PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY

From Data to Action: National, State & Local Efforts to End Menthol and Other Flavored Commercial Tobacco Product Use

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GUEST EDITORIAL

Preventing Chronic Disease Collection: From Data to Action: National, State, and Local Efforts to End Menthol and Other Flavored Commercial Tobacco Product Use

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The use of menthol and other flavored commercial tobacco products poses a serious risk to public health, and its elimination is critical to achieving health equity (1). Targeted marketing of these products in specific populations (2,3) has contributed to health inequities through increased likelihood of initiation (3–5) and continued use and decreased successful cessation (4,6). Disparities related to its use exist across and within populations (7,8). Activities at the national, state, and local levels can help end the use of menthol and flavored tobacco products and reduce their overall tobacco-related health burden.

This *Preventing Chronic Disease* collection features 9 articles that enhance our understanding of public health's role in reducing tobacco-related diseases and deaths, highlight menthol and other flavored tobacco surveillance data, and provide examples of state and local activities implemented in this area.

The first article, by Marshall and colleagues (9), describes the Centers for Disease Control and Prevention's (CDC's) National and State Tobacco Control Program (NTCP) and its role in reducing chronic disease illness, death, and disability related to commercial tobacco use and dependence and secondhand smoke exposure in the US. The NTCP supports evidence-based policy, systems, and environmental strategies (PSEs) as outlined in CDC's *Best Practices for Comprehensive Tobacco Control Programs* (10) to address its 4 goals: 1) prevent initiation of commercial tobacco product use (including emerging products and e-cigarettes) among youth and young adults, 2) promote quitting among adults and youth, 3) eliminate exposure to secondhand smoke, and 4) identify and eliminate tobacco-related disparities among population groups. (This goal has since been updated to the following: Advance health equity by identifying and eliminating commercial tobacco product–related inequities and disparities.) NTCP disseminates the best available evidence for interventions that work to achieve its 4 goals, facilitates strategic partnerships and community engagement, and leverages internal and external resources important in addressing menthol and other flavored tobacco product use. NTCP also supports activities that are reflected in the themes of the 8 remaining articles in the collection:

- Prevalence, trends, and disparities among youth and adults
- Community engagement and social media campaigns
- Lessons learned from policy implementation

Prevalence, Trends, and Disparities Among Youth and Adults

Surveillance of tobacco use patterns among youth and adults is a key theme in this collection. Cornelius and colleagues (11) examined the prevalence of menthol-flavored tobacco use among US middle and high school students. Among all students who reported current use of any tobacco product in 2022, approximately 24% reported using a menthol-flavored tobacco product (11). Their findings show that prevalence was highest among high school students (24.3%) and males (25.6%) (11). Among racial and ethnic groups, the prevalence was highest among non-Hispanic White students (30.1%) and lowest among non-Hispanic Black students (7.8%) (11). This result contrasts with earlier find-

ings on menthol-flavored cigarette use among youth and adults (12,13); however, a recent study on cigarette smoking among youth reported similar findings (14). Cornelius and colleagues (11) acknowledge this may be associated with non-Hispanic Black youth starting to smoke at a later age (15,16) and a lower prevalence of smoking among youth (17,18). The article did not address other forms of combustible smoking, such as cigar use.

Cheng and colleagues (19) reported a significant increase in the prevalence of menthol cigarette use among adults aged 20 years or older who smoke, from 22.9% (1999–2002) to 35.9% (2015–2018). Non-Hispanic Black adults who smoke had the highest overall prevalence of menthol cigarette use (73.0%) (19). The highest increase occurred among Mexican American adults, from 12.8% to 31.0%, and adults with fair or poor health status, from 21.8% to 37.0% (19).

This collection does not address cessation among adults who use menthol-flavored tobacco products. Cornelius et al found that the percentage of adults aged 18 years or older who smoked and were interested in quitting ranged from 68.2% in Alabama to 87.5% in Connecticut in 2018–2019 (20). Past year quit attempts ranged from 44.1% in Tennessee to 62.8% in Rhode Island (20). Several states with the highest smoking prevalence reported the lowest prevalence of interest in quitting, quit attempts, receipt of advice to quit, and use of counseling and/or medication (20). These findings do provide evidence that most adults who smoke would like to quit (20). We do not know if this is true among adults who smoke menthol-flavored cigarettes.

Community Engagement and Social Media Campaigns

Community engagement and social media campaign approaches to address menthol cigarette use and prevention are key themes in this collection. Caldwell and colleagues (21) developed a Community Capacity Building Curriculum to operationalize the foundational framework of the Community Development Model (22). This model prioritizes community members' lived experiences, encouraging them to identify their unique needs and assets to achieve their desired policy, systems, and environmental changes.

Social media is also an effective approach for disease prevention and health promotion (23). Eggers and colleagues (24) evaluated a New York media campaign developed collaboratively with community partners. This study aimed to assess campaign awareness, audience reactions, and campaign-related attitudes and behaviors among community members aged 18 years or older. They suggest that community education campaigns can play an important role in raising awareness of the impact of menthol tobacco products in Black communities and help build public support for local menthol restrictions.

To address local disparities in menthol cigarette use and to support a recently adopted flavor ban in Los Angeles County, Humphrey and colleagues (25) surveyed 2 groups of people aged 18 years or older (public health professionals and people who are current smokers, are former smokers, or live with a current smoker of menthol cigarettes) to describe how a local health department used appealing creative materials and messaging reminiscent of tobacco marketing tactics to develop a health marketing campaign called "Done with Menthol." The results of the survey were used to inform the development of this campaign. After the campaign's initial run, the quitline call volumes for African American and Latino subgroups were 1.9 and 1.8 times higher, respectively, than the average inbound call volume for corresponding months during 2018–2019 (25). This media campaign resulted in over 66 million impressions and offered free or low-cost, accessible resources to county residents interested in tobacco use cessation. Their study supports previous findings that social media can influence hard-to-reach populations to improve health outcomes (26).

Lessons Learned From Policy Implementation

Understanding the factors supporting or impeding policy change is another key theme in this collection. Hellesen and colleagues (27) evaluated data from 36 local grantees of the California Tobacco Prevention Program who worked to prohibit the sale of flavored tobacco products in their respective jurisdictions. Over half of these grantees spoke with community decision makers between 2017 and 2021. Their work resulted in the passage of new flavor policies in 19 local jurisdictions covered by the grantees (27). The authors reported that some factors contributing to a policy change include youth involvement, demonstrating need and public support for a ban, identifying a champion, and involving a community coalition.

Guglielmo and colleagues (28) examined additional approaches to support flavor policy adoption by 86 local communities in Los Angeles County. They found that areas with a community engagement campaign on flavor bans were more likely to pass the policy, as were those with prior experience with adopting other tobacco control ordinances, such as smokefree multi-unit housing, and those with neighboring jurisdictions that had already passed a tobacco retailer licensing policy (28). This finding suggests that local communities can ready themselves for flavor policy passage by implementing related tobacco control policies and conducting targeted community-engagement campaigns.

Caldwell and colleagues (21) described the Community Capacity Building Curriculum developed by the Center for Black Health & Equity, as theory-based, practical, and strategic guidance for community coalitions and advocacy groups to build community mobilization and menthol and flavor policy adoption in Black communities and other communities of color. This curriculum centers on health equity and social justice through multiethnic, multigenerational coalitions of partners. The curriculum has resulted in beneficial policy changes in several communities through a strong community-led process and serves as a valuable model for communities experiencing tobacco-related disparities.

Actions to Curb the Use of Menthol and Other Flavored Tobacco Products

Although progress has been made in reducing cigarette smoking overall (29), the use of menthol cigarettes has increased and may contribute to disparities observed among subpopulations (8). Furthermore, the focused marketing of menthol and other flavored tobacco products highlights the structural barriers and unjust practices that are intentionally aimed at subsets of the US population, such as Black communities (30).

Despite differences in capacity, funding, and experience across states and localities, more than 300 local jurisdictions and 2 states have restricted the sale of menthol and other flavored tobacco products of various types (31). The US Food and Drug Administration (FDA), the agency responsible for regulating tobacco products in the US, issued 2 proposed rules in April 2022 to prohibit menthol as a characterizing flavor in cigarettes and all characterizing flavors in cigars (32). Final rules are pending (33,34).

Sharing evidence about tobacco interventions that work (10) can help states, tribes, localities, and communities mobilize partners to promote and implement equitable policies and resolutions, systems and environmental changes that can prevent tobacco initiation and support individuals who are ready to quit. Cessation support should be facilitated by engaging with community members to understand their needs to create and implement culturally appropriate interventions that resonate with the community of focus.

This collection shows public health's role in educating communities about evidence-based interventions, including policies, to create healthier and more equitable communities, particularly among those who have been burdened by menthol and flavored tobacco.

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References

1. Villanti AC, Sterling K, Rose SW. US Food and Drug Administration action on menthol cigarettes and flavored cigars — a pivotal moment for health equity. *JAMA Netw Open*. 2022;5(6):e2217150. doi:10.1001/jamanetworkopen.2022.17150
2. Smiley SL, Cho J, Blackman KCA, Cruz TB, Pentz MA, Samet JM, et al. Retail marketing of menthol cigarettes in Los Angeles, California: a challenge to health equity. *Prev Chronic Dis*. 2021;18:E11. doi:10.5888/pcd18.200144
3. Klausner K. Menthol cigarettes and smoking initiation: a tobacco industry perspective. *Tob Control*. 2011;20(Suppl 2):12–19.
4. Villanti AC, Collins LK, Niaura RS, Gagosian SY, Abrams DB. Menthol cigarettes and the public health standard: a systematic review. *BMC Public Health*. 2017;17(1):983. doi:10.1186/s12889-017-4987-z
5. Kabbani N. Not so cool? Menthol's discovered actions on the nicotinic receptor and its implications for nicotine addiction. *Front Pharmacol*. 2013;4:95.
6. Smith PH, Assefa B, Kainth S, Salas-Ramirez KY, McKee SA, Giovino GA. Use of mentholated cigarettes and likelihood of smoking cessation in the United States: a meta-analysis. *Nicotine Tob Res*. 2020;22(3):307–316. doi:10.1093/ntr/ntz067

7. Seaman EL, Corcy N, Chang JT, Chomenko D, Hartman AM, Kittner DL, et al. Menthol cigarette smoking trends among United States adults, 2003–2019. *Cancer Epidemiol Biomarkers Prev*. 2022;31(10):1959–1965. doi:10.1158/1055-9965.EPI-22-0095
8. Goodwin RD, Ganz O, Weinberger AH, Smith PH, Wyka K, Delnevo CD. Menthol cigarette use among adults who smoke cigarettes, 2008–2020: rapid growth and widening inequities in the United States. *Nicotine Tob Res*. 2023;25(4):692–698. doi:10.1093/ntr/ntac214
9. Marshall L, Pasalic E, Mahoney M, Turner T, Sneegas K, Kittner D. The National and State Tobacco Control Program: overview of the Centers for Disease Control and Prevention's efforts to address commercial tobacco use. *Prev Chronic Dis*. 2024;21:E38.
10. Centers for Disease Control and Prevention. Best practices for comprehensive tobacco control programs — 2014. US Department of Health and Human Services; 2014. Accessed April 24, 2024. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/2014/comprehensive.pdf
11. Cornelius M, Gentzke A, Loretan C, Hawkins N, Jamal A. Use of menthol-flavored tobacco products among US middle and high school students: National Youth Tobacco Survey, 2022. *Prev Chronic Dis*. 2024;21:E37.
12. Giovino GA, Villanti AC, Mowery PD, Sevilimedu V, Niaura RS, Vallone DM, et al. Differential trends in cigarette smoking in the USA: is menthol slowing progress? *Tob Control*. 2015; 24(1):28–37. doi:10.1136/tobaccocontrol-2013-051159
13. Sawdey MD, Chang JT, Cullen KA, Rass O, Jackson KJ, Ali FRM, et al. Trends and associations of menthol cigarette smoking among US middle and high school students — National Youth Tobacco Survey, 2011–2018. *Nicotine Tob Res*. 2020;22(10):1726–1735. doi:10.1093/ntr/ntaa054
14. Miech RA, Leventhal AM, Johnson LD. Recent, national trends in US adolescent use of menthol and non-menthol cigarettes. *Tob Control*. 2023;32(e1):e10–e15. doi:10.1136/tobaccocontrol-2021-056970
15. Roberts ME, Colby SM, Lu B, Ferketich AK. Understanding tobacco use onset among African Americans. *Nicotine Tob Res*. 2016;18(Suppl 1):S49–56.
16. Cheng YJ, Cornelius ME, Wang TW, Homa DM. Trends and demographic differences in the incidence and mean age of starting to smoke cigarettes regularly, National Health Interview Survey, 1997–2018. *Public Health Rep*. 2023; 138(6):908–915. doi:10.1177/00333549221138295
17. Gentzke AS, Wang TW, Cornelius M, Park-Lee E, Ren C, Sawdey MD, et al. Tobacco product use and associated factors among middle and high school students — National Youth Tobacco Survey, United States, 2021. *MMWR Surveill Summ*. 2022;71(5):1–29. doi:10.15585/mmwr.ss7105a1
18. Park-Lee E, Ren C, Cooper M, Cornelius M, Jamal A, Cullen KA. Tobacco product use among middle and high school students — United States, 2022. *MMWR Morb Mortal Wkly Rep*. 2022;71(45):1429–1435. doi:10.15585/mmwr.mm7145a1
19. Cheng YJ, Tsai J, Cornelius ME, Mahoney M, Neff LJ. Sociodemographic and temporal differences in menthol cigarette use among US adults who smoke, 1999–2018. *Prev Chronic Dis*. 2024;21:E20. doi:10.5888/pcd21.230291
20. Cornelius ME, Wang TW, Jamal A, Loretan CG, Willis G, Graham-Glover B, et al. State-specific prevalence of adult tobacco product use and cigarette smoking cessation behaviors, United States, 2018–2019. *Prev Chronic Dis*. 2023;20:E107. doi:10.5888/pcd20.230132
21. Caldwell K, Hebert A, Bolden G. Strategies for effective capacity-building in the fight against commercial tobacco. *Prev Chronic Dis*. 2024;21:E35.
22. Robinson RG. Community development model for public health applications: overview of a model to eliminate population disparities. *Health Promot Pract*. 2005;6(3): 338–346. doi:10.1177/1524839905276036
23. Gatewood J, Monks SL, Singletary CR, Vidrascu E, Moore JB. Social media in public health: strategies to distill, package, and disseminate public health research. *J Public Health Manag Pract*. 2020;26(5):489–492. doi:10.1097/PHH.0000000000001096
24. Eggers ME, Nonnemaker JM, Kelly LK, Ortega-Peluso C, Anker E, Lee J, et al. It's Not Just: evaluation of a media campaign to motivate action around targeting of menthol tobacco in Black communities. *Prev Chronic Dis*. 2024;21: E24. doi:10.5888/pcd21.230237
25. Humphrey R, Truong A, Fraser R, Gallow TG, Fischbach L, Kuo T. Creating and implementing a community-focused, culturally tailored health marketing campaign to address menthol cigarette use in Los Angeles County. *Prev Chronic Dis*. 2024;21:E25. doi:10.5888/pcd21.230282
26. Tseng TS, Gonzalez G. Social media and types with their current applications in public health and healthcare. In: Batra K, Sharma M, editors. Effective use of social media in public health. 1st Edition. (NY): Elsevier Publishing Group; 2023. p. 3–22.
27. Hellesen S, Huan S, Dove M. Facilitators and barriers to passing local policies that prohibit the sale of flavored tobacco products: qualitative analysis of strategies implemented by 36 communities in California, 2017–2021. *Prev Chronic Dis*. 2024;21:E36.
28. Guglielmo D, Dang A, Fischbach L, Toruno R, Chavez-Sosa G, Messex M, et al. Community engagement, jurisdictional experience, and previous tobacco-related ordinances in neighboring communities as drivers of flavored tobacco bans in Los Angeles County. *Prev Chronic Dis*. 2024;21:E29.

29. US Department of Health and Human Services. The health consequences of smoking — 50 years of progress: a report of the Surgeon General. US Public Health Service, National Center for Chronic Disease Prevention and Health Promotion; 2014. Accessed April 24, 2024. https://www.hhs.gov/sites/default/files/consequences-smoking-exec-summary.pdf
30. Anderson SJ. Marketing of menthol cigarettes and consumer perceptions: a review of tobacco industry documents. *Tob Control.* 2011;20(Suppl 2):20–28. doi:10.1136/tc.2010.041939
31. Campaign for Tobacco-free Kids. States and localities that have restricted the sale of flavored tobacco products. Accessed April 24, 2024. https://assets.tobaccofreekids.org/factsheets/0398.pdf
32. US Food and Drug Administration. FDA proposes rules prohibiting menthol cigarettes and flavored cigars to prevent youth initiation, significantly reduce tobacco-related disease and death. Accessed April 24, 2024. https://www.fda.gov/news-events/press-announcements/fda-proposes-rules-prohibiting-menthol-cigarettes-and-flavored-cigars-prevent-youth-initiation
33. US General Services Administration, Office of Management and Budget. Tobacco product standard for menthol in cigarettes. Accessed April 24, 2024. https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=0910-AI60
34. US General Services Administration, Office of Management and Budget. Tobacco product standard for characterizing flavors in cigars. Accessed April 24, 2024. https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202310&RIN=0910-AI28

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ESSAY

The National and State Tobacco Control Program: Overview of the Centers for Disease Control and Prevention's Efforts to Address Commercial Tobacco Use

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Introduction

Considerable progress has been made in reducing cigarette smoking among US youth and adults (1). Comprehensive statewide evidence-based tobacco control programs have reduced smoking prevalence and tobacco-related diseases and deaths (1). Even so, commercial tobacco use (ie, harmful products made and sold by tobacco companies, not traditional tobacco used by Indigenous groups for religious or ceremonial purposes) remains the most preventable cause of disease and death in the US, accounting for more than 480,000 deaths each year (1). Close to 46 million US adults currently use tobacco products (2), including smoked, smokeless, and electronic products, such as e-cigarettes (3). Cigarette smoking is estimated to have contributed to more than $225 billion in annual health care costs in 2014 (4). Although the overall prevalence of tobacco use has declined, this decline has not been experienced equally by all populations in the US. Large tobacco-related health disparities exist among such groups as American Indian and Alaska Native people (5); Black and African American people (6); people exposed to secondhand smoke, such as those who live in states without smoke-free air policies (7); people who are lesbian, gay, bisexual, or transgender (LGBT) (5,8); adults with a mental health condition (9); and people with low socioeconomic status (SES) (5), among many other population groups.

Since the release of the US Surgeon General's report in 1964, which warned of the health hazards of cigarette smoking (10), state and national tobacco control efforts have helped to dramatically reduce smoking in the US (1,2,11–13); however, disparities in tobacco use remain, making national, state, tribal, territorial, and community-level efforts necessary.

The National and State Tobacco Control Program

In 1978, the Office on Smoking and Health (OSH) was established in the Office of the Assistant Secretary of Health to serve as the lead federal entity for gathering information about smoking-related death and disease. OSH administers a national program that works with state and local governments on smoking and health matters to reduce death and disability from smoking (14). In 1986, this office became a part of Centers for Disease Control and Prevention (CDC) (15), where OSH became the lead federal agency for comprehensive tobacco prevention and control (16).

In 1999, OSH created the National and State Tobacco Control Program (NTCP) and published *Best Practices for Comprehensive Tobacco Control Programs* to provide grant recipients with tobacco control program guidelines and recommendations (17). CDC established NTCP to provide technical assistance and funding to support comprehensive tobacco control programs in all 50 states, the District of Columbia, and 8 US territories and freely associated states. Overall, NTCP was formed to encourage nationally coordinated, statewide-level efforts to reduce tobacco-related disease and death.

NTCP funding for states and territories is managed through cooperative agreements. Cooperative agreements transfer funds and technical assistance to recipients in exchange for their contributions to federal public health goals and objectives with substantial agency involvement (18). Technical assistance involves advice, assistance, or training to prepare for and manage program development, implementation, maintenance, and evaluation.

NTCP continues to be built on the successes and lessons learned of previously funded work, such as Tobacco Use Prevention: Public Health Approaches for Ensuring Quitline Capacity (CDC-RFA-DP14-1410PPHF14) (19) and National State-Based Tobacco Control Programs (CDC-RFA-DP15–1509) (20). Although recipients receive funds through various sources, the aforementioned funded projects contributed to progress in tobacco control prevention in such areas as education and outreach, smoke-free policies, media campaigns to increase the use of the state quitlines, and health-systems changes that institutionalize tobacco screening and referrals to the quitline. Many states used the Tips From Former Smokers Campaign (Tips), the first federally funded tobacco education campaign in the US. During 2012–2018, the Tips campaign contributed to 16.4 million quit attempts and more than 1 million estimated sustained quits (21). Quitlines have also been effectively tailored for racial and ethnic groups, lower-income groups, and LGBTQI+ (LGBT, queer, intersex, and all other identities not encompassed by the acronym) groups (22).

In June 2020, OSH initiated a new 5-year cooperative funding agreement, the NTCP CDC-RFA-DP20-2001, to implement evidence-based tobacco control strategies (23). NTCP's fiscal year investment was $71.5 million. State tobacco control programs, including the District of Columbia and territorial governments, could apply for one or both of the two components of the cooperative agreement. For Component 1 — National Tobacco Control Program (State-Based), state tobacco control programs (including the District of Columbia) engage local lead agencies, coalition partners, and others to implement selected strategies — including State and Community Interventions; Mass-Reach Health Communication Interventions; Tobacco Use and Dependence Treatment Interventions; Surveillance and Evaluation; Infrastructure, Administration, and Management; and 3 new requirement areas to promote health equity — the Statewide Disparity Requirement, the Community-Based Disparity Requirement, and the Statewide Prevention of Initiation to Emerging Tobacco Products, Including E-Cigarettes, for Youth and Young Adults Requirement. For Component 2 — State Commercial Tobacco Use and Dependence Treatment Support System, states, the District of Columbia, and territorial governments apply for funds to focus on commercial tobacco use and support systems to treat dependence.

The National and State Tobacco Control Program Approach

Recipients of NTCP funds are required to use evidence-based policy, systems, and environmental (PSE) strategies to address NTCP's 4 goals: 1) prevent initiation of commercial tobacco product use (including emerging products and e-cigarettes) among youth and young adults; 2) promote quitting among adults and youth; 3) eliminate exposure to secondhand smoke; and 4) advance health equity by identifying and eliminating commercial tobacco product–related inequities and disparities. The relationship among program inputs, PSE strategies, and short-term, intermediate, and long-term outcomes is depicted in the NTCP logic model (Figure).

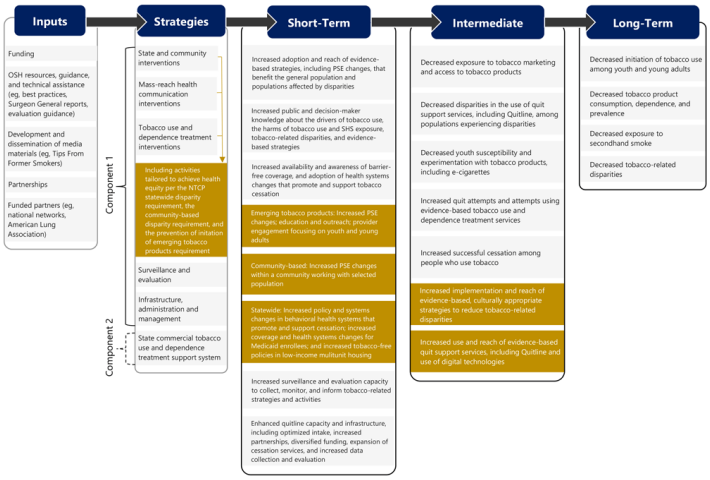

Figure. A logic model depicting the relationship among program inputs, PSE strategies, and short-term, intermediate, and long-term outcomes for the NTCP. Abbreviations: NTCP, National Tobacco Control Program; OSH, Office of Smoking and Health; PSE, policy, systems, and environmental.

PSE strategies are based on CDC's *Best Practices for Comprehensive Tobacco Control Programs* (22), a guide that assists states in planning their comprehensive tobacco control program. The following best practices are evidence-based interventions that serve as the foundation for NTCP work and are among the core PSE strategies selected by recipients to fulfill their cooperative agreements:

State and Community Interventions (Component 1). This PSE strategy supports a comprehensive statewide tobacco control program that coordinates community-level interventions, focusing on the synergies of implementing policies and programs that promote and reinforce behavior changes that align with tobacco-free norms. Examples of interventions include counteracting protobacco messaging, restricting the availability of tobacco products, increasing

tobacco prices, and disseminating positive health messaging (24–26). The short-term outcomes of advancing these initiatives at the state and community levels include increased reach of evidence-based strategies, such as PSE changes that benefit the general population as well as populations affected by disparities (27). Interventions are aimed at preventing initiation of commercial tobacco products, promoting cessation of commercial tobacco product use, and eliminating exposure to secondhand smoke with the help of community support and engagement (22).

Mass-Reach Health Communication Interventions (Component 1). This PSE strategy includes activities to deliver evidence-based, strategic, culturally appropriate, high-impact messages. These messages include mass-reach health communication campaigns and counter-marketing strategies (24), including those that leverage CDC's national tobacco education campaigns and reports by the US Surgeon General. Recipient outputs related to this PSE strategy include the development of detailed communications plans to increase public and decision-maker knowledge about the drivers of tobacco use, the harms of tobacco use and secondhand-smoke exposure, and tobacco-related disparities. Communication campaigns can provide graphic and personal stories of the health consequences of smoking as effective tools to motivate people who smoke to quit (21). In 2012, to support recipients to effectively implement this PSE strategy, CDC launched the first-ever federally funded national tobacco education campaign (Tips), which has increased population-level quit attempts (28).

Tobacco Use and Dependence Treatment Interventions (Component 1). People who use commercial tobacco are encouraged to quit by using the most effective methods (26,29). Recipients selected interventions designed to promote health systems change, expand health insurance coverage, use proven cessation treatments, and support state quitline capacity (22,29,30). Implementation of this PSE strategy is expected to increase availability and awareness of barrier-free health insurance coverage of tobacco cessation treatment and result in the adoption of health systems changes that promote and support tobacco cessation.

Surveillance and Evaluation (Component 1). NTCP cooperative agreements require 10% of funds be allocated to a surveillance and evaluation system that can monitor and document outcomes and provide direction for future activities. As such, recipients are required to develop and implement a written evaluation plan and report program progress, evaluation findings, and performance measurement data annually. Evidence shows that "systematic surveillance and monitoring of key program inputs and outputs and environmental influences is central to understand the effectiveness and cost-effectiveness of tobacco control efforts" (31). Strong recipient-led evaluations in combination with a national surveillance network can help state programs select and implement best practices (31).

Infrastructure, Administration, and Management (Component 1). Recipients develop and maintain an infrastructure to sustain comprehensive tobacco control programs, ensuring that programs have networked partnerships, multilevel leadership, engaged data, managed resources, and responsive plans (32). Program infrastructure that supports program capacity and sustainability can help programs achieve positive public health outcomes (32).

Commercial Tobacco Use and Dependence Treatment Support System (Component 2). Recipients develop and implement action plans to enhance quitline capacity and infrastructure, optimize quitline intake processes, increase quitline partnerships, diversify funding, expand cessation services, and improve quitline evaluation to include an assessment of disparities in quitline use and effectiveness. This PSE strategy is expected to improve quitline outcomes, including expanding the reach of evidence-based tobacco use dependence treatment services (29,33).

As recipients implement PSE strategies during the 5-year cooperative agreement, they can expect to see changes in long-term outcome indicators related to each of the 4 goal areas, such as decreases in initiation of tobacco use among youth and young adults; tobacco product consumption, dependence, and prevalence; exposure to secondhand smoke; and tobacco-related disparities (34).

Disparities and Health Inequities

The decrease in prevalence of tobacco use has not been experienced by all population groups equally; many population groups continue to be at a disproportionate risk for experiencing tobacco-related disease and death (1). These disparities are closely linked with social, economic, or environmental factors that includes systemwide problems, unfair practices, and unjust conditions (35). NTCP supports implementing evidence-based strategies through a health equity lens to decrease commercial tobacco use among all population groups. For example, menthol cigarette use disproportionately affects people who are African American, women (36–38), LGBT (39), have a low income (38) or education (38), and adult smokers who have behavioral health conditions (40). Culturally appropriate, evidence-based strategies to prevent and reduce commercial tobacco use may help reduce these disparities. This cooperative agreement supports recipients to implement state and community interventions that educate communities on evidence-based population-level strategies to reduce access to menthol and other flavored tobacco products. Policies that prohibit menthol can reduce tobacco experimentation among young

people, increase the number of smokers that quit, and lead to a reduction in disease and death (41).

NTCP elevated the importance of OSH's fourth goal area — advance health equity by identifying and eliminating commercial tobacco product–related inequities and disparities — by including 3 new requirements.

Statewide Disparity Requirement (Component 1): Recipients develop strategies and activities to reduce tobacco product–related disparities among population groups with behavioral health conditions or low SES. Recipients working with population groups with behavioral health conditions engage behavioral health systems, health care providers, hospitals, outpatient facilities, residential facilities, and recovery residences to 1) create tobacco-free campuses, 2) increase screening for tobacco use and dependence, and 3) provide tobacco use and dependence treatment assistance to clients. Recipients working with people with low SES collaborate with low-income multi-unit housing providers to implement smoke-free policies and promote quit support resources and work with Medicaid recipients and health care providers to improve comprehensive coverage for treatment of tobacco use and dependence.

Community-Based Disparity Requirement (Component 1). To promote a community-led approach to addressing tobacco product–related disparities for a specific population group, recipients are required to identify a population group in a community that is disparately affected by tobacco use and dependence and secondhand smoke exposure, and then fund, support, and collaborate with a local lead agency that serves this population group. The recipient supports the local lead agency and its tobacco-control community coalition partners to promote PSE strategies and activities with and for the identified population group to reduce disparities in tobacco use, dependence, or secondhand smoke. Community engagement and mobilization are essential to programs addressing tobacco control (42). To support strategies for achieving equity and eliminating commercial tobacco–related disparities, National Networks also partner with states to assist in providing technical assistance with this requirement. National Networks is a consortium of organizations that strives to prevent commercial tobacco use and cancer in population groups with tobacco- and cancer-related health disparities (43).

Statewide Prevention of Initiation to Emerging Tobacco Products, Including E-Cigarettes, for Youth and Young Adults Requirement (Component 1). This strategy requires recipients to focus on disparities in tobacco product use (such as e-cigarettes) among youth and young adults. Recipients collaborate with partners to support youth and young adults in making behavior choices consistent with tobacco-free norms. As part of a comprehensive approach to tobacco control, recipients tailor interventions to reach population groups with the highest use, which might vary by tobacco product type (2).

Technical Assistance to Recipients

To increase recipients' capacity for implementing evidence-based tobacco prevention and control strategies, OSH created an infrastructure in which public health advisors serve as the primary contact for identifying and implementing technical assistance. Cooperative agreements provide substantial federal staff involvement, which creates a collaborative foundation for the work of OSH. As such, recipients also receive internal support through OSH's subject matter experts such as scientists, evaluators, health communication specialists, and policy experts. This support can be obtained through monthly calls facilitated by their public health advisor, monthly NTCP webinars, media network webinars, surveillance and evaluation webinars, or administrative calls based on the need of the recipient. In addition, communities of practice exist for which topics are selected to advance the program knowledge and skill necessary for managing and leading comprehensive tobacco control programs.

Furthermore, external support is provided through funded technical assistance partnerships, such as National Networks, which provide an avenue for recipients to receive training and technical assistance. Each network focuses on a specific population group (ie, Asian American; Native Hawaiian or Pacific Islander; American Indian or Alaska Native; African American; Hispanic or Latino; LGBTQ; a geographically defined population; people with behavioral health conditions; and people with low SES) experiencing disparities in commercial tobacco use and cancer-related illness and death. Other funded organizations that provide technical assistance to recipients include the Public Health Law Center, the American Lung Association, the Association of State and Territorial Health Officials, and other nongovernment organizations.

In providing technical assistance, recipients are provided with tools, resources such as best practices user guides (44), and access to experts in the field. For example, to support NTCP recipients in measuring performance and conducting evaluations, OSH evaluators developed guidance materials. These include 4 key outcome indicator guides, one for each goal area, plus an introduction to process evaluation in tobacco use prevention and control and a compendium of surveillance and evaluation data resources (34,45–49). Another resource is the NTCP Awards Management Platform (50), which facilitates communication across internal OSH technical assistance providers; it provides easy access to in-

formation and resources about the NTCP and provides a platform for recipients to upload their workplans, performance measures, and evaluation plans and reports in collaboration with OSH's evaluators.

OSH's approach to technical assistance is tailored to meet the unique needs of the recipient organization, including the context and culture within which they operate (51). Therefore, we identify measures that indicate improvements in individual recipient practice or organizational performance and track those measures to demonstrate that our technical assistance has real, measurable results. Technical assistance is an important element in building capacity for adopting and implementing PSE strategies, such as policies (52), which are critical in moving tobacco control efforts forward. Through provision of the wide array of technical assistance offered, recipients are able to learn from others and share their successes and lessons learned (52,53).

Monitoring NTCP Recipients

All publicly financed programs require accountability. CDC and recipients monitor NTCP program progress and outcomes by examining a combination of process and outcome indicators. Monitoring long-term outcome indicators over time, such as the prevalence of commercial tobacco product use, allows CDC to document progress toward the 4 goal areas and provides data to demonstrate program effectiveness and inform decision making (34). CDC regularly monitors and publishes findings on long-term outcomes by using several national and state-level surveillance data sources (49). Healthy People 2030 benchmarks and tracks several NTCP long-term outcomes at the national level (for example, reducing current tobacco use to a 2030 target level of 17.4%), underscoring the alignment of NTCP goals with national objectives to improve health and well-being (54). Just as long-term outcome data provide critical information, timely data on program process indicators from recipients (eg, program data and performance measurement data related to program activities, outputs, and short-term and intermediate outcomes like reach) demonstrate program fidelity and allow for iterative program improvements (48).

CDC systematically collects performance measurement data from recipients to monitor the NTCP's inputs, activities, outputs, and reach. Recipients are required to report program measurement data for indicators of selected short-term and intermediate outcomes depicted in the NTCP logic model (Figure). These data are collected annually from funded recipients through the NTCP Awards Management Platform, an online, collaborative platform designed for knowledge management, information sharing, technical assistance management, and performance monitoring with uniform data collection, reports, and dashboards (55).

To monitor the number and proportion of recipients implementing selected PSE strategies and delivering outputs, CDC used program data submitted by recipients, including NTCP work plan and annual progress reports, NTCP evaluation reports, and communications plans (56–58). To calculate the reach of selected PSE strategies, CDC relied on a combination of recipient-reported data and secondary data sources. Recipients reported the number and location of state, local, and tribal policies to prohibit the sale of all flavored tobacco products, including menthol (55). OSH calculated reach as the combined sum of adults aged 18 years or older in each local jurisdiction in which recipients reported policies were passed, using 2021 1-year estimates from the American Community Survey (59). Recipients reported the number and reach of state Medicaid plans, state employee health plans, and other employers' private health insurers that improved coverage of evidence-based cessation services, removed barriers, or adopted comprehensive coverage for all evidence-based cessation services without barriers (55). OSH calculated reach as the combined sum of enrollees in each of the plans reported by recipients to have gained improved coverage. The number of Medicaid enrollees reached was determined by using secondary Medicaid enrollment data (60). The number of enrollees reached in employer or private health insurer plans was reported by recipients (55). For the first time, a selection of program process data, demonstrating early results of the current NTCP cooperative agreement, is presented next.

Process Evaluation Findings From Year 1 of Current 5-Year Funding Cycle

From June 29, 2020, through April 28, 2021, a total of 53 recipients from all 50 states, the District of Columbia, Guam, and Puerto Rico were awarded funding for Component 1 (51 recipients) and/or Component 2 (52 recipients). In year 1, recipient activities and outputs reached millions of people in the US (Table 1 and Table 2). Recipients engaged local lead agencies, coalition partners, and subcontractors to implement strategies across all PSE intervention areas, including the 3 new requirement areas. Popular strategies are highlighted below.

State and Community Interventions (Component 1). Eleven of 51 recipients (21.6%) selected the strategy of supporting the implementation of local policies prohibiting the sale of all flavored tobacco products, including menthol. For example, California and Minnesota provided data, technical assistance, and education to partners on evidence-based strategies that can reduce access to menthol and other flavored tobacco products. Twenty-two communities adopted policies in California and Minnesota, affecting an estimated 5,790,779 adults who became newly protected by local policies that prohibit the sale of menthol and other flavored products. Of the 11 recipients implementing this strategy, 9 recipi-

ents did not reach adoption (or implementation) of new policies in year 1; however, many reported substantive progress in their efforts to educate and engage partners, developing new partnerships and coalitions, providing educational resources, and working with partners to develop and coordinate key messaging on health risks and target marketing of flavored tobacco products.

Mass-Reach Health Communications (Component 1). All 51 recipients submitted detailed communication plans designed for reaching the general population and population groups experiencing tobacco-related disparities to prevent and reduce tobacco use and secondhand smoke exposure. Plans for implementation varied across recipients.

Tobacco Use and Dependence Treatment (Component 1). Twenty-one of 51 recipients (41.2%) selected strategies to expand the availability and promotion of comprehensive, barrier-free insurance coverage for evidence-based cessation treatment. Combined, 8 recipients reported that 20 state Medicaid plans, state employee health plans, or other employers or private health insurance plans improved coverage of evidence-based cessation services, removed barriers to these services, or adopted comprehensive coverage for evidence-based cessation services without barriers, potentially affecting 7,828,192 enrollees.

Surveillance and Evaluation (Component 1). All 51 recipients submitted detailed evaluation reports focusing on in-depth evaluations of a subset of strategies.

Infrastructure, Administration, and Management (Components 1 and 2). All 53 recipients selected and implemented up to 8 strategies to bolster the infrastructure and management of their tobacco control programs. Recipients reported successful partnerships, acquiring additional funding streams, onboarding and training new staff, and other successes.

Commercial Tobacco Use and Dependence Treatment Support Systems (Component 2). Among the 52 recipients funded through Component 2 to ensure quitline capacity, 37 recipients (71.2%) conducted follow-up studies among people who used the quitline to assess quit success rates at 7 months postintervention.

Statewide Disparities Requirement (Component 1). Thirty-one of 51 recipients (60.8%) chose the strategy focused on promoting health systems changes in behavioral health care facilities to encourage and support screening for and treatment of tobacco use and dependence.

Community Based Disparities Requirement (Component 1). Forty-six of 51 recipients (90.2%) chose the strategy focused on developing or engaging partners to plan and implement evidence-based tobacco prevention and control strategies. As of April 2023, states had partnered with numerous population groups that experience tobacco-related disparities, including people who are African American (n = 12); American Indian or Alaska Native (n = 9); Asian American, Native Hawaiian, or Pacific Islander (n = 2); Hispanic or Latino (n = 1); living in specific geographic regions (n = 4); LGBTQ (n = 10); experiencing low SES (n = 10); experiencing behavioral health conditions (n = 1); and veteran or military (n = 2).

Emerging Tobacco Products Requirement (Component 1). Forty-one of 51 recipients (80.4%) chose the strategy focused on educating and engaging partners, such as parents, schools, and community-based organizations, on evidence-based strategies to reduce use of emerging tobacco products, including e-cigarettes, among young people.

Implications for Public Health Practice

This cooperative agreement (National and State Tobacco Control Program CDC-RFA-DP20-2001) enhances relationships between states and communities. The data presented here have several limitations. First, they are limited to findings that recipients chose to report and may not encompass all outcomes in every jurisdiction, potentially underestimating results. Second, they reflect year 1 of the program only, with the exception of the most recent list of recipients' partnering with population groups as part of the community-based disparity requirement. Third, the short performance period (June 29, 2020–April 28, 2021) may have limited the results.

The 2020 NTCP cycle was built on previously funded work, which contributed to positive outcomes in year 1 of the cooperative agreement, and further supports the value of sustained commercial tobacco control efforts (22). NTCP's *Best Practices for Comprehensive Tobacco Control Programs* (22) provides a roadmap for states and communities to decrease commercial tobacco–related diseases and deaths with several implications for public health practice. Strategic partnerships are critical in leveraging resources to end the use of commercial tobacco. They assist programs in developing synergy, building capacity, collecting and disseminating data that can inform policy change, enhancing credibility, countering tobacco industry influence, advancing health equity, reducing disparities, and sustaining commercial tobacco control efforts (61). For example, policies that prohibit menthol can reduce experimentation among young people, increase the number of smokers that quit, and lead to a reduction in disease and death (41). Finally, requiring states to work in partnership with communities is critical for understanding local needs and implementing culturally appropriate, evidence-based strategies that work best for the community served.

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References

1. US Department of Health and Human Services. *The Health Consequences of Smoking — 50 Years of Progress: A Report of the Surgeon General*. National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Centers for Disease and Control and Prevention; 2014. Accessed August 15, 2023. https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf
2. Cornelius ME, Loretan CG, Jamal A, Davis Lynn BC, Mayer M, Alcantara IC, et al. Tobacco product use among adults — United States, 2021. *MMWR Morb Mortal Wkly Rep*. 2023; 72(18):475–483. doi:10.15585/mmwr.mm7218a1
3. US Department of Health and Human Services. *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General*.National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Centers for Disease Control and Prevention; 2016. Accessed August 15, 2023. https://www.cdc.gov/tobacco/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf
4. Xu X, Shrestha SS, Trivers KF, Neff L, Armour BS, King BA. U.S. healthcare spending attributable to cigarette smoking in 2014. *Prev Med*. 2021;150:106529. doi:10.1016/j.ypmed.2021.106529
5. Cornelius ME, Loretan CG, Wang TW, Jamal A, Homa DM. Tobacco product use among adults — United States, 2020. *MMWR Morb Mortal Wkly Rep*. 2022;71(11):397–405. doi:10.15585/mmwr.mm7111a1
6. Yerger VB, Przewoznik J, Malone RE. Racialized geography, corporate activity, and health disparities: tobacco industry targeting of inner cities. *J Health Care Poor Underserved*. 2007;18(4 Suppl):10–38. doi:10.1353/hpu.2007.0120
7. Tsai J, Homa DM, Neff LJ, Sosnoff CS, Wang L, Blount BC, et al. Trends in secondhand smoke exposure, 2011–2018: impact and implications of expanding serum cotinine range. *Am J Prev Med*. 2021;61(3):e109–e117. doi:10.1016/j.amepre.2021.04.004
8. Buchting FO, Emory KT, Scout, Kim Y, Fagan P, Vera LE, et al. Transgender use of cigarettes, cigars, and e-cigarettes in a national study. *Am J Prev Med*. 2017;53(1):e1–e7. doi:10.1016/j.amepre.2016.11.022
9. Substance Abuse and Mental Health Services Administration. 2019 National Survey on Drug Use and Health: detailed tables. September 11, 2020 . Accessed October 30, 2023. https://www.samhsa.gov/data/report/2019-nsduh-detailed-tables
10. US Department of Health, Education, and Welfare. *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service*. US Department of Health, Education, and Welfare, Public Health Service, Centers for Disease Control, 1964. PHS Publication No. 1103. Accessed October 19, 2023. https://profiles.nlm.nih.gov/spotlight/nn/catalog/nlm:nlmuid-101584932X202-doc
11. California Health & Human Services Agency. Data-Cigarette Use Prevalence in Adults. Created June 16, 2017. Last updated April 2, 2021. Accessed October 30, 2023. https://data.chhs.ca.gov/dataset/adult-cigarette-and-tobacco-use-prevalence/resource/85d7e0b3-40ec-4ddc-959b-a1a7aed97481
12. Maciosek MV, St Claire AW, Keller PA, LaFrance AB, Xu Z, Schillo B. Projecting the future impact of past accomplishments in tobacco control. *Tob Control*. 2021;30(2): 231–233. doi:10.1136/tobaccocontrol-2019-055487
13. Bauer UE, Johnson TM, Hopkins RS, Brooks RG. Changes in youth cigarette use and intentions following implementation of a tobacco control program: findings from the Florida Youth Tobacco Survey, 1998–2000. *JAMA*. 2000;284(6):723–728. doi:10.1001/jama.284.6.723
14. Statement of Organization, Functions, and Delegations of Authority. Federal Register 43:9773. [4110-85] (March 10, 1978) p. 9868.

