

21.2 ENDS Use and Cigarette Discontinuation among Adults in the U.S. across 2014/15-2021 by ENDS Flavor and ENDS Device type: Findings from the PATH Study

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Abstract: Significance: Cigarette discontinuation rates among adults who smoked cigarettes in the U.S. diverged across 2013/14-2021 between those who did and did not use electronic nicotine delivery systems (ENDS). Approximately 1 in 6 adults who smoke cigarettes do not plan to ever quit smoking; studies on ENDS use and cigarette quitting behaviors often exclude focus on them. Methods: First, adults ages 18+ who smoked cigarettes in the past 30 days (P30D) and used ENDS (P30D) were evaluated from PATH Study interview pairs (2014/15-2021, n=3,054). Weighted GEE analyses were used to evaluate and test for differences in trends in cigarette discontinuation (P30D smoking at baseline and no P30D smoking at follow-up in an interview pair), stratified by ENDS flavor and ENDS device types. Second, we focused on adults ages 21+ who smoked cigarettes daily, did not plan to ever quit, and did not use ENDS (n= 2,353). Weighted GEE analyses were used to evaluate cigarette smoking reduction by ENDS uptake and whether smoking reduction rates differed by ENDS flavor or device type. Results: Among adults ages 18+, cigarette discontinuation rates increased across 2014/15-2021 for those who used menthol/mint ENDS (trend AOR=3.18, 95%CI:1.21-8.32), fruit/sweet ENDS (trend AOR=2.13, 95%CI:1.43-3.16), combination flavor ENDS (trend AOR=2.89, 95%CI:1.49-5.62), disposables (trend AOR=3.38, 95%CI:1.25-9.16), cartridges (trend AOR=2.33, 95%CI:1.49-3.63), and tanks (trend AOR=2.05, 95%CI:1.43-2.94). Among adults ages 21+ who smoked daily and did not plan to quit, uptake of daily ENDS use (which was low) was associated with smoking reduction compared to no uptake (53.5% vs. 10.0%, AOR=14.58, 95%CI:5.99-35.50); neither ENDS flavor nor device type were associated with smoking reduction though sample sizes were small. Conclusions: Increasing cigarette discontinuation rates among adults who used ENDS was not specific to any ENDS flavor or device type examined. Cigarette reduction rates did not differ by ENDS flavor or device type among those not planning to quit smoking who took up daily ENDS use. Interview year and frequency of ENDS use were predictive of cigarette discontinuation among adults, as well as cigarette reduction among a population at high risk of smoking-attributable morbidity and mortality. These data aid in assessing the risk and benefits of ENDS use among adults smoking cigarettes, and thus can inform tobacco regulatory decision-making.

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21.3 Patterns of Ends Use among Youth and Young Adults: Path Study Findings, 2013- 2023

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Abstract: Significance: Electronic nicotine delivery systems (ENDS) have been the most prevalent tobacco product used among US youth since 2014. Given the continually changing ENDS products being marketed, it is important to assess patterns of use across time, especially among youth and young adults. Methods: Data from Waves (Ws) 1-7 (2013/14-2022/23) of the Population Assessment of Tobacco and Health (PATH) Study were used to examine changes in ENDS use among youth (aged 14-17) and young adults (YA; aged 18-24) over time, including ENDS prevalence (past 30-day [P30D] use), initiation (new ever use), top flavors used, and access to ENDS. Results: Prevalence of P30D ENDS use among youth spiked in 2018/19 (12.2%, 95% CI: 11.5-13.0) but reduced by 2022/23 (7.3%, 95% CI: 6.7-7.9). The pattern was similar among YA aged 18-20 (29.9%, 95% CI: 28.5-31.2 in 2018/19 to 22.1%, 95% CI: 20.7-23.6 in 2022/23); however, among YA aged 21-24, P30D ENDS use jumped to 23.5% (95% CI: 22.2-24.7) in 2018/19, and has remained fairly constant since then (24.5%, 95% CI: 22.9-26.0 in 2022/23). Among youth and YA, initiation of ENDS was the highest in 2014/15 decreased between 2015-2017, increased again in 2018/19, and has lowered since then in 2022/23. Dual cigarette and ENDS use among those who used any tobacco in the past 30 days, was the lowest in 2013/14 (6%, 95% CI: 4.6-7.8), increased in 2014/15 (10.3%, 95% CI: 8.0-13.2) and has remained constant among youth, while it increased from W1-7 among 18-20 year olds (6.4%, 95% CI: 5.3-7.7 to 11.2, 95% CI: 9.4-13.3) and 21-24 year olds (8.6%, 95% CI: 7.5-9.9) to 14.2%, 95% CI: 12.3-16.4). ENDS flavor preferences were consistent across all waves among youth and YA—few used only tobacco-flavored ENDS, and non-tobacco flavored ENDS were consistently preferred. Among those who used a single flavor type, fruit flavor followed by menthol/mint were the more commonly used flavor types across all three age groups. Social sources

