



HHS Public Access

Author manuscript

Addiction. Author manuscript; available in PMC 2022 May 23.

Published in final edited form as:

Addiction. 2020 December ; 115(12): 2379–2381. doi:10.1111/add.15268.

Commentary on Foxon & Selya (2020): Social gradients in long-term health consequences of cigarette use—will adolescent e-cigarette use follow the same trajectory?

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Abstract

As exclusive e-cigarette use increases and combustible cigarette use declines among American youth, tracking and reporting social, racial, and economic disparities as they emerge will increasingly be an important surveillance activity. E-cigarette harm evaluation should also look beyond the immediate physical harms, and include social and financial harms as well.

Keywords

Adolescent; e-cigarettes; educational attainment; fundamental causes; social inequality; vaping

Foxon and Selya (2020) document that the prevalence of exclusive e-cigarette use among United States (US) youth has substantially increased around 2010, whereas exclusive combustible cigarette (cigarette) use continuously declined [1]. This evidence is consistent with e-cigarette use diverting youth from cigarette use, which suggests a net public health benefit, insofar as e-cigarettes are less harmful, and increased prevalence does not generate cigarette users later [1]. However, asking how harmful e-cigarettes are requires an interrogation of what harms, inflicted on whom and, specifically, on which social class?

Cigarettes were largely unassociated with social class before information about their health harms became well-known [2], then, social disparities emerged. Access to health information is a privilege, and the fact that social gradients in health outcomes emerge as information is uncovered has been reproduced many times. This is consistent with fundamental cause theory, in which access to flexible resources (e.g. knowledge, money, power, and prestige) protects individuals from health outcomes as well as their causes and wider consequences [3]. Health inequities emerging from unequal access to information are produced and reproduced so that class gradients persist over time; as harmful effects of one cause are eliminated, new ones emerge [3]. These gradients are further potentiated by other vectors of oppression (e.g. racism). Even in the face of high socio-economic status (SES),

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Declaration of interests

None.

racial/ethnic minorities continue to experience worse health outcomes and increased risk of disease or weaker protective effects of class [4].

How does this historic legacy of cigarette use relate to e-cigarette use? E-cigarettes are less harmful than cigarettes when considering carcinogens and chemicals [5,6]. However, studying additional potential harms is critical [7–9]. In the United States, for example, around 3000 people have been hospitalized for illnesses linked to tetrahydrocannabinol (THC)-containing vape products and dozens have died, prompting reactive federal regulation [10]. This suggests that in a rapidly changing marketplace of products, ongoing assessment of risks is key.

Harms of e-cigarettes may also move beyond the respiratory. Cigarette-using youth have lower high school graduation and college attendance rates than non-using youth, and lower SES through the life course [11] because of shared risk factors, complex and reinforcing selection, and causation mechanisms (e.g. social networks [12] and neurocognitive factors [13]). How these same differences in education, income, and financial stability are reproduced in e-cigarette users requires explicit monitoring, because social class is perhaps the largest and most preventable cause of death worldwide [2,3,14,15]. Arrests for cigarette-related crimes also disproportionately pattern by social class and race, leading to increased incarceration and injury (e.g. Eric Garner was killed in New York City in 2014 in an incident arising from unlicensed cigarette selling [16]).

Overall, if youth begin to view e-cigarettes as potentially harmful to health, fundamental cause theory shows that we can expect disparities in use to emerge. That is, individuals with flexible resources may reduce their use of e-cigarettes, whereas those with limited flexible resources may continue to use e-cigarette at a stable or increased rate. Additionally, as federal regulations limiting access to e-cigarettes increase, we can further expect harms because of use of these products, including material deprivation and incarceration patterned by class and race, to be reproduced.

On the other hand, e-cigarettes may help to reduce the 500000 smoking-related deaths/year in the United States [17], insofar as individuals use e-cigarettes as a replacement for cigarettes. Here too, disparities emerge; e-cigarette accessibility as a smoking cessation aid is restricted among racial/ethnic minorities and social class [18]. Therefore, to the extent that e-cigarettes are an effective harm reduction technique, we can again expect disparities to emerge.

What do we currently know about the socio-demographics of exclusive e-cigarette using youth in the United States? Our analysis of data from Monitoring the Future suggests that the prevalence of lifetime exclusive e-cigarette use is highest among the most socially advantaged adolescents: those who are white and have parents who are highly educated (see Figs 1 & 2). Yet, differences by social class are emerging. The increase in e-cigarette use from 2015 to 2019 was highest among low SES adolescents (risk difference [RD] = 138.5%) and lowest among high SES adolescents (RD = 78.6%). By race, white adolescents remain the most likely to exclusively use e-cigarettes and to increase the most across recent years.