15. Centers for Disease Control and Prevention. CDC timeline 1980s. Page last reviewed January 11, 2021. Accessed November 2, 2023. https://www.cdc.gov/museum/timeline/1980.html
16. Centers for Disease Control and Prevention. Office on Smoking and Health at a glance. Last reviewed August 31, 2023. Accessed November 2, 2023. https://www.cdc.gov/chronicdisease/resources/publications/aag/tobacco-use.htm
17. Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs — August 1999*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. August 1999. Accessed November 2, 2023. https://stacks.cdc.gov/view/cdc/21692
18. Centers for Disease Control and Prevention. About CDC grants. Page last reviewed June 23, 2021. Accessed November 2, 2023. https://www.cdc.gov/grants/about-cdc-grants/index.html
19. Grants.gov. PPHF 2014: Tobacco Use Prevention — Public Health Approaches for Ensuring Quitline Capacity — financed solely by 2014 Prevention and Public Health Funds. Posted April 10, 2014. Accessed May 6, 2024. http://grants.gov/search-results-detail/253712
20. Grants.gov. CDC-RFA-DP15-1509: National State-Based Tobacco Control Programs. Posted September 5, 2014. Last updated November 4, 2014. Accessed May 6, 2024. http://grants.gov/search-results-detail/264152
21. Murphy-Hoefer R, Davis KC, King BA, Beistle D, Rodes R, Graffunder C. Association between the Tips From Former Smokers Campaign and smoking cessation among adults, United States, 2012–2018. *Prev Chronic Dis*. 2020;17:E97. doi:10.5888/pcd17.200052
22. Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs, 2014*. US Department of Health and Human Services; 2014. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/2014/comprehensive.pdf
23. Grants.gov. View grant opportunity. CDC-RFA-DP20-2001. National and State Tobacco Control Program. Posted January 28, 2020. Last updated April 3, 2020. Accessed November 3, 2023. https://www.grants.gov/search-results-detail/319760
24. Centers for Disease Control and Prevention. *Designing and Implementing an Effective Tobacco Counter-Marketing Campaign*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2003.
25. Zaza S, Briss PA, Harris KW. *The Guide to Community Preventive Services: What Works to Promote Health?* Oxford University Press; 2005.
26. Institute of Medicine. *Ending the Tobacco Problem: A Blueprint for the Nation*. The National Academies Press; 2007.
27. Starr G, Schooley M, Porter S, Wiesen E, Jamison N. *Key Outcome Indicators for Evaluating Comprehensive Tobacco Control Programs*. Centers for Disease Control and Prevention; 2005.
28. McAfee T, Davis KC, Alexander RL Jr, Pechacek TF, Bunnell R. Effect of the first federally funded US antismoking national media campaign. *Lancet*. 2013;382(9909):2003–2011. doi:10.1016/S0140-6736(13)61686-4
29. Glover-Kudon RM, Gates EF. The role of quitlines in tobacco cessation: an introduction. *Am J Prev Med*. 2021;60(3 Suppl 2):S99–S102. doi:10.1016/j.amepre.2020.12.003
30. Rigotti NA. Integrating comprehensive tobacco treatment into the evolving US health care system: it's time to act: comment on "A randomized trial of internet and telephone treatment for smoking cessation". *Arch Intern Med*. 2011;171(1):53–55. doi:10.1001/archinternmed.2010.491
31. Farrelly MC. Monitoring the tobacco use epidemic V: the environment: factors that influence tobacco use. *Prev Med*. 2009;48(1 Suppl):S35–S43. doi:10.1016/j.ypmed.2008.10.012
32. Lavinghouze SR, Snyder K, Rieker PP. The component model of infrastructure: a practical approach to understanding public health program infrastructure. *Am J Public Health*. 2014;104(8):e14–e24. doi:10.2105/AJPH.2014.302033
33. Berg CJ. Quitline reach and effectiveness among populations disproportionately affected by tobacco use: future directions. *J Health Care Poor Underserved*. 2021;32(3):1188–1198. doi:10.1353/hpu.2021.0125
34. Centers for Disease Control and Prevention. *Identifying and Eliminating Tobacco-Related Disparities: Key Outcome Indicators for Evaluating Comprehensive Tobacco Control Programs*. National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2022. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/2022-koi-guide-508.pdf
35. Centers for Disease Control and Prevention. Health disparities related to commercial tobacco and advancing health equity. Last reviewed June 27, 2022. Accessed July 13, 2023. https://www.cdc.gov/tobacco/health-equity/index.htm
36. US Food and Drug Administration. *Preliminary Scientific Evaluation of the Possible Public Health Effects of Menthol Versus Nonmenthol Cigarettes*. 2013. Accessed April 22, 2024. https://www.fda.gov/media/86497/download

37. Villanti AC, Mowery PD, Delnevo CD, Niaura RS, Abrams DB, Giovino GA. Changes in the prevalence and correlates of menthol cigarette use in the USA, 2004-2014. *Tob Control*. 2016;25(Suppl 2):ii14–ii20. doi:10.1136/tobaccocontrol-2016-053329
38. Lawrence D, Rose A, Fagan P, Moolchan ET, Gibson JT, Backinger CL. National patterns and correlates of mentholated cigarette use in the United States. *Addiction*. 2010;105(Suppl 1):13–31. doi:10.1111/j.1360-0443.2010.03203.x
39. Fallin A, Goodin AJ, King BA. Menthol cigarette smoking among lesbian, gay, bisexual, and transgender adults. *Am J Prev Med*. 2015;48(1):93–97. doi:10.1016/j.amepre.2014.07.044
40. Young-Wolff KC, Hickman NJ III, Kim R, Gali K, Prochaska JJ. Correlates and prevalence of menthol cigarette use among adults with serious mental illness. *Nicotine Tob Res*. 2015;17(3):285–291. doi:10.1093/ntr/ntu141
41. US Food and Drug Administration. FDA proposes rules prohibiting menthol cigarettes and flavored cigars to prevent youth initiation, significantly reduce tobacco-related disease and death. News release; April 28, 2022. Accessed July 13, 2023. https://www.fda.gov/news-events/press-announcements/fda-proposes-rules-prohibiting-menthol-cigarettes-and-flavored-cigars-prevent-youth-initiation
42. Ahmed SM, Palermo AG. Community engagement in research: frameworks for education and peer review. *Am J Public Health*. 2010;100(8):1380–1387. doi:10.2105/AJPH.2009.178137
43. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. CDC's National Networks driving action. Last reviewed March 26, 2024. Accessed May 6, 2024. https://www.cdc.gov/tobacco/stateandcommunity/tobacco-control/coop-agreement/index.html
44. Centers for Disease Control and Prevention. Evidence based guides for states. Last reviewed February 21, 2024. Accessed November 3, 2023. https://www.cdc.gov/tobacco/stateandcommunity/guides/index.htm
45. Centers for Disease Control and Prevention. *Preventing Initiation of Tobacco Use: Outcome Indicators for Comprehensive Tobacco Control Programs – 2014*. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014. Accessed April 22, 2024. https://www.cdc.gov/tobacco/stateandcommunity/tobacco-control/pdfs/preventing_initiation.pdf
46. Centers for Disease Control and Prevention. *Promoting Quitting Among Adults and Young People: Outcome Indicators for Comprehensive Tobacco Control Programs — 2015*. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2015. Accessed April 22, 2024. https://www.cdc.gov/tobacco/stateandcommunity/tobacco-control/pdfs/KOI_Goal3_Update_12_28_15.pdf
47. Centers for Disease Control and Prevention. *Eliminating Exposure to Secondhand Smoke: Outcome Indicators for Comprehensive Tobacco Control Programs — 2017*. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2017. Accessed April 22, 2024. https://www.cdc.gov/tobacco/stateandcommunity/tobacco-control/pdfs/eliminating-exposure-koi-goal2-508.pdf
48. Centers for Disease Control and Prevention. *Introduction to Process Evaluation in Tobacco Use Prevention and Control*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2008. Accessed April 22, 2024. https://www.cdc.gov/tobacco/stateandcommunity/tobacco-control/pdfs/tobaccousemanual_updated04182008.pdf
49. Centers for Disease Control and Prevention. *Surveillance and Evaluation Data Resources for Comprehensive Tobacco Control Programs*. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: Atlanta, GA; 2014. Accessed April 22, 2024. https://www.cdc.gov/tobacco/stateandcommunity/tobacco-control/pdfs/surveillance_evaluation_508.pdf
50. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. National Tobacco Control Program Awards Management Platform. Accessed May 2, 2024. https://amp.cdc.gov/NTCP
51. Gibbs DA, Hawkins SR, Clinton-Sherrod AM, Noonan RK. Empowering programs with evaluation technical assistance: outcomes and lessons learned. *Health Promot Pract*. 2009;10(1 Suppl):38S–44S. doi:10.1177/1524839908316517
52. Roeseler A, Hagaman T, Kurtz C. The use of training and technical assistance to drive and improve performance of California's Tobacco Control Program. *Health Promot Pract*. 2011;12(6 Suppl 2):130S–143S. doi:10.1177/1524839911419297
53. Treiber J, Cassady D, Kipke R, Kwon N, Satterlund T. Building the evaluation capacity of California's local tobacco control programs. *Health Promot Pract*. 2011;12(6 Suppl 2):118S–124S. doi:10.1177/1524839911414411

54. US Department of Health and Human Services. Healthy People 2030: tobacco use. Accessed October 31, 2023. https://health.gov/healthypeople/objectives-and-data/browse-objectives/tobacco-use
55. Centers for Disease Control and Prevention, Office on Smoking and Health. NTCP performance measures report. Accessed June 2, 2023. https://amp.cdc.gov/NTCP
56. Centers for Disease Control and Prevention, Office on Smoking and Health. NTCP work plan & APR report. Accessed June 2, 2023. https://amp.cdc.gov/NTCP
57. Centers for Disease Control and Prevention, Office on Smoking and Health. Evaluation report — years 1 and 2. Accessed June 2, 2023. https://amp.cdc.gov/NTCP
58. Centers for Disease Control and Prevention, Office on Smoking and Health. Communications plan — Year 3. Accessed June 2, 2023. https://amp.cdc.gov/NTCP
59. US Census Bureau. 2021 ACS 1-year estimates. 2021. Page last reviewed August 29, 2023. Accessed April 22, 2024. https://www.census.gov/programs-surveys/acs/technical-documentation/table-and-geography-changes/2021/1-year.html
60. Centers for Medicare & Medicaid Services. Medicaid enrollment — new adult group. Updated January 3, 2024. Accessed May 22, 2023. https://data.medicaid.gov/dataset/6c114b2c-cb83-559b-832f-4d8b06d6c1b9
61. Centers for Disease Control and Prevention. *Best Practices User Guides: Partnerships in Tobacco Prevention and Control*. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: 2021. Accessed April 22, 2024. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/best-practices-partnership-user-guide-508.pdf

Tables

Table 1. Process Findings From Selected Strategies and Outputs in Year 1, the National Tobacco Control Program[a], 2020–2021

PSE strategy	No. of funded recipients	Related indicators	Output[a]	Reach	No. of recipients selecting relevant strategies for year 1 work plan[b]
Component 1					
State and Community Interventions	51	Number and reach of state, local, and tribal policies to prohibit the sale of all flavored tobacco products, including menthol	22 policies	5,790,779[c]	11
Mass-Reach Health Communications Interventions	51	Percentage of funded recipients submitting detailed communications plans	100%	NA	51
Tobacco Use and Dependence Treatment Interventions	51	Number and reach of state Medicaid plans, state Employee Health Plans, and other employers/ private health insurers that have improved coverage of evidence-based cessation services, removed barriers, or that adopted comprehensive coverage that covers all evidence-based cessation services without barriers	20 plans	7,828,192 enrollees[d]	21
Surveillance and Evaluation	51	Percentage of funded recipients submitting detailed evaluation reports for years 1 and 2.	100%	NA	51
Components 1 and 2					
Infrastructure, Administration, and Management	53	Percent of funded recipients selecting between 1 and 8 strategies focused on Infrastructure, Administration, and Management	100%	NA	53

Abbreviations: NA, not applicable; PSE, policy, systems, and environmental.

[a] Beginning in 2020, the Centers for Disease Control and Prevention's Office on Smoking and Health awarded funding to all 50 states, the District of Columbia, Guam, and Puerto Rico through the National Tobacco Control Program. Fifty-one recipients received funding for Component 1 (excluding Puerto Rico and Guam); 52 recipients received funding for component 2 (excluding New Mexico). The program implemented strategies to eliminate exposure to secondhand smoke, promote quitting among adults and youth, prevent initiation among youth and young adults, and advance health equity by identifying and eliminating commercial tobacco product-related inequities and disparities. Unless otherwise noted, data include reported outcomes from the year 1 performance period: June 29, 2020–April 28, 2021. Data are limited to recipients who chose to report outcomes to the Office on Smoking and Health and may not include all outcomes in every jurisdiction.

[b] Data sources: National Tobacco Control Program Awards Management Platform (50); Office of Smoking and Health (55–58).

[c] Two recipients chose to report outcomes for this measure (California, Minnesota). Reach represents the combined sum of adults aged ≥18 years in each of the 22 local jurisdictions where recipients reported policies were passed (California: Alhambra, Glendale, Encinitas, Guadalupe, Hayward, Long Beach, Maywood, Mendocino County, Mill Valley, Napa, Palo Alto, Paradise, Pleasanton, San Mateo, Sebastopol, Sunnyvale, Tiburon, West Hollywood; Minnesota: Edina, Lauderdale, Fridley, and Brown County). Data source: US Census Bureau (59).

[d] Eight recipients chose to report outcomes for this measure (Indiana, Minnesota, North Carolina, New Jersey, New Mexico, Ohio, Oklahoma, Utah). Reach represents the combined sum of enrollees in each of the 20 plans that the 8 recipients reported had improved coverage. Data source for recipients reporting changes to state Medicaid Agency coverage (Indiana, Minnesota, North Carolina, New Mexico, Oklahoma, Utah): Centers for Medicare & Medicaid Services (60). Data source for recipients reporting changes to other employers/ private health insurers plans (Ohio, North Carolina, New Jersey): National Tobacco Control Program Awards Management Platform (50).

Table 2. Year 1 Selected Strategies for Statewide Disparities, Emerging Tobacco Products, and Community Disparities Requirements by Number and Percentage of Recipients, National Tobacco Control Program, 2020–2021

Requirement strategy	No. (%) of recipients (N = 51)
Statewide disparities	
Expand availability and promotion of comprehensive, barrier-free insurance coverage for evidence-based cessation treatments among Medicaid enrollees	8 (15.7)
Implement smoke-free policies in low-income multi-unit housing (eg, federal, assisted, section 8), coupled with promotion of evidence-based cessation treatment and resources	5 (9.8)
Increase promotion of evidence-based cessation treatment and increase referrals to such services from social services agencies (eg, WIC, SNAP, employment and training services)	9 (17.6)
Increase tobacco-free policies in behavioral health treatment facilities and campuses	29 (56.9)
Promote health systems changes in behavioral health care facilities to encourage and support screening and treatment of tobacco use and dependence	31 (60.8)
Promote health systems changes to support screening for and treatment of tobacco use and dependence in federally qualified health centers and other federally funded, state-funded, and nonprofit and community health centers that serve underserved populations	5 (9.8)
Promote use of evidence-based cessation treatments, including the quitline, among persons with behavioral health conditions	14 (27.5)
Emerging tobacco products[a]	
Educate and engage partners, such as parents, schools, and community-based organizations, and decision makers on evidence-based strategies to reduce youth use of emerging tobacco products, including e-cigarettes	41 (80.4)
Engage health care providers and health systems to expand tobacco use screening and delivery of tobacco education and treatment of youth and young adults, including for e-cigarettes	16 (31.4)
Engage youth to educate other youth and community partners on the dangers of tobacco use, including e-cigarettes	20 (39.2)
Establish and strengthen tobacco-free policies in schools and on college and university campuses	16 (31.4)
Expand upon and/or complement existing media efforts, including paid, earned, and social media that focus on youth and young adults	13 (25.5)
Implement and strengthen licensing requirements to sell tobacco products, including e-cigarettes	5 (9.8)
Implement policies to raise minimum age of tobacco sales to at least age 21	6 (11.8)
Implement strategies to identify and explore tobacco cessation resources for youth and young adults	8 (15.7)
Implement strategies to increase the price of tobacco products, including e-cigarettes	1 (2.0)
Prohibit the sale of flavored tobacco products, including menthol and combustibles	4 (7.8)
Reduce exposure to tobacco industry marketing, including advertising, sponsorship, tobacco imagery, and promotions (other than price)	1 (2.0)
Restrict location, number, type, or density of tobacco retailers through zoning, licensing requirements, or a stand-alone law	1 (2.0)
Community-based disparity	
Decrease disparities in the use of cessation treatment among populations experiencing tobacco-related disparities	4 (7.8)
Develop and/or engage with multilevel, multisector local coalitions and community partners and leaders to plan and implement evidence-based tobacco prevention and control strategies	46 (90.2)
Establish and strengthen tobacco-free policies in community colleges, trade schools, and other academic settings that serve underserved populations	3 (5.9)
Expand availability and promotion of comprehensive, barrier-free insurance coverage for evidence-based cessation treatment (eg, Medicaid plans)	1 (2.0)
Implement and strengthen licensing requirements to sell tobacco products, including e-cigarettes	1 (2.0)
Implement tailored and/or culturally appropriate evidence-based mass-reach health communications strategies to reach populations experiencing tobacco-related disparities	6 (11.8)

Abbreviations: SNAP, Supplemental Nutrition Assistance Program; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.
[a] Only 50 recipients selected an e-cigarette requirement strategy in year 1.
[b] Updated April 2023.

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Table 2. Year 1 Selected Strategies for Statewide Disparities, Emerging Tobacco Products, and Community Disparities Requirements by Number and Percentage of Recipients, National Tobacco Control Program, 2020–2021

Requirement strategy	No. (%) of recipients (N = 51)
Increase and enhance comprehensive smoke-free policies, including workplaces, bars, and restaurants	4 (7.8)
Increase engagement with health care providers and health systems to expand delivery of evidence-based cessation treatment, including referrals to the state quitline	3 (5.9)
Increase policies for smoke-free housing, including federally assisted, multifamily properties and Section 8, coupled with promotion of evidence-based cessation treatment and resources	3 (5.9)
Increase tobacco-free policies in health care facilities and campuses that serve underserved populations (eg, federally qualified health centers, community health centers)	1 (2.0)
Prohibit the sale of flavored tobacco products, including menthol and combustibles	2 (3.9)
Promote awareness and use of evidence-based cessation treatment, including use of the quitline and digital-based technologies	2 (3.9)
Promote health systems changes (eg, protocol implementation, electronic health records, clinical decision-support tools) to support screening for and treatment of tobacco use and dependence	2 (3.9)
Reduce exposure to tobacco industry marketing, including advertising, sponsorship, tobacco imagery, and promotions (other than price)	1 (2.0)
No. of population groups partnering with recipients as part of the community-based disparity requirement[b]	
African American	12
American Indian or Alaska Native	9
Asian American, Native Hawaiian, or Pacific Islander	2
Geographic region	4
Hispanic/Latino	1
Lesbian, gay, bisexual, transgender, and queer	10
Low socioeconomic status	10
Behavioral health	1
Veterans/military	2

Abbreviations: SNAP, Supplemental Nutrition Assistance Program; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.
[a] Only 50 recipients selected an e-cigarette requirement strategy in year 1.
[b] Updated April 2023.

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ORIGINAL RESEARCH

Use of Menthol-Flavored Tobacco Products Among US Middle and High School Students: National Youth Tobacco Survey, 2022

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PEER REVIEWED

Summary

What is already known on this topic?

Middle and high school students who currently use tobacco products report using a variety of flavors, including menthol.

What is added by this report?

In 2022, 23.8% of students who currently used any tobacco product and 39.5% who currently used flavored tobacco products reported using menthol-flavored tobacco products. Students who exhibited characteristics of addiction to tobacco product use had a higher prevalence of menthol-flavored tobacco product use.

What are the implications for public health practice?

Menthol and other characterizing flavors or additives in tobacco products may contribute to first-time tobacco use and sustained use among young people. Understanding this association can inform public health policy aimed at preventing and reducing tobacco product use in this population.

Abstract

Introduction

Menthol cigarettes have been associated with increased smoking initiation. Although numerous studies have focused on correlates of menthol cigarette smoking among youths, fewer studies have assessed the prevalence and correlates of overall menthol-flavored tobacco product use among middle and high school students.

Methods

We analyzed 2022 National Youth Tobacco Survey data to estimate the prevalence of menthol-flavored tobacco product use among US middle and high school students who used tobacco products within the past 30 days. Characteristics associated with menthol-flavored tobacco product use were also examined.

Results

Use of menthol-flavored tobacco products was reported by 23.8% of students who currently used any tobacco product and by 39.5% of students who currently used any flavored tobacco product. Among students who reported past 30-day use of a flavored tobacco product, characteristics associated with a higher prevalence of menthol-flavored tobacco product use included non-Hispanic White race and ethnicity, frequent tobacco product use, use of multiple tobacco products, wanting to use a tobacco product within the first 30 minutes of awakening, and craving tobacco products within the past 30 days.

Conclusion

Unlike results of prior research focused on cigarette smoking among young people, prevalence of use of any menthol-flavored tobacco product was highest among non-Hispanic White youths. Any use of menthol-flavored tobacco products of any type (alone or in combination with other flavors) among young people may be associated with continued product use and symptoms of dependence.

Introduction

Menthol, an additive in commercial tobacco products, creates a cooling sensation when inhaled (1–3). Menthol has both flavor and sensation properties (1–3). The effects of menthol can make cigarette smoke or e-cigarette aerosol seem less irritating and can enhance the product-user's experience (1–4). Menthol flavoring is not limited to cigarettes and e-cigarettes; most types of commer-

cial tobacco products are available in menthol flavor (3). Menthol cigarettes have been associated with increased smoking initiation, nicotine dependence, and lower smoking cessation success (1,3,5). Results from modeling studies suggest that prohibiting menthol cigarettes in the US could result in a 15% reduction in smoking prevalence and prevent an estimated 324,000 to 654,000 deaths over the next 40 years (6–8).

Disparities among population groups that use menthol cigarettes are well-documented. Marketing directed at certain population groups has been associated with a higher prevalence of menthol cigarette smoking in these groups (1,3,9,10). Population groups most likely to smoke menthol cigarettes are non-Hispanic Black people, women, sexual minority groups, people identifying as transgender, people residing in low-income communities, people with mental health conditions, youths, and young adults (3).

Smoking initiation usually begins in adolescence (4) when use of nicotine can have negative consequences on brain development and may increase the risk for nicotine dependence (11). Middle and high school students often use a variety of commercial tobacco products available in flavors, including menthol (12). E-cigarettes are the most commonly used tobacco product among middle and high school students — with 9.4% reporting e-cigarette use in 2022 — followed by cigars (1.9%) and cigarettes (1.6%) (12,13). Almost 4 of 5 (79.1%) middle and high school students who reported current use of 1 or more tobacco products used a flavored tobacco product (12). Furthermore, among middle and high school students who currently used any flavored tobacco product, 38.8% reported smoking menthol cigarettes (12). Non-Hispanic Black, Hispanic, and female middle and high school students have reported a higher prevalence of smoking menthol cigarettes (14).

Although numerous studies have focused on correlates of menthol cigarette smoking among youths, fewer studies have assessed the prevalence of using both cigarette and noncigarette menthol-flavored tobacco products in this population (14,15). Such information is important because, although the prevalence of cigarette smoking among youths has declined, use of e-cigarettes has increased, and new tobacco product types (eg, heated tobacco products) continue to become available (13,14). To examine whether previously observed characteristics associated with menthol cigarette smoking (eg, higher prevalence among Black, Hispanic, and female adolescent populations) are similar for use of any menthol-flavored tobacco product among adolescents, our study will 1) provide updated estimates of menthol-flavored tobacco product use among middle and high school students and 2) assess correlates of use of any menthol-flavored tobacco products in this population. Assessing correlates of menthol-flavored tobacco product use among youths can further identify populations that may benefit from public health strategies recognizing the effects of flavored tobacco products in reducing tobacco product use by young people.

Methods

Data sample

We analyzed data from the 2022 National Youth Tobacco Survey (NYTS), a cross-sectional, school-based, voluntary, self-administered survey of US middle and high school students in grades 6 to 12 (12,13). A stratified 3-stage cluster sampling procedure generated a nationally representative sample of US students attending public and private schools (16). We collected data from January through May 2022 from 28,291 middle and high school students (overall response rate: 45.2%) by using a web-based survey with 99.3% of respondents completing the survey on a school campus. The analytic sample consisted of middle and high school students who reported use of 1 or more tobacco products within the past 30 days. The 2022 NYTS was approved by the institutional review boards of the data collectors, the CDC institutional review board (45 C.F.R. part 46; 21 C.F.R. part 56), and the Office of Management and Budget.

Measures

We assessed current use of menthol-flavored tobacco products among students who indicated past 30-day use of any tobacco product (use of ≥1 tobacco products: e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes or hookahs, pipe tobacco, bidis, heated tobacco products, or nicotine pouches). We also assessed use of menthol-flavored tobacco products among students who indicated past 30-day use of any flavored tobacco products. Menthol-flavored tobacco product use was defined as using any menthol-flavored tobacco product within the past 30 days, regardless of whether other flavors of tobacco products were used. Responses of "yes" to questions about flavored tobacco product use and "menthol" to the type(s) of flavor used were categorized as menthol-flavored tobacco use. For cigarettes, respondents who, within the past 30 days 1) indicated using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport), 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only one answer)" (asked among respondents who used multiple brands in the past 30 days), or 3) who answered yes to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered to have used

menthol-flavored tobacco products (12). Students indicating no use of menthol-flavored tobacco products were categorized as using nonmenthol tobacco products.

Among students who used a flavored tobacco product in the past 30 days, tobacco product use was categorized as follows: 1) e-cigarettes only; 2) combustible tobacco products (cigarettes, cigars, bidis, hookahs, or pipes) only; 3) other tobacco products (smokeless tobacco products [chewing tobacco, snuff, dip, snus], dissolvables, heated tobacco products, or nicotine pouches) only; and 4) any combination of the preceding 3 categories.

Covariates examined included sex (male/female), race and ethnicity (Hispanic, non-Hispanic Black, non-Hispanic White, non-Hispanic Other), sexual orientation (heterosexual, lesbian, gay, bisexual, not sure), transgender identity (yes, no, not sure, don't know what question is asking), family affluence (scores of low [0–5], medium [6,7], high [8,9] on a 4-item scale), tobacco product advertising exposure (yes [most of the time/always/sometimes], no [rarely/none]), frequent use (≥20 of the past 30 days) of a tobacco product, use of multiple tobacco products (≥2 products), time to wanting to use a tobacco product after awakening (<30 minutes, ≥30 minutes), craving tobacco products within the past 30 days (yes, no), past-year quit attempts, and quit intentions. Categorization of family affluence, advertising exposure, and cessation behaviors were consistent with previous analyses (12).

Respondents who indicated seeing advertisements or promotions for e-cigarettes, cigarettes, and other tobacco products "sometimes," "most of the time," or "always" on the internet, in newspapers or magazines, at a store (convenience store, supermarket, gas station, kiosk/storefront, or shopping center), or on television or streaming services were categorized as having been exposed to tobacco product advertising. Those who responded "never" or "rarely" were categorized as unexposed. Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience store, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded.

Respondents who indicated 1 or more for the number of times they had stopped using all tobacco products for 1 day or longer because they were trying to quit were categorized as having a past-year quit attempt. Those who indicated "I did not try to quit all tobacco products during the past 12 months" were categorized as not having made a past-year quit attempt. Respondents who indicated they were seriously thinking about quitting the use of all tobacco products were categorized as having quit intentions; those that responded "No, I am not thinking about quitting the use of all tobacco products" were categorized as not having quit intentions.

Analysis

We computed the weighted prevalence and 95% CIs separately for menthol-flavored and nonmenthol-flavored tobacco product use among students who used 1) 1 or more tobacco products within the past 30 days (n = 3,334) and 2) 1 or more flavored tobacco products within the past 30 days (n = 2,020), overall and by sociodemographic characteristics, tobacco use characteristics, cessation behaviors, and advertising exposure. We also computed the weighted percentage of menthol use by type of tobacco product. Additionally, we computed the percentage of each characteristic by menthol and nonmenthol tobacco product use among students who used flavored tobacco products (n = 2,020), which is the primary focus of our study. Chi-square tests of independence were used to test for differences in the proportions of each characteristic among menthol- and nonmenthol-flavored tobacco product use, with a P value of <.05 indicating significance. Nested logistic regression models (unadjusted models and models adjusted for sex, racial or ethnic group, and grade level) were used to estimate associations between each characteristic of interest and current use of menthol-flavored tobacco products among students who used 1 or more flavored tobacco products within the past 30 days. Model-adjusted prevalence ratios (APRs) with predicted marginals and Wald χ^2 statistics were computed. Models were adjusted to control for confounding in the associations between each covariate of interest and menthol-flavored tobacco product use. All analyses were performed using SAS-callable SUDAAN software, version 11.0.3 (RTI International).

Results

Prevalence of menthol-flavored and nonmenthol-flavored tobacco product use

Nonmenthol- and menthol-flavored tobacco product use among students who used any tobacco products. In 2022, 3.1 million middle and high school students (11.3%) reported currently using any tobacco product. Most of these students reported using nonmenthol tobacco products (76.2%), ranging from 56.0% (those indicating a time of wanting to use a tobacco product after awakening of <30 min) to 92.2% (non-Hispanic Black students) (Table 1). Among middle and high school students who reported current use of any tobacco product, 23.8% (an estimated 730,000 students) reported use of a menthol-flavored tobacco product; prevalence of menthol-flavored tobacco product use was 25.6% among males and 22.2% among females (Table 1). Prevalence of menthol-flavored tobacco product use by race or ethnicity ranged from 7.8% among non-Hispanic Black students to 30.1% among non-Hispanic White students. Prevalence was 19.6% among middle school students and 24.3% among high school students. Preval-

ence of menthol-flavored tobacco product use across sexual orientation categories ranged from 24.4% to 26.5%. Prevalence of menthol-flavored tobacco product use by transgender identity ranged from 20.5% among students who didn't know what the question was asking to 37.7% among students who identified as transgender. Prevalence of menthol-flavored tobacco use among students with characteristics indicative of tobacco addiction (frequent use of tobacco, craving tobacco products, use of multiple tobacco products, and time after awakening to wanting to use a tobacco product) ranged from 38.0% to 44.0% compared with 13.8% to 23.5% among students who did not report characteristics indicative of tobacco addiction. Prevalence of menthol-flavored tobacco use was 26.5% among students with exposure to tobacco product advertising, 24.8% among students who intended to quit using all tobacco products, and 26.2% among students who reported a past-year quit attempt.

Nonmenthol- and menthol-flavored tobacco product use among students who used flavored tobacco products. Most students who currently used any flavored tobacco product reported using nonmenthol tobacco products (60.5%), ranging from 41.2% (those indicating "not sure" if they were transgender) to 84.5% (non-Hispanic Black students) (Table 1). Among students who reported current use of a flavored tobacco product, 39.5% reported use of menthol-flavored tobacco products (Table 1) (Figure). Among middle and high school students who currently used any flavored tobacco products, prevalence of menthol-flavored tobacco product use by sex was 43.7% among males and 35.9% among females (Table 1). Prevalence of menthol-flavored tobacco product use ranged from 15.5% among non-Hispanic Black students to 47.1% among non-Hispanic White students. Among middle school students, the prevalence was 34.7% compared with 39.9% among high school students and ranged from 39.4% to 44.3% across sexual orientation categories. Prevalence of menthol-flavored tobacco product use by transgender identity ranged from 37.6% among those who identified as not transgender to 58.8% among those who were not sure. Prevalence of menthol-flavored tobacco use among students with characteristics indicative of addiction (craving tobacco products, use of multiple tobacco products, frequent use of tobacco, and time after awakening to wanting to use a tobacco product) ranged from 50.7% to 57.9% compared with 26.4% to 36.5% among students who did not report characteristics indicative of tobacco addiction. Prevalence of menthol-flavored tobacco use was 41.2% among students with exposure to tobacco product advertising, 38.3% among students who intended to quit using all tobacco products, and 40.6% among students who reported a past-year quit attempt.

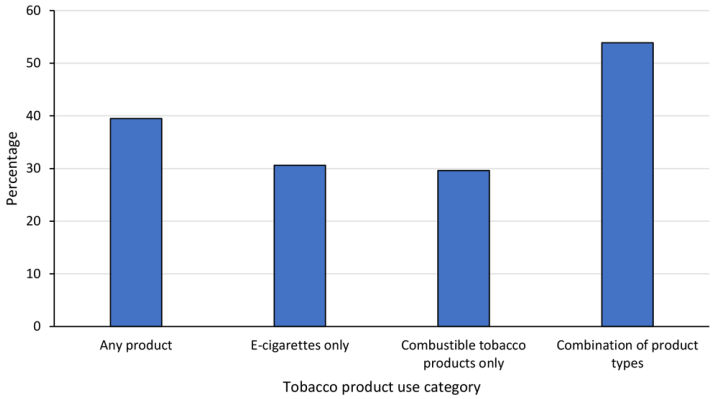

Figure. Use of menthol-flavored tobacco products, by current type of tobacco product used, among middle and high school students who currently used flavored tobacco products (N = 2,020), National Youth Tobacco Survey, United States, 2022.

Menthol-flavored tobacco use by type of flavored tobacco product. Approximately 53.9% of students who used a combination of types of flavored tobacco products, including e-cigarettes, combustible tobacco products, and other types of tobacco product, indicated use of at least 1 menthol-flavored tobacco product (Figure). Among students who exclusively used e-cigarettes, 30.6% reported using menthol-flavored products, and 29.6% of students who exclusively used combustible tobacco products reported using menthol-flavored products. The estimate for prevalence of use of menthol-flavored tobacco products among students who exclusively used other types of tobacco products was not statistically reliable and is not presented.

Characteristics of middle and high school students who use menthol- and nonmenthol-flavored tobacco products among students who use flavored tobacco products. Among students who used any flavored tobacco products, those who used menthol-flavored products differed from those who used nonmenthol-flavored products (Table 2). Compared with students who used nonmenthol-flavored tobacco products, a higher proportion of students who used menthol-flavored tobacco products were male (50.4% among menthol vs 42.2% among nonmenthol, $P = .04$) or non-Hispanic White, Hispanic, or non-Hispanic Other (96.2% menthol vs 86.5% nonmenthol, $P < .001$, not shown in table). In contrast, compared with students who used nonmenthol-flavored products, a lower proportion of students who used menthol-flavored products were non-Hispanic Black (3.8% menthol vs 13.5% nonmenthol, $P < .001$). A higher proportion of students who used menthol-flavored tobacco products (compared with students who used nonmenthol-flavored products) used tobacco products frequently (66.0% vs 38.1%, $P < .001$); used multiple tobacco products (54.0% vs 31.3%, $P < .001$); wanted to use a to-

bacco product within less than 30 minutes of awakening (48.1% vs 27.9%, $P < .001$); craved tobacco products within the past 30 days (44.8% vs 28.3%, $P < .001$); and did not intend to quit using tobacco products (39.9% vs 33.1%, $P = .03$).

Characteristics associated with menthol-flavored tobacco product use among students who use flavored tobacco products. We examined correlates of menthol-flavored tobacco product use among middle and high school students who reported current use of any flavored product. Except for sex and intending to quit using all tobacco products, significant associations between covariates and use of menthol-flavored tobacco products remained after adjustment for grade level, sex, and race and ethnicity, although some changes existed in the strengths of association. Compared with non-Hispanic White students, the prevalence of menthol-flavored tobacco product use was lower among Hispanic students (APR, 0.59; 95% CI, 0.45–0.77) and non-Hispanic Black students (APR, 0.34; 95% CI, 0.22–0.53) (Table 3). Compared with students who were not transgender, current prevalence of menthol-flavored tobacco product use was also higher among students who were transgender (APR, 1.45; 95% CI, 1.03–2.03) and those who were not sure if they were transgender (APR, 1.55; 95% CI, 1.14–2.12). Current prevalence of menthol-flavored tobacco product use was also higher among students who indicated frequent tobacco product use (APR: 1.88; 95% CI, 1.59–2.22); use of multiple tobacco products (APR, 1.68; 95% CI, 1.36–2.05); wanting to use a tobacco product within 30 minutes of awakening (APR, 1.55; 95% CI, 1.27–1.88); and craving tobacco products within the past 30 days (APR, 1.34; 95% CI, 1.08–1.66), compared with respective reference categories.

Discussion

We found that more than 1 in 5 students who reported current use of at least 1 tobacco product reported use of a menthol-flavored tobacco product. Among students who reported use of at least 1 flavored tobacco product, nearly 2 in 5 reported current use of a menthol-flavored tobacco product. Additionally, 3 in 10 students who reported currently using only flavored e-cigarettes reported using a menthol-flavored product; more than 3 in 10 students who currently only used flavored combustible tobacco products reported using a menthol-flavored product; and more than half of all students who currently used a combination of flavored e-cigarettes, combustible tobacco products, and noncombustible tobacco products reported use of a menthol-flavored product. Differences in sociodemographic characteristics, tobacco product use behavior, and cessation indicators were found among middle and high school students who used menthol-flavored tobacco products.

The prevalence of menthol-flavored tobacco product use was highest among non-Hispanic White students and lowest among non-Hispanic Black students — a result that is contrary to studies focused on menthol cigarette smoking among youths and adults (14,15). At the time of our writing, we found no studies focused on prevalence of any menthol-flavored tobacco product use among youths by race or ethnicity; most studies focused on menthol cigarette smoking or any flavored tobacco product use or did not distinguish between menthol and mint flavors (14,15,17,18). Although our results contrast with some previous studies of cigarette smoking among young people, these findings align with recent research on menthol cigarette smoking that reported a similar pattern (14,19). Miech et al reported that Black adolescents had a lower prevalence of menthol cigarette smoking than adolescents of other races and ethnicities, although results from modeling showed that Black adolescents who smoked cigarettes were more likely to smoke menthol cigarettes compared with White adolescents (19). The results from our study and the Miech study could be partially attributable to a lower prevalence of cigarette smoking in general among young people (12,13) and later-age onset of cigarette smoking among non-Hispanic Black people (20,21). The higher prevalence of e-cigarette use compared with other tobacco products among youths may also play a role. E-cigarettes account for a large proportion of prevalence of any tobacco product use in this population, and fruit- and candy-flavored e-cigarettes are popular in this population (12,13). Populations of young people with a high prevalence of e-cigarette use differ from adult populations with a high prevalence of cigarette smoking relative to other tobacco products. We saw differences by race and ethnicity and among any menthol-flavored tobacco product use (15).

Among students who reported past 30-day use of flavored tobacco products, we saw no association between sexual orientation and menthol-flavored tobacco product use. This is in contrast with previous literature among adults who smoke menthol cigarettes (3). This could be due partly to the high proportion of youths using e-cigarettes and nonmenthol-flavored noncigarette tobacco products (12).

Similar to results from previous studies focused on menthol cigarette smoking (17,22), our study's results show that, among students who used menthol-flavored tobacco products within the past 30 days, use was associated with behaviors that indicated tobacco dependence. These behaviors include frequent tobacco product use, use of multiple tobacco products, wanting to use tobacco products within 30 minutes of awakening, and craving a tobacco product within the past 30 days. These results suggest use of any menthol-flavored tobacco product (alone or in combination with other flavors) among students who use any flavored tobacco

products may be associated with symptoms of dependence, which in turn, can contribute to continued use.

We also found that in 2022, 30.6% of students who currently used only flavored e-cigarettes used menthol e-cigarettes. To our knowledge, our study is one of a few studies focused on the prevalence of menthol-flavored tobacco product use among middle and high school students who currently use any flavored tobacco product, although at least 1 study assessed this among all youths (not just those who currently use tobacco products) (18). Most studies have focused exclusively on the prevalence of menthol cigarette smoking (14,17,19). Thus, our study expands the knowledge base on use by young people of menthol flavor across multiple tobacco product types.

Findings of this study are subject to at least 4 limitations. First, the sample size was not large enough to present characteristics of menthol-flavored product use by exclusive use of individual tobacco product types (eg, cigarette smoking only, cigar use only). Second, NYTS data are cross-sectional, and identified associations reflect tobacco use patterns at the time of survey completion. Third, NYTS data are subject to response bias. However, the validity of self-reported tobacco product use in population-based studies has been shown to be high (23). Finally, our results are generalizable only to middle and high school students in public and private schools in the US.

As of July 2023, menthol is the only nontobacco flavoring allowed in cigarettes sold in the US since the 2009 Family Smoking Prevention and Tobacco Control Act, which prohibited the sale of all characterizing flavors of cigarettes except menthol and tobacco (24). Additionally, in early 2020, the US Food and Drug Administration (FDA) prohibited the use of characterizing flavors in cartridge-based e-cigarettes, excluding menthol (25). In 2022, FDA proposed standards to prohibit menthol as a characterizing flavor in cigarettes and all flavored cigars (6).

Although prohibiting sales of flavors can have a significant effect on reducing tobacco product use among young people, the continued availability of menthol could mitigate the effects of policies prohibiting flavors (26). For example, immediately following the FDA's announcement of prioritized enforcement of sales of prefilled e-cigarette cartridges in flavors other than tobacco and menthol, increases occurred in the market share of menthol-flavored, prefilled, cartridge-based e-cigarettes and nonmenthol-flavored (including fruit, candy, and alcohol flavored) disposable e-cigarettes (27,28). How this affected overall e-cigarette use among young people is currently unknown. However, a recent study in Minnesota reported changes in tobacco product use in this population after a flavor ban that included menthol was implemented in the Twin Cities (Minneapolis and St. Paul) (26). The study reported that any tobacco product use and e-cigarette use among youths increased to a greater extent in the rest of the state of Minnesota when compared with the increase in the Twin Cities (26). Additionally, use of noncigarette tobacco products with flavors other than mint or menthol by youths increased by 5% in the Twin Cities compared with 10.2% in the rest of the state (26). This shows that the inclusion of menthol in prohibitions of tobacco product flavor can further reduce overall tobacco product use among youths.

As new product types continue to be added to the tobacco landscape, examining the role of menthol and other characterizing flavors or additives in all tobacco products will be important to determine factors that may contribute to initiation and sustained use of tobacco products. Future studies are needed of menthol-flavored tobacco product use with sufficient sample sizes to assess use of specific tobacco products by demographic groups. Continued surveillance of the use of all characterizing flavored tobacco products (including menthol) and the effectiveness of restrictions on flavored tobacco product sales are needed to inform public health policy and tobacco prevention and control efforts.