were the primary way youth accessed ENDS products, while commercial outlets (vape shops and convenience stores) were YA's top source. Conclusion: Understanding how ENDS prevalence, initiation, use characteristics, and purchasing behaviors are changing over time can help policymakers determine effective strategies to reduce ENDS use, as well as aid in assessing ENDS products and regulatory actions under an appropriate for the protection of the public health standard.

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22. A COMPREHENSIVE LOOK AT THE ROLE OF CANNABIS IN NICOTINE/TOBACCO USE BEHAVIORS: UNDERSTANDING PATTERNS OF USE AND CESSATION

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Symposium Abstract: Use of cannabis is increasingly prevalent among adolescents, young adults, and adults who use nicotine and tobacco products. Nicotine/tobacco products and cannabis present their own unique health risks, including dependence, escalated product use and cessation barriers, as well as psychosocial and physical harms. While co-use of these products is increasingly common, there is a gap in understanding the patterns of nicotine/tobacco and cannabis co-use behaviors and how co-use may hinder nicotine/tobacco cessation. This is particularly relevant and timely as cannabis use continues to evolve in a changing legal landscape with growing availability of cannabis types and devices. The aim of this symposium is to provide a scoping examination of nicotine/tobacco and cannabis co-use, starting from patterns of behavior and risk factors through the impact on nicotine cessation. Speakers will provide a comprehensive review of the current science on this topic across adolescent and adult populations. First, Dr. Ouellette will present data on patterns of nicotine and cannabis co-use among youth and will examine the link between co-use behaviors to dependence and frequency of product use. Next, Dr. Davis will expand upon this by

presenting qualitative data among youth and young adults that assess novel methods of nicotine and cannabis co-use and motivations for co-use. Dr. Liu and Dr. Lee will examine underexplored risk factors associated with nicotine and cannabis co-use. Dr. Lee will examine young adults' data surveilling problematic social media use and its relationship to cannabis and nicotine/tobacco co-use above and beyond nicotine/tobacco use alone. Dr. Liu will examine gender identity as it pertains to differences and nuances in patterns of co-use. Finally, after this scoping review of risk factors and patterns of co-use, Drs. Han and McClure will present two studies focused on the degree of impact cannabis plays in nicotine/tobacco cessation treatment. Dr. Han will present longitudinal PATH data on this topic and Dr. McClure will present the results of a multi-site prospective tobacco treatment study quantifying the impact of cannabis co-use on nicotine/tobacco cessation. Discussant Dr. Halpern-Felsher, an expert on tobacco and cannabis co-use, will synthesize the findings to highlight the evolving patterns of nicotine and cannabis co-use and highlight the detrimental effects of cannabis on nicotine/tobacco use behaviors, particularly in youth and young adults.

22.1 Patterns in Methods and Timing of Cannabis and Nicotine Co-Use among Adolescents

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Abstract: Significance: Adolescents are increasingly likely to co-use nicotine and cannabis, which can increase their risk of dependence to both substances. Research is needed to understand evolving co-use patterns (e.g., timing, methods) and consequences (e.g., dependence) as new nicotine and cannabis products emerge. Methods: School-wide surveys (N=4760) were conducted in Spring 2024 across eight CT high schools. We assessed past-month use of nicotine (e-cigs, cigars, cigarillos, hookah, smokeless, pouches) and cannabis (vaped, dabs, smoked, edibles, tincture, topical), timing of co-use (same session, same day, different day), sequence within session (simultaneous, nic first, cannabis first), co-use methods (blunts, spliffs, mixed, two products in mouth at same time), the PROMIS e-cigarette dependence scale, and the marijuana Severity of Dependence Scale. Among adolescents reporting past month e-cigarette and cannabis use, we used multivariate regression to examine for differences in e-cigarette and cannabis dependence based on preferred sequence of co-use, adjusting for age, race, ethnicity, gender, SES, and frequency of e-cigarette and cannabis use (# of days/past 30). Results: 403 adolescents (mean=16.3 years) endorsed past 30-day use of both nicotine and cannabis. Among