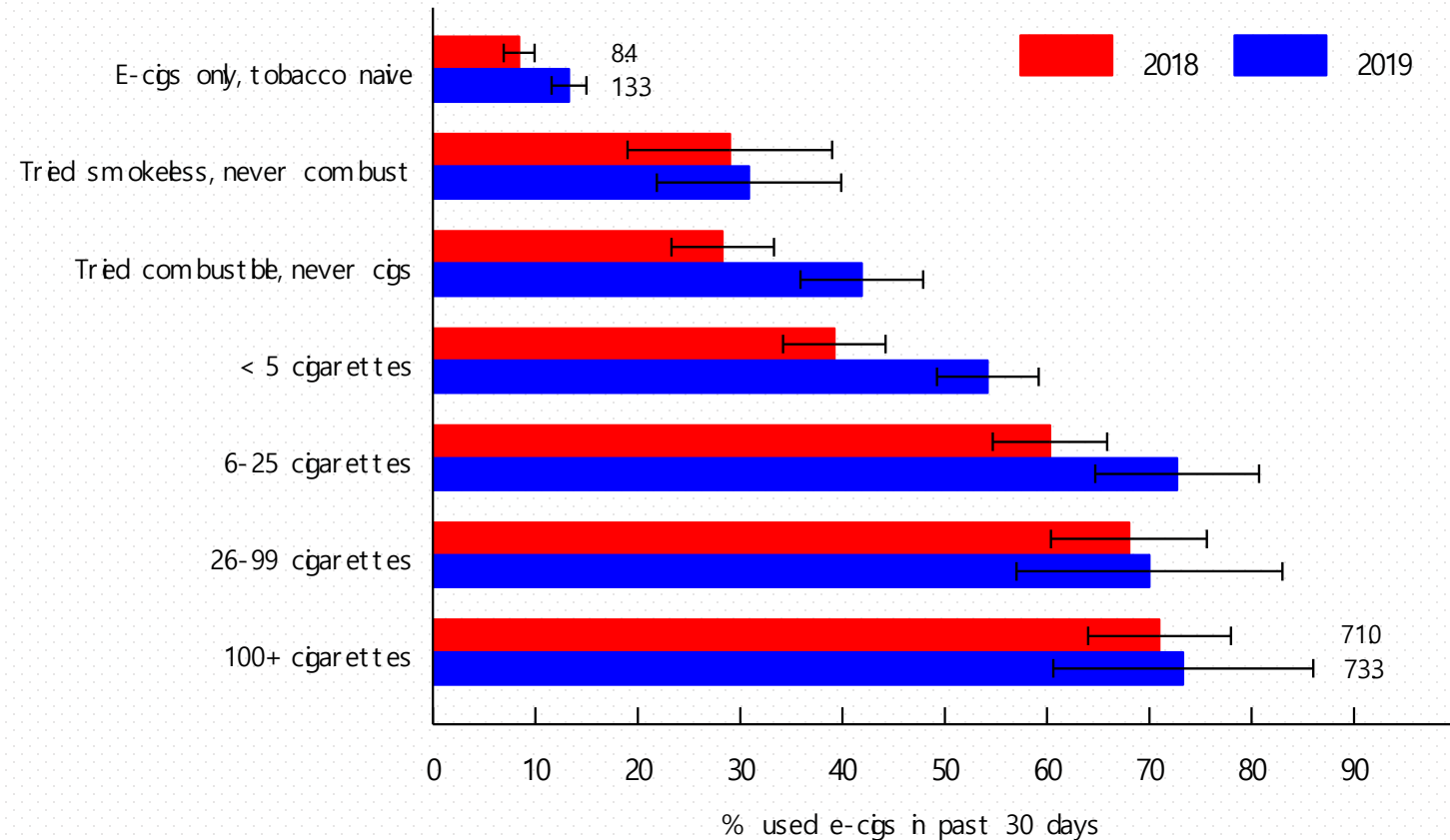


E-cigarette use in context of use of other tobacco products

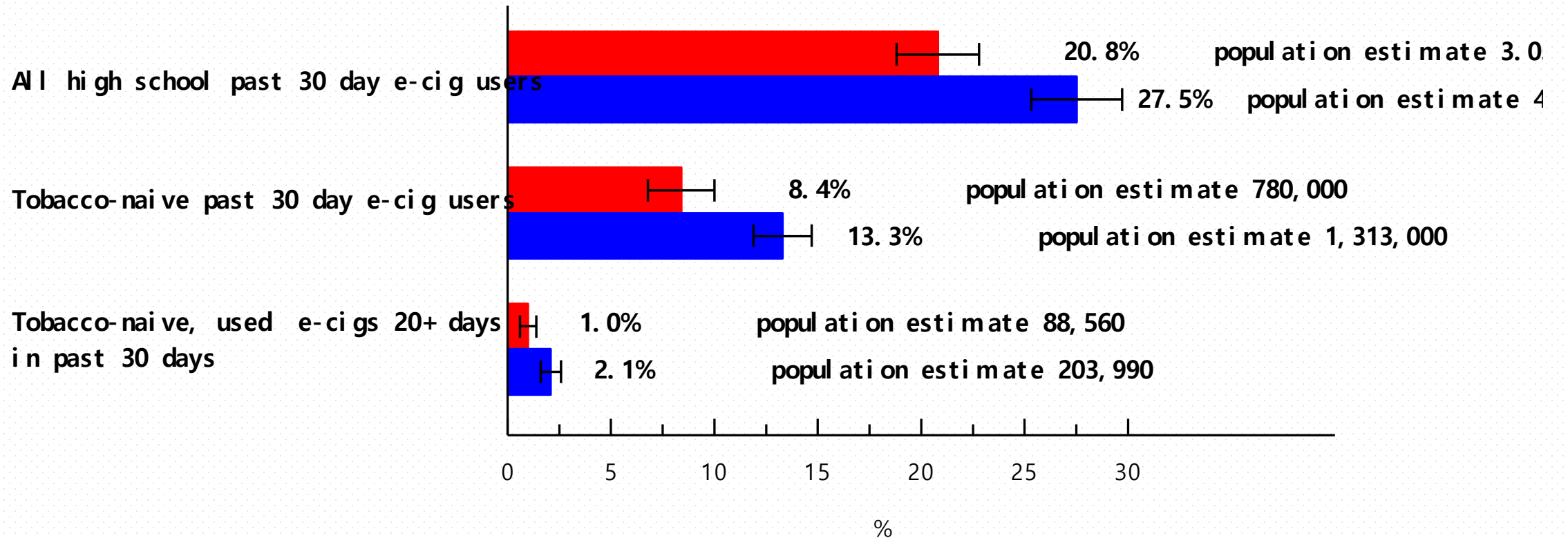
Use of e-cigarettes is strongly associated with use of other tobacco products: least common in those who have never tried any other product, and rising in graded fashion with the extent of experience of other products, from smokeless through to cigarettes

In 2019, use of e-cigs in the past 30 days was 13.3% in otherwise tobacco-naïve students, rising to 73.3% among those who had smoked 100+ cigarettes

Past 30 day e-cigarette use by lifetime tobacco use history
NYTS 2018-2019



Extent of the epidemic?



How has nicotine dependence in the whole population been impacted?

- Different tobacco products may be associated with differing levels of dependence
- Prevalence of use of 'any tobacco product' may mislead, as it implies similar dependence from all products, while mix of products used changes over time
- Overall burden of nicotine dependence in the population can be estimated by averaging self-reported dependence across all individuals surveyed: never-users, users of each product considered separately, and users of more than one product concurrently