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References

1. Klausner K. Menthol cigarettes and smoking initiation: a tobacco industry perspective. *Tob Control*. 2011;20(Suppl 2): ii12–ii19. doi:10.1136/tc.2010.041954
2. Krishnan-Sarin S, Green BG, Kong G, Cavallo DA, Jatlow P, Gueorguieva R, et al. Studying the interactive effects of menthol and nicotine among youth: An examination using e-cigarettes. *Drug Alcohol Depend*. 2017;180:193–199. doi:10.1016/j.drugalcdep.2017.07.044
3. Centers for Disease Control and Prevention. Menthol and cigarettes. Updated June 27, 2022. Accessed March 23, 2023. https://www.cdc.gov/tobacco/basic_information/menthol/index.html
4. Centers for Disease Control and Prevention. Preventing tobacco use among youth and young adults: a report of the Surgeon General. 2012. Accessed March 24, 2023. https://www.ncbi.nlm.nih.gov/books/NBK99237/
5. Villanti AC, Johnson AL, Glasser AM, Rose SW, Ambrose BK, Conway KP, et al. Association of flavored tobacco use with tobacco initiation and subsequent use among US youth and adults, 2013–2015. *JAMA Netw Open*. 2019;2(10): e1913804. doi:10.1001/jamanetworkopen.2019.13804
6. US Food and Drug Administration. FDA proposes rules prohibiting menthol cigarettes and flavored cigars to prevent youth initiation, significantly reduce tobacco-related disease and death. FDA News Release. April 28, 2022. Accessed March 23, 2023. https://www.fda.gov/news-events/press-announcements/fda-proposes-rules-prohibiting-menthol-cigarettes-and-flavored-cigars-prevent-youth-initiation
7. Levy DT, Meza R, Yuan Z, Li Y, Cadham C, Sanchez-Romero LM, et al. Public health impact of a US ban on menthol in cigarettes and cigars: a simulation study. *Tob Control*. 2023; 32(e1):e37–e44. doi:10.1136/tobaccocontrol-2021-056604
8. Levy DT, Pearson JL, Villanti AC, Blackman K, Vallone DM, Niaura RS, et al. Modeling the future effects of a menthol ban on smoking prevalence and smoking-attributable deaths in the United States. *Am J Public Health*. 2011;101(7):1236–1240. doi:10.2105/AJPH.2011.300179
9. Centers for Disease Control and Prevention. The health consequences of smoking: a report of the Surgeon General; 2004. Accessed March 24, 2023. https://www.ncbi.nlm.nih.gov/books/NBK44695
10. Watson CV, Puvanesarajah S, Hawkins NA, Trivers KF. Racial disparities in flavored tobacco product use, curiosity, susceptibility, and harm perception, National Youth Tobacco Survey 2019-2020. *Health Equity*. 2023;7(1):137–147. doi:10.1089/heq.2022.0087
11. US Department of Health and Human Services. E-cigarette use among youth and young adults: a report of the Surgeon General: executive summary. 2016. Accessed March 14, 2024. https://e-cigarettes.surgeongeneral.gov/documents/2016_SGR_Exec_Summ_508.pdf
12. Gentzke AS, Wang TW, Cornelius M, Park-Lee E, Ren C, Sawdey MD, et al. Tobacco product use and associated factors among middle and high school students — National Youth Tobacco Survey, United States, 2021. *MMWR Surveill Summ*. 2022;71(5):1–29. doi:10.15585/mmwr.ss7105a1
13. Park-Lee E, Ren C, Cooper M, Cornelius M, Jamal A, Cullen KA. Tobacco product use among middle and high school students — United States, 2022. *MMWR Morb Mortal Wkly Rep*. 2022;71(45):1429–1435. doi:10.15585/mmwr.mm7145a1
14. Sawdey MD, Chang JT, Cullen KA, Rass O, Jackson KJ, Ali FRM, et al. Trends and associations of menthol cigarette smoking among US middle and high school students — National Youth Tobacco Survey, 2011–2018. *Nicotine Tob Res*. 2020;22(10):1726–1735. doi:10.1093/ntr/ntaa054
15. Watkins SL, Pieper F, Chaffee BW, Yerger VB, Ling PM, Max W. Flavored tobacco product use among young adults by race and ethnicity: evidence from the Population Assessment of Tobacco and Health Study. *J Adolesc Health*. 2022;71(2): 226–232. doi:10.1016/j.jadohealth.2022.02.013
16. Centers for Disease Control and Prevention. Methodology report of the 2022 National Youth Tobacco Survey. February 2023. Accessed March 16, 2024. https://www.cdc.gov/tobacco/data_statistics/surveys/nyts/pdfs/2022-NYTS-Public-Use-Methods-Report-508.pdf
17. Leas EC, Benmarhnia T, Strong DR, Pierce JP. Use of menthol cigarettes, smoking frequency, and nicotine dependence among US youth. *JAMA Network Open*. 2022;5(6):e2217144-e. doi:10.1001/jamanetworkopen.2022.17144
18. Rose SW, Johnson AL, Glasser AM, Villanti AC, Ambrose BK, Conway K, et al. Flavour types used by youth and adult tobacco users in wave 2 of the Population Assessment of Tobacco and Health (PATH) Study 2014–2015. *Tob Control*. 2020;29(4):432–446. doi:10.1136/tobaccocontrol-2018-054852
19. Miech RA, Leventhal AM, Johnson LD. Recent, national trends in US adolescent use of menthol and non-menthol cigarettes. *Tob Control*. 2023;32(e1):e10–e15. doi:10.1136/tobaccocontrol-2021-056970
20. Roberts ME, Colby SM, Lu B, Ferketich AK. Understanding tobacco use onset among African Americans. *Nicotine Tob Res*. 2016;18(Suppl 1):S49–S56. doi:10.1093/ntr/ntv250

21. Cheng YJ, Cornelius ME, Wang TW, Homa DM. Trends and demographic differences in the incidence and mean age of starting to smoke cigarettes regularly, National Health Interview Survey, 1997. *Public Health Rep*. 2023;138(6): 908–915. doi:10.1177/00333549221138295
22. Azagba S, King J, Shan L, Manzione L. Cigarette smoking behavior among menthol and nonmenthol adolescent smokers. *J Adolesc Health*. 2020;66(5):545–550. doi:10.1016/j.jadohealth.2019.11.307
23. Boykan R, Messina CR, Chateau G, Eliscu A, Tolentino J, Goniewicz ML. Self-reported use of tobacco, e-cigarettes, and marijuana versus urinary biomarkers. *Pediatrics*. 2019;143(5): e20183531. doi:10.1542/peds.2018-3531
24. US Food and Drug Administration. Family Smoking Prevention and Tobacco Control Act — an overview. 2020. Accessed July 17, 2023. https://www.fda.gov/tobacco-products/rules-regulations-and-guidance/family-smoking-prevention-and-tobacco-control-act-overview
25. US Food and Drug Administration. FDA News Release. FDA finalizes enforcement policy on unauthorized flavored cartridge-based e-cigarettes that appeal to children, including fruit and mint. January 2, 2020. Accessed March 24, 2023. https://www.fda.gov/news-events/press-announcements/fda-finalizes-enforcement-policy-unauthorized-flavored-cartridge-based-e-cigarettes-appeal-children
26. Olson LT, Coats EM, Rogers T, Brown EM, Nonnemaker J, Ross AM, et al. Youth tobacco use before and after local sales restrictions on flavored and menthol tobacco products in Minnesota. *J Adolesc Health*. 2022;70(6):978–984. doi:10.1016/j.jadohealth.2022.01.129
27. Ali FRM, Seidenberg AB, Crane E, Seaman E, Tynan MA, Marynak K. E-cigarette unit sales by product and flavor type, and top-selling brands, United States, 2020–2022. *MMWR Morb Mortal Wkly Rep*. 2023;72(25):672–677. doi:10.15585/mmwr.mm7225a1
28. Federal Trade Commission. Federal Trade Commission e-cigarette report for 2019–2020. 2022. Accessed July 17, 2023. https://www.ftc.gov/system/files/ftc_gov/pdf/E-Cigarette%20Report%202019-20%20final.pdf

Tables

Table 1. Prevalence of Current Menthol- and Nonmenthol-Flavored Tobacco Product Use[a] Among Middle and High School Students Who Use Tobacco Products, by Sociodemographic Characteristics and Cessation Behaviors, National Youth Tobacco Survey, United States, 2022

Characteristic	Estimated no. of students who used menthol-flavored product[b]	All students who currently use any tobacco product (n = 3,334)		All students who currently use any flavored tobacco product (n = 2,020)	
		Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)	Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)
All students	730,000	23.8 (19.7–28.5)	76.2 (71.5–80.3)	39.5 (34.0–45.3)	60.5 (54.7–66.0)
Demographic characteristic					
Sex					
Male	360,000	25.6 (20.7–31.2)	74.4 (68.8–79.3)	43.7 (37.2–50.5)	56.3 (49.5–62.8)
Female	360,000	22.2 (17.6–27.5)	77.8 (72.5–82.4)	35.9 (29.5–42.8)	64.1 (57.2–70.5)
Race or ethnicity					
Hispanic	130,000	16.6 (12.3–22.0)	83.4 (78.0–87.7)	28.5 (21.9–36.3)	71.5 (63.7–78.1)
Non-Hispanic Black	20,000	7.8 (4.7–12.6)	92.2 (87.4–95.3)	15.5 (9.5–24.2)	84.5 (75.8–90.5)
Non-Hispanic White	480,000	30.1 (25.4–35.3)	69.9 (64.7–74.6)	47.1 (40.7–53.6)	52.9 (46.4–59.3)
Non-Hispanic Other	70,000	26.0 (18.7–34.8)	74.0 (65.2–81.3)	43.8 (33.1–55.1)	56.2 (44.9–66.9)

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "yes" to using a flavored product and "menthol" to type of flavor were categorized as having used menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 persons. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n=2,619 among students who currently use tobacco products; n = 1,617 among students who currently used flavored tobacco products) were summed (range, 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[d] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience store, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 476 respondents excluded among students reporting current tobacco product use and 262 respondents excluded among students reporting current flavored tobacco product use.

[e] People who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, they were categorized as not having frequent tobacco product use.

[f] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[g] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents missing data on this outcome (n = 619 among students reporting current tobacco product use; n = 286 among students reporting current flavored tobacco product use) were excluded from the analysis.

[h] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents missing data on this outcome (n = 578 among students reporting current tobacco product use; n = 265 among students reporting current flavored tobacco product use) were excluded from the analysis.

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Table 1. Prevalence of Current Menthol- and Nonmenthol-Flavored Tobacco Product Use[a] Among Middle and High School Students Who Use Tobacco Products, by Sociodemographic Characteristics and Cessation Behaviors, National Youth Tobacco Survey, United States, 2022

Characteristic	Estimated no. of students who used menthol-flavored product[b]	All students who currently use any tobacco product (n = 3,334)		All students who currently use any flavored tobacco product (n = 2,020)	
		Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)	Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)
Grade level					
Middle school (grades 6–8)	100,000	19.6 (14.6–25.9)	80.4 (74.1–85.4)	34.7 (27.3–42.9)	65.3 (57.1–72.7)
High school (grades 9–12)	610,000	24.3 (19.8–29.4)	75.7 (70.6–80.2)	39.9 (33.8–46.2)	60.1 (53.8–66.2)
Sexual orientation					
Heterosexual	420,000	24.4 (19.7–29.8)	75.6 (70.2–80.3)	39.4 (32.9–46.4)	60.6 (53.6–67.1)
Gay, lesbian, or bisexual	160,000	26.2 (20.4–33.0)	73.8 (67.0–79.6)	39.6 (31.6–48.3)	60.4 (51.7–68.4)
Not sure	40,000	26.5 (19.3–35.3)	73.5 (64.7–80.7)	44.3 (30.6–59.0)	55.7 (41.0–69.4)
Transgender identity					
No, not transgender	520,000	23.6 (19.5–28.4)	76.4 (71.6–80.5)	37.6 (32.0–43.5)	62.4 (56.5–68.0)
Yes, transgender	50,000	37.7 (26.3–50.5)	62.3 (49.5–73.7)	56.3 (38.5–72.6)	43.7 (27.5–61.5)

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "yes" to using a flavored product and "menthol" to type of flavor were categorized as having used menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having using menthol-flavored tobacco products.

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[e] People who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, they were categorized as not having frequent tobacco product use.

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		Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)	Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)
Not sure	40,000	36.6 (24.1–51.3)	63.4 (48.7–75.9)	58.8 (39.1–76.1)	41.2 (23.9–60.9)
I don't know what this question is asking	10,000	20.5 (11.5–33.9)	79.5 (66.1–88.5)	38.3 (22.4–57.2)	61.7 (42.8–77.6)
Family affluence scale[c]					
Low	150,000	22.4 (16.8–29.4)	77.6 (70.6–83.2)	39.6 (30.5–49.4)	60.4 (50.6–69.5)
Medium	190,000	22.0 (17.4–27.3)	78.0 (72.7–82.6)	36.7 (29.0–45.1)	63.3 (54.9–71.0)
High	250,000	28.3 (22.1–35.4)	71.7 (64.6–77.9)	41.3 (33.3–49.8)	58.7 (50.2–66.7)
Tobacco product advertising exposure[d]					
Yes (most of the time/always/sometimes)	590,000	26.5 (21.4–32.2)	73.5 (67.8–78.6)	41.2 (34.7–48.1)	58.8 (51.9–65.3)

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "yes" to using a flavored product and "menthol" to type of flavor were categorized as having used menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 persons. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n=2,619 among students who currently use tobacco products; n = 1,617 among students who currently used flavored tobacco products) were summed (range, 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[d] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience store, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 476 respondents excluded among students reporting current tobacco product use and 262 respondents excluded among students reporting current flavored tobacco product use.

[e] People who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, they were categorized as not having frequent tobacco product use.

[f] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[g] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents missing data on this outcome (n = 619 among students reporting current tobacco product use; n = 286 among students reporting current flavored tobacco product use) were excluded from the analysis.

[h] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents missing data on this outcome (n = 578 among students reporting current tobacco product use; n = 265 among students reporting current flavored tobacco product use) were excluded from the analysis.

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Table 1. Prevalence of Current Menthol- and Nonmenthol-Flavored Tobacco Product Use[a] Among Middle and High School Students Who Use Tobacco Products, by Sociodemographic Characteristics and Cessation Behaviors, National Youth Tobacco Survey, United States, 2022

Characteristic	Estimated no. of students who used menthol-flavored product[b]	All students who currently use any tobacco product (n = 3,334)		All students who currently use any flavored tobacco product (n = 2,020)	
		Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)	Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)
No (rarely/never)	70,000	15.8 (10.5–23.1)	84.2 (76.9–89.5)	31.5 (21.4–43.7)	68.5 (56.3–78.6)
Frequent tobacco product use[e]					
Yes	480,000	38.0 (31.7–44.7)	62.0 (55.3–68.3)	53.1 (45.9–60.1)	46.9 (39.9–54.1)
No	240,000	13.8 (11.1–17.1)	86.2 (82.9–88.9)	26.4 (21.8–31.6)	73.6 (68.4–78.2)
Use multiple tobacco products					
Yes	390,000	41.1 (35.4–47.2)	58.9 (52.8–64.6)	53.0 (46.7–59.2)	47.0 (40.8–53.3)
No	330,000	15.9 (12.1–20.7)	84.1 (79.3–87.9)	30.4 (23.8–37.9)	69.6 (62.1–76.2)
Time to wanting to use a tobacco product <30 min after awakening					
Yes	250,000	44.0 (34.5–53.8)	56.0 (46.2–65.5)	57.9 (46.9–68.2)	42.1 (31.8–53.1)
No	270,000	23.5 (19.2–28.4)	76.5 (71.6–80.8)	36.5 (30.4–43.0)	63.5 (57.0–69.6)

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "yes" to using a flavored product and "menthol" to type of flavor were categorized as having used menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 persons. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n=2,619 among students who currently use tobacco products; n = 1,617 among students who currently used flavored tobacco products) were summed (range, 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[d] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience store, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 476 respondents excluded among students reporting current tobacco product use and 262 respondents excluded among students reporting current flavored tobacco product use.

[e] People who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, they were categorized as not having frequent tobacco product use.

[f] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[g] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents missing data on this outcome (n = 619 among students reporting current tobacco product use; n = 286 among students reporting current flavored tobacco product use) were excluded from the analysis.

[h] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents missing data on this outcome (n = 578 among students reporting current tobacco product use; n = 265 among students reporting current flavored tobacco product use) were excluded from the analysis.

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Table 1. Prevalence of Current Menthol- and Nonmenthol-Flavored Tobacco Product Use[a] Among Middle and High School Students Who Use Tobacco Products, by Sociodemographic Characteristics and Cessation Behaviors, National Youth Tobacco Survey, United States, 2022

Characteristic	Estimated no. of students who used menthol-flavored product[b]	All students who currently use any tobacco product (n = 3,334)		All students who currently use any flavored tobacco product (n = 2,020)	
		Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)	Prevalence, use of any menthol-flavored products, % (95% CI)	Prevalence, use of only nonmenthol-flavored products, % (95% CI)
Craving tobacco products within the past 30 days[f]					
Yes	310,000	38.9 (31.2–47.2)	61.1 (52.8–68.8)	50.7 (42.0–59.5)	49.3 (40.5–58.0)
No	380,000	18.7 (15.1–22.9)	81.3 (77.1–84.9)	33.4 (27.9–39.3)	66.6 (60.7–72.1)
Past-year quit attempt[g]					
Yes	400,000	26.2 (20.9–32.3)	73.8 (67.7–79.1)	40.6 (34.0–47.6)	59.4 (52.4–66.0)
No	260,000	25.9 (20.5–32.0)	74.1 (68.0–79.5)	41.6 (33.8–49.8)	58.4 (50.2–66.2)
Quit intentions[h]					
Yes	400,000	24.8 (19.8–30.7)	75.2 (69.3–80.2)	38.3 (31.4–45.6)	61.7 (54.4–68.6)
No	260,000	27.5 (23.1–32.2)	72.5 (67.8–76.9)	45.4 (39.5–51.4)	54.6 (48.6–60.5)

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "yes" to using a flavored product and "menthol" to type of flavor were categorized as having used menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 persons. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n=2,619 among students who currently use tobacco products; n = 1,617 among students who currently used flavored tobacco products) were summed (range, 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[d] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience store, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 476 respondents excluded among students reporting current tobacco product use and 262 respondents excluded among students reporting current flavored tobacco product use.

[e] People who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, they were categorized as not having frequent tobacco product use.

[f] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[g] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents missing data on this outcome (n = 619 among students reporting current tobacco product use; n = 286 among students reporting current flavored tobacco product use) were excluded from the analysis.

[h] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents missing data on this outcome (n = 578 among students reporting current tobacco product use; n = 265 among students reporting current flavored tobacco product use) were excluded from the analysis.

Table 2. Use of Menthol[a] and Nonmenthol-Flavored Tobacco Products Among Middle and High School Students Who Currently Use Any Flavored Tobacco Products, by Selected Characteristics and Tobacco Use Behaviors, National Youth Tobacco Survey, 2022

Characteristic	Total estimated no. who currently use tobacco products[b]	Any menthol flavor		Only nonmenthol flavors		*P* value[c]
		Estimated no.[b]	% (95% CI)	Estimated no.[b]	% (95% CI)	
All students	1,850,000	730,000	39.5 (34.0–45.3)	1,120,000	60.5 (54.7–66.0)	Not applicable
Demographic characteristic						
Overall						
Sex						
Male	830,000	360,000	50.4 (42.6–58.2)	470,000	42.2 (37.4–47.2)	.04
Female	1,000,000	360,000	49.6 (41.8–57.4)	640,000	57.8 (52.8–62.6)	
Race or ethnicity						
Hispanic	460,000	130,000	18.4 (14.0–23.8)	330,000	29.5 (23.4–36.5)	<.001
Non-Hispanic Black	170,000	20,000	3.8 (2.5–5.8)	150,000	13.5 (9.4–18.9)	
Non-Hispanic White	1,020,000	480,000	67.3 (60.8–73.3)	540,000	48.5 (39.7–57.3)	
Non-Hispanic Other	170,000	70,000	10.4 (7.1–15.1)	90,000	8.5 (6.1–11.9)	
Grade level						

[a] Current use of menthol-flavored tobacco products was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only one cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were categorized as using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 people. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] *P* value calculated by using the χ^2 test of independence and indicates whether there are differences between use of menthol-flavored and nonmenthol-flavored tobacco products for each characteristic.

[d] Unstable estimate is not presented because of a relative SE of ≥0.3 or unweighted denominators less than 50.

[e] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets; not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617 among students who currently used flavored tobacco products) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

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[g] Persons who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then persons were categorized as not having frequent tobacco product use.

[h] Based on the question "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?" those answering "yes" were categorized as craving tobacco products within the past 30 days.

[i] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.

[j] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 2. Use of Menthol[a] and Nonmenthol-Flavored Tobacco Products Among Middle and High School Students Who Currently Use Any Flavored Tobacco Products, by Selected Characteristics and Tobacco Use Behaviors, National Youth Tobacco Survey, 2022

Characteristic	Total estimated no. who currently use tobacco products[b]	Any menthol flavor		Only nonmenthol flavors		*P* value[c]
		Estimated no.[b]	% (95% CI)	Estimated no.[b]	% (95% CI)	
Middle school (grades 6–8)	300,000	100,000	14.8 (10.0–21.2)	190,000	17.8 (12.7–24.4)	.23
High school (grades 9–12)	1,530,000	610,000	85.2 (78.8–90.0)	920,000	82.2 (75.6–87.3)	
Sexual orientation						
Heterosexual	1,080,000	420,000	66.8 (61.1–72.0)	650,000	67.8 (62.2–72.9)	.79
Gay, lesbian, or bisexual	420,000	160,000	26.1 (21.2–31.7)	250,000	26.3 (21.5–31.8)	
Not Sure	100,000	40,000	7.1 (4.9–10.3)	50,000	5.9 (3.8–9.0)	
Transgender identity						
No, not transgender	1,380,000	520,000	82.0 (75.9–86.8)	860,000	89.6 (86.0–92.4)	.11
Yes, transgender	90,000	50,000	8.2 (5.2–12.7)	40,000	—[d]	
Not sure	70,000	40,000	7.1 (4.6–10.7)	30,000	3.3 (1.9–5.5)	
I don't know what this question is	40,000	10,000	—[d]	20,000	—[d]	

[a] Current use of menthol-flavored tobacco products was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only one cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were categorized as using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 people. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] *P* value calculated by using the χ^2 test of independence and indicates whether there are differences between use of menthol-flavored and nonmenthol-flavored tobacco products for each characteristic.

[d] Unstable estimate is not presented because of a relative SE of ≥0.3 or unweighted denominators less than 50.

[e] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets; not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617 among students who currently used flavored tobacco products) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

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[g] Persons who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then persons were categorized as not having frequent tobacco product use.

[h] Based on the question "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?" those answering "yes" were categorized as craving tobacco products within the past 30 days.

[i] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.

[j] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 2. Use of Menthol[a] and Nonmenthol-Flavored Tobacco Products Among Middle and High School Students Who Currently Use Any Flavored Tobacco Products, by Selected Characteristics and Tobacco Use Behaviors, National Youth Tobacco Survey, 2022

Characteristic	Total estimated no. who currently use tobacco products[b]	Any menthol flavor		Only nonmenthol flavors		*P* value[c]
		Estimated no.[b]	% (95% CI)	Estimated no.[b]	% (95% CI)	
asking						
Family affluence scale[e]						
Low	380,000	150,000	25.6 (19.0–33.5)	230,000	25.3 (20.7–30.5)	.73
Medium	520,000	190,000	32.0 (25.8–39.0)	330,000	35.8 (29.9–42.1)	
High	610,000	250,000	42.4 (34.8–50.3)	360,000	38.9 (31.9–46.4)	
Tobacco product advertising exposure[f]						
Yes (most of the time/always/ sometimes)	1,440,000	590,000	89.3 (83.8–93.1)	840,000	84.6 (79.9–88.3)	.20
No (rarely/never)	220,000	70,000	10.7 (6.9–16.2)	150,000	15.4 (11.7–20.1)	
Frequent tobacco product use[g]						
Yes	910,000	480,000	66.0 (61.4–70.4)	420,000	38.1 (33.7–42.7)	<.001

[a] Current use of menthol-flavored tobacco products was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only one cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were categorized as using menthol-flavored tobacco products.

[b] Estimated weighted total numbers were rounded to the nearest 10,000 people. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.

[c] *P* value calculated by using the χ^2 test of independence and indicates whether there are differences between use of menthol-flavored and nonmenthol-flavored tobacco products for each characteristic.

[d] Unstable estimate is not presented because of a relative SE of ≥0.3 or unweighted denominators less than 50.

[e] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets; not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617 among students who currently used flavored tobacco products) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[f] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime); or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience stores, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 262 respondents excluded.

[g] Persons who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then persons were categorized as not having frequent tobacco product use.

[h] Based on the question "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?" those answering "yes" were categorized as craving tobacco products within the past 30 days.

[i] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.

[j] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 2. Use of Menthol[a] and Nonmenthol-Flavored Tobacco Products Among Middle and High School Students Who Currently Use Any Flavored Tobacco Products, by Selected Characteristics and Tobacco Use Behaviors, National Youth Tobacco Survey, 2022

Characteristic	Total estimated no. who currently use tobacco products[b]	Any menthol flavor		Only nonmenthol flavors		*P* value[c]
		Estimated no.[b]	% (95% CI)	Estimated no.[b]	% (95% CI)	
No	940,000	240,000	34.0 (29.6–38.6)	690,000	61.9 (57.3–66.3)	
Use of multiple tobacco products						
Yes	740,000	390,000	54.0 (47.6–60.4)	350,000	31.3 (26.4–36.7)	<.001
No	1,100,000	330,000	46.0 (39.6–52.4)	770,000	68.7 (63.3–73.6)	
Time to wanting to use a tobacco product <30 min after awakening						
Yes	440,000	250,000	48.1 (41.3–55.0)	180,000	27.9 (23.3–33.0)	<.001
No	760,000	270,000	51.9 (45.0–58.7)	480,000	72.1 (67.0–76.7)	
Craving tobacco products within the past 30 days[h]						
Yes	610,000	310,000	44.8 (36.8–53.0)	300,000	28.3 (24.5–32.3)	<.001
No	1,150,000	380,000	55.2 (47.0–63.2)	760,000	71.7 (67.7–75.5)	
Past-year quit attempt[i]						

[a] Current use of menthol-flavored tobacco products was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only one cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were categorized as using menthol-flavored tobacco products.
[b] Estimated weighted total numbers were rounded to the nearest 10,000 people. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.
[c] *P* value calculated by using the χ^2 test of independence and indicates whether there are differences between use of menthol-flavored and nonmenthol-flavored tobacco products for each characteristic.
[d] Unstable estimate is not presented because of a relative SE of ≥0.3 or unweighted denominators less than 50.
[e] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets; not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617 among students who currently used flavored tobacco products) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.
[f] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime); or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience stores, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 262 respondents excluded.
[g] Persons who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then persons were categorized as not having frequent tobacco product use.
[h] Based on the question "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?" those answering "yes" were categorized as craving tobacco products within the past 30 days.
[i] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.
[j] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 2. Use of Menthol[a] and Nonmenthol-Flavored Tobacco Products Among Middle and High School Students Who Currently Use Any Flavored Tobacco Products, by Selected Characteristics and Tobacco Use Behaviors, National Youth Tobacco Survey, 2022

Characteristic	Total estimated no. who currently use tobacco products[b]	Any menthol flavor		Only nonmenthol flavors		*P* value[c]
		Estimated no.[b]	% (95% CI)	Estimated no.[b]	% (95% CI)	
Yes	990,000	400,000	60.3 (53.8–66.6)	580,000	61.3 (56.7–65.6)	.83
No	630,000	260,000	39.7 (33.4–46.2)	370,000	38.7 (34.4–43.3)	
Quit intentions[j]						
Yes	1,040,000	400,000	60.1 (54.5–65.5)	640,000	66.9 (61.9–71.5)	.03
No	580,000	260,000	39.9 (34.5–45.5)	320,000	33.1 (28.5–38.1)	

[a] Current use of menthol-flavored tobacco products was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol-flavored tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only one cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days); or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were categorized as using menthol-flavored tobacco products.
[b] Estimated weighted total numbers were rounded to the nearest 10,000 people. Overall population estimates might not sum to corresponding subgroup population estimates because of rounding or inclusion of students who did not self-report sex, race and ethnicity, or grade level.
[c] *P* value calculated by using the χ^2 test of independence and indicates whether there are differences between use of menthol-flavored and nonmenthol-flavored tobacco products for each characteristic.
[d] Unstable estimate is not presented because of a relative SE of ≥0.3 or unweighted denominators less than 50.
[e] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets; not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617 among students who currently used flavored tobacco products) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.
[f] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes, cigarettes, and other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime); or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience stores, supermarket, or gas station," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 262 respondents excluded.
[g] Persons who used tobacco products in the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then persons were categorized as not having frequent tobacco product use.
[h] Based on the question "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?" those answering "yes" were categorized as craving tobacco products within the past 30 days.
[i] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" responses other than "I did not try to quit all tobacco products during the past 12 months" were considered having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.
[j] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated having quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

Table 3. Univariate and Multivariable Associations Between Selected Characteristics and Use of Any Menthol-Flavored Tobacco Product[a] Among Middle and High School Students (N = 2,020) Reporting Current Use of Any Flavored Product, National Youth Tobacco Survey, 2022

Characteristic	Unadjusted		Adjusted[b]	
	PR (95% CI)	*P* value	APR (95% CI)	*P* value[c]
Sex				
Male	1.22 (1.01–1.47)	.04	1.15 (0.97–1.37)	.11
Female	1 [Reference]		1 [Reference]	
Race or ethnicity				
Hispanic	0.61 (0.47–0.78)	<.001	0.59 (0.45–0.77)	<.001
Non-Hispanic Black	0.33 (0.21–0.51)		0.34 (0.22–0.53)	
Non-Hispanic White	1 [Reference]		1 [Reference]	
Non-Hispanic Other	0.93 (0.71–1.21)		0.93 (0.71–1.21)	
Grade				
Middle school (grades 6–8)	1 [Reference]	.23	1 [Reference]	.40
High school (grades 9–12)	1.15 (0.91–1.46)		1.10 (0.88–1.38)	
Sexual orientation				

Abbreviations: APR, adjusted prevalence ratio; PR, prevalence ratio.

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days), or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having used menthol-flavored tobacco products.

[b] Prevalence ratios adjusted for sex, race, and grade level for all variables except sex, race, and grade. APR for sex adjusted for race and grade; APR for race adjusted for sex and grade; APR for grade adjusted for sex and race.

[c] *P* value was calculated by using the Wald χ^2 and tests for differences between menthol status groups (menthol flavors, nonmenthol flavor tobacco product use) for each characteristic.

[d] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[e] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes and cigarettes or other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience stores, supermarkets, or gas stations," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 262 respondents excluded.

[f] Students who used tobacco products within the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then students who used tobacco product within the past 30 days were categorized as not using tobacco products frequently.

[g] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[h] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" indicated having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.

[i] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 3. Univariate and Multivariable Associations Between Selected Characteristics and Use of Any Menthol-Flavored Tobacco Product[a] Among Middle and High School Students (N = 2,020) Reporting Current Use of Any Flavored Product, National Youth Tobacco Survey, 2022

Characteristic	Unadjusted		Adjusted[b]	
	PR (95% CI)	*P* value	APR (95% CI)	*P* value[c]
Heterosexual	1 [Reference]	.80	1 [Reference]	.45
Gay, lesbian, or bisexual	1.00 (0.79–1.28)		1.00 (0.77–1.31)	
Not sure	1.12 (0.80–1.57)		1.23 (0.91–1.68)	
Transgender identity				
No, not transgender	1 [Reference]	.0463	1 [Reference]	.0497
Yes, transgender	1.50 (1.08–2.08)		1.45 (1.03–2.03)	
Not sure	1.57 (1.14–2.16)		1.55 (1.14–2.12)	
I don't know what this question is asking	1.02 (0.62–1.68)		1.07 (0.61–1.87)	
Family affluence scale[d]				
Low	0.96 (0.72–1.27)	.73	0.96 (0.73–1.26)	.64
Medium	0.89 (0.66–1.19)		0.87 (0.64–1.18)	

Abbreviations: APR, adjusted prevalence ratio; PR, prevalence ratio.

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days), or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having used menthol-flavored tobacco products.

[b] Prevalence ratios adjusted for sex, race, and grade level for all variables except sex, race, and grade. APR for sex adjusted for race and grade; APR for race adjusted for sex and grade; APR for grade adjusted for sex and race.

[c] *P* value was calculated by using the Wald χ^2 and tests for differences between menthol status groups (menthol flavors, nonmenthol flavor tobacco product use) for each characteristic.

[d] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[e] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes and cigarettes or other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience stores, supermarkets, or gas stations," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 262 respondents excluded.

[f] Students who used tobacco products within the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then students who used tobacco product within the past 30 days were categorized as not using tobacco products frequently.

[g] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[h] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" indicated having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.

[i] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 3. Univariate and Multivariable Associations Between Selected Characteristics and Use of Any Menthol-Flavored Tobacco Product[a] Among Middle and High School Students (N = 2,020) Reporting Current Use of Any Flavored Product, National Youth Tobacco Survey, 2022

Characteristic	Unadjusted		Adjusted[b]	
	PR (95% CI)	*P* value	APR (95% CI)	*P* value[c]
High	1 [Reference]		1 [Reference]	
Tobacco product advertising exposure[e]				
Yes (most of the time/always/sometimes)	1.31 (0.87–1.97)	.18	1.31 (0.89–1.93)	.15
No (rarely/never)	1 [Reference]		1 [Reference]	
Frequent tobacco product use[f]				
Yes	2.01 (1.72–2.35)	<.001	1.88 (1.59–2.22)	<.001
No	1 [Reference]		1 [Reference]	
Use of multiple tobacco products				
Yes	1.74 (1.39–2.19)	<.001	1.68 (1.36–2.05)	<.001
No	1 [Reference]		1 [Reference]	
Time to wanting to use a tobacco product <30 minutes after awakening				

Abbreviations: APR, adjusted prevalence ratio; PR, prevalence ratio.

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days), or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having used menthol-flavored tobacco products.

[b] Prevalence ratios adjusted for sex, race, and grade level for all variables except sex, race, and grade. APR for sex adjusted for race and grade; APR for race adjusted for sex and grade; APR for grade adjusted for sex and race.

[c] *P* value was calculated by using the Wald χ^2 and tests for differences between menthol status groups (menthol flavors, nonmenthol flavor tobacco product use) for each characteristic.

[d] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

[e] Exposure to tobacco product marketing (advertisements or promotions) was assessed separately for e-cigarettes and cigarettes or other tobacco products for 4 sources: retail stores; internet; television, streaming services, or movies; and newspapers or magazines. Respondents were asked, "When you [are using the Internet; read newspapers or magazines; go to a convenience store, supermarket, or gas station; watch television or streaming services (such as Netflix, Hulu, or Amazon Prime), or go to the movies], how often do you see ads or promotions for [e-cigarettes; cigarettes or other tobacco products]?" Respondents were categorized as exposed if they responded "sometimes," "most of the time," or "always" or unexposed if they responded "never" or "rarely." Those who reported "I do not use the internet," "I do not read newspapers or magazines," "I never go to a convenience stores, supermarkets, or gas stations," or "I do not watch television or streaming services or go to the movies" were excluded from the analysis. There were 262 respondents excluded.

[f] Students who used tobacco products within the past 30 days who indicated use of any product on 20 or more days in the past 30 days were categorized as using tobacco products frequently; otherwise, if all tobacco products were reported as being used less than 20 days out of the last 30, then students who used tobacco product within the past 30 days were categorized as not using tobacco products frequently.

[g] Based on the question "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?" Those answering "yes" were categorized as craving tobacco products within the past 30 days.

[h] Based on the question, "During the past 12 months, how many times have you stopped using all tobacco products for 1 day or longer because you were trying to quit tobacco products for good?" Responses other than "I did not try to quit all tobacco products during the past 12 months" indicated having made 1 or more quit attempts. Respondents (n = 286) missing data on this outcome were excluded from the analysis.

[i] Based on the question, "Are you seriously thinking about quitting the use of all tobacco products?" Responses of "Yes, during the next 30 days," "Yes, during the next 6 months," "Yes, during the next 12 months," and "Yes, but not during the next 12 months" indicated quit intentions. The response, "No, I am not thinking about quitting the use of all tobacco products" indicated not having quit intentions. Respondents (n = 265) missing data on this outcome were excluded from the analysis.

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Table 3. Univariate and Multivariable Associations Between Selected Characteristics and Use of Any Menthol-Flavored Tobacco Product[a] Among Middle and High School Students (N = 2,020) Reporting Current Use of Any Flavored Product, National Youth Tobacco Survey, 2022

Characteristic	Unadjusted		Adjusted[b]	
	PR (95% CI)	*P* value	APR (95% CI)	*P* value[c]
Yes	1.59 (1.31–1.92)	<.001	1.55 (1.27–1.88)	<.001
No	1 [Reference]		1 [Reference]	
Craving tobacco products within the past 30 days[g]				
Yes	1.52 (1.23–1.88)	<.001	1.34 (1.08–1.66)	.01
No	1 [Reference]		1 [Reference]	
Past-year quit attempt[h]				
Yes	0.98 (0.79–1.21)	.83	0.97 (0.77–1.23)	.81
No	1 [Reference]		1 [Reference]	
Quit intentions[i]				
Yes	0.84 (0.71–1.00)	.04	0.86 (0.70–1.06)	.14
No	1 [Reference]		1 [Reference]	

Abbreviations: APR, adjusted prevalence ratio; PR, prevalence ratio.

[a] Current menthol-flavored tobacco product use was assessed among students who indicated past 30-day tobacco product use (use of ≥1 tobacco products including e-cigarettes, cigarettes, cigars, smokeless tobacco [chewing tobacco, snuff, dip, snus], dissolvable tobacco products, waterpipes/hookahs, pipe tobacco, bidis, heated tobacco products, and nicotine pouches). Those responding "Yes" to using a flavored product and "menthol" to the type of flavor were categorized as using menthol tobacco products. For cigarettes, respondents who, within the past 30 days, indicated 1) using only 1 cigarette brand and indicated that the brand was a menthol-flavored brand (Kool, Newport); 2) responded that they smoked Kool or Newport brands to the question "During the past 30 days, what brand of cigarettes did you usually smoke? (Choose only 1 answer)" (asked among respondents who used multiple brands in the past 30 days), or 3) who answered "Yes" to "During the past 30 days, were the cigarettes that you usually smoked menthol?" were considered as having used menthol-flavored tobacco products.

[b] Prevalence ratios adjusted for sex, race, and grade level for all variables except sex, race, and grade. APR for sex adjusted for race and grade; APR for race adjusted for sex and grade; APR for grade adjusted for sex and race.

[c] *P* value was calculated by using the Wald χ^2 and tests for differences between menthol status groups (menthol flavors, nonmenthol flavor tobacco product use) for each characteristic.

[d] Family affluence was assessed with a composite scale that comprised 4 questions: 1) "Does your family own a vehicle (such as a car, van, or truck)?"; 2) "Do you have your own bedroom?"; 3) "How many computers (including laptops and tablets, not including game consoles and smartphones) does your family own?"; and 4) "During the past 12 months, how many times did you travel on vacation with your family?" Complete data from all 4 questions (n = 1,617) were summed (range = 0–9) and categorized into approximate tertiles based on the sample's weighted distribution of scores.

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ORIGINAL RESEARCH

Sociodemographic and Temporal Differences in Menthol Cigarette Use Among US Adults Who Smoke, 1999–2018

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PEER REVIEWED

Summary

What is already known on this topic?

Menthol cigarette use has increased over the past few decades. The commercial tobacco industry targets menthol tobacco products to specific demographic groups, and disparities exist in menthol cigarette use in the US population.

What is added by this report?

We examined changes in menthol cigarette use among US adults who smoke. The prevalence of menthol cigarette use remains high for non-Hispanic Black adults who smoke and is increasing among other groups, especially Mexican American adults.

What are the implications for public health practice?

Increased menthol cigarette use among some demographic groups and ongoing prevalence disparities suggest that eliminating menthol cigarette use could strengthen ongoing health equity–related efforts to reduce US smoking prevalence.

Abstract

Introduction

Monitoring menthol cigarette use allows for identification of potential health disparities. We examined sociodemographic and temporal differences in menthol cigarette use among US adults who smoke.

Methods

We analyzed data from the 1999–2018 National Health and Nutrition Examination Survey for adults aged 20 years or older who smoke (N = 11,431) using binary logistic regression.

Results

Among US adults who smoke, 28.8% used menthol cigarettes. After adjusting for age, sex, race and ethnicity, education, income-to-poverty ratio, and health status, the prevalence of menthol use among adults who smoke increased on average by 3.8% (95% CI, 2.7%–4.9%) annually. Non-Hispanic Black adults had the highest average prevalence of menthol cigarette use, 73.0% (95% CI, 70.9%–75.2%), and Mexican American adults had higher average annual increase in menthol cigarette use, 7.1% (95% CI, 4.0%–10.3%). Adults with fair or poor health status had a 4.3% annual increase in menthol cigarette use (95% CI, 2.5%–6.1%). The adjusted prevalence ratios of menthol cigarette use were 1.61 (95% CI, 1.39–1.83) for adults aged 20–29 years compared with those aged 65 years or older, 1.41 (95% CI, 1.32–1.49) for female adults compared with male adults, and 1.17 (95% CI, 1.07–1.27) for high school graduates or higher compared with those with no high school diploma.

Conclusion

Non-Hispanic Black adults who smoke had the highest prevalence of menthol cigarette use among all racial and ethnic groups; the prevalence of menthol cigarette use among adults who smoke increased especially among Mexican American adults, younger adults, and adults who reported fair to poor health status.

Introduction

Cigarette smoking is the leading cause of disease and death in the United States (1). Menthol flavor masks the unpleasant taste of tobacco and suppresses coughing impulses (2). Menthol in cigarettes increases tobacco use initiation and dependence in young

people and reduces the likelihood for successful cessation (2–4). Restricting the sale of flavored tobacco products in the US has been shown to reduce the proportion of youth who try or use tobacco products (5–8). More than 18 million US adults smoked menthol cigarettes in 2019; it was estimated that prohibiting menthol cigarettes in the US would result in more than 1.3 million people quitting smoking, based on studies after menthol cigarettes were prohibited in Canada (9).

The commercial tobacco industry targets its marketing to certain populations. Neighborhoods with predominantly Black and lower-income residents have disproportionately higher numbers of advertisements and price promotions, in addition to the lowest pack prices for menthol cigarettes (10,11). Substantial differences have been noted in the prevalence of menthol cigarette use by sociodemographic group (12). Non-Hispanic Black adults, adults with lower income, and female adults have a higher prevalence of menthol cigarette use compared with people from other racial and ethnic groups, adults with higher incomes, and male adults, respectively (13,14). Furthermore, temporal changes in menthol cigarette use have varied across sociodemographic groups (15).

Monitoring menthol cigarette use can not only play a crucial role for program and regulatory planning but also inform the evaluation of programmatic and policy interventions for addressing disparities. By using 20 years of National Health and Nutrition Examination Survey (NHANES) data (1999–2018), we aimed to achieve 2 objectives: 1) investigate temporal and sociodemographic differences in the prevalence of menthol cigarette use and 2) examine the association of menthol cigarette use with self-reported health status among adults who smoke.

Methods

Participants

NHANES is an ongoing, cross-sectional, nationally representative survey of the civilian, noninstitutionalized US population, operated by the Centers for Disease Control and Prevention (16). It uses a stratified, multistage probability sampling design with oversampling of people aged 60 years or older, Black people, and Hispanic people to assess the health and nutritional status of adults and children in the United States. The data are collected continuously and released biennially. Participants are randomly selected for a home interview and then invited to participate in a medical examination at a mobile center. The overall response rates of the interviewed sample ranged from 52% to 84% during 1999–2018 (16). For this trend analysis, we excluded NHANES 2019–2020 data due to disruptions caused by the COVID-19 pandemic because these changes could bias the evaluation of temporal changes. NHANES data collection is approved by the Research Ethics Review Board of the National Center for Health Statistics (NCHS). All NHANES respondents provided consent before interview (16). The institutional review board's approval was not required for this analysis of public data with de-identified individual records.

Tobacco use information during the home interview was collected only for adults 20 years or older, before 2013. We used 10 NHANES cycles from 1999 to 2018 and grouped them into 5 periods: 1999–2002, 2003–2006, 2007–2010, 2011–2014, and 2015–2018 (16). After excluding 72 (0.1%) participants who did not report smoking status, the final analytical sample included 11,431 participants who smoked cigarettes at the time of the survey (54.5% male, 45.5% female).

Smoking status and menthol cigarette indicators

Interviewers collected cigarette smoking history and characteristics from adults during the home interview. Participants who ever smoked were defined as participants who answered yes to "Have you smoked at least 100 cigarettes in your entire life?"; otherwise, smoking status was defined as never smoked. Among participants who ever smoked, adults who currently smoke were defined as those who answered "every day" or "some days" to the follow-up question "Do you now smoke cigarettes?"; people were defined as having formerly smoked if they answered "not at all" to that question. In this study, we included only the participants who smoked "every day" or "some days" as adults who smoke. Participants who smoke were asked to show interviewers the pack of cigarettes they smoked. The cigarette brand was verified using the uniform product code (UPC) found on the cigarette pack presented. The UPC was matched to a database containing UPC and menthol designations. The current menthol cigarette use indicator (hereinafter, menthol cigarette use) was created with this matched information by NCHS (17).

Covariates

Sociodemographic information collected during the interview included age, sex at birth (male and female), race and ethnicity, educational attainment, and family income-to-poverty ratio (IPR). We analyzed age in years as a 4-level variable: 20–29, 30–44, 45–64, and 65 years or older. Race and ethnicity had 5 groups: non-Hispanic White (hereinafter, White), non-Hispanic Black (hereinafter, Black), Mexican American, Other Hispanic American (hereinafter, Other Hispanic), and non-Hispanic Other races (hereinafter, Other).

Educational attainment and family IPR were used as indicators of participants' socioeconomic position (SEP) throughout their lifetime (18). Educational attainment, a SEP indicator in young adulthood (19), was characterized as less than a high school graduate or high school graduate or higher. Family income at the time of inter-

view, a current SEP indicator, was categorized according to the federal poverty thresholds of the US Department of Health and Human Services poverty guidelines (20). The family IPR was defined as the ratio of family income to the family's appropriate poverty threshold at the time of interview and was divided into 3 categories: <1.3, 1.3 to <3.5, and ≥3.5. Self-reported health status was grouped into 3 categories: excellent, very good or good, and fair or poor. Health status was included as an indicator of a participant's perception of overall health, which is related to SEP, lifestyle, and mortality (21,22).

Statistical methods

By using menthol cigarette use as the response variable, binary logistic regression was used to estimate the crude and adjusted prevalence of menthol cigarette use among adults who smoke and compare between different subgroups by age, sex, race and ethnicity, educational attainment, health status, and survey period. The interaction terms of the survey period with other covariates were included in the model and used to estimate prevalence by period, racial and ethnic group, and other covariates (23). The prevalence ratio (PR) was estimated by using prevalence estimates. The middle year of each survey cycle was treated as a continuous variable to estimate average relative change and annual percentage change (APC) for temporal trend analysis. With year and year squared of survey cycle as continuous variables in logistic regression, the APC of prevalence was estimated by using the average annual marginal change (semi-elasticity) in prevalence from the logistic model.

