Beyond prevalence: new opportunities for e-cigarette research using the All of Us Research Program

Jennifer B. Unger*

Department of Population and Public Health Sciences, University of Southern California, US

Submitted: 19 October 2026; **Accepted:** 19 October 2026
Online publication: 22 October 2026

Arch Med Sci 2026; 22 (5): 2685–2686
DOI: https://doi.org/10.5114/aoms/241937
Copyright © 2026 Termedia & Banach

***Corresponding author:**
Jennifer B. Unger
Department of Population and Public Health Sciences
University of Southern California, US
E-mail: jennifer.unger@usc.edu

The article "Prevalence and patterns of e-cigarette use among U.S. adults: a repeated cross-sectional analysis of the All of Us Research Program, 2017–2023" in this issue [1] demonstrates that the large, comprehensive All of Us dataset can be used to identify trends over time and demographic disparities in e-cigarette use. Although All of Us was not designed to be a representative sample of United States adults, its data revealed trends in e-cigarette use over time and population patterns that are broadly consistent with those found in nationally representative samples [2, 3], as well as earlier analyses of All of Us [4]. Specifically, this analysis found that e-cigarette use is most prevalent among young adults, males, and people with depression. This article also identified several groups with particularly high prevalence of e-cigarette use, including people identifying as bisexual and those without college degrees.

An advantage of All of Us is its large sample size. This analysis included over 400,000 people with complete data, unlike other nationwide longitudinal tobacco use surveys such as the Food and Drug Administration's Population Assessment of Tobacco and Health [5], which typically has about 30,000 participants per wave. This creates a unique opportunity that was not fully realized in the Erhabor *et al.'s* article. Some intersectional minority groups – people who identify with two or more minority categories – typically report high rates of substance use [6]. The large All of Us sample presents a rare opportunity to estimate e-cigarette use prevalence among intersectional groups that are too small to generate meaningful estimates in other datasets (e.g., people with specific racial/ethnic backgrounds who also identify as transgender).

The large sample size of All of Us also could make it possible to identify differences across racial and ethnic subgroups. Previous analyses of cigarette smoking have found that specific Asian national groups (e.g., Korean) have a significantly higher smoking prevalence than others (e.g., Chinese), and that these differences also vary by sex and acculturation [7]. Conducting similar analyses for e-cigarettes could facilitate the development of culturally targeted tobacco prevention and cessation programs for the racial/ethnic communities that need them the most.

In addition, the longitudinal nature of the All of Us dataset could make it possible to track the evolution of tobacco product use over the lifespan. All of Us generally collects tobacco use information through the baseline Lifestyle Survey. Additional e-cigarette questions appeared in the May, June, and July 2020 COPE surveys, but subsequent COPE rounds removed substance use questions [8]. The article mentions the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance

Creative Commons licenses: This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY -NC -SA 4.0). License (http://creativecommons.org/licenses/by-nc-sa/4.0/).

System [9], which has a similar sample size to All of Us but recruits cross-sectional samples each year rather than following the same participants over time. Cross-sectional surveys can detect trends over time but cannot detect changes in behavior within individuals. The Erhabor *et al*. found that younger e-cigarette users were more likely to report never smoking combustible cigarettes, whereas older e-cigarette users were more likely to report current or former combustible cigarette use. These differences raise important questions about tobacco use trajectories, including whether e-cigarettes serve as an entry point to nicotine use or facilitate smoking cessation among established smokers. Repeated assessments are needed to distinguish these pathways.

The field has not yet reached consensus about whether e-cigarettes are a harm-reduction product because they help combustible cigarette users switch to a less harmful product, or whether they are a gateway to nicotine dependence and escalation to more harmful products among people who would not otherwise have used tobacco. The extent to which each of these pathways occurs likely varies across populations and patterns of use. The All of Us data could be used to follow individuals over time and identify the demographic, social, health, and even genetic predictors of transitioning from cigarettes to e-cigarettes and vice versa. This could help researchers develop more effective prevention and cessation programs targeted to specific groups. However, because All of Us asked about tobacco use in its baseline surveys and specific sub-surveys conducted during the COVID-19 pandemic but not afterwards, the number of participants with repeated substance-use measurements is limited. This could be remedied by asking about substance use at every wave in the future.

Because the tobacco product landscape is more varied than ever before, with options ranging from combustible cigarettes to e-cigarettes to nicotine pouches, the All of Us dataset also makes it possible to examine dual- or poly-use of tobacco products. For example, Diaby ***et al.*** (2026) found high rates of multiple tobacco product use among young adults, males, non-Hispanic Middle Eastern or North African adults, bisexual adults, adults with low education, non-homeowners, and unemployed adults [10]. These patterns of polytobacco use are similar to those observed for e-cigarettes in the Erhabor *et al.'s* article. It would be interesting to identify adults who are at high risk for other polysubstance use patterns, including co-use of nicotine and cannabis or nicotine and alcohol.

Erhabor *et al*. demonstrate that All of Us can complement established tobacco surveillance systems. Its greatest contribution, however, may be the potential to address questions that those systems cannot readily answer. Analyses of intersectional disparities, differences within racial and ethnic populations, and longitudinal patterns of tobacco product and other substance use could provide important insights for tobacco prevention and cessation. We hope that these and other researchers will continue to explore additional questions using these data.

Funding

No external funding.

Ethical approval

Not applicable.

Conflict of interest

The author declares no conflict of interest.

References

1. Erhabor J, Yao Z, Tasdighi E, et al. Prevalence and patterns of e-cigarette use among U.S. adults: a repeated cross-sectional analysis of the All of Us Research Program, 2017–2023. Arch Med Sci 2026; 22: 2674–84.
2. Arrazola RA, Husten CG, Cornelius ME, Armour BS. Notes from the field: tobacco product use among adults – United States, 2017-2023. MMWR Morb Mortal Wkly Rep 2025; 74: 118-21.
3. Cornelius ME, Loretan CG, Jamal A, et al. Tobacco product use among adults – United States, 2021. MMWR Morb Mortal Wkly Rep 2023; 72: 475-83.
4. Kirchner TR, Tian D, Li J, Srivastava P, Zheng Y. Cigarette smoking, e-cigarette use, and sociodemographic correlates of mental health and tobacco-related disease risk in the All of Us Research Program. J Am Med Inform Assoc 2024; 31: 2829-36.
5. Hyland A, Ambrose BK, Conway KP, et al. Design and methods of the Population Assessment of Tobacco and Health (PATH) Study. Tob Control 2017; 26: 371-8.
6. Chiang AY, Vijayaraghavan M. Intersectional disparities in adult cigarette smoking, e-cigarette use, and cannabis use among sexual and gender and racial and ethnic minorities in California. Am J Public Health 2026 Aug 27:e1-e12. doi: 10.2105/AJPH.2026.308633.
7. An N, Cochran SD, Mays VM, McCarthy WJ. Influence of American acculturation on cigarette smoking behaviors among Asian American subpopulations in California. Nicotine Tobacco Res 2008; 10: 579-87.
8. All of Us Research Program. COVID-19-related Survey Series Details and Resources. Updated July 18, 2025. Accessed October 18, 2026. https://support.researchallofus.org/hc/en-us/articles/6086233315988-COVID-19-related-Survey-Series-Details-and-Resources
9. Centers for Disease Control and Prevention (CDC). Behavioral Risk Factor Surveillance System Survey Data. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Accessed on October 18, 2026 from https://www.cdc.gov/brfss/
10. Diaby M, Feizy S, Zhang J, et al. Disparities in poly-tobacco use among united states adults in the All of Us Research Program. Addict Behav 2026; 184: 108862.