NYTS questions on dependence indicators

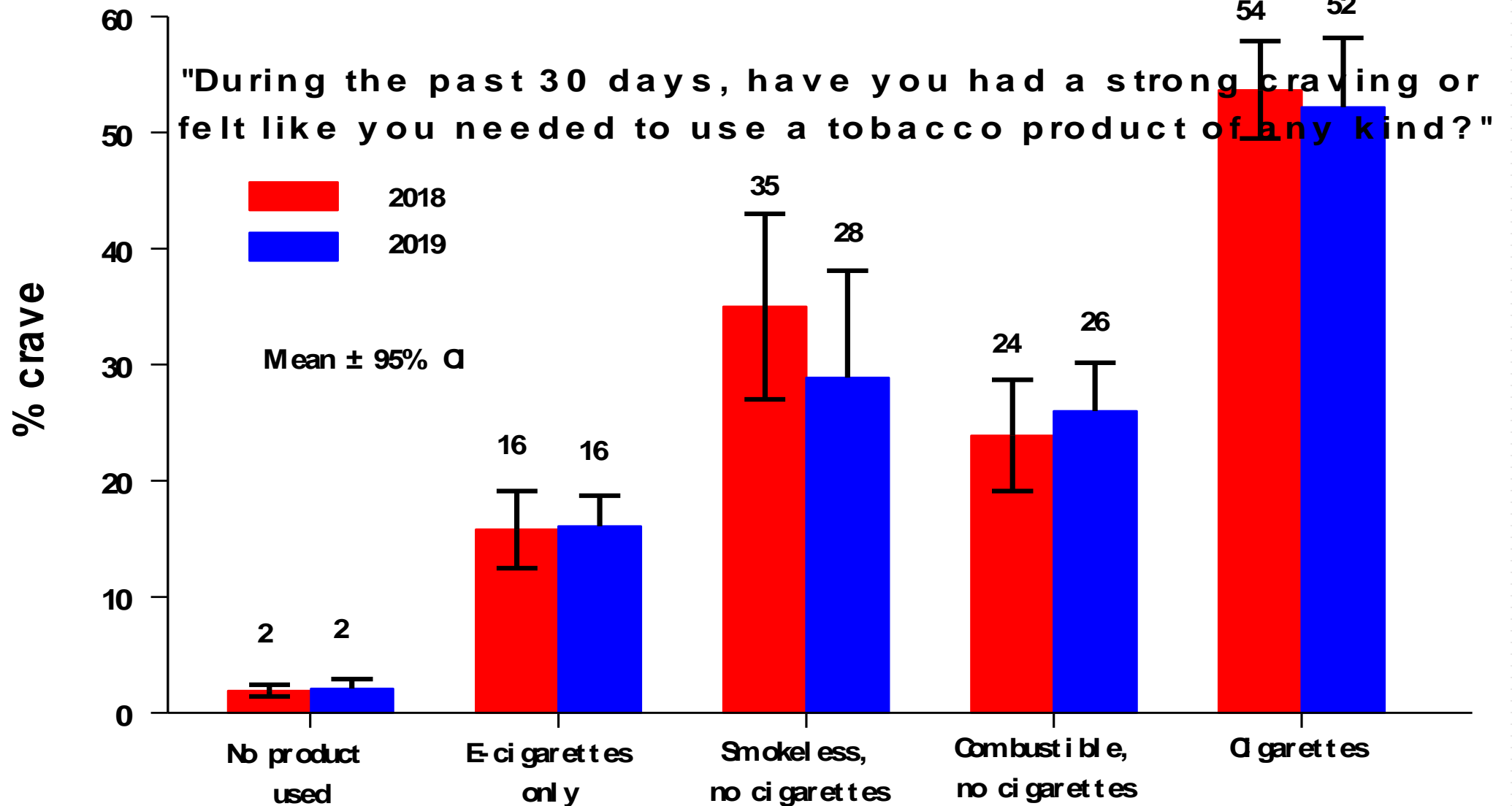
- *Now think about your responses to the questions about past 30 day use of cigarettes, cigars, smokeless tobacco, e-cigarettes, hookahs, roll-your-own cigarettes, pipes, snus, dissolvable tobacco, bidis, and heated tobacco products:*

During the past 30 days, have you had a strong craving or felt like you really needed to use a tobacco product of any kind? Yes/No