Analyses accounting for the complex sampling design were conducted using Stata (version 17.0, StataCorp LLC). Interview sample weights were used to account for sampling design per NHANES analytic guidelines (16). We used multiple imputation (MI) with chained equations to impute the missing values of the menthol cigarette indicator (n = 699, 6.1% of all adults who smoked), IPR (n = 5,287, 9.6% of all adults), educational attainment (n = 92, 0.2% of all adults), and health status (n = 47, 0.1% of all adults). The imputation model of missingness included all the dependent and independent variables of logistic models plus sampling design variables (primary sampling unit, stratum). Twenty sets of multiple imputed data were generated to provide adequate reproducibility of MI analysis (24). The Stata MI module with survey data module of Stata was used for menthol cigarette use, IPR, education, or health status–related analyses. *P* values of 2-sided statistical tests <.05 or nonoverlapping 95% CIs suggested a significance for population inference and comparison across population subgroups.

Results

During 1999–2018, 28.8% (95% CI, 27.2%–30.4%) of all US adults who smoked used menthol cigarettes annually (Table 1). Menthol cigarette use was higher among younger adults (aged 20–64 y), female adults, Black adults, and, on average, among adults with a lower IPR (Table 2). Among all adults who smoked cigarettes, the prevalence of menthol cigarette use increased significantly from 22.9% in 1999–2002 to 35.9% in 2015–2018 (APC = 3.8%; 95% CI, 2.7%–4.9%).

The APC of menthol cigarette use among adults who smoke was significantly higher among younger adults, male adults, and adults with poorer health status. Adults aged 65 years or older had no significant change in the prevalence of menthol cigarette use. Black adults had a significant decrease in the prevalence of menthol cigarette use (APC = −0.8%; 95% CI, −1.3% to −0.3%). However, Black adults annually had the highest prevalence of menthol cigarette smoking among racial and ethnic groups. Other racial and ethnic groups, especially Mexican American adults, had a large increase in the prevalence of menthol cigarette use. Among Mexican American adults who smoked, the prevalence of menthol cigarette use increased from 12.8% (95% CI, 7.3%–18.2%) in 1999–2002 to 31.0% (95% CI, 23.5%–38.5%) in 2015–2018. The prevalence of menthol cigarette use increased across all levels of educational attainment and IPR. There was little temporal change in the prevalence of menthol cigarette use among adults who smoke who had excellent health status (APC = 1.5%; 95% CI, −1.0% to 4.1%). However, there was a significant temporal increase among adults with very good or good health status (APC = 4.0%; 95% CI, 2.7% to 5.3%) and with fair or poor health status (APC = 4.3%; 95% CI, 2.5%–6.1%) (Table 2).

The unadjusted prevalence of menthol cigarette use among adults who smoke increased by 60% from 1999–2002 to 2015–2018 (PR [2015–2018 vs 1999–2002] = 1.60; 95% CI, 1.30–1.90). Compared with adults aged 65 years or older, adults aged 20 to 29 years had a 51% higher prevalence of menthol cigarette use (PR = 1.51; 95% CI, 1.28–1.74) (Table 3). Compared with male adults, female adults had a 38% higher prevalence of menthol cigarette use during 1999 to 2018 (PR = 1.38; 95% CI, 1.29–1.47). Compared with White adults, Black adults had a 3.3 times higher prevalence of menthol cigarette use (PR = 3.31; 95% CI, 3.04–3.57). Adults with lower family income (IPR <1.30) had a 31% higher prevalence of menthol cigarette use than adults with higher family income (IPR ≥3.5) (PR = 1.31; 95% CI, 1.16–1.47). There was a lower prevalence of menthol cigarette use among adults with educational attainment of less than a high school diploma compared with those with a high school diploma or more and among adults with poorer health status compared with excellent health status.

The PRs changed little after adjusting for age group and sex (Table 3). However, after additional adjustment for race and ethnicity, the PR of adults who were high school graduates or higher (vs less than high school graduate) increased from 1.03 (95% CI, 0.95–1.11) to 1.17 (95% CI, 1.08–1.26), and the PRs of menthol cigarette use among different income groups were no longer significant (IPR <1.30 vs IPR ≥3.5, PR = 0.98; 95% CI, 0.88–1.08). Female adults who smoke continued to have a significantly higher prevalence of menthol cigarette use than male adults who smoke (PR = 1.41, 95% CI, 1.32–1.49).

Discussion

Among US adults who smoke, the prevalence of menthol cigarette use increased from 22.9% in 1999–2002 to 35.9% in 2015–2018. Mexican American adults had the highest increase in menthol cigarette use during this period. Although the prevalence of menthol cigarette use declined among Black adults (from 78.0% to 71.8%), menthol cigarette use in this group remained substantially higher than in any other racial and ethnic group. Female adults and adults with a high school diploma or more were more likely to use menthol cigarettes than male adults and adults with less education than a high school diploma, respectively.

The commercial tobacco industry markets menthol cigarettes to specific population groups, including young people, women, and racial and ethnic minority groups, with a particular focus on Black communities; these strategies involve the use of advertisements, giveaways, lower pricing, lifestyle branding, and event sponsorships (25). Notably, menthol cigarettes are more commonly found and are cheaper in neighborhoods with higher proportions of Black residents, younger people, and low-income households (11). These marketing efforts have likely contributed to menthol cigarettes being smoked disproportionately by certain population groups, such as adolescents, Black adults, and female adults (26). In addition, the menthol flavor increases the likelihood of youth and young adults experimenting with smoking, compared with the appeal of nonmenthol cigarettes (27). People who smoke menthol cigarettes are also less likely to successfully quit smoking (2,28). These challenges may be even more pronounced among Black people who smoke, who have a higher prevalence of menthol cigarette use compared with other population groups (2).

In contrast to the national population, a larger proportion of Black people are protected by any local policies that prohibit the sale of flavored tobacco products; however, a smaller proportion of Black people are protected by flavored tobacco policies that specifically prohibit the sale of menthol cigarettes (29). Based on policy outcome evaluation studies and other analyses, prohibiting the sale of menthol cigarettes in the United States would reduce cigarette smoking overall, including among Black people (7,9,30). However, given other social determinants of cigarette smoking and anticipated industry shifts to adjust to a new marketplace, it will be important to monitor the effects of a menthol cigarette sales prohibition on the smoking behavior of all population groups — including Black adults, given the history of marketing and given their higher prevalence of smoking menthol cigarettes (10,11).

This study shows that Black adults had the highest prevalence of menthol cigarette use throughout the study period, compared with other racial and ethnic groups, which is consistent with previous studies (15). The prevalence of menthol cigarette use increased significantly among other racial and ethnic groups, particularly among Mexican American adults, and among younger adults and persons who reported fair to poor health status. Multiple factors may correspond to these temporal changes, such as changes in the commercial tobacco industry's marketing strategy and its targeted populations. In 1999, a large part of the US cigarette industry's advertising and promotional expenditures were for activities such as favorable stocking of products in retail stores, or offering "buy one, get one" incentives to receive cigarette or noncigarette products, while in 2021 most expenditures were for retailer price discounts to reduce cigarette prices for consumers (31). These changes can disproportionately affect certain population groups, given that tobacco retailers are clustered in lower income neighborhoods and in neighborhoods with a high proportion of youth and racial and ethnic minority groups (32). It is worth noting that when people who smoke menthol cigarettes seek medical attention, increased clinical opportunities exist to promote and provide comprehensive, barrier-free tobacco cessation services.

A previous study showed that adults with lower income have a higher risk of starting and continuing to use menthol cigarettes (15). Our results showed that lower income was associated with a higher prevalence of menthol cigarette use, though this relationship was attenuated after additional adjustments for race and ethnicity. These findings align with recent research, which suggests that once a person has established a dependence on smoking, the continued preference for menthol cigarettes is more strongly associated with subjective personal satisfaction and reward, rather than income level (33). These findings suggest that race and ethnicity could have a stronger association with menthol cigarette use than income.

This observational study has several limitations. First, we used multiyear, nationally representative, cross-sectional survey data that cannot establish causality. Second, sociodemographic characteristics and smoking behavior were self-reported and may be subject to bias. Third, current SEP was represented using IPR. IPR accounts for inflation over time; however, it did not account for other factors such as standard of living, taxes, and variation among

geographic locations, which affect SEP over time (34). In addition, 10% of the participants did not report their income. We imputed missing data by assuming that the information was missing at random, which might not be sufficient to eliminate the potential information bias. Because of the significant disruption caused by the COVID-19 pandemic, we chose not to include NHANES 2019–2020 data in this temporal trend report. Finally, we did not have sufficient information to estimate menthol cigarette use among some groups with high prevalence of tobacco use, including Native American and Alaska Native people; Asian, Native Hawaiian, or Pacific Islander people; and LGBTQ+ people. Additional studies are needed to assess menthol cigarette use among a broader range of sociodemographic groups and among people who may belong to more than one population group.

We conclude that, from 1999 to 2018, Black adults had the highest prevalence of menthol cigarette use. Additionally, we found a notable increase in the use of menthol cigarettes among adults who smoke — particularly Mexican American adults, younger adults, and those who reported fair to poor health status. These subgroups may be at heightened risk of use of menthol cigarettes. Implementing policies that prohibit the sale of menthol cigarettes, alongside promoting and ensuring access to comprehensive and barrier-free tobacco cessation services, can reduce cigarette smoking, including among population groups experiencing tobacco use disparities. Notably, more jurisdictions have prohibited the sale of menthol tobacco products following the period covered in our study (35). Continued monitoring of menthol cigarette use is important to track progress in advancing health equity in the United States.

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References

1. US Department of Health and Human Services. 2014 Surgeon General's Report: The health consequences of smoking — 50 years of progress. Accessed November 6, 2023. https://www.cdc.gov/tobacco/sgr/50th-anniversary/index.htm
2. US Food and Drug Administration. Scientific review of the effects of menthol in cigarettes on tobacco addiction: 1980–2021. Accessed November 6, 2023. https://www.fda.gov/media/157642/download
3. Chung-Hall J, Fong GT, Meng G, Cummings KM, Hyland A, O'Connor RJ, et al. Evaluating the impact of menthol cigarette bans on cessation and smoking behaviours in Canada: longitudinal findings from the Canadian arm of the 2016–2018 ITC Four Country Smoking and Vaping Surveys. *Tob Control*. 2022;31(4):556–563. doi:10.1136/tobaccocontrol-2020-056259
4. Jones JT, Xu K, Deng L, Sawdey MD, Reyes-Guzman CM, Chang CM, et al. Smoking cessation prevalence by menthol cigarette use and select demographics among adults in the United States, TUS-CPS, 2003–2019. *Prev Med Rep*. 2023;36:102440. doi:10.1016/j.pmedr.2023.102440
5. Asare S, Majmundar A, Westmaas JL, Bandi P, Xue Z, Jemal A, et al. Association of cigarette sales with comprehensive menthol flavor ban in Massachusetts. *JAMA Intern Med*. 2022;182(2):231–234. doi:10.1001/jamainternmed.2021.7333
6. Rogers T, Brown EM, Siegel-Reamer L, Rahman B, Feld AL, Patel M, et al. A comprehensive qualitative review of studies evaluating the impact of local US laws restricting the sale of flavored and menthol tobacco products. *Nicotine Tob Res*. 2022;24(4):433–443. doi:10.1093/ntr/ntab188
7. US Food and Drug Administration. Review of studies assessing the potential impact of prohibiting menthol as a characterizing flavor in cigarettes. 2022. Accessed November 6, 2023. https://www.fda.gov/media/157643/download
8. Issabakhsh M, Meza R, Li Y, Yuan Z, Sanchez-Romero LM, Levy DT. Public health impact of a US menthol cigarette ban on the non-Hispanic Black population: a simulation study. *Tob Control*. 2022;tobaccocontrol-2022-057298:2022–057298. doi:10.1136/tobaccocontrol-2022-057298

9. Fong GT, Chung-Hall J, Meng G, Craig LV, Thompson ME, Quah ACK, et al. Impact of Canada's menthol cigarette ban on quitting among menthol smokers: pooled analysis of pre–post evaluation from the ITC Project and the Ontario Menthol Ban Study and projections of impact in the USA. *Tob Control*. 2023;32(6):734–738.
10. Smiley SL, Cho J, Blackman KCA, Cruz TB, Pentz MA, Samet JM, et al. Retail marketing of menthol cigarettes in Los Angeles, California: a challenge to health equity. *Prev Chronic Dis*. 2021;18:E11. doi:10.5888/pcd18.200144
11. Mills SD, Henriksen L, Golden SD, Kurtzman R, Kong AY, Queen TL, et al. Disparities in retail marketing for menthol cigarettes in the United States, 2015. *Health Place*. 2018;53: 62–70. doi:10.1016/j.healthplace.2018.06.011
12. US Department of Health and Human Services. 2012 Surgeon General's Report: Preventing tobacco use among youth and young adults; 2012. Accessed November 6, 2023. https://www.cdc.gov/tobacco/sgr/2012/index.htm
13. Giovino GA, Villanti AC, Mowery PD, Sevilimedu V, Niaura RS, Vallone DM, et al. Differential trends in cigarette smoking in the USA: is menthol slowing progress? *Tob Control*. 2015; 24(1):28–37. doi:10.1136/tobaccocontrol-2013-051159
14. Goodwin RD, Ganz O, Weinberger AH, Smith PH, Wyka K, Delnevo CD. Menthol cigarette use among adults who smoke cigarettes, 2008–2020: rapid growth and widening inequities in the United States. *Nicotine Tob Res*. 2023;25(4):692–698. doi:10.1093/ntr/ntac214
15. Villanti AC, Mowery PD, Delnevo CD, Niaura RS, Abrams DB, Giovino GA. Changes in the prevalence and correlates of menthol cigarette use in the USA, 2004–2014. *Tob Control*. 2016;25(suppl 2):ii14–ii20. doi:10.1136/tobaccocontrol-2016-053329
16. Centers for Disease Control and Prevention. National Health and Nutrition Examination Survey: survey methods and analytic guidelines; 2021. Accessed November 6, 2023. https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx
17. Centers for Disease Control and Prevention. NHANES 2017–2018 data documentation, codebook, and frequencies: smoking — cigarette use; 2020. Accessed November 6, 2023. https://wwwn.cdc.gov/Nchs/Nhanes/2017-2018/SMQ_j.htm
18. Galobardes B, Lynch J, Smith GD. Measuring socioeconomic position in health research. *Br Med Bull*. 2007;81-82(1):21–37. doi:10.1093/bmb/ldm001
19. Winpenny EM, Howe LD, van Sluijs EMF, Hardy R, Tilling K. Early adulthood socioeconomic trajectories contribute to inequalities in adult cardiovascular health, independently of childhood and adulthood socioeconomic position. *J Epidemiol Community Health*. 2021;75(12):1172–1180. doi:10.1136/jech-2021-216611
20. US Office of the Assistant Secretary for Planning and Evaluation. Prior HHS poverty guidelines and Federal Register references; 2021. Accessed November 6, 2023. https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references
21. Lorem G, Cook S, Leon DA, Emaus N, Schirmer H. Self-reported health as a predictor of mortality: a cohort study of its relation to other health measurements and observation time. *Sci Rep*. 2020;10(1):4886. doi:10.1038/s41598-020-61603-0
22. Gallagher JE, Wilkie AA, Cordner A, Hudgens EE, Ghio AJ, Birch RJ, et al. Factors associated with self-reported health: implications for screening level community-based health and environmental studies. *BMC Public Health*. 2016;16(1):640. doi:10.1186/s12889-016-3321-5
23. Graubard BI, Korn EL. Predictive margins with survey data. *Biometrics*. 1999;55(2):652–659. doi:10.1111/j.0006-341X.1999.00652.x
24. Madley-Dowd P, Hughes R, Tilling K, Heron J. The proportion of missing data should not be used to guide decisions on multiple imputation. *J Clin Epidemiol*. 2019;110: 63–73. doi:10.1016/j.jclinepi.2019.02.016
25. Centers for Disease Control and Prevention. Tobacco industry marketing; 2021. Accessed November 6, 2023. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/tobacco_industry/marketing/index.htm
26. Caraballo RS, Asman K. Epidemiology of menthol cigarette use in the United States. *Tob Induc Dis*. 2011;9(Suppl 1):S1. doi:10.1186/1617-9625-9-S1-S1
27. Barrientos-Gutierrez I, Islam F, Cho YJ, Salloum RG, Louviere J, Arillo-Santillán E, et al. Assessing cigarette packaging and labelling policy effects on early adolescents: results from a discrete choice experiment. *Tob Control*. 2020; tobaccocontrol-2019-055463.
28. Levy DT, Blackman K, Tauras J, Chaloupka FJ, Villanti AC, Niaura RS, et al. Quit attempts and quit rates among menthol and nonmenthol smokers in the United States. *Am J Public Health*. 2011;101(7):1241–1247. doi:10.2105/AJPH.2011.300178
29. Rose SW, Amato MS, Anesetti-Rothermel A, Carnegie B, Safi Z, Benson AF, et al. Characteristics and reach equity of policies restricting flavored tobacco product sales in the United States. *Health Promot Pract*. 2020;21(1_suppl):44S–53S. doi:10.1177/1524839919879928
30. Cohn AM, Alexander AC, Ehlke SJ. Affirming the abuse liability and addiction potential of menthol: differences in subjective appeal to smoking menthol versus non-menthol cigarettes across African American and White young adult smokers. *Nicotine Tob Res*. 2022;24(1):20–27. doi:10.1093/ntr/ntab137

31. Federal Trade Commission. Federal Trade Commission cigarette report for 2021 and smokeless tobacco report for 2021; 2023. Accessed November 6, 2023. https://www.ftc.gov/reports/federal-trade-commission-cigarette-report-2021-smokeless-tobacco-report-2021
32. Lee JG, Henriksen L, Rose SW, Moreland-Russell S, Ribisl KM. A systematic review of neighborhood disparities in point-of-sale tobacco marketing. *Am J Public Health*. 2015;105(9): e8–e18. doi:10.2105/AJPH.2015.302777
33. Cohn AM, Ganz O, Dennhardt AA, Murphy JG, Ehlke S, Cha S, et al. Menthol cigarette smoking is associated with greater subjective reward, satisfaction, and "throat hit" but not greater behavioral economic demand. *Addict Behav*. 2020;101: 106108. doi:10.1016/j.addbeh.2019.106108
34. Bishop M. Poverty threshold as an indicator of the association between childhood overweight and socioeconomic status over time. *Am J Clin Nutr*. 2007;85(5):1437. doi:10.1093/ajcn/85.5.1437
35. Truth Initiative. Flavored tobacco policy restrictions; 2023. Accessed November 6, 2023. https://truthinitiative.org/sites/default/files/media/files/2023/04/Q1_2023_FINAL.pdf

Tables

Table 1. Type of Cigarette Smoked Among US Adults Aged 20 Years or Older Who Smoke, by Sociodemographic Characteristics and Health Status, National Health and Nutrition Examination Survey, 1999–2018

US adults who smoke	All (N = 11,431)[a]	Nonmenthol cigarettes (n = 7,107)[a]	Menthol cigarettes (n = 3,625)[a]
All	100	71.2 (69.6–72.8)	28.8 (27.2–30.4)
Age, y			
20–29	23.8 (22.9–24.9)	22.5 (21.1–23.8)	28.6 (26.6–30.5)
30–44	33.7 (32.4–34.9)	33.8 (32.4–35.4)	33.6 (31.5–35.8)
45–64	35.2 (34.0–36.4)	36.0 (34.5–37.5)	32.2 (30.0–34.4)
≥65	7.3 (6.7–7.9)	7.7 (6.9–8.4)	5.6 (4.8–6.4)
Sex			
Male	54.5 (53.4–55.6)	57.1 (55.7–58.5)	45.9 (44.1–47.7)
Female	45.5 (44.4–46.6)	42.9 (41.5–44.3)	54.1 (52.3–55.9)
Race and ethnicity			
White, non-Hispanic	69.2 (66.9–71.6)	76.1 (73.7–78.4)	52.2 (48.9–55.6)
Black, non-Hispanic	13.1 (11.7–14.4)	5.2 (4.5–5.9)	32.9 (29.9–35.8)
Mexican American	6.7 (5.7–7.7)	7.7 (6.5–9.0)	4.1 (3.2–5.1)
Other, Hispanic	4.9 (3.8–6.1)	4.6 (3.3–6.0)	5.8 (4.4–7.1)
Other, non-Hispanic	6.1 (5.4–6.8)	6.4 (5.4–7.3)	5.0 (4.0–6.0)
Educational attainment			
Less than high school graduate	25.5 (24.3–26.8)	26.0 (24.4–27.5)	23.9 (22.2–25.6)
High school graduate or higher	74.5 (73.2–75.7)	74.0 (72.5–75.6)	76.1 (74.4–77.8)
Missing, n	15	8	6
Income-to-poverty ratio			
<1.30	33.3 (31.5–35.0)	30.8 (28.7–32.9)	37.2 (35.1–39.2)
1.30 to <3.5	38.4 (36.9–40.0)	38.9 (37.1–40.7)	38.3 (35.8–40.7)
≥3.5	28.3 (26.5–30.1)	30.3 (28.2–32.3)	24.5 (21.9–27.2)
Missing, n	1,042	633	357
Health status			
Excellent	11.7 (10.9–12.5)	11.4 (10.4–12.4)	12.3 (10.8–13.9)
Very good or good	64.3 (63.2–65.4)	65.2 (63.8–66.5)	63.3 (61.2–65.3)
Fair or poor	24.0 (22.9–25.1)	23.4 (22.1–24.8)	24.4 (22.6–26.2)
Missing, n	10	7	3

[a] Among 11,431 participants who smoke, 699 had missing data for menthol cigarette use. The percentages for all participants included all 11,431 participants, and other percentages by menthol cigarette status used 10,732 participants without missingness of menthol cigarette status. All values are weighted percentage (95% CI), unless otherwise indicated.

Table 2. Adjusted Prevalence[a] of Menthol Cigarette Use Among US Adults Aged 20 Years or Older Who Smoke, by Sociodemographic Characteristics and Health Status, National Health and Nutrition Examination Survey, 1999–2018

US adults who smoke	All (N = 11,431)	1999–2002 (n = 2,170)	2003–2006 (n = 2,220)	2007–2010 (n = 2,665)	2011–2014 (n = 2,302)	2015–2018 (n = 2,074)	Annual percentage change[b]
Menthol cigarette use, all	28.6 (27.1–30.2)	22.9 (20.1–25.7)	27.1 (24.7–29.6)	28.0 (24.9–31.1)	30.8 (27.9–33.7)	35.9 (32.4–39.5)	3.8 (2.7 to 4.9)
Age, y							
20–29	35.6 (32.8–38.5)	25.5 (21.9–29.2)	31.1 (25.6–36.7)	36.1 (29.7–42.4)	42.7 (35.6–49.9)	44.3 (37.4–51.1)	5.1 (3.5 to 6.7)
30–44	28.7 (26.3–31.0)	23.8 (19.8–27.7)	26.5 (22.4–30.7)	25.9 (21.2–30.5)	27.9 (23.2–32.6)	40.3 (34.3–46.4)	4.3 (2.5 to 6.0)
45–64	25.6 (23.8–27.3)	21.2 (17.9–24.6)	25.3 (22.0–28.6)	26.1 (22.4–29.8)	27.1 (23.0–31.2)	28.4 (23.9–32.9)	2.8 (1.3 to 4.3)
≥65	22.1 (19.2–25.0)	18.3 (12.5–24.0)	25.9 (19.4–32.4)	20.5 (13.8–27.1)	22.1 (15.9–28.4)	23.8 (17.6–30.1)	1.7 (−1.0 to 4.5)
Sex							
Male	24.2 (22.6–25.8)	19.5 (16.7–22.2)	21.7 (19.1–24.3)	22.1 (18.9–25.2)	26.6 (23.2–30.0)	32.8 (28.9–36.8)	4.8 (3.3 to 6.2)
Female	34.0 (32.0–36.0)	27.0 (23.3–30.8)	33.6 (30.1–37.1)	35.0 (31.0–39.1)	35.8 (31.8–39.9)	39.6 (35.0–44.2)	2.6 (1.4 to 3.8)
Race and ethnicity							
White, non-Hispanic	21.5 (19.9–23.1)	14.0 (11.0–17.0)	19.8 (17.0–22.6)	22.4 (19.1–25.6)	23.4 (19.7–27.1)	29.3 (24.7–33.8)	4.2 (2.8 to 5.6)
Black, non-Hispanic	73.0 (70.9–75.2)	78.0 (73.5–82.5)	78.7 (74.0–83.4)	64.9 (59.4–70.4)	71.0 (65.9–76.0)	71.8 (67.7–75.9)	−0.8 (−1.3 to −0.3)
Mexican American	19.2 (16.2–22.3)	12.8 (7.3–18.2)	13.3 (6.7–20.0)	17.4 (11.4–23.3)	24.0 (16.0–32.0)	31.0 (23.5–38.5)	7.1 (4.0 to 10.3)
Other, Hispanic	32.8 (27.5–38.1)	23.6 (10.4–36.8)	22.7 (10.3–35.1)	35.0 (26.2–43.8)	42.2 (28.0–56.4)	43.0 (35.1–50.9)	4.3 (0.6 to 8.0)
Other, non-Hispanic	22.5 (18.4–26.6)	16.9 (7.2–26.7)	17.6 (10.0–25.3)	19.3 (10.9–27.7)	26.8 (17.0–36.7)	33.9 (24.0–43.7)	5.1 (1.5 to 8.8)
Educational attainment[c]							
Less than high school graduate	25.5 (23.3–27.7)	20.7 (17.2–24.2)	24.3 (20.1–28.4)	22.8 (18.2–27.3)	26.5 (21.6–31.5)	34.6 (28.6–40.5)	4.3 (2.5 to 6.1)
High school graduate or higher	29.8 (28.1–31.5)	23.7 (20.6–26.8)	28.1 (25.0–31.1)	29.7 (26.6–32.9)	32.2 (28.9–35.6)	36.4 (32.6–40.1)	3.6 (2.4 to 4.8)
Income-to-poverty ratio[c]							
<1.30	29.0 (27.0–30.9)	24.7 (20.3–29.1)	27.2 (23.9–30.6)	27.1 (23.2–31.0)	30.3 (26.8–33.8)	37.1 (32.7–41.6)	3.5 (2.0 to 5.0)
1.30 to <3.5	28.6 (26.6–30.6)	22.1 (18.8–25.4)	26.1 (22.6–29.6)	27.9 (23.8–32.1)	32.0 (27.6–36.4)	36.6 (32.0–41.2)	4.3 (2.9 to 5.7)
≥3.5	28.3 (25.5–31.0)	21.8 (17.4–26.2)	28.4 (23.8–33.1)	29.2 (23.2–35.1)	29.6 (22.9–36.4)	33.5 (25.0–42.0)	3.4 (1.3 to 5.4)
Health status[c]							
Excellent	29.2 (26.0–32.4)	26.1 (19.5–32.7)	32.1 (26.6–37.7)	27.2 (20.8–33.6)	29.8 (23.3–36.2)	31.7 (22.2–41.3)	1.5 (−1.0 to 4.1)
Very good or good	28.4 (26.7–30.1)	22.7 (19.7–25.7)	26.0 (23.4–28.6)	28.3 (25.1–31.5)	30.9 (27.8–34.0)	36.3 (31.5–41.0)	4.0 (2.7 to 5.3)
Fair or poor	28.6 (26.0–31.1)	21.8 (17.6–26.1)	27.8 (22.4–33.2)	27.6 (21.8–33.4)	30.8 (25.3–36.4)	37.0 (31.8–42.2)	4.3 (2.5 to 6.1)

[a] Adjusted prevalence ratio (PR) was estimated by using logistic regression with survey period, age group, sex, race and ethnicity, education, income-to-poverty ratio group, and health status group. 95% CIs that do not overlap between 2 PRs indicates significance. All values are percentage (95% CI), unless otherwise indicated.
[b] 95% CIs that do not overlap zero suggested a significant annual percentage change.
[c] Multiple imputed data sets were used for estimates related to education, income-to-poverty ratio, and health status.

Table 3. Adjusted Prevalence Ratio[a] of Menthol Cigarette Use Among US Adults Aged 20 Years or Older Who Smoke, by Sociodemographic Characteristics and Health Status, National Health and Nutrition Examination Survey, 1999–2018

	Unadjusted model	Age- and sex- adjusted model[b]	Age-, sex-, and race/ethnicity–adjusted model[c]	Fully adjusted model[d]
US adults who smoke (N = 11,431)	Prevalence ratio (95% CI)			
Period				
1999–2002	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
2003–2006	1.16 (0.93–1.39)	1.18 (0.95–1.41)	1.20 (1.03–1.37)	1.18 (1.02–1.35)
2007–2010	1.26 (1.00–1.52)	1.26 (1.01–1.52)	1.22 (1.02–1.41)	1.22 (1.03–1.41)
2011–2014	1.37 (1.11–1.62)	1.40 (1.14–1.66)	1.36 (1.15–1.56)	1.34 (1.14–1.54)
2015–2018	1.60 (1.30–1.90)	1.66 (1.35–1.96)	1.59 (1.35–1.84)	1.57 (1.33–1.81)
Age, y				
20–29	1.51 (1.28–1.74)	1.61 (1.36–1.86)	1.67 (1.44–1.91)	1.61 (1.39–1.83)
30–44	1.28 (1.08–1.47)	1.33 (1.13–1.53)	1.34 (1.14–1.53)	1.30 (1.11–1.48)
45–64	1.18 (1.00–1.36)	1.21 (1.02–1.39)	1.19 (1.02–1.36)	1.16 (0.99–1.32)
≥65	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Sex				
Male	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Female	1.38 (1.29–1.47)	1.39 (1.30–1.48)	1.41 (1.32–1.49)	1.41 (1.32–1.49)
Race and ethnicity[b]				
White, non-Hispanic, %	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Black, non-Hispanic, %	3.31 (3.04–3.57)	3.32 (3.07–3.58)	3.35 (3.09–3.61)	3.40 (3.14–3.66)
Mexican American, %	0.83 (0.67–0.99)	0.85 (0.70–0.99)	0.84 (0.70–0.98)	0.90 (0.74–1.05)
Other Hispanic, %	1.53 (1.22–1.84)	1.53 (1.26–1.81)	1.49 (1.24–1.74)	1.52 (1.27–1.78)
Other, non-Hispanic, %	1.11 (0.90–1.32)	1.08 (0.89–1.28)	1.05 (0.85–1.25)	1.05 (0.85–1.25)
Educational attainment[b]				
Less than high school graduate	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
High school graduate or higher	1.09 (1.00–1.17)	1.03 (0.95–1.11)	1.17 (1.08–1.26)	1.17 (1.07–1.27)
IPR				
<1.30	1.31 (1.16–1.47)	1.22 (1.07–1.36)	0.98 (0.88–1.08)	1.03 (0.91–1.14)
1.30 to <3.5	1.15 (1.01–1.29)	1.12 (0.98–1.25)	0.99 (0.88–1.10)	1.01 (0.90–1.12)
≥3.5	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Health status[a]				
Excellent	1 [Reference]	1 [Reference]	1 [Reference]	1 [Reference]
Very good or good	0.93 (0.82–1.03)	0.89 (0.79–0.98)	0.94 (0.84–1.05)	0.97 (0.86–1.08)
Fair or poor	0.97 (0.84–1.10)	0.95 (0.83–1.07)	0.93 (0.82–1.05)	0.98 (0.85–1.11)

Abbreviation: IPR, income-to-poverty ratio.
[a] Multiple imputed data sets of IPR, education, and health status were used.
[b] Adjusted prevalence ratio (PR) was estimated by using logistic regression with variables (age group, sex, and survey period) and interaction terms of these variables with survey period.
[c] Adjusted PR was estimated by using logistic regression with all variables (age group, sex, race and ethnicity, and survey period) and interaction terms of these variables with race and ethnicity and survey period.
[d] Adjusted PR was estimated by using logistic regression with all variables (age group, sex, race and ethnicity, educational attainment, income-to-poverty ratio group, health status, and survey period) and interaction terms of these variables with race and ethnicity and survey period.

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ORIGINAL RESEARCH

State-Specific Prevalence of Adult Tobacco Product Use and Cigarette Smoking Cessation Behaviors, United States, 2018–2019

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PEER REVIEWED

Summary

What is already known on this topic?

Increasing quitting among people who use tobacco products is the quickest approach to reducing commercial tobacco-related disease and death.

What is added by this report?

In 2018–2019, past-year quit attempts ranged from 44.1% to 62.8% across states. Recent (past-year) successful smoking cessation ranged from 4.6% to 10.8%. Among adults who smoked and tried to quit, only 25.5% to 50.1% used evidence-based methods.

What are the implications for public health practice?

Adults who struggle with smoking cessation could benefit from additional intervention. Prevention opportunities exist at both individual (eg, community-cessation intervention programs) and population (eg, insurers covering cessation treatments; health systems integrating evidence-based cessation interventions into routine clinical care) levels.

Abstract

Introduction

Increasing quitting among people who smoke cigarettes is the quickest approach to reducing tobacco-related disease and death.

Methods

We analyzed data from the 2018–2019 Tobacco Use Supplement to the Current Population Survey for 137,471 adult self-respondents from all 50 US states and the District of Columbia to estimate state-specific prevalence of current tobacco product use, interest in quitting smoking, past-year quit attempts, recent successful cessation (past-year quit lasting ≥6 months), receipt of advice to quit smoking from a medical doctor, and use of cessation medications and/or counseling to quit.

Results

Prevalence of current any-tobacco use (use every day or some days) ranged from 10.2% in California to 29.0% in West Virginia. The percentage of adults who currently smoked cigarettes and were interested in quitting ranged from 68.2% in Alabama to 87.5% in Connecticut; made a past-year quit attempt ranged from 44.1% in Tennessee to 62.8% in Rhode Island; reported recent successful cessation ranged from 4.6% in West Virginia and Wisconsin to 10.8% in South Dakota; received advice to quit from a medical doctor ranged from 63.3% in Colorado to 86.9% in Rhode Island; and used medications and/or counseling to quit ranged from 25.5% in Nevada to 50.1% in Massachusetts. Several states with the highest cigarette smoking prevalence reported the lowest prevalence of interest in quitting, quit attempts, receipt of advice to quit, and use of counseling and/or medication, and the highest prevalence of e-cigarette, smokeless tobacco, and cigar use.

Conclusion

Adults who smoke struggle with smoking cessation and could benefit from additional intervention.

Introduction

Although commercial tobacco use has declined over the past few decades, it remains a significant cause of preventable disease and death in the US (1–4). Increasing the number of people who quit smoking cigarettes is the quickest approach to reducing tobacco-related disease, death, and health care costs (3,5). Smoking cessation represents a critical component of a comprehensive tobacco

control program (3,5). State programs can increase smoking cessation through implementation of educational interventions and delivery of cessation services (3,6,7).

Variation in state tobacco prevention and control programs, demographic characteristics of adults who smoke cigarettes, and the changing landscape of available tobacco products may all affect cessation. A higher prevalence of current cigarette smoking has been reported among certain racial and ethnic groups (eg, non-Hispanic American Indian and Alaska Native populations), sexual-minority groups (eg, those who identify as LGBTQ), people with lower income, and people aged 25 to 54 years (1,2,8), all of which may differ by geographic area. Geographic differences in population groups with greater cessation needs, along with jurisdictional differences related to economics, health, and tobacco control laws, may all play a role in cessation success.

Indicators for smoking cessation can be used to gauge the extent to which individuals are quitting, how the extent to which individuals are quitting relates to state tobacco prevention and control measures, and how each differs between states.

To inform national and state efforts to increase smoking cessation and reduce commercial tobacco use, this study builds on work by Wang et al (9) and provides 2018–2019 national and state-specific prevalence estimates of current adult tobacco product use, in addition to providing updated prevalence estimates for the following cessation indicators: 1) interest in quitting smoking; 2) quit attempts within the past year; 3) recent successful smoking cessation (quitting for ≥6 months in the past year); 4) receipt of advice to quit from a medical doctor; and 5) use of cessation medication and/or counseling during the most recent past-year quit attempt.

Methods

Data source

Data came from the 2018–2019 Tobacco Use Supplement to the Current Population Survey (TUS-CPS). The CPS uses a multistage probability sample based on results of the US Census to interview a nationally representative sample of noninstitutionalized US civilians aged 18 years or older in all 50 states and the District of Columbia (DC) (10). The TUS is a cross-sectional household-based survey which is attached to the CPS every 3 to 4 years (11). The TUS-CPS is a key source of national and state-level data on tobacco-related use behaviors, attitudes, and policies (11). The 2018–2019 TUS-CPS was conducted by telephone or in person in 3 waves: July 2018, January 2019, and May 2019. Combined, 137,471 adults completed the interview as self-respondents, with an average self-response rate of 56%. Institutional review board approval was not required because TUS-CPS data are deidentified and publicly available. In this report, "tobacco" refers to commercial tobacco products and not to tobacco used for medicinal and spiritual purposes by some American Indian communities.

Measures

Adults who currently smoke were defined as those aged 18 years or older who had smoked 100 or more cigarettes during their lifetime and reported smoking "every day" or "some days" at the time of interview. Adults who formerly smoked were defined as those who had smoked 100 or more cigarettes during their lifetime and reported smoking "not at all" at the time of interview.

Current use of cigars (cigars, cigarillos, little filtered cigars), regular pipes, water pipes or hookah, e-cigarettes, and smokeless tobacco products (chewing tobacco, snuff, dip, snus, or dissolvable products) was defined as use of each of these products "every day" or "some days" at the time of interview. Any combustible tobacco use was defined as current use of at least 1 combustible tobacco product (cigarettes; cigars, cigarillos, filtered little cigars; pipes, water pipes or hookah). Current use of any tobacco product was defined as current use of at least 1 tobacco product.

Interest in quitting was assessed among adults who currently smoke cigarettes and indicated their interest in quitting smoking by selecting a response on a 10-point scale, which ranged from 1 (not at all interested) to 10 (extremely interested). Those selecting a response from 2 to 10 were considered as being interested in quitting smoking (9).

Past-year quit attempts was assessed among adults who currently smoke cigarettes. Those who reported having stopped smoking for 1 or more days or reported having made a serious attempt to stop smoking (even <1 day) within the past year were classified as having made a quit attempt (12). Additionally, adults who formerly smoked and who quit within the past year were classified as having made a quit attempt (12).

Recent successful quitting was assessed among adults who currently smoke cigarettes and initiated smoking at least 2 years ago and adults who formerly smoked who reported quitting within the past year. Recent successful cessation was defined as remaining abstinent from smoking for 6 months or longer within the past year (12).

Past-year receipt of medical advice to quit was assessed among adults who currently smoke cigarettes who visited a medical doctor within the past year and adults who formerly smoked who visited a medical doctor within the year before they quit smoking. Those who reported receiving advice to quit smoking were considered as having received past-year advice to quit.

Adults who currently or formerly smoked cigarettes who answered yes to having used evidence-based medications (nicotine patch, gum, lozenge, nasal spray, inhaler, Chantix/varenicline, Zyban/bupropion/Wellbutrin) and/or counseling (telephone help line or quit line; one-on-one in-person counseling by a health professional; stop-smoking clinic; internet or web-based program or tool including smartphone apps and text messaging programs) during their last past-year quit attempt were considered as having used medications and/or counseling.

Statistical analysis

Data were weighted to yield national and state-representative point prevalence estimates and 95% CIs for all 50 states and DC. Quartiles were mapped for each tobacco product use definition and each cessation indicator. Statistical analyses were performed using SAS-callable SUDAAN, version 11.0.1 (Research Triangle Institute). Unstable estimates, defined as a relative standard error (RSE) of more than 30% or an unweighted denominator of less than 50, were suppressed. The number of states and their US Census region designation falling within the lower and upper quartiles were identified (13).

Results

Tobacco product use

During 2018–2019, prevalence of current use of any tobacco product ranged from 10.2% (95% CI, 9.5%–10.8%) in California to 29.0% (95% CI, 25.0%–32.9%) in West Virginia, with a median of 16.5% (Table 1). Among the 13 states and federal district in the lowest quartile (≤14.0%), 5 were from the South (DC, Delaware, Florida, Texas, Virginia) and 5 were from the Northeast (Connecticut, Massachusetts, New Jersey, New York, Rhode Island). Among the 12 states in the highest quartile (≥20.1%), 6 states were from the South (Alabama, Arkansas, Kentucky, Mississippi, Oklahoma, West Virginia). The prevalence of any combustible tobacco product use ranged from 7.9% (95% CI, 6.0%–9.8%) in Utah to 22.9% (95% CI, 19.8%–26.0%) in West Virginia (Table 1).

Prevalence of current cigarette smoking ranged from 6.7% (95% CI, 5.0%–8.3%) in Utah to 21.3% (95% CI, 18.5%–24.1%) in West Virginia, with a median of 12.4% (Table 1). Among the 14 states in the lowest quartile (≤9.9%), 5 were in the West (California, Colorado, Hawaii, Utah, Washington) and 5 were from the Northeast (Connecticut, Massachusetts, New Jersey, New York, Rhode Island). Among the 13 states in the highest quartile (≥14.9%), 8 were from the South (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, West Virginia).

The prevalence of e-cigarette use ranged from 1.3% (95% CI, 0.8%–1.8%) in DC to 4.9% (95% CI, 3.8%–6.1%) in Oklahoma, with a median of 2.4% (Table 1). Among the 14 states and federal district in the lowest quartile (≤2.0%), 7 were from the South (DC, Delaware, Florida, Louisiana, Mississippi, South Carolina, Tennessee). Among the 12 states in the highest quartile (≥3.2%), 4 were from the South (Alabama, Kentucky, Oklahoma, West Virginia) and 4 were from the West (Arizona, Colorado, Oregon, Wyoming).

The prevalence of cigar smoking (including cigarillos and filtered little cigars) ranged from 0.7% (95% CI, 0.3%–1.1%) in Hawaii to 3.3% (95% CI, 2.3%–4.4%) in Kansas, with a median of 2.2% (Table 1). The prevalence of smokeless tobacco product use ranged from 0.4% (95% CI, 0.3%–0.5%) in California and 0.4% (95% CI, 0.2%–0.6%) in DC to 6.3% (95% CI, 4.8%–7.8%) in West Virginia, with a median of 1.9% (Table 1). The prevalence of pipe use ranged from 0% in Hawaii to 0.6% (95% CI, 0.3%–0.9%) in West Virginia, with a median of 0.2% (Table 1). The prevalence of water pipe or hookah use ranged from 0.3% (95% CI, 0.2%–0.4%) in Florida to 2.0% (95% CI, 1.4%–2.7%) in DC, with a median of 0.6% (Table 1).

Cessation indicators

The prevalence of adults who currently smoke cigarettes reporting they were interested in quitting ranged from 68.2% (95% CI, 63.5%–72.9%) in Alabama to 87.5% (95% CI, 81.0%–94.0%) in Connecticut, with a median of 76.5% (Table 2). Among the 13 states in the lowest quartile (≤73.7%), 7 were in the South (Alabama, Arkansas, Florida, Kentucky, Mississippi, Oklahoma, West Virginia); among the 12 states in the highest quartile (≥79.3%), 5 were in the Northeast (Connecticut, New Hampshire, New Jersey, Pennsylvania, Rhode Island) (Figure, Map A).

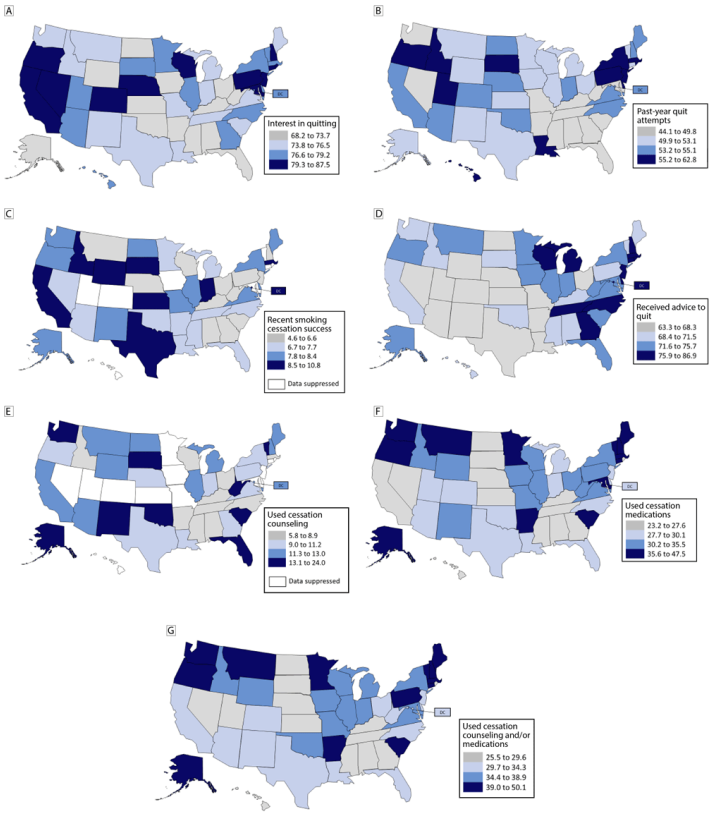

Figure. State-level prevalence of smoking cessation and cessation treatment indicators among adults aged ≥18 years who reported currently or formerly smoking cigarettes, by quartile, Tobacco Use Supplement to the Current Population Survey, United States, 2018–2019. All categories are defined in the Methods section.