However, we can anticipate racial disparities emerging if negative health information about e-cigarette use becomes public.

Given the tobacco industry's deception regarding the "safety" and harms of cigarette and tobacco use [7], it is possible that the e-cigarette industry could follow a similar trend, wherein potential harms of e-cigarettes will not be disclosed until health effects can no longer be ignored. Like cigarette use, there will likely be a complex array of factors that lead to inequities in e-cigarette use and associated adverse consequences, such as the influence of e-cigarette industries, lack of nicotine and e-liquid flavoring control policies, and differential access to health information and cessation services. We can use what we know about historic trends in cigarette use and changes in policy, knowledge of associated harms, and treatment and prevention techniques to see that a similar scenario may happen with e-cigarette use, in which marginalized adolescents will be the ones harmed by the potential ill effects of e-cigarettes. Understanding the extent of potential disparities, how they emerge and how they result in harm, is critical to set a research and action agenda before these harms emerge if we have any chance of their prevention.

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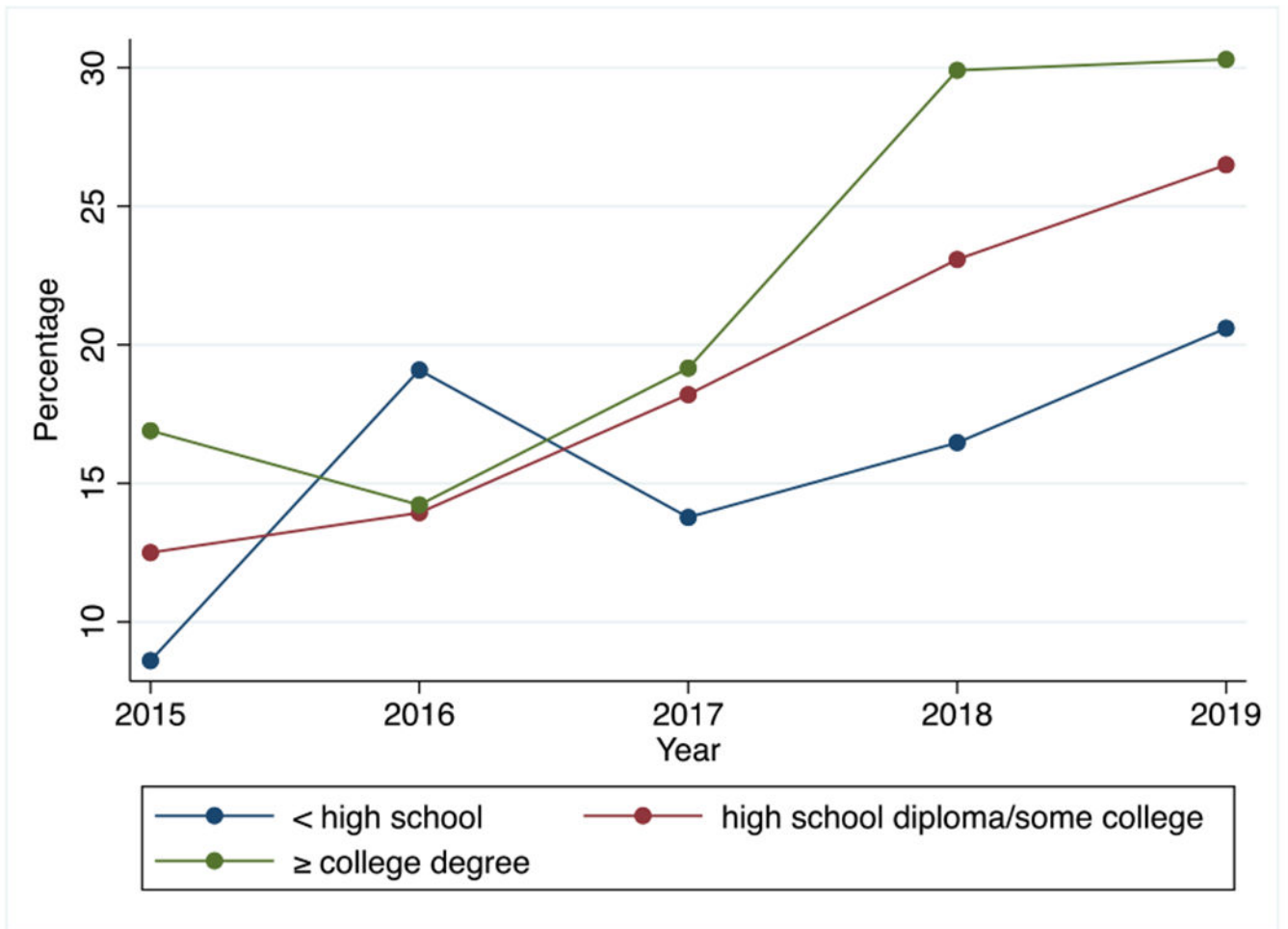