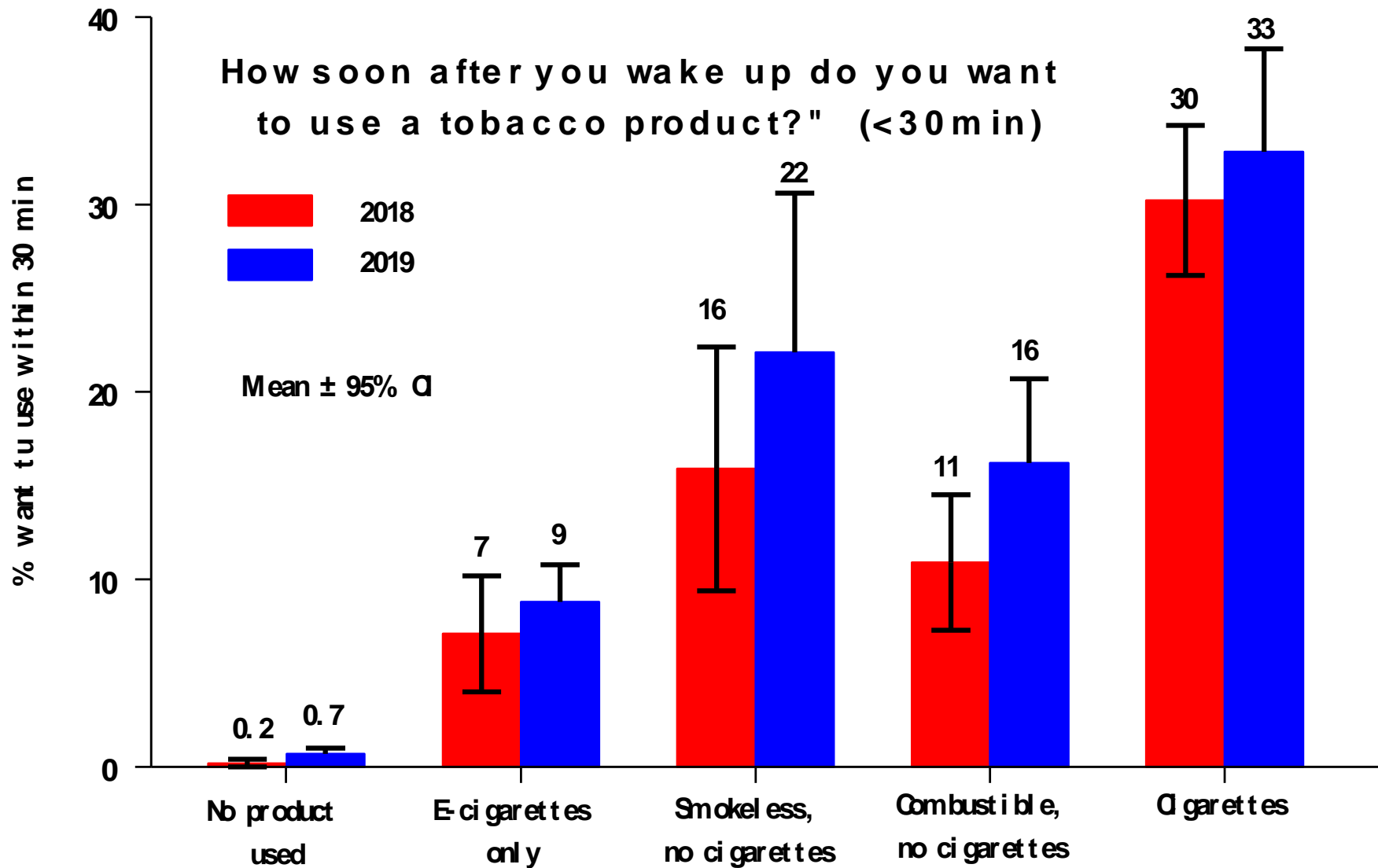
How soon after you wake up do you want to use a tobacco product?

- I do not want to use tobacco products
- Within 5 minutes
- From 6 to 30 minutes
- From more than 30 minutes to 1 hour
- After more than 1 hour but less than 24 hours
- I rarely want to use tobacco products