The prevalence of adults who currently smoke or formerly smoked and reported past-year quit attempts ranged from 44.1% (95% CI, 39.7%–48.5%) in Tennessee to 62.8% (95% CI, 53.2%–72.4%) in Rhode Island, with a median of 53.1% (Table 2). Among the 13 states in the lowest quartile (≤49.8%), 10 were in the South (Alabama, Arkansas, Florida, Georgia, Kentucky, Maryland, Mississippi, South Carolina, Tennessee, West Virginia); among the 12 states in the highest quartile (≥55.2%), 5 were in the Northeast (Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island) (Figure, Map B).

The prevalence of adults who smoked and recently successfully quit ranged from 4.6% (95% CI, 2.9%–6.3%) in West Virginia and 4.6% (95% CI, 2.2%–7.0%) in Wisconsin to 10.8% (95% CI, 6.9%–14.7%) in South Dakota, with a median value of 7.7% (Table 2). Of the 12 states in the lowest quartile (≤6.6%), 5 were in the South (Alabama, Georgia, Kentucky, South Carolina, West Virginia); of the 9 states in the highest quartile (≥8.5%), 3 were in the West (California, Idaho, Wyoming) and 3 were in the Midwest (Indiana, Kansas, South Dakota) (Figure, Map C).

The prevalence of adults who smoked and received advice to quit from a medical doctor ranged from 63.3% (95% CI, 51.9%–74.7%) in Colorado to 86.9% (95% CI, 79.6%–94.2%) in Rhode Island, with a median of 71.5% (Table 2). Among the 14 states in the lowest quartile (≤68.3%), 6 were in the West (Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming); among the 11 states and federal district in the highest quartile (≥75.8%), 5 were in the South (DC, Delaware, Georgia, North Carolina, Tennessee) and 5 were in the Northeast (Connecticut, Massachusetts, New Hampshire, New Jersey, Rhode Island) (Figure, Map D).

The prevalence of adults who smoke who reported using cessation counseling during their last quit attempt ranged from 5.8% (95% CI, 2.8%–8.8%) in Tennessee to 24.0% (95% CI, 12.8%–35.2%) in Alaska, with a median of 11.2% (Table 2). Among the 10 states in the lowest quartile (≤8.9%), 6 were in the South (Alabama, Arkansas, Kentucky, Mississippi, North Carolina, Tennessee) and among the 9 states in the highest quartile (≥13.1%), 4 were in the South (Florida, Oklahoma, South Carolina, West Virginia) (Figure, Map E).

The prevalence of adults who smoke who reported using cessation medications during their last quit attempt ranged from 23.2% (95% CI, 17.0%–29.4%) in Nebraska to 47.5% (95% CI, 38.1%–56.9%) in Vermont and 47.5% (95% CI, 38.7%–56.3%) in Massachusetts, with a median of 30.1% (Table 2). Of the 13 states in the lowest quartile (≤27.6%), 5 were in the South (Alabama, Georgia, Kentucky, Mississippi, Tennessee), and of 13 states in the highest quartile (≥35.6%), 5 were in the Northeast (Connecticut, Maine, Massachusetts, New Hampshire, Vermont) (Figure, Map F).

The prevalence of adults who smoke and reported using counseling and/or medications during their last quit attempt ranged from 25.5% (95% CI, 17.3%–33.7%) in Nevada to 50.1% (95% CI, 41.0%–59.2%) in Massachusetts, with a median of 34.3% (Table 2). Of 13 states in the lowest quartile (≤29.6%), 5 were in the South (Alabama, Georgia, Kentucky, Mississippi, Tennessee), and of 13 states in the highest quartile (≥39.0%), 6 were in the Northeast (Connecticut, Maine, Massachusetts, New Hampshire, Pennsylvania, Vermont) (Figure, Map G).

Among the 13 states in the highest quartile for cigarette smoking, 7 were also in the highest quartile for e-cigarette use (Alabama, Kentucky, Maine, North Dakota, Oklahoma, South Dakota, West Virginia); 7 were in the highest quartile for smokeless use (Alabama, Arkansas, Kentucky, Mississippi, North Dakota, Ok-

lahoma, West Virginia), and 4 were in the highest quartile for cigar use (Iowa, Louisiana, Maine, Ohio). Six states (Alabama, Kentucky, Maine, North Dakota, Oklahoma, West Virginia) were in the highest quartile for 3 or more tobacco products.

Among the 13 states in the highest quartile for cigarette smoking, 9 were in the lowest quartile for interest in quitting (Alabama, Arkansas, Iowa, Kentucky, Mississippi, North Dakota, Ohio, Oklahoma, West Virginia); 6 were in the lowest quartile for quit attempts (Alabama, Arkansas, Kentucky, Mississippi, Tennessee, West Virginia); 4 were in the lowest quartile for recent quit success (Alabama, Kentucky, Ohio, West Virginia); 4 were among the lowest quartile for receipt of advice to quit (Arkansas, Louisiana, North Dakota, Ohio); and 6 were among the lowest quartile for reporting use of counseling and/or medications to quit (Alabama, Kentucky, Mississippi, North Dakota, South Dakota, Tennessee).

Discussion

During 2018–2019, variation existed in the prevalence of current commercial tobacco product use and cigarette smoking cessation behaviors among adults across US states. In every state, at least 10% of the adult population used at least 1 tobacco product, and combustible products (primarily cigarettes) were the most prevalent product used. More than two-thirds of adults who currently smoke cigarettes in all states and DC expressed at least some interest in quitting smoking. Similar to results from analysis of 2014–2015 TUS-CPS data (9), 3 in 10 people who smoked made no past-year quit attempts, 9 in 10 people who smoked did not successfully quit, and at least 1 in 10 people who smoked did not receive advice to quit from a medical doctor during a health care visit within the past year (9). Use of medications and/or counseling during the most recent past-year quit attempt was reported by one-quarter to one-half of all people who smoke. Except for receipt of advice to quit from a medical doctor, one-third to one-half of states in the lowest quartiles for all other cessation indicators assessed in this study were in the South. Several states with the highest prevalence of cigarette smoking also had a high prevalence of e-cigarette, smokeless tobacco, and cigar use and the lowest prevalence for interest in quitting, quit attempts, receiving advice to quit, and receipt of counseling and/or medications to quit.

Results suggest that adults who live in states with a higher prevalence of commercial tobacco use report less quit interest, cessation-focused behaviors, and more missed opportunities for cessation intervention from medical doctors. This variation between states may reflect jurisdictional differences in tobacco product use, demographic composition, tobacco prevention and control strategies, and access to cessation supports (5). For example, 9 of the 13 states with the highest prevalence of cigarette smoking have been noted as having weaker tobacco control policies and programs and disproportionately higher numbers of populations with more significant health care and financial needs (14). Social norms that influence perceptions toward tobacco use may also differ both between and within US Census regions (15). Taken together, these factors suggest that the variation in the prevalence of cessation indicators across states may be related to differences in implementation of strategies or access to cessation support and resources across states.

Estimates for interest in quitting smoking, quit attempts, recent successful cessation, receipt of advice to quit from a medical doctor, and use of evidence-based methods for quitting were consistent with previous estimates from national and state surveys, further highlighting difficulties in quitting smoking as a public health concern (3,8,16–18). Although most people who smoke cigarettes have made recent quit attempts, few have successfully quit. Only one-quarter to one-half of those who attempted to quit smoking within the past year used evidence-based cessation methods on their last quit attempt, with a higher prevalence reporting medication use than counseling.

The discrepancy between trying to quit and subsequently succeeding indicates opportunities for intervention. Use of evidence-based cessation methods represents an important area for improving quit rates, given that use of both counseling and medication together further increases cessation success (3,19). Use of quitlines also provides an affordable option for obtaining both behavioral counseling for nicotine addiction and access to cessation medications (3,5).

Behavioral interventions and cessation medications are key strategies for helping people who smoke to quit. However, population-level strategies can serve as an important complement to individual-level strategies (3). The 2020 US Surgeon General's Report on smoking cessation states that increasing smoking cessation will require several strategies including 1) increasing the appeal, reach, and use of existing evidence-based cessation interventions; 2) further increasing the effectiveness of those interventions; and 3) developing additional cessation interventions that have greater reach and effectiveness than existing interventions or that appeal to and are used by different populations of people who smoke (3).

The path to successful smoking cessation is dynamic, challenging, and influenced by multiple behavioral, social, and biological factors (3). Tailoring evidence-based comprehensive tobacco control strategies to the needs of populations within jurisdictions can help with increasing cessation success and minimize geographical disparities (20). For example, states with higher proportions of

populations with high tobacco use prevalence could tailor strategies to these groups (20). Using population-level interventions that affect social norms related to tobacco use could help states increase cessation by creating a social environment that denormalizes tobacco product use (eg, mass-reach intensive media campaigns to directly influence social norms; enactment of smoke-free laws; price increases) and provide greater opportunities for cessation (eg, offering free nicotine replacement therapy) (5).

Limitations and strengths

The findings in this study are subject to at least 3 limitations. First, data were self-reported and are subject to recall and social desirability bias. Related to this, smoking and smoking cessation were not biochemically validated by serum cotinine measures. However, studies have shown that serum cotinine correlates well with self-reported smoking status (21). Second, this study does not fully address how other demographic, environmental, policy, and social factors may have influenced the geographic variation observed. Finally, this study focuses on state-specific prevalence and cannot account for within-state differences.

This study also has strengths. First, it provides state-level estimates of several key cessation indicators and use of evidence-based cessation methods. Although previous reports have provided only national-level estimates, reported only on some of the indicators at the state level, or used older information, this study provides 2018–2019 data using a broad set of cessation indicators (9,16,22). Additionally, this study provides an overall summary of results of combined state-specific tobacco product use and cessation indicator prevalence and compares this information by region. We have not found similar combined information in the published literature at the time of this writing. Second, this study provides state-specific estimates on 4 cessation behavioral indicators that align with Healthy People 2030 Tobacco Use Objectives 11 through 14, which specify national objectives related to quit attempts, receipt of advice to quit smoking from a medical doctor, use of smoking cessation counseling and/or medications, and recent cessation success, respectively (12). Finally, results of this report can be used to assist in monitoring state progress toward smoking cessation goals.

Conclusion

Smoking cessation is a core component of comprehensive commercial tobacco control programs. Up-to-date state-level information on the prevalence of adult smoking cessation behaviors and on variations in these indicators across states are important for informing national and state efforts to increase delivery and use of proven cessation interventions. Prevention opportunities exist at both individual (eg, community cessation intervention programs) and population (eg, insurers covering cessation treatments; health systems integrating evidence-based cessation interventions into routine clinical care) levels (3–5). Use of state-level information on smoking prevalence and cessation behaviors can assist in identifying jurisdictions with the greatest need for cessation support. Identifying jurisdictions with the greatest cessation needs is a necessary step toward improving implementation of evidence-based strategies to increase cessation success and reduce overall commercial tobacco use.

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References

1. Cornelius ME, Loretan CG, Jamal A, Davis Lynn BC, Mayer M, Alcantara IC, et al. Tobacco product use among adults — United States, 2021. *MMWR Morb Mortal Wkly Rep.* 2023; 72(18):475–483. doi:10.15585/mmwr.mm7218a1
2. Cornelius ME, Loretan CG, Wang TW, Jamal A, Homa DM. Tobacco product use among adults — United States, 2020. *MMWR Morb Mortal Wkly Rep.* 2022;71(11):397–405. doi:10.15585/mmwr.mm7111a1

3. US Department of Health and Human Services. Smoking cessation. A report of the Surgeon General. Atlanta (GA): US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2020. Accessed April 20, 2023. https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf
4. US Department of Health and Human Services. The health consequences of smoking — 50 years of progress: a report of the Surgeon General. Atlanta (GA): US Department of Health and Human Services, Centers for Disease Control and Prevention; 2014. Accessed April 20, 2023. https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf
5. Centers for Disease Control and Prevention. Best practices for comprehensive tobacco control programs — 2014. Atlanta (GA): US Department of Health and Human Services, Centers for Disease Control and Prevention; 2014. Accessed April 20, 2023. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/2014/comprehensive.pdf
6. Community Preventive Services Task Force. 2022. What works to boost cessation? The Community Guide; updated October 17, 2022. Accessed April 20, 2023. https://www.thecommunityguide.org/content/what-works-boost-tobacco-cessation
7. Zaza S, Briss PA, Harris KW. The Guide to Community Preventive Services: what works to promote health? Oxford (NY): Oxford University Press; 2005.
8. Creamer MR, Wang TW, Babb S, Cullen KA, Day H, Willis G, et al. Tobacco product use and cessation indicators among adults — United States, 2018. *MMWR Morb Mortal Wkly Rep*. 2019;68(45):1013–1019. doi:10.15585/mmwr.mm6845a2
9. Wang TW, Walton K, Jamal A, Babb SD, Schecter A, Prutzman YM, et al. State-specific cessation behaviors among adult cigarette smokers — United States, 2014–2015. *Prev Chronic Dis*. 2019;16:180349. doi:10.5888/pcd16.180349
10. US Census Bureau. Current Population Survey (CPS) methodology; 2019. Accessed April 23, 2023. https://www.census.gov/programs-surveys/cps/technical-documentation/complete.html
11. US Department of Health and Human Services. Tobacco use supplement to the current population survey. National Institutes of Health, and National Cancer Institute; 2020. Accessed April 20, 2023. https://cancercontrol.cancer.gov/sites/default/files/2020-06/2018-19-tus-factsheet.pdf
12. US Department of Health and Human Services. Healthy people 2030. Proposed tobacco use objectives; 2020. Accessed April 20, 2023. https://health.gov/healthypeople/objectives-and-data/browse-objectives/tobacco-use
13. US Census Bureau. 2021. Census Bureau regions. Accessed April 20, 2023. https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf
14. Truth Initiative. Tobacco nation: an ongoing crisis. Examining the health and policy disparities of US states with the highest smoking rates. Updated June 2019. Accessed April 20, 2023. https://truthinitiative.org/sites/default/files/media/files/2022/09/Tobacco%20Nation%20Report%20Update_final_092622_rev.pdf
15. Zhang X, Cowling D, Tang H. The impact of social norm change strategies on smokers' quitting behaviours. *Tob Control*. 2010;19(Suppl 1):i51–55.
16. Babb S, Malarcher A, Schauer G, Asman K, Jamal A. Quitting smoking among adults — United States, 2000–2015. *MMWR Morb Mortal Wkly Rep*. 2017;65(52):1457–1464. doi:10.15585/mmwr.mm6552a1
17. Siu AL; U.S. Preventive Services Task Force. Behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women: US Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2015;163(8):622–634. doi:10.7326/M15-2023
18. US Public Health Service. Treating tobacco use and dependence: 2008 update. Clinical practice guideline. Rockville (MD): US Department of Health and Human Services, US Public Health Service; 2008. Accessed April 20, 2023. https://www.ncbi.nlm.nih.gov/books/NBK63952/
19. Stead LF, Lancaster T. Combined pharmacotherapy and behavioural interventions for smoking cessation. *Cochrane Database Syst Rev*. 2012;10:CD008286.
20. Centers for Disease Control and Prevention. Best practices user guide: health equity in tobacco prevention and control. Atlanta (GA): US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2015. Accessed April 20, 2023. https://www.cdc.gov/tobacco/stateandcommunity/best-practices-health-equity/pdfs/bp-health-equity.pdf
21. Binnie V, McHugh S, Macpherson L, Borland B, Moir K, Malik K. The validation of self-reported smoking status by analysing cotinine levels in stimulated and unstimulated saliva, serum and urine. *Oral Dis*. 2004;10(5):287–293. doi:10.1111/j.1601-0825.2004.01018.x
22. Walton K, Wang TW, Schauer GL, Hu S, McGruder HF, Jamal A, et al. State-specific prevalence of quit attempts among adult cigarette smokers — United States, 2011–2017. *MMWR Morb Mortal Wkly Rep*. 2019;68(28):621–626. doi:10.15585/mmwr.mm6828a1

Tables

Table 1. Prevalence of Current Use of Tobacco Products Among Adults Aged ≥18 Years, by State, Tobacco Use Supplement to the Current Population Survey, United States, 2018–2019[a]

State	Any tobacco[b]	Combustible tobacco products[c]	Cigarettes[d]	Cigars /cigarillos/ filtered little cigars[e]	Regular pipes[f]	Water pipes/ hookah[g]	E-cigarettes[h]	Smokeless tobacco[i]
	% (95% CI)							
National	**15.4 (15.1–15.6)**	**13.0 (12.8–13.3)**	**11.4 (11.2–11.6)**	**2.1 (2.0–2.2)**	**0.3 (0.2–0.3)**	**0.4 (0.4–0.5)**	**2.3 (2.2–2.4)**	**1.4 (1.4–1.5)**
Alabama	21.6 (19.6–23.6)	16.7 (15.1–18.4)	15.2 (13.6–16.8)	2.0 (1.3–2.7)	[j]	[j]	3.4 (2.6–4.3)	3.9 (3.2–4.7)
Alaska	18.4 (15.7–21.1)	16.5 (13.8–19.1)	14.3 (11.8–16.8)	2.4 (1.5–3.4)	[j]	[j]	2.2 (1.1–3.3)	2.2 (1.3–3.1)
Arizona	14.4 (12.7–16.2)	12.3 (10.8–13.8)	10.5 (9.1–11.9)	2.1 (1.5–2.8)	[j]	[j]	3.4 (2.3–4.5)	0.9 (0.5–1.2)
Arkansas	21.1 (17.7–24.6)	17.3 (14.4–20.2)	15.5 (12.7–18.4)	2.5 (1.7–3.3)	[j]	[j]	2.5 (1.6–3.4)	3.5 (2.5–4.5)
California	10.2 (9.5–10.8)	9.0 (8.4–9.7)	7.5 (7.0–8.1)	1.5 (1.2–1.7)	0.2 (0.1–0.3)	0.5 (0.3–0.7)	1.6 (1.3–2.0)	0.4 (0.3–0.5)
Colorado	14.8 (12.1–17.6)	11.5 (9.6–13.5)	9.9 (8.0–11.9)	1.7 (0.8–2.5)	[j]	[j]	3.2 (2.1–4.4)	[j]
Connecticut	12.9 (10.6–15.3)	11.5 (9.3–13.7)	9.4 (7.4–11.3)	2.7 (1.6–3.8)	[j]	[j]	2.0 (1.0–3.1)	[j]
Delaware	13.4 (11.1–15.8)	12.6 (10.2–14.9)	10.7 (8.6–12.8)	2.2 (1.1–3.2)	[j]	[j]	1.4 (0.8–2.1)	[j]
District of Columbia	14.0 (12.4–15.6)	13.2 (11.6–14.8)	9.9 (8.5–11.3)	2.6 (1.8–3.3)	[j]	2.0 (1.4–2.7)	1.3 (0.8–1.8)	0.4 (0.2–0.6)
Florida	13.9 (12.9–14.9)	12.4 (11.5–13.3)	10.6 (9.7–11.5)	2.1 (1.7–2.5)	0.4 (0.2–0.6)	0.3 (0.2–0.4)	1.7 (1.2–2.1)	0.8 (0.5–1.1)
Georgia	16.2 (14.6–17.9)	14.1 (12.5–15.6)	12.0 (10.5–13.5)	2.3 (1.7–2.9)	[j]	0.7 (0.4–1.1)	2.2 (1.5–3.0)	1.2 (0.6–1.7)
Hawaii	10.8 (8.9–12.7)	9.1 (7.4–10.8)	8.7 (7.0–10.3)	0.7 (0.3–1.1)	0 (0.0–0.0)	[j]	2.7 (1.6–3.9)	[j]
Idaho	16.3 (14.3–18.2)	12.4 (10.7–14.1)	10.8 (9.3–12.3)	1.7 (1.1–2.2)	[j]	[j]	2.8 (2.1–3.6)	3.2 (2.1–4.3)
Illinois	15.7 (14.1–17.3)	14.0 (12.5–15.6)	12.2 (10.7–13.7)	2.2 (1.6–2.8)	[j]	[j]	2.3 (1.8–2.8)	1.1 (0.6–1.5)
Indiana	20.0 (17.3–22.6)	16.8 (14.4–19.3)	14.7 (12.3–17.2)	2.9 (2.0–3.7)	[j]	[j]	3.0 (2.2–3.8)	2.1 (1.4–2.7)
Iowa	20.3 (17.3–23.4)	17.6 (14.6–20.7)	15.9 (13.2–18.6)	2.7 (1.7–3.6)	[j]	[j]	3.1 (2.1–4.1)	2.2 (1.5–2.9)
Kansas	18.6 (15.4–21.7)	14.9 (12.5–17.3)	12.3 (10.1–14.5)	3.3 (2.3–4.4)	[j]	[j]	2.7 (1.4–4.1)	2.3 (1.6–2.9)
Kentucky	24.8 (22.1–27.5)	20.4 (18.0–22.8)	18.3 (15.7–20.9)	2.4 (1.1–3.6)	[j]	[j]	3.5 (2.1–4.9)	4.3 (2.3–6.2)
Louisiana	18.9 (16.5–21.2)	17.0 (14.9–19.1)	14.9 (12.9–16.9)	2.8 (2.1–3.5)	[j]	[j]	1.7 (1.0–2.3)	1.5 (1.0–2.1)
Maine	20.2 (17.7–22.6)	17.9 (15.7–20.2)	15.9 (13.7–18.0)	2.6 (1.4–3.7)	[j]	[j]	3.3 (1.9–4.7)	0.9 (0.4–1.5)

[a] In this article, "tobacco" refers to commercial tobacco products and not to tobacco used for medicinal and spiritual purposes by some American Indian communities.
[b] Any tobacco use was defined as use either "every day" or "some days" of at least 1 tobacco product. For cigarettes, users were defined as adults who reported use either "every day" or "some days" and had smoked ≥100 cigarettes during their lifetime.
[c] Any combustible tobacco use was defined as use either "every day" or "some days" of at least 1 combustible tobacco product: cigarettes; cigars, cigarillos, or filtered little cigars; and pipes, water pipes, or hookah. For cigarettes, users were defined as adults who reported use either "every day" or "some days" and had smoked ≥100 times during their lifetime.
[d] Adults who currently smoke cigarettes were defined as adults who reported smoking ≥100 cigarettes during their lifetime and now smoked cigarettes "every day" or "some days."
[e] Adults who currently smoke cigars were defined as adults who currently reported smoking cigars, cigarillos, or little filtered cigars "every day" or "some days."
[f] Adults who currently smoke pipes were defined as adults who reported currently smoking tobacco in a regular pipe "every day" or "some days."
[g] Adults who currently smoke waterpipes or hookahs were defined as adults who reported currently smoking tobacco in a waterpipe or hookah "every day" or "some days."
[h] Adults who currently use e-cigarettes were defined as adults who reported using e-cigarettes at least once during their lifetime and now use e-cigarettes "every day" or "some days."
[i] Current smokeless tobacco product users were defined as adults who reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and now use at least 1 of these products "every day" or "some days."
[j] Unweighted denominator <50 or relative standard error >30%.

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Table 1. Prevalence of Current Use of Tobacco Products Among Adults Aged ≥18 Years, by State, Tobacco Use Supplement to the Current Population Survey, United States, 2018–2019[a]

State	Any tobacco[b]	Combustible tobacco products[c]	Cigarettes[d]	Cigars /cigarillos/ filtered little cigars[e]	Regular pipes[f]	Water pipes/ hookah[g]	E-cigarettes[h]	Smokeless tobacco[i]
	% (95% CI)							
Maryland	14.4 (12.4–16.5)	12.4 (10.4–14.3)	9.9 (8.2–11.5)	2.5 (1.6–3.3)	[j]	[j]	2.2 (1.5–3.0)	[j]
Massachusetts	11.2 (9.7–12.8)	10.0 (8.5–11.4)	8.4 (7.0–9.7)	1.7 (1.2–2.2)	[j]	[j]	1.8 (1.2–2.4)	[j]
Michigan	18.0 (16.1–20.0)	16.3 (14.4–18.2)	14.4 (12.6–16.2)	2.3 (1.7–2.9)	[j]	[j]	1.9 (1.4–2.5)	1.4 (0.9–1.9)
Minnesota	16.2 (13.5–19.0)	13.9 (11.1–16.8)	11.9 (9.6–14.1)	2.0 (1.1–2.9)	[j]	[j]	1.5 (0.9–2.1)	2.1 (1.4–2.8)
Mississippi	20.6 (19.0–22.2)	17.4 (15.9–18.9)	16.2 (15.0–17.5)	2.5 (1.7–3.2)	[j]	[j]	1.4 (0.9–2.0)	3.2 (2.4–3.9)
Missouri	19.1 (17.0–21.3)	16.0 (13.7–18.4)	13.5 (11.4–15.7)	2.5 (1.7–3.4)	[j]	[j]	2.7 (1.8–3.5)	2.2 (1.3–3.1)
Montana	19.9 (18.2–21.7)	15.8 (14.3–17.3)	14.5 (12.9–16.1)	2.0 (1.3–2.6)	0.2 (0.1–0.3)	[j]	2.4 (1.6–3.1)	3.8 (3.0–4.6)
Nebraska	18.8 (16.9–20.7)	15.7 (13.8–17.6)	13.8 (12.0–15.6)	2.6 (1.7–3.4)	[j]	[j]	3.2 (2.0–4.3)	1.7 (0.9–2.5)
Nevada	15.4 (13.5–17.3)	14.2 (12.4–16.1)	12.4 (10.6–14.1)	1.9 (1.1–2.7)	[j]	[j]	2.0 (1.1–2.9)	[j]
New Hampshire	17.4 (15.2–19.6)	15.5 (13.5–17.5)	12.4 (10.6–14.1)	3.0 (2.1–4.0)	[j]	[j]	2.0 (1.0–3.1)	0.7 (0.3–1.2)
New Jersey	11.7 (10.4–13.1)	10.4 (9.1–11.7)	7.8 (6.6–8.9)	2.5 (1.7–3.2)	[j]	0.8 (0.4–1.3)	2.1 (1.4–2.9)	[j]
New Mexico	15.5 (13.3–17.7)	12.6 (10.6–14.6)	11.2 (9.5–12.9)	1.6 (0.8–2.4)	[j]	[j]	2.5 (1.6–3.4)	1.7 (1.3–2.0)
New York	12.9 (12.0–13.9)	11.2 (10.3–12.2)	9.5 (8.7–10.2)	1.3 (1.0–1.6)	0.2 (0.1–0.2)	0.8 (0.5–1.2)	2.1 (1.7–2.5)	0.5 (0.3–0.8)
North Carolina	18.8 (16.8–20.7)	15.9 (14.3–17.6)	13.6 (12.0–15.1)	2.5 (1.8–3.3)	[j]	0.6 (0.3–0.9)	2.7 (2.1–3.3)	2.1 (1.6–2.7)
North Dakota	22.0 (19.4–24.6)	17.3 (15.1–19.5)	15.8 (13.7–17.9)	2.2 (1.5–2.9)	[j]	[j]	3.2 (2.2–4.1)	4.3 (2.8–5.7)
Ohio	21.6 (20.1–23.0)	18.7 (17.3–20.1)	16.4 (15.1–17.8)	3.1 (2.5–3.8)	[j]	[j]	2.8 (2.1–3.5)	2.1 (1.6–2.6)
Oklahoma	23.6 (21.6–25.6)	17.8 (15.8–19.7)	16.1 (14.2–18.1)	2.4 (1.7–3.2)	[j]	[j]	4.9 (3.8–6.1)	3.4 (2.4–4.4)
Oregon	16.0 (14.0–18.1)	13.2 (11.3–15.0)	11.2 (9.3–13.1)	1.9 (1.1–2.7)	[j]	[j]	3.2 (2.2–4.1)	1.9 (1.2–2.6)
Pennsylvania	18.5 (17.0–20.0)	16.2 (14.8–17.6)	13.7 (12.4–14.9)	2.8 (2.2–3.5)	0.4 (0.2–0.6)	[j]	2.4 (1.8–3.0)	1.8 (1.4–2.3)
Rhode Island	12.9 (10.6–15.3)	11.0 (9.1–12.9)	8.4 (6.8–10.0)	1.9 (1.0–2.8)	[j]	[j]	[j]	[j]
South Carolina	16.5 (14.5–18.5)	14.2 (12.2–16.2)	12.8 (10.9–14.8)	1.8 (1.2–2.4)	[j]	[j]	1.9 (1.3–2.6)	1.6 (1.1–2.2)
South Dakota	20.7 (18.6–22.9)	17.8 (15.5–20.0)	15.5 (13.2–17.7)	2.2 (1.3–3.1)	[j]	[j]	3.5 (2.3–4.7)	2.4 (1.6–3.1)

[a] In this article, "tobacco" refers to commercial tobacco products and not to tobacco used for medicinal and spiritual purposes by some American Indian communities.
[b] Any tobacco use was defined as use either "every day" or "some days" of at least 1 tobacco product. For cigarettes, users were defined as adults who reported use either "every day" or "some days" and had smoked ≥100 cigarettes during their lifetime.
[c] Any combustible tobacco use was defined as use either "every day" or "some days" of at least 1 combustible tobacco product: cigarettes; cigars, cigarillos, or filtered little cigars; and pipes, water pipes, or hookah. For cigarettes, users were defined as adults who reported use either "every day" or "some days" and had smoked ≥100 times during their lifetime.
[d] Adults who currently smoke cigarettes were defined as adults who reported smoking ≥100 cigarettes during their lifetime and now smoked cigarettes "every day" or "some days."
[e] Adults who currently smoke cigars were defined as adults who currently reported smoking cigars, cigarillos, or little filtered cigars "every day" or "some days."
[f] Adults who currently smoke pipes were defined as adults who reported currently smoking tobacco in a regular pipe "every day" or "some days."
[g] Adults who currently smoke waterpipes or hookahs were defined as adults who reported currently smoking tobacco in a waterpipe or hookah "every day" or "some days."
[h] Adults who currently use e-cigarettes were defined as adults who reported using e-cigarettes at least once during their lifetime and now use e-cigarettes "every day" or "some days."
[i] Current smokeless tobacco product users were defined as adults who reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and now use at least 1 of these products "every day" or "some days."
[j] Unweighted denominator <50 or relative standard error >30%.

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Table 1. Prevalence of Current Use of Tobacco Products Among Adults Aged ≥18 Years, by State, Tobacco Use Supplement to the Current Population Survey, United States, 2018–2019[a]

State	Any tobacco[b]	Combustible tobacco products[c]	Cigarettes[d]	Cigars /cigarillos/ filtered little cigars[e]	Regular pipes[f]	Water pipes/ hookah[g]	E-cigarettes[h]	Smokeless tobacco[i]
	% (95% CI)							
Tennessee	19.7 (18.2–21.2)	17.3 (15.9–18.7)	15.8 (14.4–17.1)	2.0 (1.4–2.6)	[j]	[j]	2.0 (1.2–2.8)	2.1 (1.6–2.6)
Texas	13.4 (12.6–14.2)	10.8 (10.1–11.6)	9.0 (8.3–9.8)	1.7 (1.3–2.1)	0.1 (0.1–0.2)	0.4 (0.2–0.6)	2.3 (1.9–2.7)	1.5 (1.2–1.8)
Utah	10.7 (8.6–12.8)	7.9 (6.0–9.8)	6.7 (5.0–8.3)	1.0 (0.4–1.5)	[j]	[j]	3.0 (2.1–3.8)	1.4 (0.8–2.0)
Vermont	14.2 (12.3–16.2)	12.5 (10.8–14.2)	10.8 (9.2–12.4)	1.8 (1.1–2.5)	[j]	[j]	1.9 (1.1–2.7)	1.0 (0.4–1.6)
Virginia	14.0 (12.0–16.0)	11.8 (9.9–13.6)	9.6 (7.8–11.4)	2.3 (1.7–3.0)	[j]	0.6 (0.3–0.9)	2.4 (1.7–3.0)	1.3 (0.8–1.7)
Washington	13.7 (11.8–15.7)	10.9 (9.5–12.2)	9.9 (8.7–11.2)	1.4 (0.8–1.9)	[j]	[j]	2.3 (1.5–3.1)	1.7 (0.9–2.5)
West Virginia	29.0 (25.0–32.9)	22.9 (19.8–26.0)	21.3 (18.5–24.1)	2.4 (1.5–3.3)	0.6 (0.3–0.9)	[j]	3.8 (2.9–4.7)	6.3 (4.8–7.8)
Wisconsin	17.8 (15.9–19.7)	14.9 (13.3–16.5)	13.2 (11.7–14.7)	1.9 (1.4–2.3)	[j]	[j]	2.6 (1.6–3.6)	1.8 (1.1–2.6)
Wyoming	22.6 (19.6–25.5)	16.2 (14.2–18.3)	14.2 (12.2–16.2)	2.2 (1.5–2.9)	[j]	[j]	3.7 (2.6–4.7)	5.2 (3.0–7.3)

[a] In this article, "tobacco" refers to commercial tobacco products and not to tobacco used for medicinal and spiritual purposes by some American Indian communities.
[b] Any tobacco use was defined as use either "every day" or "some days" of at least 1 tobacco product. For cigarettes, users were defined as adults who reported use either "every day" or "some days" and had smoked ≥100 cigarettes during their lifetime.
[c] Any combustible tobacco use was defined as use either "every day" or "some days" of at least 1 combustible tobacco product: cigarettes; cigars, cigarillos, or filtered little cigars; and pipes, water pipes, or hookah. For cigarettes, users were defined as adults who reported use either "every day" or "some days" and had smoked ≥100 times during their lifetime.
[d] Adults who currently smoke cigarettes were defined as adults who reported smoking ≥100 cigarettes during their lifetime and now smoked cigarettes "every day" or "some days."
[e] Adults who currently smoke cigars were defined as adults who currently reported smoking cigars, cigarillos, or little filtered cigars "every day" or "some days."
[f] Adults who currently smoke pipes were defined as adults who reported currently smoking tobacco in a regular pipe "every day" or "some days."
[g] Adults who currently smoke waterpipes or hookahs were defined as adults who reported currently smoking tobacco in a waterpipe or hookah "every day" or "some days."
[h] Adults who currently use e-cigarettes were defined as adults who reported using e-cigarettes at least once during their lifetime and now use e-cigarettes "every day" or "some days."
[i] Current smokeless tobacco product users were defined as adults who reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and now use at least 1 of these products "every day" or "some days."
[j] Unweighted denominator <50 or relative standard error >30%.

Table 2. State-Specific Prevalence of Smoking Cessation and Cessation Treatment Indicators, Tobacco Use Supplement to the Current Population Survey, United States, 2018–2019[a,b]

State	Interested in quitting[c]	Past-year quit attempts[d]	Recent smoking cessation[e]	Receipt of advice to quit[f]	Use of cessation counseling and/or medications to quit[g]	Use of counseling to quit[h]	Use of cessation medications to quit[i]
	% (95% CI)						
National	**76.6 (75.8–77.4)**	**51.9 (51.1–52.8)**	**7.4 (7.0–7.9)**	**71.8 (70.8–72.9)**	**34.3 (33.1–35.6)**	**10.2 (9.5–10.9)**	**31.0 (29.8–32.2)**
Alabama	68.2 (63.5–72.9)	46.1 (39.8–52.4)	5.0 (3.0–7.0)	71.1 (63.3–78.9)	27.7 (23.3–32.1)	6.9 (3.7–10.1)	25.7 (21.4–30.0)
Alaska	72.2 (64.1–80.3)	53.0 (44.8–61.2)	7.8 (3.6–12.0)	72.8 (64.7–80.9)	48.1 (38.1–58.1)	24.0 (12.8–35.2)	44.3 (35.1–53.5)
Arizona	78.4 (72.6–84.2)	53.8 (46.9–60.7)	7.7 (4.7–10.7)	63.5 (54.9–72.1)	31.3 (23.8–38.8)	12.6 (7.1–18.1)	27.7 (20.5–34.9)
Arkansas	72.7 (68.3–77.1)	45.1 (40.0–50.2)	6.8 (3.8–9.8)	65.2 (59.1–71.3)	44.6 (36.5–52.7)	8.8 (4.8–12.8)	41.5 (33.1–49.9)
California	80.0 (76.7–83.3)	54.4 (50.6–58.2)	9.0 (7.0–11.0)	69.0 (64.7–73.3)	30.1 (25.3–34.9)	13.0 (9.6–16.4)	26.7 (22.1–31.3)
Colorado	83.6 (75.7–91.5)	54.2 (45.0–63.4)	[j]	63.3 (51.9–74.7)	29.8 (18.2–41.4)	[j]	27.8 (16.1–39.5)
Connecticut	87.5 (81.0–94.0)	52.0 (41.9–62.1)	[j]	83.5 (75.4–91.6)	44.8 (32.0–57.6)	[j]	38.9 (26.1–51.7)
Delaware	78.4 (69.6–87.2)	57.2 (49.0–65.4)	7.9 (3.9–11.9)	84.4 (77.4–91.4)	30.8 (20.3–41.3)	[j]	27.7 (18.0–37.4)
District of Columbia	77.3 (70.1–84.5)	54.8 (47.8–61.8)	8.5 (4.9–12.1)	76.5 (69.8–83.2)	31.7 (24.0–39.4)	11.3 (6.4–16.2)	27.9 (20.4–35.4)
Florida	73.1 (68.8–77.4)	49.1 (44.9–53.3)	6.7 (4.6–8.8)	72.7 (67.3–78.1)	32.5 (27.0–38.0)	13.7 (9.7–17.7)	28.5 (23.4–33.6)
Georgia	79.2 (74.7–83.7)	44.9 (39.2–50.6)	5.9 (2.7–9.1)	76.3 (69.5–83.1)	27.4 (19.9–34.9)	11.1 (6.6–15.6)	24.8 (17.4–32.2)
Hawaii	78.1 (71.7–84.5)	55.7 (46.0–65.4)	[j]	70.4 (59.1–81.7)	29.1 (17.3–40.9)	[j]	24.9 (14.3–35.5)
Idaho	76.0 (71.1–80.9)	55.4 (49.3–61.5)	9.8 (6.2–13.4)	68.4 (60.8–76.0)	35.0 (25.8–44.2)	8.8 (4.1–13.5)	33.4 (24.4–42.4)
Illinois	77.2 (72.9–81.5)	52.5 (47.9–57.1)	8.3 (5.4–11.2)	73.3 (67.2–79.4)	37.1 (29.9–44.3)	12.0 (8.1–15.9)	31.9 (24.5–39.3)
Indiana	73.9 (69.8–78.0)	54.8 (49.1–60.5)	9.9 (6.8–13.0)	75.1 (67.7–82.5)	36.9 (28.8–45.0)	11.0 (5.5–16.5)	29.8 (22.7–36.9)
Iowa	69.5 (61.8–77.2)	49.9 (44.8–55.0)	[j]	75.0 (66.6–83.4)	38.1 (26.1–50.1)	[j]	35.1 (24.1–46.1)

[a] Adults who currently smoke cigarettes were defined as adults who reported smoking ≥100 cigarettes during their lifetime and now smoked cigarettes "every day" or "some days."
[b] Adults who formerly smoked cigarettes were defined as adults who had smoked ≥100 cigarettes during their lifetime and reported smoking "not at all" at the time of interview.
[c] Adults who currently smoke cigarettes and who indicated their interest in quitting smoking by selecting a response from 2 to 10 on a 10-point scale, which ranged from 1 (not at all interested) to 10 (extremely interested).
[d] Adults who currently smoke cigarettes and who made a quit attempt in the past year who reported having stopped smoking for ≥1 days or reported having made a serious attempt to stop smoking (even <1 day) within the past year, and adults who formerly smoked who quit within the past year were classified as having made a quit attempt.
[e] Recent successful cessation was defined as adults who currently smoke and adults who formerly smoked who remained quit for ≥6 months within the past year. Recent successful cessation was assessed among adults who currently smoke and who initiated smoking at least 2 years ago, and adults who formerly smoked who reported quitting within the past year.
[f] Among adults who currently smoke who visited a medical doctor within the past year and adults who formerly smoked who visited a medical doctor within the year before they quit smoking, those who reported receiving advice to quit were considered as having received past-year advice to quit.
[g] Adults who currently smoke and adults who formerly smoked who answered yes to having used evidence-based medications (ie, nicotine patch, gum, lozenge, nasal spray, inhaler, Chantix/varenicline, Zyban/bupropion/Wellbutrin) and/or counseling (telephone help line or quit line; one-on-one in-person counseling by a health professional; stop-smoking clinic; internet or web-based program or tool, including smartphone apps and text messaging programs) during their last past-year quit attempt were classified as having used medications and/or counseling. We are not able to distinguish those who selected each item among those who selected "internet or web-based program or tool including smartphone apps and text messaging programs" and acknowledge the limitations in the definition for evidence-based counseling since the evidence is currently inadequate to infer that smartphone apps for smoking cessation are independently effective in increasing smoking cessation. See page 33 of the Surgeon General's Report on Cessation (3).
[h] Adults who currently smoke and adults who formerly smoked who answered "yes" to having received counseling (telephone help line or quitline; one-on-one in-person counseling by a health professional; stop-smoking clinic; internet or web-based program or tool including smartphone apps and text messaging programs) during their last past-year quit attempt were considered as having used counseling to quit.
[i] Adults who currently smoke and adults who formerly smoked who answered yes to having used evidence-based medications (ie, nicotine patch, gum, lozenge, nasal spray, inhaler, Chantix/varenicline, Zyban/bupropion/Wellbutrin) during their last past-year quit attempt were considered as having used medications.
[j] Unweighted denominator <50 or relative standard error >30%.