Figure 1.
Lifetime exclusive e-cigarette use among adolescents from 2015–2019 by race/ethnicity.
[Colour figure can be viewed at wileyonlinelibrary.com]

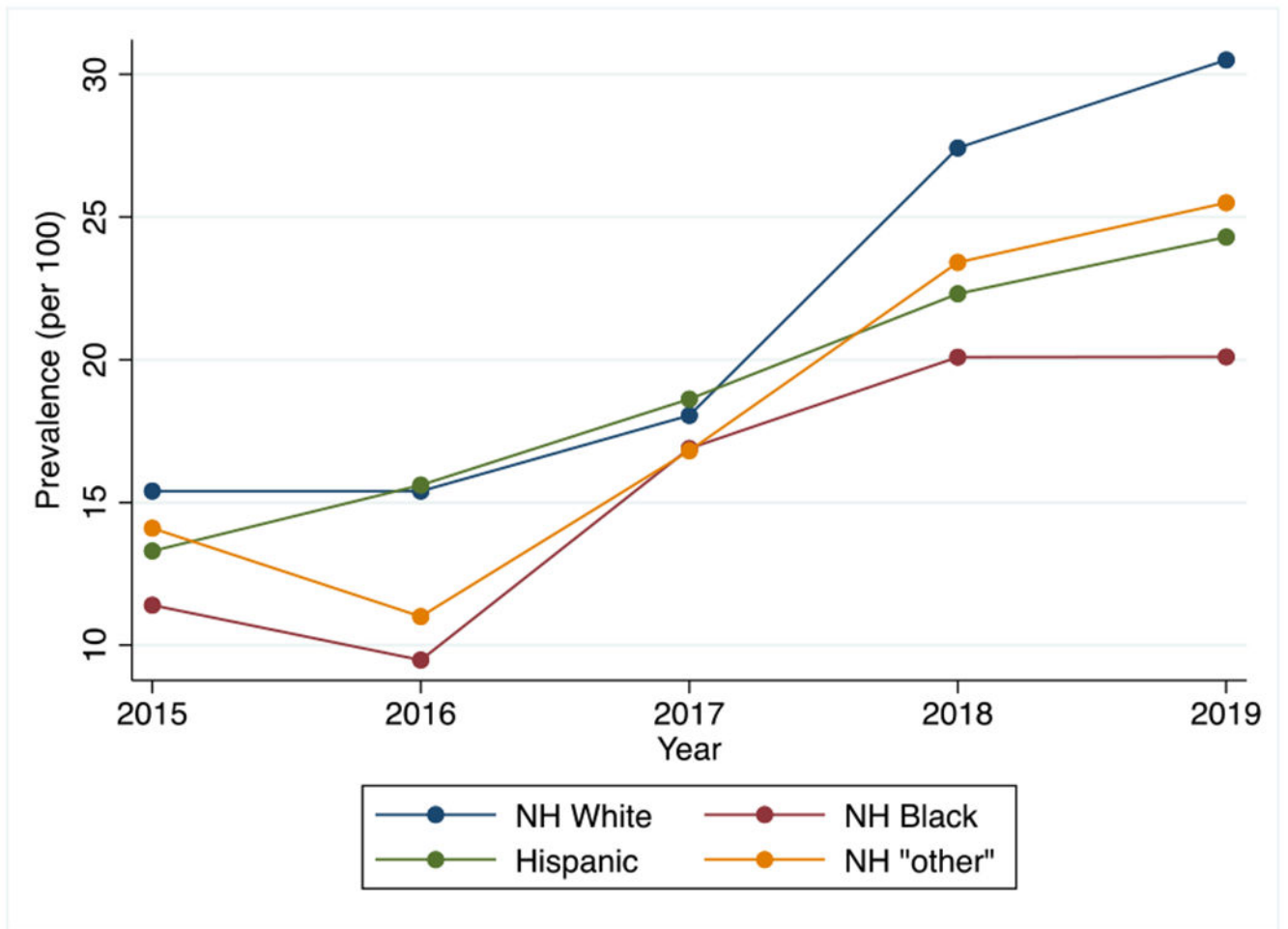


Figure 2. Lifetime exclusive e-cigarette use among adolescents from 2015–2019 by parents SES (education only). [Colour figure can be viewed at wileyonlinelibrary.com]