Craving by product used: high school students NYTS 2018-2019

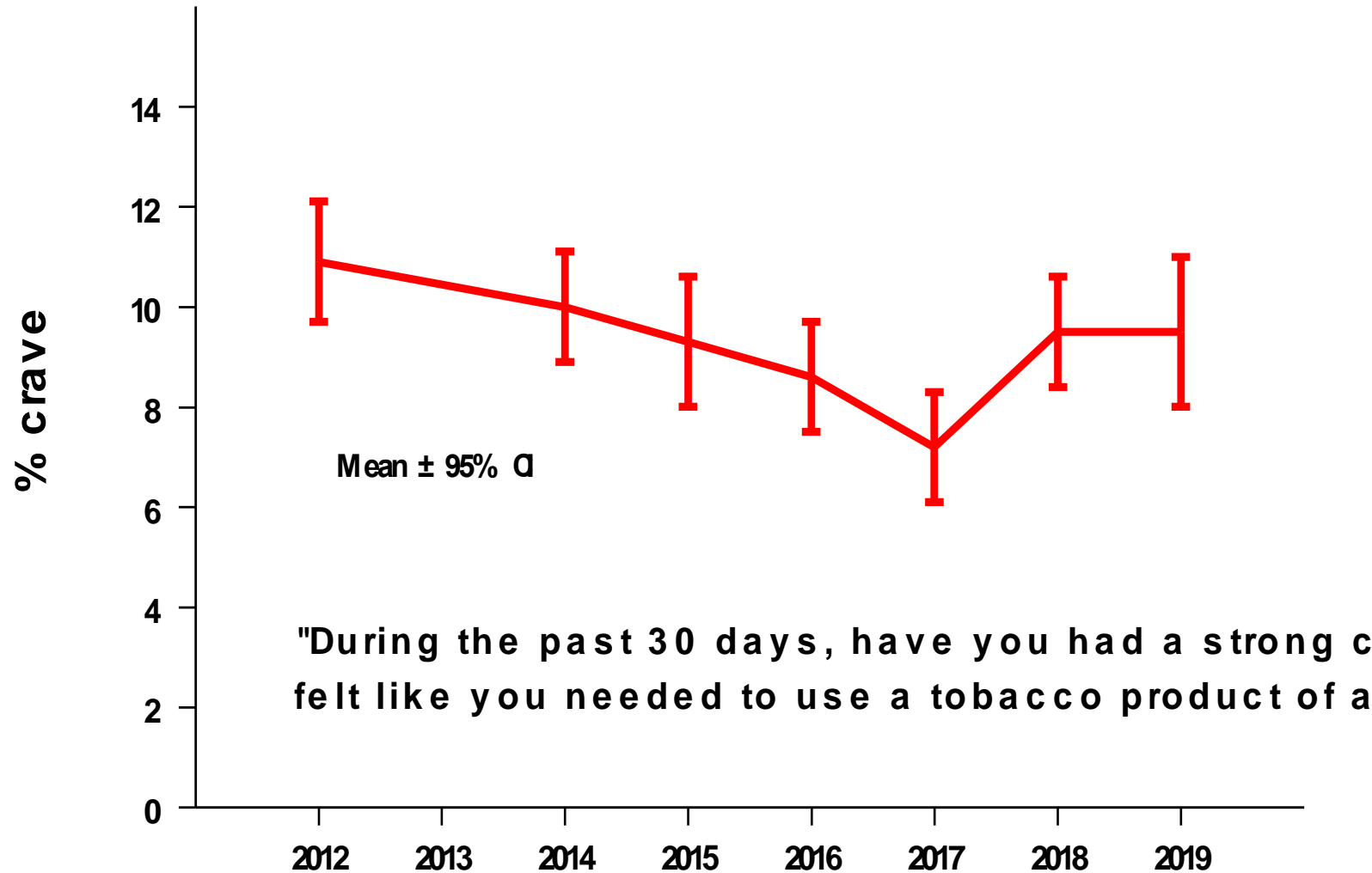


First want to use within 30 min by product used: high school students NYTS 2018-2019