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State	Interested in quitting[c]	Past-year quit attempts[d]	Recent smoking cessation[e]	Receipt of advice to quit[f]	Use of cessation counseling and/or medications to quit[g]	Use of counseling to quit[h]	Use of cessation medications to quit[i]
	% (95% CI)						
Kansas	72.5 (65.4–79.6)	52.0 (42.5–61.5)	10.3 (6.2–14.4)	65.5 (55.9–75.1)	27.4 (17.6–37.2)	[j]	27.2 (17.5–36.9)
Kentucky	68.8 (62.0–75.6)	46.3 (41.7–50.9)	4.8 (2.5–7.1)	69.9 (64.8–75.0)	28.8 (20.4–37.2)	7.2 (3.8–10.6)	27.5 (19.3–35.7)
Louisiana	76.0 (71.7–80.3)	55.7 (50.3–61.1)	7.5 (5.6–9.4)	67.0 (61.1–72.9)	32.0 (26.6–37.4)	10.7 (7.2–14.2)	29.2 (23.6–34.8)
Maine	75.4 (69.3–81.5)	54.3 (48.1–60.5)	8.2 (4.5–11.9)	71.5 (62.2–80.8)	45.9 (36.7–55.1)	12.9 (6.8–19.0)	43.1 (34.0–52.2)
Maryland	84.7 (79.0–90.4)	47.8 (38.6–57.0)	[j]	74.3 (64.8–83.8)	38.6 (27.4–49.8)	[j]	35.8 (25.2–46.4)
Massachusetts	77.9 (72.3–83.5)	56.2 (49.5–62.9)	9.8 (5.5–14.1)	77.3 (70.5–84.1)	50.1 (41.0–59.2)	7.6 (3.4–11.8)	47.5 (38.7–56.3)
Michigan	74.0 (67.4–80.6)	52.6 (47.3–57.9)	6.9 (4.1–9.7)	76.3 (70.7–81.9)	36.4 (29.4–43.4)	13.0 (8.3–17.7)	30.1 (24.1–36.1)
Minnesota	77.5 (72.3–82.7)	51.2 (44.7–57.7)	7.2 (4.0–10.4)	74.1 (67.8–80.4)	39.1 (29.8–48.4)	[j]	38.1 (28.5–47.7)
Mississippi	72.1 (67.1–77.1)	48.8 (41.0–56.6)	6.8 (3.9–9.7)	68.4 (61.2–75.6)	27.8 (22.9–32.7)	6.3 (2.6–10.0)	25.7 (21.1–30.3)
Missouri	73.8 (68.2–79.4)	49.1 (42.9–55.3)	8.1 (3.9–12.3)	64.8 (58.4–71.2)	34.4 (26.0–42.8)	[j]	31.7 (23.6–39.8)
Montana	75.8 (70.9–80.7)	50.5 (44.1–56.9)	5.4 (3.0–7.8)	73.3 (67.8–78.8)	39.8 (33.1–46.5)	11.7 (7.7–15.7)	37.9 (31.6–44.2)
Nebraska	82.5 (77.5–87.5)	53.7 (45.2–62.2)	6.4 (3.3–9.5)	66.9 (60.3–73.5)	28.0 (21.1–34.9)	9.1 (4.6–13.6)	23.2 (17.0–29.4)
Nevada	85.2 (80.7–89.7)	46.7 (38.6–54.8)	7.4 (3.9–10.9)	66.1 (57.2–75.0)	25.5 (17.3–33.7)	[j]	23.9 (16.1–31.7)
New Hampshire	87.4 (82.4–92.4)	55.1 (47.5–62.7)	5.1 (2.6–7.6)	81.8 (75.4–88.2)	41.4 (33.3–49.5)	12.0 (6.5–17.5)	38.0 (29.8–46.2)
New Jersey	80.4 (74.6–86.2)	57.3 (51.0–63.6)	6.3 (3.0–9.6)	79.0 (72.0–86.0)	32.3 (23.4–41.2)	[j]	29.8 (20.9–38.7)

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[b] Adults who formerly smoked cigarettes were defined as adults who had smoked ≥100 cigarettes during their lifetime and reported smoking "not at all" at the time of interview.
[c] Adults who currently smoke cigarettes and who indicated their interest in quitting smoking by selecting a response from 2 to 10 on a 10-point scale, which ranged from 1 (not at all interested) to 10 (extremely interested).
[d] Adults who currently smoke cigarettes and who made a quit attempt in the past year who reported having stopped smoking for ≥1 days or reported having made a serious attempt to stop smoking (even <1 day) within the past year, and adults who formerly smoked who quit within the past year were classified as having made a quit attempt.
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[f] Among adults who currently smoke who visited a medical doctor within the past year and adults who formerly smoked who visited a medical doctor within the year before they quit smoking, those who reported receiving advice to quit were considered as having received past-year advice to quit.
[g] Adults who currently smoke and adults who formerly smoked who answered yes to having used evidence-based medications (ie, nicotine patch, gum, lozenge, nasal spray, inhaler, Chantix/varenicline, Zyban/bupropion/Wellbutrin) and/or counseling (telephone help line or quit line; one-on-one in-person counseling by a health professional; stop-smoking clinic; internet or web-based program or tool, including smartphone apps and text messaging programs) during their last past-year quit attempt were classified as having used medications and/or counseling. We are not able to distinguish those who selected each item among those who selected "internet or web-based program or tool including smartphone apps and text messaging programs" and acknowledge the limitations in the definition for evidence-based counseling since the evidence is currently inadequate to infer that smartphone apps for smoking cessation are independently effective in increasing smoking cessation. See page 33 of the Surgeon General's Report on Cessation (3).
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Table 2. State-Specific Prevalence of Smoking Cessation and Cessation Treatment Indicators, Tobacco Use Supplement to the Current Population Survey, United States, 2018–2019[a,b]

State	Interested in quitting[c]	Past-year quit attempts[d]	Recent smoking cessation[e]	Receipt of advice to quit[f]	Use of cessation counseling and/or medications to quit[g]	Use of counseling to quit[h]	Use of cessation medications to quit[i]
	% (95% CI)						
New Mexico	75.5 (70.6–80.4)	53.1 (45.3–60.9)	8.1 (5.4–10.8)	64.5 (56.4–72.6)	34.3 (29.0–39.6)	14.5 (9.8–19.2)	30.7 (24.7–36.7)
New York	78.0 (73.7–82.3)	55.5 (51.6–59.4)	8.4 (5.8–11.0)	75.6 (71.2–80.0)	35.0 (28.7–41.3)	10.1 (6.4–13.8)	32.4 (26.0–38.8)
North Carolina	79.2 (75.2–83.2)	53.7 (48.3–59.1)	7.1 (4.5–9.7)	75.9 (69.3–82.5)	31.2 (24.7–37.7)	6.2 (3.1–9.3)	29.1 (23.3–34.9)
North Dakota	73.2 (67.8–78.6)	53.8 (47.1–60.5)	8.0 (4.2–11.8)	68.3 (62.1–74.5)	28.2 (20.6–35.8)	12.4 (6.1–18.7)	25.5 (17.6–33.4)
Ohio	72.0 (68.0–76.0)	51.7 (47.7–55.7)	6.6 (4.7–8.5)	68.2 (62.5–73.9)	34.2 (28.4–40.0)	6.1 (3.5–8.7)	32.4 (26.8–38.0)
Oklahoma	73.6 (66.9–80.3)	54.9 (49.2–60.6)	7.7 (5.3–10.1)	68.5 (61.0–76.0)	35.7 (29.7–41.7)	13.3 (7.4–19.2)	29.8 (24.7–34.9)
Oregon	83.7 (78.9–88.5)	58.0 (51.6–64.4)	8.4 (5.1–11.7)	71.6 (62.2–81.0)	39.5 (30.5–48.5)	9.8 (4.6–15.0)	37.0 (28.6–45.4)
Pennsylvania	80.3 (76.2–84.4)	56.2 (51.7–60.7)	6.5 (4.2–8.8)	68.8 (64.1–73.5)	39.5 (33.6–45.4)	10.6 (6.6–14.6)	33.0 (27.1–38.9)
Rhode Island	87.3 (81.1–93.5)	62.8 (53.2–72.4)	[j]	86.9 (79.6–94.2)	26.0 (15.8–36.2)	[j]	25.0 (14.7–35.3)
South Carolina	74.7 (68.4–81.0)	47.5 (40.4–54.6)	5.5 (2.4–8.6)	73.5 (67.2–79.8)	46.1 (35.5–56.7)	13.5 (6.2–20.8)	42.8 (32.3–53.3)
South Dakota	78.9 (71.1–86.7)	58.0 (52.6–63.4)	10.8 (6.9–14.7)	71.1 (64.6–77.6)	29.3 (17.6–41.0)	14.9 (7.2–22.6)	27.2 (16.3–38.1)
Tennessee	74.0 (69.8–78.2)	44.1 (39.7–48.5)	7.1 (4.7–9.5)	77.7 (72.2–83.2)	28.0 (21.7–34.3)	5.8 (2.8–8.8)	25.5 (19.4–31.6)
Texas	76.1 (72.5–79.7)	50.8 (46.7–54.9)	9.0 (6.7–11.3)	66.0 (61.4–70.6)	31.2 (26.0–36.4)	9.0 (6.0–12.0)	28.1 (23.2–33.0)
Utah	77.5 (69.4–85.6)	62.7 (54.9–70.5)	[j]	68.3 (57.8–78.8)	28.4 (17.5–39.3)	[j]	28.4 (17.5–39.3)
Vermont	78.8 (72.6–85.0)	53.1 (45.3–60.9)	[j]	71.1 (64.4–77.8)	49.4 (39.7–59.1)	16.8 (8.6–25.0)	47.5 (38.1–56.9)

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[b] Adults who formerly smoked cigarettes were defined as adults who had smoked ≥100 cigarettes during their lifetime and reported smoking "not at all" at the time of interview.
[c] Adults who currently smoke cigarettes and who indicated their interest in quitting smoking by selecting a response from 2 to 10 on a 10-point scale, which ranged from 1 (not at all interested) to 10 (extremely interested).
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State	Interested in quitting[c]	Past-year quit attempts[d]	Recent smoking cessation[e]	Receipt of advice to quit[f]	Use of cessation counseling and/or medications to quit[g]	Use of counseling to quit[h]	Use of cessation medications to quit[i]
	% (95% CI)						
Virginia	75.1 (68.3–81.9)	55.1 (49.1–61.1)	7.9 (3.9–11.9)	73.0 (64.7–81.3)	37.8 (28.6–47.0)	10.0 (5.6–14.4)	34.9 (25.0–44.8)
Washington	76.5 (71.1–81.9)	49.6 (43.4–55.8)	7.8 (4.4–11.2)	71.5 (65.2–77.8)	42.7 (34.5–50.9)	13.2 (7.3–19.1)	39.2 (31.1–47.3)
West Virginia	70.7 (65.8–75.6)	46.4 (39.9–52.9)	4.6 (2.9–6.3)	75.7 (70.4–81.0)	33.3 (27.6–39.0)	14.1 (10.7–17.5)	30.9 (25.3–36.5)
Wisconsin	79.4 (74.7–84.1)	50.3 (44.4–56.2)	4.6 (2.2–7.0)	79.5 (73.6–85.4)	35.7 (27.2–44.2)	8.5 (3.7–13.3)	35.0 (26.9–43.1)
Wyoming	73.6 (67.0–80.2)	53.1 (48.3–57.9)	10.0 (7.3–12.7)	64.5 (58.6–70.4)	37.2 (29.8–44.6)	12.0 (7.9–16.1)	33.1 (25.6–40.6)

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TOOLS FOR PUBLIC HEALTH PRACTICE

Strategies for Effective Capacity-Building in the Fight Against Commercial Tobacco

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PEER REVIEWED

Summary

What is already known on this topic?

For the past twenty years, tobacco control partnerships and coalitions have raised awareness of the harms of tobacco products through public health campaigns and cessation services.

What is added by this report?

Program planning requires a strategic approach, such as that offered through our Community Capacity Building Curriculum and RoadMap tool for ongoing community support.

What are the implications for public health practice?

Health justice is inherently linked to social justice. Our training series provides a detailed community-led action plan that accounts for each community's history, culture, context, and geography to support the successful implementation of tobacco control programs.

Abstract

The Center for Black Health & Equity's approach to addressing health inequities relies on the inherent ability within community-based organizations to respond to public health priorities while addressing the political and social determinants of health. By using Dr. Robert Robinson's Community Development Model as a foundational framework, communities can address systemic barriers that impede optimal health outcomes. The model includes community engagement and mobilization activities that motivate communities to achieve equity-centered policy change and offers milestones that show progress made toward their goals and objectives. We operationalized the Community Development Model into the Community Capacity Building Curriculum to train community partners to form a multicultural coalition through asset mapping as a tool for community mobilization. This curriculum is both cost effective and efficient because it enables communities to address health disparities beyond tobacco control, such as food and nutrition, housing, and environmental issues. Coalitions are prepared to identify and make recommendations to address policies that perpetuate health disparities. Facing off against a powerful tobacco industry giant is challenging for small grassroots organizations advocating for stricter tobacco regulations and policies. Such organizations struggle for resources; however, their passion and dedication to the mission of saving Black lives can promote change.

Introduction

The Center for Black Health & Equity (hereinafter, The Center) originally founded as the National African American Tobacco Prevention Network, develops new coalitions or identifies existing ones to build capacity within the Black community to advocate for policies promoting optimal health. For over 20 years, The Center has built networks across the country to drive meaningful change in diminishing health disparities and promoting health equity; it is one of the Centers for Disease Control and Prevention's (CDC's) 9 funded national networks in its National Networks Driving Action: Preventing Tobacco- and Cancer-Related Health Disparities by Building Equitable Communities program. The Center reduces health disparities as a grantee of the program by advancing commercial tobacco prevention with evidence-based strategies that address cancer-related illness among African Americans who experience tobacco- and cancer-related health disparities.

The Center strategically partners with community-based organizations, national partners, and state and local public health departments to ensure tobacco control activities and policies benefit the Black community. The health implications of equitable policies minimize the harm for people who are most affected by the problem. The outcome of these activities will benefit the community in the following ways: the government system will provide equitable protections to disparate populations; predatory marketing, density of tobacco-selling venues, and advertising in unprotected communities will be reduced; health care will benefit from improved and equitable cessation services and decreased chronic disease

prevalence; smoking and overall tobacco use will be reduced in housing, especially multiunit housing with units that share ventilation systems; and school systems will see a reduction in student suspensions for violating tobacco-free school policies. Our primary focus has been educating the public and community leaders about the harmful effects of mentholated tobacco use and highlighting the availability of culturally tailored cessation services.

The purpose of this article is to provide learners — the public health community, community leaders, and the general public — with the tools of our Community Capacity Building Curriculum. This process will enrich learners with theoretical strategies that can be implemented in local and state community-based organizations. Once implemented in the community, these strategies will also reduce risk factors for chronic disease and improve quality of life among community members, especially those affected by tobacco-related illnesses. The learner will gain the fundamental process to engage community members to expand their outlook and build their leadership capacity skills, empowering them to work toward collective change through structured processes (1).

Menthol and the Black Community

Big Tobacco's infiltration into the Black community started before many of us were born (1), and its hold remains firm today. By centuries of forced enslavement in farming tobacco, covert marketing campaigns targeting Black Americans, and political tactics that pit Black influencers against public health progress, this infiltration has achieved Goliath-level proportions. Decades after our fight against Big Tobacco began, the world's 4 largest tobacco companies (2) continue to cause chronic illnesses and death and severely hinder any progress in improving local, state, and national health, including disparate economic conditions.

Big Tobacco uses Black community leaders to lobby against policies and laws, such as a menthol ban, that would reduce smoking in Black communities. A Food and Drug Administration ban on the manufacturing, distribution, and wholesale, import, and retail sale of menthol cigarettes and little cigars would address health inequities caused by the industry's targeting. Pending such a ban, state and local governments have taken action to prohibit the retail sale of flavored tobacco products, including menthol cigarettes. These policies are a big step forward for health equity and social justice in the US (3). Additionally, Big Tobacco uses preemption as a weapon to block the passage of local bans on menthol (1,4). With the knowledge of how important local control is to tobacco prevention efforts, the industry and its allies historically have used preemptive strategies to hamper smoke-free laws and influence youths' access and tobacco retailer licensing policies (5,6).

The Community Capacity Building Curriculum

Our Community Capacity Building Curriculum is based on Dr. Robert Robinson's Community Development Model, an asset-based framework that builds on existing community strengths and capacity while developing infrastructure and competency to assess problems and implement solutions (7). The model offers the learner measurable milestones toward goals and objectives, making the process sustainable. Communities are empowered to replicate efforts beyond tobacco control, such as with food and nutrition, housing, and environmental issues. Communities that decide to mobilize and fight for themselves will also be prepared to identify and make recommendations for centering policies in equity.

The curriculum operationalizes the foundational framework of the Community Development Model (8) into modules and navigates essential stages — mobilization, assessment, planning, implementation, and evaluation — by using the RoadMap, a tool we developed for ongoing guidance (Figure). This model prioritizes community members, encouraging them to identify their unique needs and assets to develop home-grown solutions. From assessing the nuances of diverse community landscapes to celebrating hard-won victories, the curriculum addresses not only immediate issues, but cultivates a culture of self-reliance, pride, and long-term empowerment. Together, these frameworks are not merely theoretical constructs but dynamic tools for crafting a more equitable, healthy, and vibrant community. Through planning, implementation, and outcomes, the RoadMap helps advocacy groups and coalitions achieve measurable milestones, which ultimately lead to their desired policy, system, and environmental change. Communities identify needed assets (research, programs, leaders, organizations, networks) and if feasible, implement necessary development strategies.

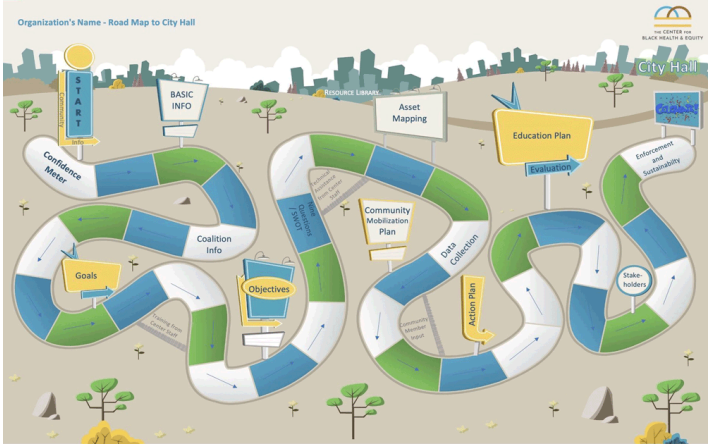

Figure. A visual representation of the RoadMap interactive tool of the Center for Black Health & Equity. The map is an interactive Excel file that houses all the elements of the Community Capacity Building Curriculum. The user can click on a segment, which links to an Excel cell that describes a particular tool of the curriculum, such as the Confidence Meter, Asset Mapping Tool, Community Mobilization Plan, and others. The RoadMap houses the coalition's created assets throughout their completion of the series.

The Community Capacity Building Curriculum consists of 5 in-person or virtually led modules. Through the 5-module series, the curriculum facilitates building capacity in data collection, community mobilization, education campaigns, policy development, and ongoing evaluation improvement. The modules serve as a how-to guide for community mobilization against commercial tobacco.

Module 1: History of tobacco, menthol, racism, and Black Americans

Understanding the history and context of commercial tobacco use and its disproportionate effect on Black and other communities of color is critical to identifying ongoing inequities and industry tactics. In the first module, an assessment of the history, context, culture, and geography of tobacco use helps coalitions understand the determinants of that community. At the end of Module 1, attendees will be able to

- Identify at least 3 examples of how the tobacco industry targets Black American communities with mentholated tobacco products
- Identify how the tobacco industry markets mentholated tobacco products to Black Americans, such as through advertisements, sales, and social media
- Understand the historic reasons why Black Americans have health disparities resulting from use of tobacco and mentholated tobacco
- Understand how commercial tobacco has shaped the development of the US
- Identify a minimum of 4 key strategies to reduce tobacco-related disparities in the Black American community

Module 2: Coalition development and maintenance

The Center works to build capacity with established coalitions and to form new ones. Of utmost importance is the development of multicultural, multiethnic, multigenerational coalitions representative of the community. In this module, groups begin to organize by assessing resources and cultivating leaders.

Resources or assets can include individuals, organizations, institutions, buildings, landscapes, equipment — anything that can be used to improve a community's quality of life. Building the capacity of leaders who are community assets creates opportunities for people affected by a problem to participate, build relationships, and influence changing the problem. Community leaders are often unknown outside the community because they lack the opportunity to be seen by outsiders. Identifying who these people are and working with them is important. By the end of Module 2, attendees will be able to

- Identify and understand the use of infrastructure- and capacity-building tools for developing the coalition
- Identify key skill sets required for advocacy work toward building community inclusiveness
- Determine the readiness and needs of the coalition to effectively advocate for a menthol flavor restriction ordinance
- Identify the key community assets required for a successful menthol ban advocacy campaign
- Identify subcommittees to lead specific tasks for building the coalition
- Name and brand the coalition

Module 3: Action planning

Coalitions develop an action plan based on the RoadMap that leads to desired policy, system, and environmental change. The RoadMap is an interactive tool designed to guide development of an action plan to educate community members and other key players on the dangers of menthol and other flavored tobacco products and guide development of strategies to reduce tobacco-related disparities in their community. Attendees make contributions to the action plan by providing their understanding of the history, context, culture, and geography of their experiences with tobacco use, predatory marketing, and resource identification and by defining roles and responsibilities to lead activities recommended by attendees. This module also includes completion of The Democracy Center's "Nine Questions for Strategic Advocacy Strategy Planning Framework" (9) and an analysis of strengths, weaknesses, opportunities, and threats related to policy, system, and environment-

al change. Answers to the questions are subject to change over time because the implementation of plans may require a pivot in strategies and activities. At this stage, the coalition will also develop skills in policy development, data collection, and most importantly, community mobilization. At the end of Module 3, attendees will be able to

- Develop the elements of an action plan (RoadMap) for their menthol flavor restriction project that consists of goals, measurable objectives, strategies, and activities
- Agree on the direction of the coalition and policy, system, or environmental change
- Identify strengths, weaknesses, opportunities, and challenges of the project
- Identify resources in hand and resources needed
- Develop outcome measures to determine success
- Prepare for the development of their RoadMap

National partners participate in these modules, leading or contributing to discussions and serving as subject matter experts when appropriate. The Center engages national partner organizations to assist in the capacity-building of coalitions to fight for themselves against systemic injustice. Organizations such as the African American Tobacco Control Leadership Council (AATCLC) assist with educating decision makers and key allies, the Public Health Law Center provides legal guidance and model policy language examples, and the CDC Office on Smoking and Health provides national data and visits the discussions at various points during the training process.

Module 4: Education campaign training

Coalitions begin to develop their education campaigns tailored to the priority population of the geographic area the policy, system, or environmental change will affect. Here the coalitions are trained to develop messaging, imagery, and dissemination channels for the products developed. Emphasis is placed on earned media, social media, and paid media strategies. At the end of Module 4, attendees will be able to

- Develop messaging and imagery toward educating the community on the dangers of using menthol and other flavored tobacco products
- Develop a dissemination plan for the education campaign in the selected community

Module 5: The RoadMap

Coalitions build, launch, and execute their RoadMap and action plans. At the end of Module 5, all attendees will be able to

- Develop the action plan RoadMap by plotting the key elements in a virtual tool designed to illustrate the plan to advocate for policy, system, and environmental change.

Fighting Menthol with Community Mobilization

Community mobilization is the process of bringing together diverse interested individuals and groups to raise awareness of and demand for a shared goal, to assist in the delivery of resources and services, and to strengthen community participation for sustainability and self-reliance (10). When people from different parts of the community share a common goal and actively participate in both identifying needs and being part of the solution, that community is empowered to initiate and control its own development (10).

Detroit, Michigan, is a shining example of a community that uses its community assets to enact public health change. Minou Jones is the founder of Making It Count Community Development Corporation (https://www.umakeitcount.org), a nonprofit organization bringing positive change to underserved Detroit communities through a series of programs and services. She currently serves as chair of the Detroit–Wayne–Oakland Tobacco-Free Coalition (DWOTFC) and as a board member for Tobacco-Free Michigan. DWOTFC, a fully functional and funded organization, is a leading example of the successful implementation of our capacity-building curriculum. Upon completion of the curriculum steps and the RoadMap tool, she guides a multisector coalition of community groups and members working to change public policy in Michigan and ban flavored tobacco products in the state.

Minou Jones's work has influenced policymakers in Detroit, where the city council responded to DWOTFC's education efforts by passing a resolution that asks Michigan to ban menthol and other flavored commercial tobacco and eliminate outdated state preemption policies that prohibit cities from regulating flavored tobacco within their own borders. The resolution was approved by the city council without objection (11). It is now a key element of larger coalition education and advocacy efforts urging the state legislature to modernize preemption laws so city leaders have the authority to ban flavored tobacco and protect their residents.

For decades communities have mobilized against Big Tobacco by using a multicultural, multiethnic, and multigenerational approach. The US Department of Health and Human Services Community Preventive Services Task Force recommends using community mobilization along with supplementary measures, such as enforcing stricter local laws for retailers, actively ensuring compliance with sales laws, and educating retailers with enforcement, all

backed by solid evidence of the effectiveness of these measures in reducing tobacco use by children and adolescents and access to tobacco products from commercial sources (12). These interventions were designed to influence the public to move toward positive change in their communities.

An Example From the Field: San Francisco, California — Carol McGruder, African American Tobacco Control Leadership Council (AATCLC) Founding Member and Co-Chair

AATCLC is the leading public health education and advocacy organization in the US that is taking on Big Tobacco to save Black lives. The group has grown a coalition of national and local organizations. Its representatives have traveled across the country to educate communities and build grassroots infrastructure, and the organization has achieved major legislation ending the sale of menthol-flavored tobacco products in cities, counties, and states across the country. AATCLC has sued the Food and Drug Administration to prohibit the sale of menthol-flavored tobacco products throughout the US.

Carol McGruder: **"**I embrace accountability with grace, mercy, and patience with coalitions and communities. Over the course of my relationship with the [California] Department of Public Health, I have learned that you have to re-engage people and provide consistent messaging. I have advocated for opportunities to try a different way and support people along the process.

"We started the African American Tobacco Control Leadership Council (AATCLC) because funding for priority population leadership groups was cut. The Latinos, the Asians, and the LGBTQ groups (along with the AATCLC), were really the only ones who banded together and kept going. I think it's because of our nature of fighting, the way that we do this is so different than other groups because we have really had to fight for everything.

"Look at how Barack Obama got in and look at what happened. The pendulum swings back and forth and everything that we do as Black people and any gain we make, there's going to be forces pushing back. Whether it's politically, health wise, etc. We see it hugely in the industry (Big Tobacco)."

Traditional evaluation for assessing program activities often fails to put community members or people as the center focus, and often overlooks the Black American lived experience. The Center measures success by its ability to get coalitions successfully through the series of modules. However, the curriculum as a whole has strengths and weakness that should be considered (Box).

Box. The Center for Black Health & Equity Evaluation of the Strengths and Weakness of the 5-Part Capacity Building Process

Strengths	Weaknesses
Community-led: The rate of success vastly improves when the community of focus is involved from the onset and not an afterthought.	Competing interests from national lobbying organizations can derail the process of the 5-part series of modules because of their top-down approach.
Training protocol: You must complete Module 1 before moving to Modules 2–5.	Timeline: Completion of the curriculum series can take up to 1 calendar year, often competing with legislative calendars and the available time of the coalition.
Training products: Each module results in a product that is loaded into the RoadMap. All products are results of the corresponding module.	Training format: Most trainings are delivered virtually. The attention to detail is higher in person because the trainer can observe in-person interactions and troubleshoot on the spot if additional in-person trainings are conducted.
Subcommittees: The subcommittees mirror the trainings that we have facilitated, and these subcommittee members put steps in place to move their action plan and RoadMap to success.	None
Visibility: The modules provide local organizations with additional visibility and exposure to other local and national organizations in the commercial tobacco control space while also giving them a sense of control and agency to choose their partner organizations.	Political environment: The political climate is assessed. The ideal level of engagement should include the state health department, the local coalition, national partners, and The Center. At times we do not have the ideal engagement because of the political climate. We have this in Detroit, and funding is from the state health department.

Conclusion

The Center has combined its wealth of knowledge of Black history, tobacco industry tactics, health disparities, and racism to curate its Community Capacity Building Curriculum, a series of trainings that progressively move Black communities toward health justice through a lens of health equity. Based on our community development model, which includes community engagement and community competence (1), the process empowers Black communities to move toward policy identification and policy change. The Community Capacity Building Curriculum offers participants measurable milestones that allow community members to see their progress toward their goals and objectives. With each step in the process, measurable competencies are developed, implemented, and ultimately evaluated: plans for community mobilization for advocating for policy, systems, and environmental change; educating key decision makers and the overall community; and sustaining efforts for the long term. Importantly, the greatest outcome of

the process is the growth and development that occurs among participants. These skills and competencies enable community members to take greater control of their own lives and, ultimately, address their own concerns, now and into the future. Lessons learned will enable communities to replicate efforts beyond tobacco control, in areas such as food and nutrition, housing, and environmental issues.

Through our community trainings, we have learned that education and awareness are necessary to move communities with limited experience to take advocacy action for tobacco control. Education and awareness can broaden local commitment to policy change by changing social norms in affected communities, such as the use of tobacco to manage stress. Local organizations with experience working in areas related to social justice and health equity were able to build on their expertise and credibility in their community as a result of working through the 5 modules of our Community Capacity Building Curriculum (12).

The Center is building the capacity of communities in Charleston, South Carolina; Cleveland, Ohio; New Orleans, Louisiana; Beckley, West Virginia; Grand Rapids, Michigan; Detroit, Michigan; Albany, Georgia; and Charlotte, North Carolina, to develop and implement action plans directed at local policies to restrict the sale of menthol and other flavored commercial tobacco products and eliminate exposure to secondhand smoke.

By marrying strategy with action, our curriculum aims to create an environment in which effective change is possible and sustainable. Our commitment to sustainable change is evidenced by our thorough planning to evaluate and document outcomes through the innovative RoadMap process, ensuring that the effect of our interventions is long-lasting and continually adapted based on community feedback. Through this multifaceted approach, our Capacity Building Curriculum seeks to transform the values, needs, and aspirations of local communities, thereby making the principles of equity and social justice tangible realities.

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References

1. Public Health Law Center. The Tobacco Industry & the Black Community; Published June 2021. Accessed February 1, 2024. https://www.publichealthlawCenter.org/sites/default/files/resources/Tobacco-Industry-Targeting.pdf
2. STOP. Who Is "Big Tobacco"? Published July 14, 2021. Accessed July 24, 2023. https://exposetobacco.org/news/who-is-big-tobacco/
3. Campaign for Tobacco-Free Kids. Tobacco use among African Americans. Accessed August 26, 2023. https://assets.tobaccofreekids.org/factsheets/0006.pdf
4. Public Health Law Center. Dillon's rule, home rule, and preemption. Published November 2020. Accessed October 26, 2023. https://www.publichealthlawCenter.org/sites/default/files/resources/Dillons-Rule-Home-Rule-Preemption.pdf
5. Centers for Disease Control and Prevention. STATE system preemption fact sheet. Reviewed May 26, 2023. Accessed September 21, 2023. https://www.cdc.gov/statesystem/factsheets/preemption/Preemption.html
6. American Nonsmokers' Rights Foundation. What is preemption? Published January 1, 2024. Accessed November 30, 2023. https://no-smoke.org/smokefree-threats/preemption/#:~:text=Preemption%20is%20the%20passage%20of
7. Robinson RG. Community development model for public health applications: overview of a model to eliminate population disparities. *Health Promot Pract.* 2005;6(3):338–346. doi:10.1177/1524839905276036
8. Health Justice in Tobacco Control. *Volume 1.*First edition. The Center for Black Health & Equity; 2022.
9. Advocacy Institute. "Nine Questions." A Strategy Planning Tool For Advocacy Campaigns. Accessed August 1, 2023. https://www.ndi.org/sites/default/files/Handout%201%20-%20Nine%20Advocacy%20Questions.pdf
10. World Health Organization. Community-based rehabilitation: CBR guidelines; 2010. Accessed February 28, 2024. https://www.who.int/publications/i/item/9789241548052

11. Benson S. Resolution urging the Michigan legislature to end the sale of flavored tobacco products; 2023. Accessed August 30, 2023. https://detroitmi.gov/sites/detroitmi.localhost/files/2023-04/RESO%20URGING%20STATE%20TO%20END%20THE%20SALE%20OF%20FLAVORED%20TOBACCO.pdf
12. The Community Guide. Tobacco use: community mobilization with additional interventions to restrict minors' access to tobacco products. Published December 21, 2022. Accessed August 27, 2023. https://www.thecommunityguide.org/findings/tobacco-use-community-mobilization-additional-interventions.html

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ORIGINAL RESEARCH

It's Not Just: Evaluation of a Media Campaign to Motivate Action Around Targeting of Menthol Tobacco in Black Communities

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PEER REVIEWED

Summary

What is already known on this topic?

For more than 60 years, tobacco companies have aggressively marketed menthol tobacco products in Black communities.

What is added by this report?

A statewide media campaign to raise awareness of menthol tobacco targeting in Black communities resulted in moderate reach, with campaign messaging that was received favorably by priority audiences and with positive associations between campaign awareness and beliefs and behaviors the campaign sought to influence.

What are the implications for public health practice?

Media campaigns can play an important role in raising awareness of the impact of menthol tobacco product targeting in Black communities and building public support for local and statewide menthol restrictions that may be implemented before federal product standards are in place.

Abstract

Introduction

For more than 60 years, tobacco companies have aggressively marketed menthol tobacco products in Black communities. In 2021, New York State Department of Health–funded grantees launched a media campaign aimed toward civically engaged New York adults to educate and mobilize community action to prevent targeted marketing of menthol tobacco. This study examined audience reactions to the campaign and associations between campaign awareness and key outcomes.

Methods

Following campaign implementation, we administered 2 online, cross-sectional surveys to 2,000 civically engaged New York adults to assess campaign awareness, audience reactions, and campaign-related attitudes and behaviors. We examined sociodemographic differences in audience reactions and assessed multivariate associations between campaign awareness and key outcomes.

Results

Overall, 40% of respondents were aware of the campaign. Perceived advertisement (ad) effectiveness was higher among Black, Hispanic, and nonsmoking respondents and those aware of the campaign. Negative reactions to ads were higher at wave 1, among non-Hispanic White and male respondents, and among current smokers. Campaign awareness was positively associated with campaign-related beliefs. The association between campaign awareness and support for a menthol ban varied by survey wave and race, with positive associations at wave 2 and among non-Hispanic White respondents only. Among wave 2 respondents only, campaign awareness was positively associated with actions to reduce the targeting of menthol in Black communities.

Conclusion

Media campaigns can play an important role in raising awareness of menthol tobacco product targeting in Black communities and building public support for local and statewide menthol restrictions that may be implemented before federal product standards are in place.

Introduction

Tobacco use is the leading cause of preventable death and disease in the United States (1). Despite comparable rates of cigarette smoking prevalence between Black (14.4%) and White (13.3%) non-Hispanic adults (2), Black people disproportionately bear the burden of tobacco-related illness and death. Among all racial and ethnic groups in the US, Black people have the highest death rates for lung cancer, heart disease, hypertension, and stroke — all health conditions that have been linked to tobacco use (3).

Racial disparities in tobacco-related health outcomes may be driven in part by smoking menthol cigarettes. In the US and in New York City, 85% and 89% (respectively) of Black people who smoke cigarettes use menthol cigarettes (4,5). Menthol's cooling properties can mask the harshness of cigarette smoke, which makes them easier to smoke and increases the likelihood of addiction (6,7). For more than 60 years, tobacco companies have aggressively marketed menthol tobacco products in Black communities (8). Neighborhoods with a higher proportion of Black residents have a higher number of tobacco retailers, more marketing of menthol tobacco products, and more tobacco marketing in general (9).

In 2022, the US Food and Drug Administration (FDA) proposed a rule prohibiting menthol as a characterizing flavor in cigarettes (10). In 2023, the New York State Executive Budget included legislation to end the sale of all flavored tobacco products, including menthol cigarettes (11). This provision was left out of the legislative budget and thus did not become New York law in 2023 (12); nevertheless, menthol restrictions continue to be a policy priority for the New York State Department of Health (NYSDOH). Nationally, approximately two-thirds (62.3%) of adults support policies to prohibit the sale of menthol cigarettes, and support is similar among non-Hispanic Black adults (61.5%) (13).

New York State's proposed menthol legislation was preceded by sustained efforts from NYSDOH-funded grantees to advance tobacco-free norms in the state. As part of these efforts, in 2021 NYSDOH-funded Advancing Tobacco-Free Communities (ATFC) grantees worked collaboratively to develop the statewide *It's Not Just* (INJ) media campaign to raise awareness of the impact of menthol tobacco use in Black communities and mobilize community action to prevent targeted marketing and sales of menthol tobacco. The campaign was aimed toward civically engaged New York adults and included digital video, print, and displays, digital radio, and social media spots; a statewide public relations campaign; and distribution of educational materials and talking points to support menthol ban advocacy efforts.

As menthol restrictions are being advanced by local communities, states, and the federal government, media campaigns like INJ can play an important role in building public support for such policies. The INJ campaign provides an opportunity to evaluate how media campaigns can influence beliefs and actions to counter tobacco marketing efforts. In this study, we conducted 2 surveys to assess audience reactions to and awareness of the INJ media campaign and examine associations between campaign awareness and key outcomes.

Methods

Campaign development and launch

The INJ campaign was developed collaboratively by ATFC grantees, NYSDOH, and Pinkney Hugo Group (PHG, the media vendor) in consultation with the Center for Black Health and Equity (CBHE). Before campaign launch, PHG conducted extensive pretesting of campaign materials via 2 separate surveys of the general adult population (N = 850) and Black adults (N = 811), balanced by region to ensure geographic representation across New York State. The pretesting surveys assessed receptivity, emotional reactions, and perceived likelihood of taking actions (eg, talking with family and friends, posting to social media, communicating with decision makers) in response to 2 advertisement (ad) concepts. Findings from the pretesting were used to select and refine the messaging concepts and final ad campaign materials. Measures used in the pretesting surveys (not described in detail in this article) were distinct from those used to evaluate the final executed media campaign messaging.

Campaign messaging featured Black people from communities targeted by the tobacco industry, along with voiceover and text describing the adverse impact of menthol tobacco in Black communities and links to educational and policy support resources. The priority audience for the media campaign was adult residents of New York State who were civically engaged, active participants of a community or church group, or educators or health care providers. These groups were identified as the priority campaign audience because they were groups hypothesized to be invested in their communities' health and well-being, receptive to campaign messaging, and likely to take action in response to the campaign. Notably, the priority audience for campaign delivery (ie, civically engaged adults) and the audience featured in campaign messaging (ie, Black residents who have been targeted by the tobacco industry) are not mutually exclusive; the campaign sought to reach a broad audience of civically engaged adults — including but not limited to Black communities affected by tobacco industry targeting — who would likely have the ability to effect change around menthol tobacco policy.

The campaign launch on May 16, 2021, coincided with *No Menthol Sunday*, CBHE's faith-based initiative, which provided a toolkit equipping participants with educational materials, strategies, and talking points to support policy action against menthol tobacco. The campaign aired statewide and included spots on iHeart radio (approximately 25% of ad budget), social media (ie, Facebook, Instagram, and Twitter: 19%), print (19%), digital television (14%), gas station televisions (11%), YouTube (6%), and digital display (6%), and it was also accompanied by a statewide ATFC public relations campaign assisted by PHG that included press releases and media pitches. The campaign has aired continuously since its launch and will run through June 2024. In tandem with the initial campaign iteration focused on menthol targeting in Black communities, the INJ campaign was also extended to reach other communities disproportionately affected by tobacco industry marketing, including youth and the LGBTQIA+ community.

Study procedures

NYSDOH and RTI International, the organization conducting this research in partnership with NYSDOH, administered 2 online, cross-sectional surveys in June and July of 2021 (n = 1,000) and in August of 2022 (n = 1,000). The first survey wave was administered approximately 1 month after the media campaign launch, and the second survey wave was administered approximately 1 year later. (Due to evaluation resource limitations, a baseline [pre-exposure] survey was not feasible.) Participants from both survey waves were recruited from a non–probability-based web panel managed by Kantar (Bain Capital). The Kantar panel includes approximately 1.3 million consumers who are recruited on an ongoing basis via social media, online ads, and affiliate corporate networks.

Eligibility criteria for survey participation was aligned with the priority audience for the campaign. To be eligible, participants had to be an adult (aged 18 y or older) resident of New York State who met 1 or more of the following criteria: has contacted a public official or signed an online petition to express their opinion, attended a public meeting about community affairs, or worked with others to improve their community in the past year (adapted from Levine, 2012) (14); follows, engages with, or supports social cause accounts and campaigns on social media; is an active member of a civic organization (eg, YMCA), social justice movement, school parent–teacher association, environmental group, or religious organization; or is an educator in a K–12 school or is a health care provider. Little is known about the optimum exposure level and mix of channels or platforms to achieve detectable, population-level effects for largely digital media campaigns like INJ (15). Therefore, by aligning the survey recruitment with the priority population for the media campaign, we sought to ensure representation from groups prioritized in campaign delivery and maximize the potential to detect campaign effects with limited evaluation resources.

In addition to these eligibility criteria, we set quotas to ensure sufficient representation from key audience segments and facilitate cross-sociodemographic analyses. Specifically, we sought to maximize participation from people who identify as Black — communities of which are the subject of the campaign — and current smokers who would be most directly affected by actions to reduce the targeting of menthol tobacco products in Black communities. We also set quotas to achieve a balanced distribution across age groups (18–34 y, 35–54 y, and ≥55 y).

For each survey, panelists who had indicated in their panel profile that they met the age and geographic criteria were sent a study invite and directed to a brief screener survey to assess full study eligibility. After consenting to participate, eligible participants completed a 15-minute survey. Upon survey completion, participants received nonmonetary "points" that could be redeemed for online gift certificates, merchandise, or cash. The RTI institutional review board determined that this activity was conducted for evaluation purposes and thus did not meet the definition of research with human subjects.

Measures

The surveys included the following key measures:

Campaign awareness. The media campaign included digital video, radio, and static image social media and banner ads. For each ad type, participants were shown or played an audio clip of the ad or a random selection of ads and asked if they had seen or heard the ad in the past 3 months. We created an indicator variable of campaign awareness that was coded 1 ("aware") if any ads had been seen or heard and 0 ("not aware") if no ads had been seen or heard.

Perceived effectiveness (PE). After viewing the digital video ad, participants were asked to indicate their agreement (1 being "strongly disagree" to 5 being "strongly agree") with the following statements: "This ad is . . ." "worth remembering"; "grabbed my attention"; "is informative"; "is meaningful to me"; "is convincing"; or "is powerful" (16). We averaged scores from these 6 items to create a scaled PE measure with a range of 1 to 5 (mean [SD] = 3.79 [0.90]; $\alpha = 0.91$).

Negative reactions (NR). For the digital video ad, we also asked participants to indicate their agreement (1 being "strongly dis-

agree" to 5 being "strongly agree") with the following items: "This ad is . . ." "phony"; "exaggerated"; "misleading"; or "deceptive" (17,18). We averaged scores from these 4 items to create a scaled measure of NR with a range of 1 to 5 ($\alpha = 0.90$).

Campaign-related beliefs. We asked participants to indicate their agreement (1 being "strongly disagree" to 4 being "strongly agree") with the following statements: "The tobacco industry heavily targets marketing of menthol-flavored tobacco products to African American/Black populations"; "There are more stores that sell tobacco in predominantly African American/Black neighborhoods compared to other neighborhoods"; "Most African American/Black smokers started by using menthol cigarettes"; "African American/Black communities have more advertising and cheaper prices for menthol cigarettes"; "The cooling flavor of menthol cigarettes makes them easier to get hooked on"; "Menthol cigarettes are harder to quit than nonmenthol cigarettes"; "Smoking-related illnesses are the number 1 cause of death for Black people." We averaged scores from these 7 items to create a scaled measure of campaign-related belief endorsement with a range of 1 to 4 ($\alpha = 0.86$).

Support for a menthol cigarette ban. We assessed support for a menthol cigarette ban with the following question: "What is your opinion about policies that ban the sale of menthol cigarettes? Are you . . . [1, "strongly against" to 5, "strongly in favor"].

Actions to reduce tobacco targeting. We asked participants whether they had taken any of the following actions in an attempt to reduce the targeting of tobacco products toward African American/Black communities in the past 3 months: "written to a local newspaper"; "signed a petition online"; "contacted an organization (such as New York Health Department, Tobacco Free New York State)"; "contacted an elected official"; "attended a meeting or joined an action group"; or "shared a petition on social media or by email." We created an index representing the total number of actions taken, with a range of 0 to 6.

Sociodemographic and geographic characteristics. We also assessed race and ethnicity, age, sex, educational attainment, current use of menthol and nonmenthol cigarettes, and geographic region (New York City Designated Market Area [DMA] vs rest of state).

Analysis

We calculated means, proportions, and frequencies for sociodemographic and geographic characteristics and campaign awareness, overall and by survey wave. To examine audience reactions to the media campaign, we first conducted 2 separate multivariable linear regressions of PE and NR each as dependent variables regressed on campaign awareness, survey wave, race and ethnicity, age, sex, educational attainment, smoking status, and geographic region. We then estimated model-predicted mean PE and NR scores, overall and across levels of each independent variable. To examine associations between campaign awareness and key campaign-related outcomes, we conducted 3 separate multivariable linear regressions of beliefs, policy support, and actions taken to reduce tobacco product targeting as dependent variables. Each model included campaign awareness, survey wave, race and ethnicity, and interactions of campaign awareness by survey wave and campaign awareness by race and ethnicity as primary independent variables. We included age, sex, educational attainment, current smoking status, and geographic region as control variables in each model. For models in which an interaction was significant, we estimated model-predicted mean dependent variable scores across each level of the interaction variable to aid in the interpretation of results. All analyses were conducted using Stata version 17.0 (StataCorp LLC).

Results

Overall, 39.7% of respondents reported being aware of any campaign ad (35.6% at Wave 1 and 43.7% at Wave 2) (Table 1). Most respondents were non-Hispanic White (55.7%), female (65.3%), did not currently smoke cigarettes (72.4%), and resided in the New York City DMA (64.4%). The highest proportion of respondents were aged 55 years or older (32.9%) and had a bachelor's degree or higher (44.9%).

Table 2 shows model-predicted mean PE and NR scores for the campaign video ad, overall and across select sample characteristics. Overall, mean PE was 3.79 and mean NR was 2.34. For context, mean scores can be compared with the response scales for the items that make up the PE and NR scales, with the mean PE score (score = 3.79) being close to "agree" and the mean NR score (score = 2.34) being between "neither agree nor disagree" and "disagree." Mean PE was higher among respondents previously aware of the campaign (score = 3.99) compared with those who were not (score = 3.66), among non-Hispanic Black (score = 3.97) and Hispanic (score = 3.87) respondents compared with non-Hispanic White respondents (score = 3.72), and among respondents aged 35 years or older (score = 3.82–3.91) compared with respondents aged 18 to 24 (score = 3.59). Mean PE was lower among respondents who currently smoked nonmenthol cigarettes only (score = 3.46) compared with those who did not currently smoke cigarettes (score = 3.84). Mean NR was lower among wave 2 respondents (score = 2.26) than wave 1 respondents (score = 2.43) and among non-Hispanic Black (score = 2.12) versus non-Hispanic White (score = 2.42) respondents. Mean NR was higher among male (score = 2.45) versus female (score = 2.29) respondents and among those who currently smoked nonmenthol (score =

2.72) and menthol (score = 2.57) cigarettes versus nonsmokers (score = 2.24).

Campaign-related beliefs were higher among respondents who were aware of campaign ads compared with those who were not aware (ß = 0.26, $P < .001$) and among those who were non-Hispanic Black (ß = 0.16, $P = .002$), non-Hispanic other or multirace (ß = 0.18, $P = .02$), and Hispanic (ß = 0.17, $P = .006$) compared with non-Hispanic White respondents (Table 3).

The association between campaign awareness and policy support varied by survey wave (ß = 0.49, $P < .001$) and non-Hispanic Black race (ß = −0.36, $P = .02$). To aid in the interpretation of these interactions, Figure 1 shows model-predicted mean policy support, by campaign awareness, survey wave, and race and ethnicity. Among wave 1 respondents, policy support was identical between respondents who were aware of and not aware of the campaign (mean = 3.43); among wave 2 respondents, policy support was higher among those aware of the campaign (mean = 3.87) compared with those not aware of the campaign (mean = 3.38) (Panel A). Among non-Hispanic White respondents, policy support was higher among those aware of the campaign (mean = 3.75) compared with those not aware of the campaign (mean = 3.40); among non-Hispanic Black respondents, policy support was similar between those aware of (mean = 3.44) and not aware of the campaign (mean = 3.45) (Panel B).

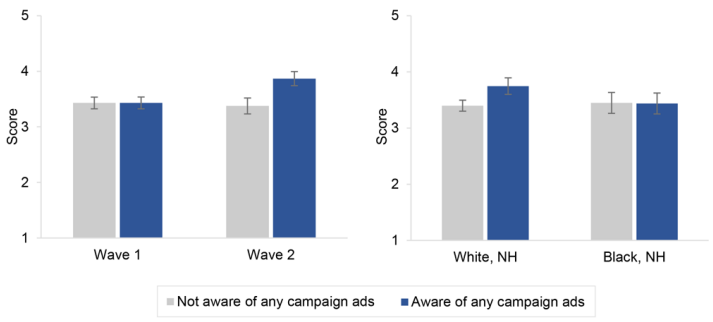

Figure 1. Model-predicted mean support for a menthol ban (score range, 1 = strongly against to 5 = strongly in favor), by campaign awareness and survey wave and race and ethnicity (N = 1,984), *It's Not Just* media campaign, New York State, 2021. Campaign awareness was compared between respondents from waves 1 and 2 (panel A) and between non-Hispanic White and non-Hispanic Black respondents (panel B). Mean policy support scores were predicted from a multivariable linear regression with policy support as the dependent variable and campaign awareness, survey wave, race and ethnicity, and interactions of campaign awareness by survey wave and campaign awareness by race and ethnicity as primary independent variables (the model also included age, sex, educational attainment, current smoking status, and geographic region as control variables). Abbreviation: NH, non-Hispanic.

Compared with non-Hispanic White respondents, Hispanic respondents had higher scores on the action index (ß = 0.37, $P = .001$). The association between campaign awareness and action index scores varied by survey wave (ß = 1.59, $P < .001$). Action index scores were similar between those aware (mean = 1.30) and not aware of the campaign (mean = 1.23) in wave 1 and were higher among those aware of the campaign (mean = 2.03) versus not aware in wave 2 (mean = 0.38) (Figure 2).

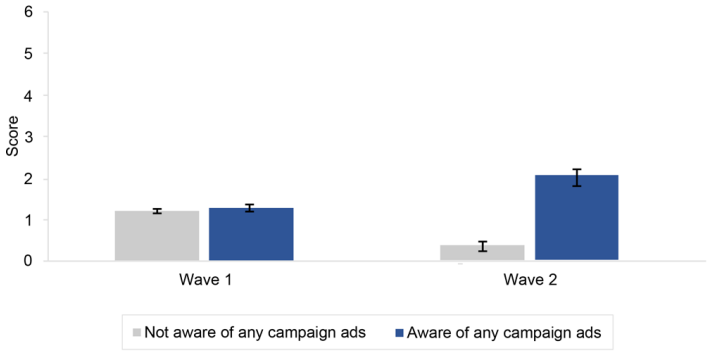

Figure 2. Model-predicted mean number of actions taken to reduce tobacco targeting in Black communities (range, 0–6), by campaign awareness and survey wave (N = 1,984), *It's Not Just* media campaign, New York State, 2021. Mean action index scores were predicted from a multivariable linear regression with number of actions taken as the dependent variable and campaign awareness, survey wave, race and ethnicity, and interactions of campaign awareness by survey wave and campaign awareness by race and ethnicity as primary independent variables (the model also included age, sex, educational attainment, current smoking status, and geographic region as control variables).

Discussion

We assessed awareness of and reactions to a media campaign to educate and motivate action around the targeting of menthol tobacco in Black communities and examined associations between campaign awareness and key outcomes the campaign sought to influence. Study findings demonstrated that the campaign resulted in moderate reach that increased over time, with nearly half of respondents reporting having seen any of the ads after approximately 1 year on air. Campaign awareness was below Centers for Disease Control and Prevention recommendations for mass-reach media campaigns to reach 75% of the priority audience (19), although no comparable benchmarks exist for primarily digital campaigns like INJ (15). We found that PE was higher among those who reported previous campaign exposure and that NR decreased between survey waves, suggesting that the campaign is being received more favorably as its reach and duration are extended. As the INJ media campaign continues amid a shifting menthol tobacco policy landscape, ongoing monitoring of awareness of and reactions to campaign messaging may be warranted.

A notable feature of the INJ campaign is that the priority audience for campaign delivery (ie, general population, civically engaged residents) is not necessarily the same as the audience depicted in the campaign (ie, Black communities); this incongruity could result in unintended consequences if the campaign is not well-received among the communities it is attempting to help. However, results from this study demonstrate that, across racial and ethnic groups, Black respondents perceived the campaign messaging to be most effective and had the lowest NR to messaging. This promising finding speaks to the robust community engagement underlying the campaign's development and implementation, including consultation with CBHE, extensive pretesting with diverse groups, and accompanying public relations outreach to complement and reinforce the campaign's messaging.

In examining differences in audience reactions by sociodemographic characteristics and tobacco use behaviors, a few additional patterns emerged. Our findings were consistent with previous research that demonstrates stronger self-reported negativity and defensive processing toward anti-tobacco messaging among smokers than nonsmokers (20). NR to campaign messaging were stronger among current menthol and nonmenthol smokers compared with nonsmokers. In contrast, menthol smokers perceived the messaging's effectiveness at a level similar to nonsmokers. We also found that favorable reactions were generally positively correlated with age and that female participants had fewer NR than male participants, suggesting room for improvement in messaging to younger and male audiences who viewed the campaign less favorably than their counterparts.

Results from analyses of the association between campaign awareness and outcomes varied. After controlling for sociodemographic and geographic characteristics and tobacco use behaviors, we found that campaign awareness was associated with stronger endorsement of campaign-related beliefs with main effects that were robust across race and ethnicity and survey wave. Partially contrasting this result, the number of actions taken to reduce tobacco targeting in Black communities was also greater among those aware of the campaign, although this effect was only observed in the second survey wave. This pattern is consistent with theories of behavioral prediction (eg, theory of planned behavior) that posit that beliefs precede intentions and behavior (21). Our findings suggest that the campaign may have had a more immediate influence on beliefs, with downstream effects on behavioral actions commensurate with increased campaign duration and reach.

In contrast with the patterns above, we found that the association between campaign awareness and support for a menthol cigarette ban increased over time and varied by race and ethnicity, with support being higher among non-Hispanic White respondents who were aware of the campaign compared with those who were not; we found no difference in support between non-Hispanic Black respondents by campaign awareness. One possible explanation for the lack of difference in policy support by campaign awareness among Black respondents is that the issues depicted in the campaign ads may be less novel to Black communities, who have been centered in public discourse around a menthol ban. Black individuals who have been disproportionately burdened by tobacco industry marketing may have already solidified their opinions about a menthol ban, with little room to move resulting from campaign exposure. Previous public opinion research among a nationally representative panel of adults has shown majority support for a menthol ban across racial groups (13), although less is known about the extent to which public opinion has shifted since FDA's proposed rulemaking in April 2022.

Another potential contributing factor to the racial and ethnic differences in association between campaign awareness and support for a menthol ban is the controversial nature of the topic. The potential public health benefits of a ban on menthol cigarettes are well established (22,23), and support for the federal ban is shared widely across national social justice and advocacy organizations, including the National Association for the Advancement of Colored People, the CBHE, and most of the Congressional Black Caucus (24). Nevertheless, FDA's proposed ban on menthol cigarettes has been criticized as inherently paternalistic (25), while the American Civil Liberties Union has raised concerns that a menthol ban may lead to an illicit market of menthol cigarette sales that could exacerbate racial disparities in law enforcement (26). Results from this study suggest that although the influence of the INJ media campaign on related beliefs and actions is robust across racial and ethnic groups, the potential effect of the campaign on menthol policy support is more nuanced and perhaps reflects the polarization among Black communities around the topic of a potential menthol ban.

This study is subject to several limitations. First, data were collected using a convenience panel of adult New York State residents with a recruitment focused on civically engaged adults who were the priority audience for the campaign; as such, results may not be representative of adults in New York State in general, and the campaign may have been received differently among those not in the priority audience. Second, campaign awareness was assessed via self-report using aided recall methods, which may be subject to recall or social desirability bias that could lead to artificially inflated campaign awareness relative to estimates using unaided recall methods. Finally, the surveys were cross-sectional, and both waves were conducted following campaign implementation, which precludes an assessment of the temporality of campaign exposure and campaign-related beliefs and actions. Because a baseline or pre-exposure survey was not feasible (due to resource limitations),

we cannot determine whether campaign-related outcomes were caused by campaign exposure or if those with favorable outcomes were more likely to recall the campaign due to preexisting beliefs and attitudes that aligned with campaign messaging.

Anti-tobacco media campaigns have been shown to increase cigarette smoking cessation attempts, reduce youth smoking initiation, and reduce smoking prevalence (27–29), but less is known about the effect of media campaigns aimed at increasing public understanding and support for policy changes (15). To our knowledge, our study is the first to evaluate a media campaign to educate and motivate action around the targeting of menthol tobacco in Black communities. It demonstrates that the INJ campaign resulted in moderate reach, with campaign messaging that was received favorably by priority audiences and with positive associations between campaign awareness and key campaign-related beliefs and behaviors.

The INJ campaign coincides with FDA's recent announcement that it intends to advance product standards to ban menthol cigarettes. Results from a recent simulation study estimate that such a ban would result in a 15% reduction in cigarette smoking, reducing cumulative smoking- and vaping-attributable deaths by 650,000 over a 40-year period (30). Despite these anticipated public health benefits, the timeline for implementation of federal product standards is unknown and will likely be impacted by tobacco industry litigation. Our findings suggest that community education campaigns can play an important role in raising awareness of the impact of menthol tobacco product targeting in Black communities and building public support for local menthol restrictions that may be implemented before federal product standards are in place. Future research could evaluate additional INJ campaign iterations focusing on other communities disproportionately affected by tobacco industry marketing including youth and the LGBTQIA+ community.

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References

1. US Department of Health and Human Services. The health consequences of smoking — 50 years of progress: a report of the Surgeon General. 2014. Accessed November 27, 2023. https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf
2. Cornelius ME, Loretan CG, Wang TW, Jamal A, Homa DM. Tobacco product use among adults — United States, 2020. *MMWR Morb Mortal Wkly Rep*. 2022;71(11):397–405. doi:10.15585/mmwr.mm7111a1
3. Simmons VN, Pineiro B, Hooper MW, Gray JE, Brandon TH. Tobacco-related health disparities across the cancer care continuum. *Cancer Contr*. 2016;23(4):434–441. doi:10.1177/107327481602300415
4. Substance Abuse and Mental Health Services Administration. 2019National Survey on Drug Use and Health (NSDUH) releases. Accessed November 27, 2023. https://www.samhsa.gov/data/release/2019-national-survey-drug-use-and-health-nsduh-releases
5. Merizier J, Orkin-Prol L, Talati A, Jasek J, Debchoudhury I. Addressing New York City's smoking inequities. *NYC Vital Signs*. 2022;20(1):1–4.
6. Kreslake JM, Wayne GF, Alpert HR, Koh HK, Connolly GN. Tobacco industry control of menthol in cigarettes and targeting of adolescents and young adults. *Am J Public Health*. 2008;98(9):1685–1692. doi:10.2105/AJPH.2007.125542
7. Klausner K. Menthol cigarettes and smoking initiation: a tobacco industry perspective. *Tob Control*. 2011;20(Suppl_2):ii12–ii9. doi:10.1136/tc.2010.041954
8. Campaign for Tobacco Free Kids. Stopping menthol, saving lives: ending Big Tobacco's predatory marketing to Black communities. 2021. Accessed November 27, 2023. https://www.tobaccofreekids.org/assets/content/what_we_do/industry_watch/menthol-report/2021_02_tfk-menthol-report.pdf
9. Lee JG, Henriksen L, Rose SW, Moreland-Russell S, Ribisl KM. A systematic review of neighborhood disparities in point-of-sale tobacco marketing. *Am J Public Health*. 2015;105(9):e8–e18. doi:10.2105/AJPH.2015.302777

10. Federal Register. Tobacco product standard for menthol in cigarettes. Volume 87 FR 26454 (proposed May 4, 2022) (to be codified at volume 21 CFR 1162). Accessed November 27, 2023. https://www.federalregister.gov/documents/2022/05/04/2022-08994/tobacco-product-standard-for-menthol-in-cigarettes?utm_medium=email&utm_source=govdelivery
11. New York State Department of Health. Advocates, public health leaders join New York State Department of Health in highlighting Governor Hochul proposal to ban the sale of all flavored tobacco products, including menthol. February 9, 2023. Accessed November 27, 2023. http://health.ny.gov/press/releases/2023/2023-02-09_flavored_tobacco_products.htm
12. Reisman N; Spectrum News, State of Politics. New York lawmakers oppose menthol cigarette ban. March 15, 2023. Accessed November 27, 2023. https://spectrumlocalnews.com/nys/central-ny/ny-state-of-politics/2023/03/14/new-york-lawmakers-oppose-menthol-cigarette-ban
13. Al-Shawaf M, Grooms KN, Mahoney M, Buchanan Lunsford N, Lawrence Kittner D. Support for policies to prohibit the sale of menthol cigarettes and all tobacco products among adults, 2021. *Prev Chronic Dis*. 2023;20:220128. doi:10.5888/pcd20.220128
14. Levine P; Inter-university Consortium for Political and Social Research. The commission on youth voting and civic knowledge youth post-election survey; 2012. Accessed November 27, 2023. https://www.icpsr.umich.edu/web/civicleads/studies/35012
15. Durkin SJ, Brennan E, Wakefield MA. Optimising tobacco control campaigns within a changing media landscape and among priority populations. *Tob Control*. 2022;31(2):284–290. doi:10.1136/tobaccocontrol-2021-056558
16. Davis KC, Nonnemaker J, Duke J, Farrelly MC. Perceived effectiveness of cessation advertisements: the importance of audience reactions and practical implications for media campaign planning. *Health Commun*. 2013;28(5):461–472. doi:10.1080/10410236.2012.696535
17. Nan X, Zhao X. When does self-affirmation reduce negative responses to antismoking messages? *Commun Stud*. 2012;63(4):482–497. doi:10.1080/10510974.2011.633151
18. Witte K. Fear control and danger control: a test of the extended parallel process model (EPPM). *Commun Monogr*. 2009;61(2):113–134. doi:10.1080/03637759409376328
19. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. Best practices for comprehensive tobacco control programs — 2014. Accessed November 27, 2023. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/2014/comprehensive.pdf
20. Clayton RB, Keene JR, Leshner G, Lang A, Bailey RL. Smoking status matters: a direct comparison of smokers' and nonsmokers' psychophysiological and self-report responses to secondhand smoke anti-tobacco PSAs. *Health Commun*. 2020;35(8):925–934. doi:10.1080/10410236.2019.1598741
21. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. 1991;50(2):179–211. doi:10.1016/0749-5978(91)90020-T
22. Chung-Hall J, Fong GT, Meng G, Cummings KM, Hyland A, O'Connor RJ, et al. Evaluating the impact of menthol cigarette bans on cessation and smoking behaviours in Canada: longitudinal findings from the Canadian arm of the 2016–2018 ITC Four Country Smoking and Vaping Surveys. *Tob Control*. 2022;31(4):556–563. doi:10.1136/tobaccocontrol-2020-056259
23. Levy DT, Pearson JL, Villanti AC, Blackman K, Vallone DM, Niaura RS, et al. Modeling the future effects of a menthol ban on smoking prevalence and smoking-attributable deaths in the United States. *Am J Public Health*. 2011;101(7):1236–1240. doi:10.2105/AJPH.2011.300179
24. Pasha A, Silbert R. Fresh take: pitfalls of the FDA's proposed menthol ban. *J Law Med Ethics*. 2022;50(1):60–66. doi:10.1017/jme.2022.9
25. Pasha AS, Silbert R. Equitable approaches to menthol tobacco use reduction: rethinking a blanket ban. *Mayo Clin Proc Innov Qual Outcomes*. 2023;7(2):122–126. doi:10.1016/j.mayocpiqo.2023.02.001
26. American Civil Liberties Union. ACLU statement on FDA menthol cigarette ban. 2021. Accessed November 27, 2023. https://www.aclu.org/press-releases/aclu-statement-fda-menthol-cigarette-ban
27. Allen JA, Duke JC, Davis KC, Kim AE, Nonnemaker JM, Farrelly MC. Using mass media campaigns to reduce youth tobacco use: a review. *Am J Health Promot*. 2015;30(2):e71–e82. doi:10.4278/ajhp.130510-LIT-237
28. Wilson LM, Avila Tang E, Chander G, Hutton HE, Odelola OA, Elf JL, et al. Impact of tobacco control interventions on smoking initiation, cessation, and prevalence: a systematic review. *J Environ Public Health*. 2012;2012:961724. doi:10.1155/2012/961724
29. Bala MM, Strzeszynski L, Topor-Madry R. Mass media interventions for smoking cessation in adults. *Cochrane Database Syst Rev*. 2017;11(11):CD004704. doi:10.1002/14651858.CD004704.pub4
30. Levy DT, Meza R, Yuan Z, Li Y, Cadham C, Sanchez-Romero LM, et al. Public health impact of a US ban on menthol in cigarettes and cigars: a simulation study. *Tob Control*. 2023;32(e1):e37–e44. doi:10.1136/tobaccocontrol-2021-056604

Tables

Table 1. Campaign Awareness and Sociodemographic and Tobacco Use Characteristics of the Study Sample (N=2,000), *It's Not Just* Media Campaign, New York State, 2021–2022

Variable	Overall[a]	Wave 1	Wave 2
	No. (%)		
Campaign awareness			
Unaware of campaign ads	1,203 (60.3)	641 (64.4)	562 (56.3)
Aware of any campaign ads	791 (39.7)	355 (35.6)	436 (43.7)
Race and ethnicity			
Non-Hispanic White	1,110 (55.7)	590 (59.2)	520 (52.1)
Non-Hispanic Black	372 (18.7)	161 (16.2)	211 (21.1)
Other, non-Hispanic	128 (6.4)	73 (7.3)	55 (5.5)
Hispanic	384 (19.3)	172 (17.3)	212 (21.2)
Age, y			
18–24	384 (19.3)	219 (22.0)	165 (16.5)
25–34	306 (15.3)	138 (13.9)	168 (16.8)
35–44	367 (18.4)	127 (12.8)	240 (24.1)
45–54	281 (14.1)	139 (14.0)	142 (14.2)
≥55	656 (32.9)	373 (37.5)	283 (28.4)
Sex			
Female	1,295 (65.3)	631 (63.6)	664 (66.9)
Male	689 (34.7)	361 (36.4)	328 (33.1)
Education			
High school or less	456 (22.9)	234 (23.5)	222 (22.2)
Some college	642 (32.2)	319 (32.0)	323 (32.4)
Bachelor's degree or more	896 (44.9)	443 (44.5)	453 (45.4)
Cigarette smoking			
Does not currently smoke cigarettes	1,444 (72.4)	769 (77.2)	675 (67.6)
Currently smokes nonmenthol cigarettes only	165 (8.3)	83 (8.3)	82 (8.2)
Currently smokes menthol cigarettes	385 (19.3)	144 (14.5)	241 (24.2)
Geographic region			
Rest of state	710 (35.6)	356 (35.7)	354 (35.5)
New York City DMA	1,284 (64.4)	640 (64.3)	644 (64.5)

Abbreviation: DMA, designated market area.
[a] Numbers may not sum to the total overall (N = 2,000) or within-wave (n = 1,000 each) sample sizes due to missing responses for some variables.

Table 2. Model-Predicted Mean Perceived Effectiveness and Negative Reactions to Video Ad, Overall and by Select Sample Characteristics (N = 1,984)[a], *It's Not Just* Media Campaign, New York State, 2021–2022

Variable	Perceived effectiveness (range, 1–5)		Negative reactions (range, 1–5)	
	Mean (95% CI)	*P* value	Mean (95% CI)	*P* value
Overall	3.79 (3.75–3.83)	—	2.34 (2.30–2.39)	—
Campaign awareness				
Unaware of campaign ads (reference)	3.66 (3.61–3.72)	—	2.32 (2.26–2.39)	—
Aware of any campaign ads	3.99 (3.92–4.05)	<.001	2.38 (2.30–2.45)	.34
Survey wave				
Wave 1 (reference)	3.77 (3.71–3.82)	—	2.43 (2.37–2.49)	—
Wave 2	3.82 (3.76–3.87)	.21	2.26 (2.20–2.32)	<.001
Race and ethnicity				
Non-Hispanic White (reference)	3.72 (3.67–3.78)	—	2.42 (2.36–2.48)	—
Non-Hispanic Black	3.97 (3.88–4.07)	<.001	2.12 (2.01–2.22)	<.001
Other or multi-race, non-Hispanic	3.64 (3.48–3.79)	.31	2.35 (2.17–2.53)	.49
Hispanic	3.87 (3.77–3.96)	.01	2.35 (2.24–2.46)	.32
Age, y				
18–24 (reference)	3.59 (3.49–3.69)	—	2.47 (2.36–2.59)	—
25–34	3.66 (3.56–3.76)	.30	2.48 (2.37–2.60)	.93
35–44	3.88 (3.79–3.98)	<.001	2.47 (2.36–2.58)	.95
45–54	3.82 (3.72–3.92)	.002	2.37 (2.25–2.49)	.24
≥55	3.91 (3.83–3.98)	<.001	2.12 (2.04–2.21)	<.001
Sex				
Female (reference)	3.82 (3.78–3.87)	—	2.29 (2.23–2.35)	—
Male	3.73 (3.67–3.80)	.03	2.45 (2.37–2.52)	.002
Educational attainment				
High school or less (reference)	3.79 (3.71–3.87)	—	2.36 (2.27–2.46)	—
Some college	3.73 (3.66–3.80)	.30	2.34 (2.26–2.42)	.73
Bachelor's degree or more	3.84 (3.78–3.90)	.32	2.34 (2.27–2.41)	.70
Cigarette smoking				
Does not currently smoke cigarettes (reference)	3.84 (3.80–3.89)	—	2.24 (2.19–2.30)	—
Currently smokes non-menthol cigarettes only	3.46 (3.32–3.59)	<.001	2.72 (2.56–2.87)	<.001
Currently smokes menthol cigarettes	3.75 (3.66–3.85)	.11	2.57 (2.46–2.68)	<.001
Geographic region				
New York City DMA (reference)	3.82 (3.77–3.87)	—	2.34 (2.28–2.40)	—
Rest of state	3.74 (3.67–3.80)	.05	2.35 (2.28–2.43)	.76

Abbreviations: —, not applicable; DMA, designated market area; NR, negative reaction; PE, perceived effectiveness.
[a] Mean PE and NR scores were predicted from separate multivariable linear regressions of PE and NR each as dependent variables regressed on campaign awareness, survey wave, race and ethnicity, age, sex, educational attainment, smoking status, and geographic region. *P* values are based on *t* tests from these models.

Table 3. Linear Regressions of Campaign-Related Beliefs, Policy Support, and Action Index (N =1,984)[a], *It's Not Just* Media Campaign, New York State, 2021–2022

	Belief scale (range, 1–4)		Policy support (range, 1–5)		Action index (range, 0–6)	
Independent variable	ß (95% CI)	*P* value	ß (95% CI)	*P* value	ß (95% CI)	*P* value
Campaign awareness						
Not aware of any campaign ads	1 [Reference]					
Aware of any campaign ads	0.26 (0.15 to 0.37)	<.001	0.10 (−0.12 to 0.32)	.36	−0.02 (−0.23 to 0.18)	.84
Survey wave						
2021	1 [Reference]					
2022	−0.01 (−0.08 to 0.06)	.71	−0.05 (−0.20 to 0.09)	.47	−0.86 (−0.93 to −0.78)	<.001
Race and ethnicity						
Non-Hispanic White	1 [Reference]					
Non-Hispanic Black	0.16 (0.06 to 0.27)	.002	0.05 (−0.16 to 0.26)	.65	0.03 (−0.11 to 0.17)	.66
Other or multi-race, non-Hispanic	0.18 (0.03 to 0.33)	.02	0.04 (−0.27 to 0.35)	.79	0.09 (−0.10 to 0.29)	.34
Hispanic	0.17 (0.05 to 0.28)	.006	−0.04 (−0.28 to 0.20)	.75	0.37 (0.15 to 0.59)	.001
Campaign awareness*survey wave	0.08 (−0.03 to 0.19)	.17	0.49 (0.26 to 0.72)	<.001	1.59 (1.34 to 1.83)	<.001
Campaign awareness*race and ethnicity						
Campaign awareness*Black, non-Hispanic	−0.03 (−0.18 to 0.12)	.72	−0.36 (−0.67 to −0.05)	.02	0.15 (−0.18 to 0.49)	.37
Campaign awareness*other or multi-race, non-Hispanic	−0.07 (−0.30 to 0.17)	.57	−0.23 (−0.71 to 0.25)	.34	0.1 (−0.46 to 0.66)	.73
Campaign awareness*Hispanic	−0.11 (−0.27 to 0.04)	.16	−0.1 (−0.42 to 0.22)	.53	0.27 (−0.09 to 0.63)	.14

[a] Results presented are from separate multivariable linear regressions of scaled campaign-related beliefs, policy support, and an index of actions taken to reduce menthol targeting in Black communities, each as dependent variables regressed on the independent variables listed. *P*-values are based on *t* tests from these models.

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PROGRAM EVALUATION BRIEF

Creating and Implementing a Community-Focused, Culturally Tailored Health Marketing Campaign to Address Menthol Cigarette Use in Los Angeles County

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PEER REVIEWED

Summary

What is known on this topic?

Public health counter-advertising is a critical tool for combating disproportionate marketing of menthol tobacco products to communities of color.

What is added by this report?

This project describes how a local health department used appealing creative materials and messaging, reminiscent of tobacco marketing tactics, to address menthol cigarette use in Los Angeles County.

What are the implications for public health practice?

The "Done with Menthol" campaign resulted in more than 66 million impressions, and it referred many smokers to the state's quitline and connected them to free and low-cost resources on the *LAQuits* website.

Abstract

Introduction

Menthol tobacco products have been marketed disproportionately to communities of color for decades.

Methods

In Los Angeles County, California, a health marketing campaign, which used glossy visuals and attractive people in appealing poses, reminiscent of tobacco marketing tactics, was created and implemented to educate smokers on the health risks of using menthol cigarettes. The campaign encouraged smokers to make a quit attempt by offering access to free or low-cost resources through the *Kick It California* quitline and the *LAQuits* website (laquits.com). A survey tailored for public health professionals and community members from the approximately 382,000 people in the county who smoked menthol cigarettes and were exposed to their smoke (our primary audience) was administered to generate insights about this problem. Survey data were used to finesse the campaign creative materials prior to launch. Advertisement exposures, website visits, and quitline call volume were monitored and tabulated to assess the performance of the campaign.

Results

At the conclusion of its initial run (February–April 2021), the "Done with Menthol" campaign had garnered more than 66 million impressions, received approximately 56,000 clicks on its various digital media platforms, and had click-through rates that surpassed industry benchmarks. The quitline call volume for African American and Latino subgroups were 1.9 and 1.8 times higher than the average inbound call volume for corresponding months during 2018 and 2019, respectively. In its second run (May–June 2023), the campaign garnered approximately 11 million additional impressions.

Conclusions

Despite having a lower budget and fewer resources than the tobacco industry, the "Done with Menthol" campaign attained excellent reach and offered free, low-cost, and accessible resources to county residents interested in tobacco use cessation.

Introduction

Vulnerable populations, especially communities of color, have long been a source of addiction and revenue for the tobacco industry, contributing significantly to tobacco-related illness and death rates in the United States (1,2). For example, 1 in 5 deaths every year in the US is attributed to tobacco use (3). Beginning in the 1960s, the tobacco industry has marketed menthol tobacco

products to African Americans, often across several generations (2,4,5). To grow a new customer base, the industry has employed similar marketing tactics to entice Latino and LGBTQ+ groups (6,7). By appealing to customers using attractive models that look like them (eg, Black models) and building an image that amplifies the desire to assimilate into the "American" culture — placing disproportionate value on expensive clothes, sports cars, clubs, and music scenes and being young, fit, and happy — the tobacco industry has succeeded in encouraging people to try mentholated, flavored tobacco products (2,5).

In 2019, 85% of African Americans in the US who smoked used menthol cigarettes (8). In Los Angeles County, the prevalence was lower (13% of 382,000 people, or nearly 50,000 African American adults), but it was still higher than among Los Angeles County White smokers (3%) (9). The overall prevalence of tobacco use in the county is approximately 11% (893,000 smokers). Among people who received cessation services from the quitline, approximately 26.9% quit for 30 days and 13.9% quit for 6 months (10).

Purpose and Objectives

To address local disparities in menthol cigarette use and to support a recently adopted flavor ban in Los Angeles County, the Tobacco Control and Prevention Program (TCPP) in the Los Angeles County Department of Public Health developed a health marketing campaign using health communications principles (11–13) and best practices from the literature for working with vulnerable populations (14,15). The campaign used many of the same marketing tactics as those used by the tobacco industry to convey the truth about menthol cigarette use: that their use can kill. A secondary campaign objective was to encourage quit attempts among smokers by referring them to free or low-cost cessation resources in the community.

Intervention Approach

Campaign development

To create a campaign that would resonate with its intended audience(s), TCPP contracted Fraser Communications (hereinafter, Fraser) to manage the campaign, including its development, production, media planning, and implementation. In collaboration with an African American marketing firm, Fraser set out to develop advertisements (ads) that mirror tobacco industry tactics, using them as familiar paths to delivering appealing, culturally appropriate cessation messaging.

To test whether these ads (eg, visual materials and text copies) would resonate with the intended audience, an online survey containing a series of agreement statements and open-ended questions was developed and administered to 2 groups of community members: 1) public health professionals, and 2) people who have had or currently have a flavored tobacco (eg, menthol) nicotine use disorder (NUD) or are exposed to menthol cigarette smoke (ie, current or prior smoker, or lives with someone who has a NUD (hereinafter, NUD respondents). The survey was conducted by a research and evaluation firm hired by Fraser. Administration of the English language survey was preceded by having each person in each of the groups review 4 social media ads and listen to two 30-second radio ads. Criteria for participation for the first group was that the prospective participant must be aged at least 18 years and work in the field of public health; participation criteria for the second group was that the prospective participant must be aged at least 18 years and have a NUD or live with a current smoker of menthol cigarettes.

Public health professionals were asked, based on their experiences, how people with a menthol-related NUD might react to the ads. The NUD respondents were asked about their reactions to the ads and opinions about the content. All surveys were completed during November and December 2020. The final enrollment numbers by group were 15 public health professionals and 27 NUD respondents or those exposed to menthol cigarette smoke. Not all members from each group fielded a complete survey.

Campaign dissemination

Guided in part by the transtheoretical model (Stages of Change framework) (16), the "Done with Menthol" campaign was disseminated from February 15 through April 4, 2021, and from May 8 through June 8, 2023. The ads were delivered in both English and Spanish; they ran on radio, out-of-home ads, in print (African American weekly and Spanish daily newspapers), on streaming radio, via social media (eg, Facebook, Instagram), and through targeted digital networks such as B Code and H Code (ie, digital pipelines for brands to connect with African American and Hispanic audiences, respectively). The campaign also ran through a partnership with Blavity, a Black-owned media technology company that focuses on Black culture via their online platforms. In its initial run, "Done with Menthol" promoted the negative health effects of menthol cigarette use and encouraged intended audiences to quit: "Menthols — Smoothing Over Cancer Since 1931" and "Menthols — Smooth on Throats Hard on Lives" (Figure 1). In the 2023 run, the messaging focused on self-motivation, promoting celebration of each quit attempt, and encouraging action by appealing to a person's sense of family obligation and self-efficacy: "Quit Smoking Menthols for the Fam" and "Quitting Menthols is Tough, You're Tougher" (Figure 1). The campaign promoted free and low-cost cessation resources (eg, a referral number to *Kick It California*, the state's quitline) (17) and a call to action (ie, "learn more") on the *LAQuits* website. Strategic media placements were key considerations in disseminating the campaign. For example, radio station ads included custom elements to authentically speak

to specific audiences by way of radio station disc jockeys who are trusted community voices (Figure 2). Out-of-home ads were placed at convenience or liquor stores where people think of smoking or purchasing tobacco products.

Figure 1. Los Angeles County Department of Public Health's health marketing campaign, "Done with Menthol." Photo A, "Menthols — Smoothing Over Cancer Since 1931"; photo B, "Menthols — Smooth on Throats Hard on Lives"; photo C, "Quit Smoking Menthols for the Fam"; and photo D, "Quitting Menthols is Tough, You're Tougher."

(e) Radio Scripts

English
Spanish

:30 "COOL HARD FACTS" (APPROVED)
Menthol cigarettes are smooth and seductive.

But the truth is, they're actually the worst for you.

The minty flavor makes you draw smoke deeper into your lungs.

And even if you smoke less, you can be more easily addicted, causing higher rates of cancer and making COVID-NINETEEN infections much more severe.

Those are the "cool" hard facts!

If you need help....We got you!

Call 1-800-NO BUTTS today.

BE DONE WITH MENTHOL. BE DONE WITH SMOKING. BROUGHT TO YOU BY THE LA COUNTY DEPARTMENT OF PUBLIC HEALTH

:15 "COOL HARD FACTS" (APPROVED)
Menthol cigarettes are minty and smooth,

making you draw smoke deeper into your lungs.

It can be easier to get addicted to.

Be done with menthol. Be done with smoking.

Call 1-800-NO Butts today.

Brought to you by the LA County Department of Public Health

:30 "LA PURA VERDAD" (APPROVED)
Los cigarrillos de mentol son suaves y seductores.

Pero la verdad, es que son los peores para tu salud.

El sabor a menta hace que inhales el humo más profundo en tus pulmones.

Puede ser más fácil desarrollar una adicción, provocando más casos de cáncer y que las infecciones de COVID-DIEZ-Y-NUEVE sean más severas.

¡Esa es la pura verdad!

Para ayuda gratuita, llama al 1-800-45-NO-FUME.

DEJA EL MENTOL. DEJA DE FUMAR.

PATROCINADO POR EL DEPARTAMENTO DE SALUD PÚBLICA DEL CONDADO DE LOS ÁNGELES

:15 "LA PURA VERDAD" (APPROVED)
Los cigarrillos de mentol son suaves y seductores.

Hacen que inhales el humo más profundo en tus pulmones. Y puede ser más fácil desarrollar una adicción.

Figure 2. Los Angeles County Department of Public Health's health marketing campaign, "Done with Menthol," radio station advertisements with custom elements for station disc jockeys.

Evaluation Approach

Two data sources were used to assess reach and performance of the campaign: 1) standard metrics used by the marketing industry (18) to document media performance, which include the number of impressions, clicks, and click-through rates (CTRs); and 2) changes in quitline activities (eg, an increase in call volume during the campaign's live runs, compared with corresponding months from the previous year). Although other measures of performance such as postcampaign surveys would have provided additional verification and insights into the ads' effects, funding constraints restricted evaluation to the use of standard media metrics only.

For standard media metrics, "impressions" represent any audience interaction with a piece of content; they indicate the number of times intended audiences saw or heard the content. "Clicks" are the absolute counts of interactions with webpages, social media platforms, and other digital interfaces. CTRs indicate how often audiences click a link in one of the ads to access additional content. Collectively, these metrics provide a surrogate measure of overall reach and engagement by the campaign. All of the metrics' data were managed and analyzed using standard software available through the public health department: Excel (Microsoft Corp) and SAS version 9.4 (SAS Institute, Inc).

The approach taken to document the campaign's reach and performance did not allow for definitive identification of audiences who were from communities of color. However, ads were placed with media companies known for their large following of African American and Latino listeners or site users and for content tailored to the preferences of these groups. The high volume and frequency of the ads also helped ensure that exposure to these ads among these groups was substantive. For example, radio ads across 12 stations (including Spanish language) ran 125 times each week for about 5 weeks during the time the campaign was live.

Results

Formative work on creative materials

In the formative stage of campaign development, most of the public health professionals (n = 14; mean age, 51 y [range, 18–65 y]; 85.7% female) and NUD respondents (n = 23; mean age, 33 y [range, 20–46 y]; 73.9% female) who saw the ads reacted favorably to the creative content and design. For example, nearly 35% of NUD respondents agreed that the ads made them think about reducing their smoking in the future and about quitting tobacco use altogether (or never starting again). Twelve of the public health professionals (86%) believed the ads would be somewhat effective or very effective for audiences who had a NUD. Most survey participants, particularly the smokers, believed the ads were im-

portant, clear, told or taught them something new, and were worth sharing with friends or family members. More than half of professionals (64%) and NUD respondents (52%) agreed that the ads increased their concern about the risks of menthol cigarette use and their awareness of the state's quitline; they also thought the information was credible because it came from a trustworthy source (ie, public health).

Performance of the campaign

Although no one ad significantly outperformed the other, the collective reach and performance of the campaign were robust (approximately 382,000 people used menthol cigarettes in Los Angeles County at the time of the campaign) (9). In its initial run, the "Done with Menthol" campaign garnered more than 66 million impressions, received approximately 56,000 clicks on its various digital and social media platforms, and had CTRs that surpassed industry benchmarks (Table). In its second run (May–June 2023), the campaign garnered approximately 11 million more impressions. Ad performances by language and by medium varied, which is reflected by the campaign's strategic ad placements in different geographic as well as specialty platforms or networks. For instance, in platforms like B Code where ads were tailored to the English-speaking African American and Black audience, English ads performed 24% better than Spanish ads.

For *LAQuits.com*, website visits were mostly from mobile devices (78%), while almost 16% came from desktop or laptop computers and the remaining 6% from tablets. Length of time during website visits showed interest and time spent looking at webpage content, searching for more information. After visiting the "Menthol" English or Spanish landing webpage, users visited the *LAQuits.com* homepage and the "Stressed" webpage the most. Also, despite 2 other tobacco prevention campaigns (quit vaping and cessation) running concurrently in Los Angeles County, at least 48,420 and 40,484 of the total 66,000 web sessions and 56,000 new visitors, respectively, were attributed to the "Done with Menthol" campaign.

During the campaign's initial run, the state quitline call volume for African American and Latino subgroups was 1.9 and 1.8 times higher than the average inbound call volume for the corresponding months during 2018 and 2019, respectively (Figure 3).

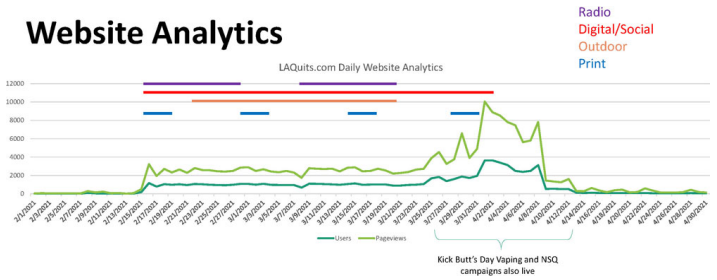

Figure 3. Los Angeles County Department of Public Health's health marketing campaign, "Done with Menthol," website analytics.

Implications for Public Health

The "Done with Menthol" campaign used similar stylistic tobacco industry marketing tactics that drew people in with attractive human models, images, and slogans. At the same time, its messaging and visual materials motivated people to learn more about how to quit, especially when stress is a trigger for smoking. The campaign encouraged smokers to make a quit attempt with the aid of in-person and online resources such as the *Kick It California* quitline and the *LAQuits* website. The quitline is an effective venue for cessation because it provides people with the opportunity to speak to a live person (eg, an experienced counselor) in real time to obtain help with quitting tobacco. In Los Angeles County, this campaign was able to address many of the disparities it set out to improve, including strengthening public support for the County flavor ban and providing cessation resources to African American and other communities of color, and to LGBTQ+ groups.

The "Done with Menthol" campaign took advantage of the tobacco industry's marketing strategies and leveraged them to increase interest in cessation, primarily through public awareness and referrals to free or low-cost in-person and online treatment resources. For local jurisdictions interested in reducing menthol cigarette use in their communities, the Los Angeles County experience could serve as a model of practice for how health marketing could be used to strategically combat this public health problem (11,12,19). The campaign could prove effective even in situations where the industry outspends local health departments in marketing and advertising dollars; for example, in 2019, the 4 major US cigarette companies spent more than $7.6 billion on advertising and promotion (20).

Limitations

Although this project provides insights into a model of practice for developing and implementing a tobacco counter-advertising health marketing campaign, its performance evaluation has limitations. First, the formative stage of campaign development, although thorough in its approach to testing ad concepts, relied heavily on reactions and opinions from a small group of individuals, suggest-

ing that selection and social desirability biases may have affected their responses. Second, even after coordinating with the California Tobacco Control Program on the timing of their tobacco counter-advertising, many state-sponsored ads were still running in the LA media market (ie, their impact on quitline call volume and *LAQuits* website visits could not be distinguished). Third, due to varying political affiliation, ideology, and support of certain policies in a given community, the "Done with Menthol" campaign, like many others before it, may not be generalizable to audiences in other US jurisdictions. Lastly, although the campaign used standard industry metrics to gauge media reach and engagement, these communications measures were not designed to demonstrate causation or show health impact. A more rigorous design, including the use of a pre-/post-campaign survey, would be required to investigate such effects. In this project, this kind of design was not possible because funding was lacking to support research or rigorous program evaluation.

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R.H. and T.K. conceptualized the initial design of this project analysis and wrote the initial draft of the article. T.G.G., R.H., and A.T. contributed to the overall health marketing campaign design, coordinating with Fraser on the market research and development of the "Done with Menthol" campaign. R.F. and Fraser conducted the fieldwork for this project, including tracking the outcomes of the campaign. R.H., L.F., and T.K. performed the data analyses and data interpretation. T.G.G. and T.K. were responsible for fund acquisition. All authors assisted with iterative writing and editing of the final version of the article. They have reviewed and approved this version for submission and publication in the journal.