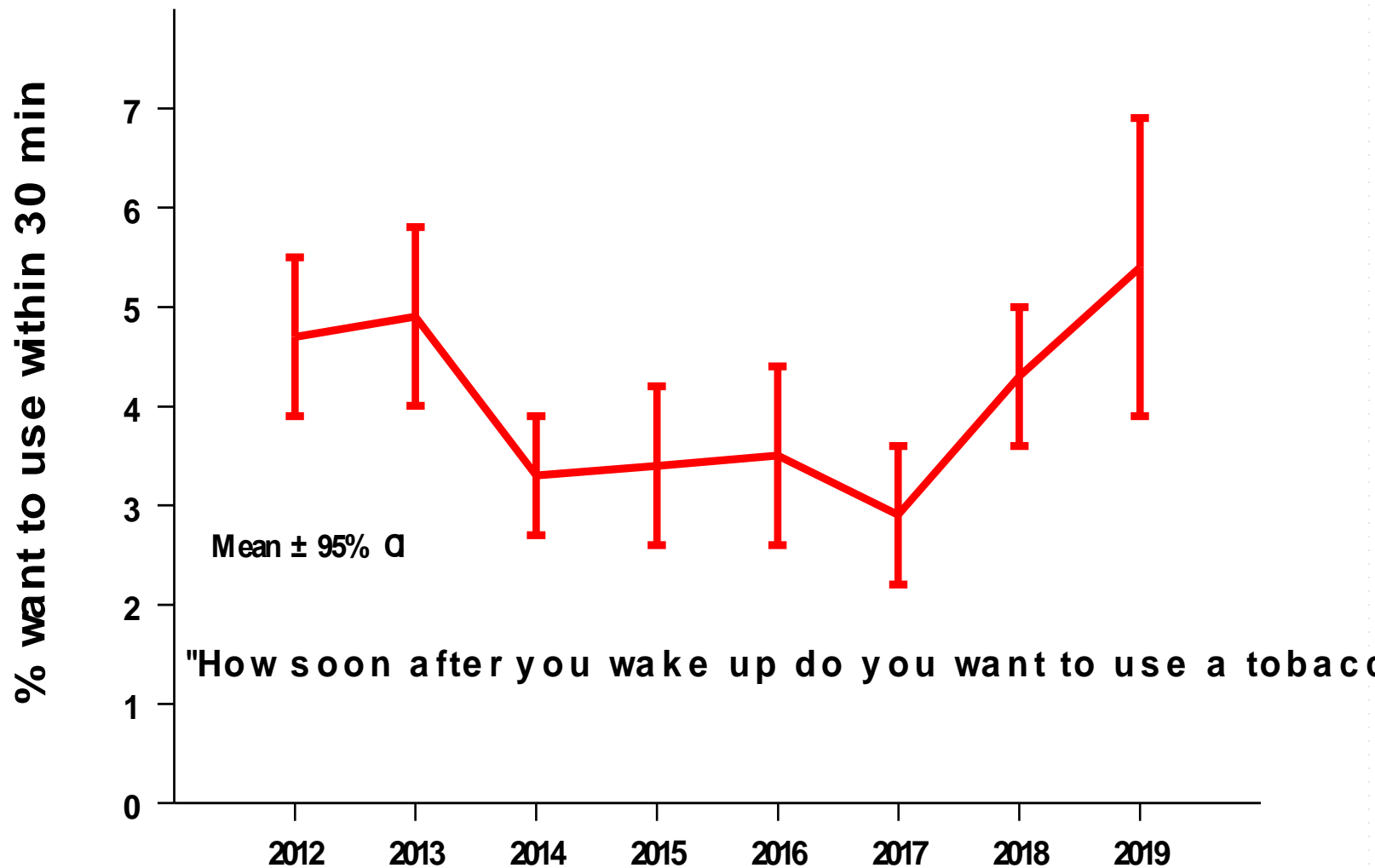
- Population mean craving has not shown a significant increase from 2012 to 2019
- The rapid increase in e-cigarette use from 2017 to 2019 was accompanied a small uptick in population craving, but not sufficient to return to 2012 level

Overall population mean craving score: high school students NYTS



Wanting to use within 30 minutes of waking Overall population mean: high school students NYTS

- Time from waking to wanting to use has not shown a significant increase from 2012 to 2019
- As with craving, a decline to a low value in 2017 was followed by a small uptick as e-cigarettes surged in popularity, but this was not sufficient to result in 2019 being significantly higher than 2012



Where does the youth epidemic notion stand now?

- Youth epidemic is a narrative in search of an evidence base
- Little evidence of any substantial increase in overall population dependence with surge of e-cigarette use
- Alternative narrative, which sees e-cigarettes supplanting cigarettes as the preferred tobacco product, has some support: population dependence essentially unchanged with decline of cigarettes and rise of e-cigarettes
- Shift in youth nicotine use to less hazardous means of delivery could bring public health gains
- 2020 NYTS data released by FDA show e-cigarette use declining to 19.6%, but, as previously, no information is given on use of other tobacco products to give context

Dependence on nicotine in US high school students in the context of changing patterns of tobacco product use. Sarah Jackson, Jamie Brown, Martin Jarvis. *Addiction* (under review)

Epidemic of youth nicotine addiction? What does the National Youth Tobacco Survey 2017-2019 reveal about high school e-cigarette use in the USA? Jarvis MJ, Jackson SE, West RJ, Brown J. *Qeios* (2020)
<https://doi.org/10.32388/745076.5>