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References

1. Gardiner PS. The African Americanization of menthol cigarette use in the United States. *Nicotine Tob Res.* 2004; 6(Suppl 1):S55–S65. doi:10.1080/14622200310001649478
2. University of California, San Francisco. The growth of menthols 1933–1977; 1978. Accessed December 12, 2023. https://www.industrydocuments.ucsf.edu/docs/#id=mqwy0139
3. Centers for Disease Control and Prevention. Tobacco-related mortality. Accessed February 6, 2024. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm
4. Jackler RK, Ramamurthi D, Willett J, Chau C, Muoneke M, Zeng A, et al. Advertising created and continues to drive the menthol tobacco market: methods used by the industry to target youth, women, and Black Americans. Stanford Medicine, American Heart Association; October 3, 2022. Accessed December 12, 2023. https://tobacco-img.stanford.edu/wp-content/uploads/2022/10/02234723/SRITA-AHA-MentholAdvertising.pdf

5. Centers for Disease Control and Prevention. Smoking and tobacco use. Unfair and unjust practices and conditions harm African American people and drive health disparities. Accessed December 12, 2023. https://www.cdc.gov/tobacco/health-equity/african-american/unfair-and-unjust.html
6. Stevens P, Carlson LM, Hinman JM. An analysis of tobacco industry marketing to lesbian, gay, bisexual, and transgender (LGBT) populations: strategies for mainstream tobacco control and prevention. *Health Promot Pract.* 2004;5(3suppl): 129S–134S. doi:10.1177/1524839904264617
7. Countertobacco.org. Latinx and POS tobacco in the US: targeted marketing. Accessed December 12, 2023. https://countertobacco.org/resources-tools/evidence-summaries/latinx-point-of-sale-in-the-us/
8. Centers for Disease Control and Prevention. Menthol smoking and related health disparities. Accessed December 12, 2023. https://www.cdc.gov/tobacco/basic_information/menthol/related-health-disparities.html
9. Los Angeles County Department of Public Health, Office of Health Assessment and Epidemiology. Los Angeles County Health Survey. Accessed December 12, 2023. http://www.publichealth.lacounty.gov/ha/hasurveyintro.htm
10. UC Davis Health. "UC Quits" project helps patients stop smoking. March 29, 2023. Accessed December 16, 2023. https://health.ucdavis.edu/news/headlines/uc-quits-project-helps-patients-stop-smoking/2023/03
11. Centers for Disease Control and Prevention. Mass-reach health communications interventions. Best practices for comprehensive tobacco control programs. Accessed December 16, 2023. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/2014/sectionA-II.pdf
12. Parvanta CF, Nelson DE, Harner RN. Public health communication: critical tools and strategies. First edition. Burlington (MA): Jones & Bartlett Learning; 2018.
13. Centers for Disease Control and Prevention, Office on Smoking and Health. Designing and implementing an effective tobacco counter-marketing campaign. Accessed December 16, 2023. https://www.cdc.gov/tobacco/stateandcommunity/counter-marketing/
14. Murphy-Hoefer R, Davis KC, King BA, Beistle D, Rodes R, Graffunder C. Association between the Tips From Former Smokers campaign and smoking cessation among adults, United States, 2012–2018. *Prev Chronic Dis.* 2020;17:E97. doi:10.5888/pcd17.200052
15. US Department of Health and Human Services. Smoking cessation: a report of the Surgeon General. Atlanta (GA): US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2020. https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf
16. Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *Am J Health Promot.* 1997;12(1): 38–48. doi:10.4278/0890-1171-12.1.38
17. Kick It California (website). Accessed December 16, 2023. https://kickitca.org/
18. Sinelnikov D. Using social media and digital marketing metrics to develop or change your brand image. Forbes; February 15, 2023. Accessed December 16, 2023. https://www.forbes.com/sites/forbesagencycouncil/2023/02/15/using-social-media-and-digital-marketing-metrics-to-develop-or-change-your-brand-image
19. Smiley SL, Cho J, Blackman KCA, Cruz TB, Pentz MA, Samet JM, et al. Retail marketing of menthol cigarettes in Los Angeles, California: a challenge to health equity. *Prev Chronic Dis.* 2021;18:E11. doi:10.5888/pcd18.200144
20. Centers for Disease Control and Prevention. Tobacco industry marketing. Accessed December 16, 2023. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/tobacco_industry/marketing/index.htm

Table

Table. Performance of the "Done with Menthol" Campaign in Los Angeles County, February–April, 2021, and May–June, 2023

Campaign	Timeline	Objective	Intended audience	Media type	Impressions	Clicks	CTR[a], %
Done with Menthol: "Smoothing Over Cancer Since 1931" and "Smooth on Throats, Hard on Lives"	First run: February 15, 2021, through April 4, 2021	To bring attention to the dangers of menthol cigarettes and encourage people to stop smoking, with an overall focus on reducing the use of menthol-flavored products in communities of color	People who smoke menthol cigarettes; Black and Latino men; aged 25–54 years. Radio demographic; English and Spanish language	Radio[b] (with added value of >244 spots that ran as bonus)	16,443,402	—	—
				Streaming audio	1,198,943	646	0.05
				Programmatic banners	14,181,982	22,391	0.16
				Facebook/Instagram	2,610,795	22,678	0.87
				HCode Media (Latino/x)	1,012,336	7,994	0.79
				iOne (African American)	982,759	1,109	0.11
				Blavity	774,862	748	~0.07
				Outdoor messaging via 437 units: 128 bus tails, 8 posters, 4 bus shelters, 172 convenience store posters, and 125 digital POS screens at convenience stores	29,100,000	—	—
				Print: 2 ads in *LA Sentinel* and *Our Weekly* (Los Angeles, Antelope Valley) and 4 ads in *La Opinion* (Spanish)	400,546	—	—
				Total	**66,705,625**	**55,566**	—
Done with Menthol Campaign, "Quit Smoking Menthols for the Fam" and "Quitting Menthols is Tough, You're Tougher"	Second run: May 8, 2023, through June 8, 2023	To bring attention to the dangers of menthol cigarettes and encourage people to stop smoking, with an overall focus on reducing the use of menthol-flavored products in communities of color	People who smoke menthol cigarettes; Black and Latino men; aged 25–54 years; Radio demographic; English and Spanish language	Programmatic banners	917,883	908	0.10
				Facebook/Instagram	754,708	12,840	1.70
				HCode Media (Latino/x)	1,181,613	1,030	0.09
				BCode Media (African American)	1,542,871	757	0.05
				Blavity	760,029	535	0.07
				Outdoor messaging via 59 units: 54 convenience store posters, 5 City Lights (coverage of West Hollywood, added coverage of San Fernando Valley)	6,300,000	—	—
				Total	**11,457,104**	**16,070**	—
LAQuits.com	February 1, 2021, through April 30, 2021	Website: resources for quit smoking tips, free or low-cost cessation support and link to *Kick It California* quitline	People who smoke menthol cigarettes; Black and Latino men; aged 25–54 years; Radio demographic; English and Spanish language	Website statistics and data tracking data via Web Analytics	Of the 66,000 website visit sessions and 56,000 new users during the campaign flight, it was estimated that at least 48,420 sessions and 40,484 new users were from the "Done with Menthol" campaign	—	—

Abbreviations: — , not applicable; CTR, click-through rate; POS, point of sale.

[a] For this campaign, CTR performances of key components were generally above industry benchmarks (ie, they exceeded expectations).

[b] Radio stations were selected to best reach both general market listeners and specific target audience(s). Many of them were ethnic media and language-specific news outlets (not an exhaustive list): KJLH-FM, KPWR-FM, KRRL-FM, KTWV-FM, and KDAY-FM, mostly Black, urban listeners; KRTH-FM, mostly English-speaking Hispanic and general market listeners; KLAX-FM, KWKW-AM (sports), KXOL-FM, and KSCA-FM, mostly Spanish-speaking listeners; KCEL-FM (Spanish), KUTY-AM, KGMX-FM, and KQAV-FM, listeners in the Antelope Valley (rural) area.

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PROGRAM EVALUATION BRIEF

Facilitators and Barriers to Passing Local Policies That Prohibit the Sale of Flavored Tobacco Products: Qualitative Analysis of Strategies Implemented by 36 Communities in California, 2017–2021

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PEER REVIEWED

Summary

What is already known on this topic?

Passing policies that prohibit the sale of flavored and menthol tobacco products is associated with a decrease in youth and young adult tobacco use.

What is added by this report?

The COVID-19 pandemic, California wildfires, staffing shortages, and conservative political climates represented significant barriers to policy adoption. Successful campaigns tended to demonstrate illegal sales to minors and public support for a ban. Urban communities passed more policies restricting flavored tobacco sales than rural communities did.

What are the implications for public health practice?

Passing future restrictions on tobacco sales will require tailoring interventions to communities' political climates and adapting work plans to be more flexible in the event of future emergencies and interruptions.

Abstract

To reduce youth access to tobacco products, the California Tobacco Prevention Program funded local tobacco prevention programs from July 2017 through December 2021 to address its Communities of Excellence Indicator 3.2.9: "the number of jurisdictions with a policy eliminating or restricting the sale and/or distribution of any mentholated cigarettes and other flavored tobacco products, and paraphernalia." We examined the strategies by which community coalitions attempted to limit the number of stores selling flavored tobacco across California. Thirty-six final evaluation reports (FERs) were used for our analysis. We examined certain elements or factors as primary areas of interest because of their apparent link to successful outcomes in analyses of FERs in the past. Over half (19 of 36) of FERs reported successfully passing at least 1 policy to regulate the sale of flavored tobacco products. Urban communities passed more policies (16 of 18) compared with rural communities (3 of 18). Successful campaigns tended to involve youth, demonstrate illegal sales to minors and public support for a ban, and identify a champion. Barriers included the COVID-19 pandemic, California wildfires, staffing shortages, and conservative political climates. This evaluation offers insights into the successes and challenges faced by local coalitions seeking policy changes for tobacco use prevention, which can be different for urban and rural communities. The evaluation also indicates the necessity of adopting flexible tactical plans for overcoming environmental factors that affected intervention and evaluation activities.

Introduction

Commercial tobacco use remains the leading cause of preventable death and disease in the United States (1). Preventing initiation and ongoing use of tobacco products by young people is critical, as most adults who use tobacco begin before the age of 18 years (2). Young tobacco users overwhelmingly use flavored tobacco products, including products with menthol (3), which improves the taste and reduces the harshness of the tobacco product, making them more appealing to new users (2).

The California Department of Public Health, Tobacco Prevention Program (CTPP) aims to change tobacco-related social norms by creating an environment where "tobacco becomes less desirable, less acceptable, and less accessible" (4). CTPP funds tobacco use prevention programs in all 58 counties as well as 3 cities in Cali-

fornia to focus on 1 or more policy objectives that fall under its 4 priority areas: limit tobacco-promoting influences, reduce exposure to secondhand smoke, reduce the availability of tobacco, and promote tobacco use cessation (4).

CTPP-funded objectives require programs to follow approved scopes of work and submit required intervention and evaluation deliverables every funding cycle that align with its Communities of Excellence Indicators (4,5). These deliverables include collecting data (eg, public opinion, key informant, observation data), providing educational materials and resources relevant to tobacco use prevention to their community coalitions, and submitting evaluation reports on their community's progress (4). The role of a community coalition in tobacco use prevention is to provide a strong voice for policy change on behalf of those who live in the target jurisdictions. Coalition members educate, make presentations to, and communicate with policymakers to campaign for policy change.

From July 2017 through December 2021, as part of its effort to reduce youth access to tobacco products, CTPP funded 36 local public health programs to address Communities of Excellence Indicator 3.2.9: "the number of jurisdictions with a policy eliminating or restricting the sale and/or distribution of any mentholated cigarettes and other flavored tobacco products, and paraphernalia" (5).

Purpose and Objectives

The primary objective of our evaluation was to determine the facilitators and barriers to successful adoption of local policies that prohibit the sale of flavored tobacco products. At the conclusion of the 2017–2021 funding cycle, 36 local public health programs produced Final Evaluation Reports (FERs) describing their coalition's experience and reporting whether they succeeded in meeting their objectives. We report on the common factors that were found to be instrumental in their campaigns or that served as obstacles.

Intervention Approach

The evaluation team's analysis examined certain elements or factors as primary areas of interest due to their apparent link to successful outcomes in past analyses of FERs (6,7). These are the involvement of youth, use of media for education and advocacy, involvement of policymakers and law enforcement, and gathering data through youth tobacco purchase survey results, public opinion surveys, and tobacco retail store observations.

Evaluation Approach

The data used in the qualitative analysis were drawn exclusively from the 36 FERs as they were submitted at the end of the funding cycle. FERs followed a standard format comprising an abstract, background, evaluation methods and design, implementation and results, and conclusions and recommendations. The evaluation team analyzed the content of these FERs; codes were used to identify common categories, themes, and relationships (8).

The evaluation team also analyzed the demographic data and tobacco control characteristics for each community to determine if patterns were present (Table 1). The total population, the land area in square miles, and the rural/urban status were obtained from the 2017–2021 American Community Survey, the 2010 Census, and the Rural Initiatives Strengthening Equity (9), respectively. The 2019 overall tobacco control grade (A–F) came from the American Lung Association (10). The percentage of adults who smoked cigarettes (2016–2018 California Health Interview Survey) was also included (Table 1).

Results

Of the 36 FERs that reported on policies to prohibit the sale of flavored tobacco, 19 (53%) stated that their communities were successful in meeting their stated objectives. Urban communities passed more policies (16 of 18) than rural communities (3 of 18).

Facilitators of policy change

Key facilitators of policy change included the involvement of youth, identifying policy champions, involving a community coalition, sharing data to demonstrate need and support for a policy, and using precedents (Table 2).

Involvement of youth

Almost all (34 of 36) FERs reported engaging youth. For example, 1 successful coalition recruited, trained, and used 87 youth volunteers to conduct a house-to-house door hanger campaign, create public service announcements, and develop an op-ed column or a letter to the editor.

Youth were primarily involved in conducting Young Adult Tobacco Purchase Surveys in their communities. These surveys were used to assess and document the rate of illegal sales to underage persons. Of the 36 programs, 18 included a Young Adult Tobacco Purchase Survey as part of their 2017–2021 scope of work, and 15 reported their results in the FER.

Most communities were able to document the problem of the rate of illegal sales to minors. Preintervention illegal sales ranged from 0% to 57%. The ability to demonstrate that illegal sales were a problem in the local community was reported as a facilitator of policy change. Coalitions that were unable to make the case that illegal sales were a problem in the community were less successful in their policy change efforts. One rural county's FER reported an

illegal sales rate of 6% (2 of 34 tobacco retailers). Another rural county had only 3 tobacco retailers countywide. In each case, policymakers did not believe the data supported the case for policy change.

Identifying policy champions

The role of a champion is to advocate for the adoption of a policy from within the decision-making body. Several FERs mentioned having strong champions from the city council "who assisted in spreading knowledge about the potential policy to community members and their fellow council members." Because it is possible to lose a policy champion if priorities shift or crises arise, one FER noted that "it is absolutely critical to have more than one council member championing the issue."

Involving a community coalition

As community coalitions led policy change efforts, most FERs mentioned the importance of adult and youth coalitions. One FER noted that "building strong community support and collaborative partnerships was critical" to the passage of policies in 3 jurisdictions. Another stated, "The combination of champions, allies, and volunteers snowballed into momentum that was also powered by media advertisements and press releases."

Demonstrating need and support for a policy

Seeing public support for reducing youth access and adopting flavored tobacco product bans is important to policymakers. Several FERs reported their communities conducted public opinion polls, gathered petition signatures, and conducted letter-writing campaigns. For example, one county's youth advocates collected endorsements of support. The results of these efforts were included in information kits, communicated during presentations, or submitted to local media for release.

Twenty-five of the programs reported the results of the public opinion surveys. The percentage of the surveyed public that was in support of the ban varied from 47% to 90%. Some programs used the results in fact sheets, presentations, and community or policymaker education. However, not all programs were able to do so, and in the jurisdictions that did not pass a policy, it appears that the results were not shared with the community. For example, in one FER, although 72% of the residents surveyed were in support of a flavored tobacco products ban, the results were not used because of redirection of staff to COVID-19 pandemic–related duties, unresponsiveness of policymakers, and later turnover in staff.

Using precedents

Coalitions found it beneficial to build on existing laws and precedents. Some FERs reported that lawmakers were influenced by policy discussions and policies being passed in neighboring counties or jurisdictions. For example, 1 FER mentioned that the community "benefitted from efforts from other local cities, which was referenced not only by city council members but from community comments, as well." Providing examples from similar counties when educating the community and policymakers was noted in some FERs because policymakers want to see examples of success.

Barriers to policy adoption

The communities faced barriers to policy adoption that delayed intervention activities or prevented them altogether. These barriers included long adoption timelines, environmental factors, and the conservative political climates in some jurisdictions.

Policy change takes time

The length of time to get a proposed policy introduced, let alone accepted and implemented, was one challenge. This can be compounded by other barriers that delay the process. For example, some FERs reported the resignation of staff or positions that were not filled for multiple years. Programs that faced staffing shortages or high staff turnover, lost their policy champion, or were unable to keep their community coalition engaged long-term had difficulty maintaining the momentum necessary to address their Communities of Excellence Indicator.

Environmental factors

Events outside of the coalitions' control can also affect progress toward passing flavored tobacco restrictions. Almost every FER reported that the COVID-19 pandemic interrupted their work; for some, it was a temporary interruption as they were ultimately successful in passing policies, but other communities had not yet recovered at the end of 2021. Policymakers focused on other priorities because of the pandemic, and some coalitions found it difficult to engage schools and parents in campaign efforts. It was also difficult to get the attention of the media. In addition, post-policy adoption education, enforcement, and evaluation activities were delayed or not conducted because of the pandemic, which would have provided valuable information about the level of compliance with flavored tobacco product bans.

Other factors that hindered progress were wildfires and extreme weather. The California wildfires that occurred during 2017–2021 (eg, The Tamarack Fires, the Glass Fires, and the Beckwourth Complex Fires) caused evacuations that delayed intervention and evaluation activities, making it difficult to build momentum. As extreme weather becomes the norm in California (11), local programs and coalitions may need to be more flexible in their approaches to community engagement and data collection.

Conservative political climate

FERs from rural counties reported that their policymakers tended to be more conservative politically than urban policymakers. In such jurisdictions, policymakers were hesitant to support initiatives that were perceived as antibusiness or that negatively affected local businesses and had "strong resistance to governmental interference in an individual's perceived rights and freedoms," as one FER noted. During this funding period, only 3 of 18 rural communities passed flavored tobacco bans, compared with 16 of 18 urban communities. Because the challenges faced in pursuit of policy change may be very different for urban and rural counties, coalitions pursuing tobacco use prevention will need to collect evaluation data to ascertain the readiness of their community to pass tobacco prevention policies and tailor their intervention activities appropriately.

Implications for Public Health

Over half of the communities that reportedly attempted to pass policies prohibiting the sale of flavored tobacco were successful. Many FERs reported that lawmakers were influenced by the policy changes occurring in neighboring jurisdictions (12). The importance of understanding local political climates and identifying champions among key parties in the community to push for local policy change is consistent with existing studies on policy change (7,13).

Youth engagement is a critical part of comprehensive tobacco control efforts, because preventing tobacco use initiation among young people is key to ending the tobacco epidemic. These young people help communicate the impact of tobacco on their communities, implement tobacco control strategies, and shift social norms (14).

As reported in the FERs, coalitions in rural areas not only had resistance from more conservative policymakers but also faced unique challenges in completing intervention activities that urban jurisdictions may not face. FERs from rural counties noted that media was limited when a county did not have any major news outlets. In some cases, these coalitions turned to regional outlets or streaming services; media coverage was achieved only because it was purchased.

Conducting data collection to demonstrate a local problem or public support for a policy is more difficult in rural regions as well, both due to logistics and small sample sizes. For rural counties, the geographic distance between communities can be significant. One rural county has a total of 3 tobacco retailers. Another rural county reported an illegal sales rate of 6% (2 of 34 tobacco retailers), which did not make the case for policy change.

This evaluation also indicates the necessity of adopting flexible tactical plans for overcoming environmental factors that influenced intervention and evaluation activities. Wildfires that devastated multiple regions of California during 2017 through 2021, as well as the COVID-19 pandemic, affected efforts to educate the community and decision-makers. These environmental factors also affected the ability to collect the necessary data to demonstrate the need and public support for policy change. These difficulties are indicative of the changing landscape of public health work and highlight the importance of adapting work plans to be more flexible in the event of future emergencies and interruptions.

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References

1. US Department of Health and Human Services. The health consequences of smoking — 50 years of progress. A report of the Surgeon General. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2014. Accessed July 27, 2023. https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf
2. US Department of Health and Human Services. Preventing tobacco use among youth and young adults: A report of the Surgeon General. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2012. Accessed July 27, 2023. https://www.ncbi.nlm.nih.gov/books/NBK99237/pdf/Bookshelf_NBK99237.pdf

3. Gentzke AS, Wang TW, Cornelius M, Park-Lee E, Ren C, Sawdey MD, et al. Tobacco product use and associated factors among middle and high school students — National Youth Tobacco Survey, United States, 2021. *MMWR Surveill Summ*. 2022;71(5):1–29. doi:10.15585/mmwr.ss7105a1
4. Roeseler A, Burns D. The quarter that changed the world. *Tob Control*. 2010;19(suppl 1):i3–i15. doi:10.1136/tc.2009.030809
5. California Department of Public Health, California Tobacco Control Program. Communities of Excellence in Tobacco Control. A Communities of Excellence needs assessment guide. 2020. Accessed April 8, 2024. https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CTCB/CDPH%20Document%20Library/Community/ToolKitsandManuals/2020CXManual.pdf
6. Satterlund TD, Cassady D, Treiber J, Lemp C. Strategies implemented by 20 local tobacco control agencies to promote smoke-free recreation areas, California, 2004–2007. *Prev Chronic Dis*. 2011;8(5):A111.
7. Satterlund TD, Treiber J, Haun S, Cassady D. Evaluating local policy adoption campaigns in California: Tobacco Retail License (TRL) adoption. *J Community Health*. 2014;39(3):584–591. doi:10.1007/s10900-013-9803-9
8. Ulin PR, Robinson ET, Tolley EE. *Qualitative methods in public health: a field guide for applied research*. Jossey-Bass; 2004.
9. Rural Initiatives Strengthening Equity. Rural projects contact list by region. Accessed July 27, 2023. https://www.ca-rise.org/resources/rural-partners-contact-list/
10. American Lung Association. State of tobacco control 2019. California local grades. Accessed July 27, 2023. https://www.lung.org/getmedia/8fee750c-f6ec-44a1-b242-30e83fc8b25d/2019-sotc-california-full.pdf.pdf
11. Guirguis K, Gershunov A, Hatchett B, Shulgina T, DeFlorio MJ, Subramanian AC, et al. Winter wet–dry weather patterns driving atmospheric rivers and Santa Ana winds provide evidence for increasing wildfire hazard in California. *Clim Dyn*. 2023;60(5-6):1729–1749. doi:10.1007/s00382-022-06361-7
12. Haun S. *A qualitative evaluation of 36 legislated, flavored tobacco products bans in California*. University of California, Davis, Tobacco Control Evaluation Center; 2023.
13. Dove MS, Zheng S, Pakdaman S, Chen-Sankey J. Demographics, tobacco use, and tobacco control measures of California cities with flavored tobacco sales restrictions. *Health Promot Pract*. 2022:15248399221136861; Epub ahead of print. doi:10.1177/15248399221136861
14. Centers for Disease Control and Prevention. Best practices user guide: Youth engagement in tobacco prevention and control. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2019. Accessed July 27, 2023. https://www.cdc.gov/tobacco/stateandcommunity/guides/pdfs/best-practices-youth-engagement-user-guide.pdf

Tables

Table 1. Demographic and Tobacco Control Characteristics for Each Community Prohibiting the Sale of Flavored Tobacco Products, California, 2017–2021 (N = 36)

County or city[a]	Population[b]	Land area, square miles[c]	Tobacco control grade[d]	Adult smokers, %[e]
Rural				
Alpine County	NA	738.33	D	NA
Calaveras County	45,349	1,020.01	F	13.0
Colusa County	21,780	1,150.73	F	15.1
Inyo County	18,804	10,180.88	F	13.0
Lassen County	32,949	4,541.18	F	16.1
Madera County	156,304	2,137.07	F	13.0
Mariposa County	17,225	1,448.82	D	NA
Mendocino County	91,534	3,506.34	D	15.1
Merced County	279,150	1,934.97	F	11.0
Plumas County	19,631	2,553.04	F	16.1
San Joaquin County	771,406	1,391.32	F	11.8
Sierra County	NA	953.21	F	16.1
Sutter County	99,080	602.41	D	14.1
Tehama County	65,345	2,949.71	F	15.1
Yuba County	80,404	631.84	F	17.5
Butte County	217,884	1,636.46	D	17.0
Modoc County	8,723	3,917.77	D	16.1
Shasta County	181,935	3,775.40	D	20.1
Urban				
Fresno County	1,003,150	5,957.99	F	10.1
San Benito County	63,329	1,388.71	F	14.2
Alameda County	1,673,133	739.02	B	8.2
Berkeley City	119,607	10.47	A	NA
Contra Costa County	1,161,643	715.94	C	9.4
Long Beach City	466,565	50.29	C	NA
Los Angeles County	10,019,635	4,057.88	D	8.6
Marin County	262,387	520.31	B	9.8
Monterey County	438,953	3,280.60	D	8.3
Napa County	138,795	748.36	F	8.2
Sacramento County	1,571,767	964.64	C	8.8

Abbreviation: NA, not available because of small population size or because the data were not available at the city level.
[a] County names in bold indicate that the county passed a ban on flavored tobacco products. Rural or urban status was obtained from Rural Initiatives Strengthening Equity (9).
[b] 2017–2021 American Community Survey.
[c] 2010 US Census.
[d] 2019 American Lung Association Tobacco Control Grade.
[e] 2017–2019 California Health Interview Survey — percentage of adults (≥18 years) who currently smoke.

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Table 1. Demographic and Tobacco Control Characteristics for Each Community Prohibiting the Sale of Flavored Tobacco Products, California, 2017–2021 (N = 36)

County or city[a]	Population[b]	Land area, square miles[c]	Tobacco control grade[d]	Adult smokers, %[e]
San Bernardino County	2,171,071	20,056.94	F	12.3
San Luis Obispo County	282,771	3,298.57	C	8.1
Santa Clara County	1,932,022	1,290.10	C	5.1
Santa Cruz County	272,138	445.17	B	10.2
Sonoma County	492,498	1,575.85	B	9.3
Ventura County	845,255	1,843.13	D	8.2
Yolo County	216,703	631.84	C	5.4

Abbreviation: NA, not available because of small population size or because the data were not available at the city level.
[a] County names in bold indicate that the county passed a ban on flavored tobacco products. Rural or urban status was obtained from Rural Initiatives Strengthening Equity (9).
[b] 2017–2021 American Community Survey.
[c] 2010 US Census.
[d] 2019 American Lung Association Tobacco Control Grade.
[e] 2017–2019 California Health Interview Survey — percentage of adults (≥18 years) who currently smoke.

Table 2. Facilitators to Passing a Flavored Tobacco Sales Restriction to Prohibit the Sale of Flavored Tobacco Products, California, 2017–2021 (N = 36)[a]

County or city[a]	Facilitators			
	Involved youth	Recruited a champion	Involved or broadened the county coalition	Shared data[b]
Rural				
Alpine County	Y	NA	NA	Y
Calaveras County	Y	Y	Y	Y
Colusa County	Y	NA	Y	Y
Inyo County	Y	NA	NA	Y
Lassen County	Y	NA	Y	NA
Madera County	Y	Y	NA	Y
Mariposa County	Y	NA	Y	NA
Mendocino County	Y	NA	NA	NA
Merced County	Y	NA	Y	NA
Plumas County	Y	Y	Y	Y
San Joaquin County	Y	NA	Y	Y
Sierra County	N	NA	NA	NA
Sutter County	Y	NA	Y	NA
Tehama County	Y	Y	Y	Y
Yuba County	Y	NA	Y	Y
Butte County	Y	Y	Y	Y
Modoc County	N	Y	Y	Y
Shasta County	Y	NA	Y	Y
Urban				
Fresno County	Y	NA	NA	Y
San Benito County	Y	Y	Y	NA
Alameda County	Y	Y	Y	Y
Berkeley City	Y	NA	Y	Y
Contra Costa County	Y	NA	Y	NA
Long Beach City	Y	NA	NA	NA
Los Angeles County	Y	Y	Y	Y
Marin County	Y	NA	Y	Y
Monterey County	Y	Y	Y	Y
Napa County	Y	NA	Y	Y
Sacramento County	Y	Y	Y	NA
San Bernardino County	Y	NA	Y	Y
San Luis Obispo County	Y	Y	Y	Y

Abbreviation: N, facilitator was not used; NA, facilitator was not reported in a final evaluation report or was not used by the county or city; Y, facilitator was used.
[a] County names in bold indicate that the county passed a ban on flavored tobacco products. Rural or urban status was obtained from Rural Initiatives Strengthening Equity (9).
[b] Shared data in community presentations, fact sheets, and educational outreach packets; with policymakers and coalition members; and through media press releases or social media (see Appendix for data points).

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Table 2. Facilitators to Passing a Flavored Tobacco Sales Restriction to Prohibit the Sale of Flavored Tobacco Products, California, 2017–2021 (N = 36)[a]

County or city[a]	Facilitators			
	Involved youth	Recruited a champion	Involved or broadened the county coalition	Shared data[b]
Santa Clara County	Y	NA	Y	Y
Santa Cruz County	Y	Y	Y	NA
Sonoma County	Y	Y	Y	Y
Ventura County	Y	Y	Y	Y
Yolo County	Y	Y	NA	Y

Abbreviation: N, facilitator was not used; NA, facilitator was not reported in a final evaluation report or was not used by the county or city; Y, facilitator was used.
[a] County names in bold indicate that the county passed a ban on flavored tobacco products. Rural or urban status was obtained from Rural Initiatives Strengthening Equity (9).
[b] Shared data in community presentations, fact sheets, and educational outreach packets; with policymakers and coalition members; and through media press releases or social media (see Appendix for data points).

Appendix

Appendix. Table. Data Included in Final Evaluation Reports Describing Efforts to Prohibit the Sale of Flavored Tobacco Products, California, 2017–2021 (N = 36)[a]

County or city[b]	Stores that sold tobacco to underage youth, %[c]	Flavored tobacco product availability in stores, %[c]	Public support for a flavor ban, %[c]
Rural			
Alpine County	0	100	50
Calaveras County	45	94	57
Colusa County	6, 17	86	72
Inyo County	NR	NR	NR
Lassen County	NR	100, 80	58
Madera County	NR	93	NR
Mariposa County	NR	NR	NR
Mendocino County	NR	NR	NR
Merced County	10, 19	NR	NR
Plumas County	24, 30	80	66
San Joaquin County	18	NR	78
Sierra County	NR	100	47
Sutter County	NR	95, 91	69
Tehama County	NR	98	71
Yuba County	36.6	NR	51
Butte County	20, 38	96, 90	66
Modoc County	NR	100	83
Shasta County	NR	84	62
Urban			
Fresno County	NR	100, 97	63
San Benito County	NR	NR	NR
Alameda County	NR	94, 100	80
Berkeley City	NR	83	67
Contra Costa County	NR	NR	NR
Long Beach City	NR	NR	NR
Los Angeles County	6–48	NR	52–88
Marin County	NR	NR	80
Monterey County	13–57	90, 82	83
Napa County	NR	84, 69	89
Sacramento County	NR	89	NR
San Bernardino County	20–40	80	77
San Luis Obispo County	7–21	80	53

Abbreviation: NR, not reported.

[a] Multiple numbers in a cell represent percentages in multiple jurisdictions in which the programs collected data; eg, Colusa County reported store percentages in 2 jurisdictions, and Los Angeles County reported a range of percentages across each of its jurisdictions.

[b] County names in bold indicate that the county passed a ban on flavored tobacco products. Rural or urban status was obtained from Rural Initiatives Strengthening Equity (9).

[c] Data reported in the final evaluation reports (12).

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Appendix. Table. Data Included in Final Evaluation Reports Describing Efforts to Prohibit the Sale of Flavored Tobacco Products, California, 2017–2021 (N = 36)[a]

County or city[b]	Stores that sold tobacco to underage youth, %[c]	Flavored tobacco product availability in stores, %[c]	Public support for a flavor ban, %[c]
Santa Clara County	23	91	68
Santa Cruz County	NR	NR	NR
Sonoma County	17.1	87, 80	90
Ventura County	23–30	NR	NR
Yolo County	NR	73	74

Abbreviation: NR, not reported.
[a] Multiple numbers in a cell represent percentages in multiple jurisdictions in which the programs collected data; eg, Colusa County reported store percentages in 2 jurisdictions, and Los Angeles County reported a range of percentages across each of its jurisdictions.
[b] County names in bold indicate that the county passed a ban on flavored tobacco products. Rural or urban status was obtained from Rural Initiatives Strengthening Equity (9).
[c] Data reported in the final evaluation reports (12).

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RESEARCH BRIEF

Community Engagement, Jurisdictional Experience, and Previous Tobacco-Related Ordinances in Neighboring Communities as Drivers of Flavored Tobacco Bans in Los Angeles County

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PEER REVIEWED

Summary

What is already known on this topic?

Local ordinances that restrict the sale of flavored tobacco products can markedly decrease their use. However, the prerequisite conditions and processes needed to advance the adoption of such ordinances are not well understood.

What is added by this report?

This study provides data supporting use of a community engagement approach, centered on the adoption and strengthening of tobacco retail license ordinances that restrict or ban the sale of flavored tobacco products, to counter the harmful effects of vaping and flavored tobacco use.

What are the implications for public health practice?

A community engagement approach that uses a policy adoption campaign can facilitate public support for ordinances that restrict the sale of flavored tobacco products.

Abstract

We examined whether a community engagement approach and jurisdictional attributes were associated with local action to restrict the sale of flavored tobacco products in Los Angeles County during 2019–2022. We estimated crude and adjusted risk ratios to examine these associations. Jurisdictions that used an active community engagement approach to adopt a flavored tobacco ban ordinance, those with previous experience adopting other tobacco-related ordinances, and those located next to communities that have an existing tobacco retail license ordinance were more likely than jurisdictions without these attributes to adopt a new ordinance to restrict the sale of flavored tobacco products. Efforts to adopt such an ordinance were generally more successful in jurisdictions where community members were engaged and policy makers were familiar with the adoption of public health ordinances.

Objective

Use of flavored tobacco is a national epidemic (1,2). To expand its customer base, the tobacco industry has aggressively marketed these products to young people and other vulnerable groups, such as women of reproductive age and racial and ethnic minority populations (3).

Local ordinances that restrict the sale of flavored tobacco products (also known as flavored tobacco bans) represent an effective strategy to decrease the use of these products (4). Factors associated with adopting local tobacco-related ordinances may include a large population size, a relatively low prevalence of smoking, voting history, a higher income or education level, and geographic clustering (5–7). However, the conditions and processes that affect adoption of local flavored tobacco bans are not well understood. To address this gap in knowledge, this study in Los Angeles County, California, sought to assess 1) whether a community engagement campaign centered on adopting an ordinance to restrict flavored tobacco products could drive local jurisdictions to act and 2) whether other jurisdictional attributes affect decisions to adopt such an ordinance.

Methods

The Tobacco Control and Prevention Program in the Los Angeles County Department of Public Health (LACDPH) conducted an analysis of a community engagement approach used by several jurisdictions to adopt a flavored tobacco ban ordinance in their communities. This approach included the following phases: 1) community assessment, 2) campaign strategy development, 3) coalition building, 4) campaign implementation, and 5) policy (ordinance) adoption (8). From 2019 through 2022, local community-based organizations used this approach (hereinafter, a "flavored tobacco ban campaign") to help municipalities and the County of Los Angeles government adopt tobacco retail license ordinances that restrict the sale of flavored tobacco products. A tobacco retail license ordinance is a jurisdiction-specific policy that sets forth requirements and conditions that retailers need to meet in order to sell any tobacco product within a regulated region. For this effort, the Tobacco Control and Prevention Program selected 20 jurisdictions to conduct flavored tobacco ban campaigns throughout Los Angeles County.

Los Angeles County covers more than 4,700 square miles, comprising 89 jurisdictions (88 cities and 1 large unincorporated area, which is not part of any city). Of these jurisdictions, 3 cities had previously adopted a flavored tobacco ban ordinance. Our study focused on the remaining 86 jurisdictions.

In 2018, the prevalence of menthol cigarette use in Los Angeles County was 4.8% (LACDPH, unpublished data, 2018). The prevalence of other flavored tobacco use was 4.2% overall and 12.7% among adults aged 18 to 24 years. By jurisdiction, the prevalence ranged from 5% to 18% for cigarette smoking and 4% to 11% for vaping (LACDPH, unpublished data, 2018).

We collected data on jurisdictions that implemented a flavored tobacco ban campaign and/or adopted a flavored tobacco ban ordinance, and the following jurisdictional attributes that may affect adoption: population size, geographic region (jurisdictions were grouped into 10 regions), number of neighboring communities with an existing tobacco retail license ordinance, sociodemographic characteristics (age, race and ethnicity, education), number of tobacco retailers, previous adoption of other tobacco-related ordinances (eg, for multiunit housing, outdoor spaces), other concurrent tobacco-related campaigns for multiunit housing or outdoor spaces, revenue per capita, and prevalence of tobacco product use. These data came from the following sources: 1) the Tobacco Control and Prevention Program ordinance tracking database (unpublished data, 2023), 2) the Los Angeles County Health Survey (unpublished data, LACDPH, 2018), 3) the US Census (9), and 4) the California Tobacco Health Assessment Tool (10). We used Fisher exact tests, Satterthwaite *t* tests, and Kruskal–Wallis tests to compare jurisdictions that implemented a flavored tobacco ban campaign and jurisdictions that did not. To assess the effect of a flavored tobacco ban campaign on the adoption of a flavored tobacco ban ordinance, we conducted a modified Poisson regression using SAS version 9.4 (SAS Institute Inc) (11), which estimated crude risk ratios and adjusted risk ratios while controlling for confounders. We performed similar analyses to assess the effect of jurisdictional attributes on the adoption of a flavored tobacco ban ordinance. We used ArcGIS version 10.8 (Esri) to create a thematic map of Los Angeles County showing jurisdictions that implemented a flavored tobacco ban campaign and adopted a flavored ban ordinance over time.

Results

Overall, we did not observe any differences in sociodemographic characteristics among the 20 jurisdictions that implemented a flavored tobacco ban campaign versus the 66 jurisdictions that did not (Table 1). We did, however, observe differences in previous adoption of tobacco-related ordinances for jurisdictions with versus jurisdictions without a flavored tobacco ban campaign. For example, 8 of 20 jurisdictions (40.0%) with a flavored tobacco ban campaign had previously (before 2019) adopted an ordinance restricting smoking in multiunit housing, whereas only 4 of 66 jurisdictions (6.1%) without a flavored tobacco ban campaign had adopted such an ordinance. Similarly, 16 of 20 jurisdictions (80.0%) with a flavored tobacco ban campaign had adopted any tobacco retail license ordinance before 2019, whereas only 27 of 66 jurisdictions (40.9%) without a flavored tobacco ban campaign had adopted such an ordinance.

From January 2019 through June 2022, 20 cities and the County of Los Angeles government (responsible for the county's unincorporated area) adopted a flavored tobacco ban ordinance (Figure); all had previously adopted a tobacco-related ordinance.

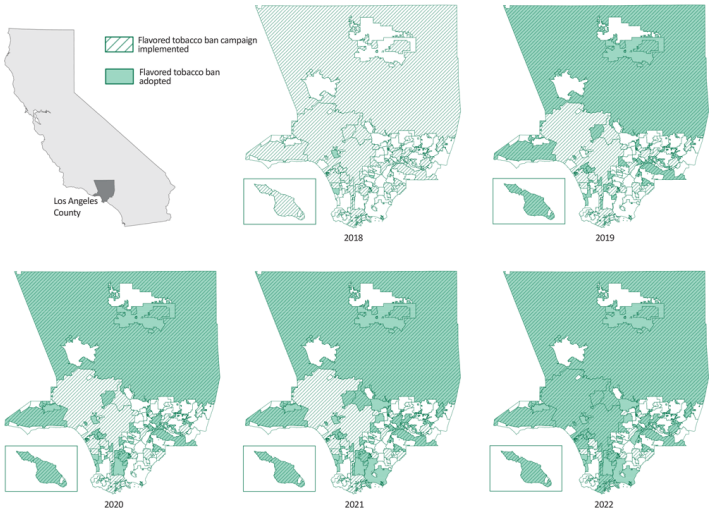

Figure. Adoption of local ordinances to restrict the sale of flavored tobacco products in Los Angeles County, 2018–2022. Map for 2018 shows jurisdictions that implemented flavored tobacco ban campaigns from 2019 through 2022. Inset shows Catalina Island. Source: Los Angeles County Department of Public Health.

The likelihood of adopting a flavored tobacco ban ordinance increased by 6% (95% CI, 3%–9%) for every increase in the number of neighboring jurisdictions with a pre-2019 tobacco retail license ordinance ($P < .001$). Eleven of 20 jurisdictions (55.0%) with a flavored tobacco ban campaign adopted a flavored tobacco ban ordinance, while only 10 of 66 jurisdictions (15.2%) without a campaign adopted an ordinance (Table 2). The corresponding crude risk ratio for this finding was 3.6 (95% CI, 1.8–7.3; $P < .001$). After controlling for previous multiunit housing ordinances, other concurrent tobacco-related campaigns, and geographic region, the adoption of a flavored tobacco ban ordinance was 2.2 times more likely in jurisdictions with a flavored tobacco ban campaign than in jurisdictions without a campaign (adjusted risk ratio = 2.2; 95% CI, 1.0–5.0; $P = .05$). Other jurisdictional attributes associated with adoption of a flavored tobacco ban ordinance were previous adoption of tobacco-related ordinances, a larger population size (>100,000 people), and geographic region (Table 2).

Discussion

Our study found that jurisdictions that used a community engagement approach (ie, a flavored tobacco ban campaign) were approximately 2 times more likely to adopt a flavored tobacco ban ordinance than jurisdictions where such an approach was not used, after controlling for confounders. This finding affirms the value of using this type of community engagement approach to drive tobacco control at the local level. The flavored tobacco ban campaigns involved the engagement of community partners, city residents, and coalitions to capture the diverse perspectives that are typically required to encourage local government to act. We examined other jurisdictional attributes that may affect the adoption of flavored tobacco bans and discovered that population size, geographic region, number of neighboring communities with a previous tobacco retail license ordinance, and previous experience with adopting tobacco-related ordinances were factors associated with adoption of flavored tobacco ban ordinances.

Similar to other studies that examined the effect of geographic location on policy adoption (12), geographic region or proximity to other communities with a tobacco retail license ordinance resulted in a higher likelihood of a jurisdiction adopting a flavored tobacco ban ordinance. This observation, in part, may be explained by the policy diffusion phenomenon, which occurs when the likelihood of ordinance adoption in one jurisdiction affects the adoption of a similar ordinance in neighboring jurisdictions (13). Data on geographic patterns may be valuable for informing future tobacco control campaigns.

Our study has some limitations. First, findings were conscribed by the existing data sources and the context of the political and cultural environment in California and may not be generalizable to other areas of the US. For example, California passed a flavored tobacco ban in 2020 (14), which went into effect in 2022; this state flavored tobacco ban may have affected the passage of local flavored tobacco bans. Second, selection bias likely affected the study's observations on the effects of the flavored tobacco ban campaign on adoption of a flavored tobacco ban ordinance. Jurisdictions that had an active campaign were more likely to have previously adopted a tobacco-related ordinance (especially for multiunit housing), and thus, had experience with the ordinance adoption process. We did, however, adjust for this confounder in our analyses.

In Los Angeles County, flavored tobacco bans are becoming more popular and are used by local jurisdictions as a key driver of tobacco control to help reduce the adverse health effects of vaping and use of other flavored tobacco products. A community engagement approach can successfully drive the passage of flavored tobacco ban ordinances, especially in larger populations and in communities that have previously enacted tobacco-related ordinances.

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References

1. Cullen KA, Liu ST, Bernat JK, Slavit WI, Tynan MA, King BA, et al. Flavored tobacco product use among middle and high school students — United States, 2014-2018. *MMWR Morb Mortal Wkly Rep.* 2019;68(39):839–844. doi:10.15585/mmwr.mm6839a2
2. Kuo T, Kuo A; Los Angeles County Medical Societies. Addressing the dangers of increased e-cigarette use among youth: a call to action for clinicians. *Rx for Prevention.* 2019;9(3):1–7. http://rx.ph.lacounty.gov/RxVaping0919
3. Cruz TB, Rose SW, Lienemann BA, Byron MJ, Meissner HI, Baezconde-Garbanati L, et al. Pro-tobacco marketing and anti-tobacco campaigns aimed at vulnerable populations: a review of the literature. *Tob Induc Dis.* 2019;17(September):68. doi:10.18332/tid/111397
4. Rogers T, Brown EM, Siegel-Reamer L, Rahman B, Feld AL, Patel M, et al. A comprehensive qualitative review of studies evaluating the impact of local US laws restricting the sale of flavored and menthol tobacco products. *Nicotine Tob Res.* 2022;24(4):433–443. doi:10.1093/ntr/ntab188
5. Feng W, Lischko A, Martin EG, Skeer M, Kaplan A, Wang Y, et al. Who are the local policy innovators? Cluster analysis of municipal tobacco control policies in Massachusetts. *J Public Health Manag Pract.* 2023;29(2):151–161. doi:10.1097/PHH.0000000000001649
6. Dai H, Tamrakar N, Rathnayake N, Samson K. Geographical distribution and social determinants of Tobacco 21 policy adoption and retail inspections in the United States, 2015–2019. *Tob Induc Dis.* 2021;19(September):55. doi:10.18332/tid/140148
7. Chen JC, Green KM, Chen J, Hoke KS, Borzekowski DLG. Restricting the sale of flavored e-cigarettes in the US: an examination of local regulations. *Tob Regul Sci.* 2018;4(4):32–40. doi:10.18001/TRS.4.4.4
8. Weber MD, Simon P, Messex M, Aragon L, Kuo T, Fielding JE. A framework for mobilizing communities to advance local tobacco control policy: the Los Angeles County experience. *Am J Public Health.* 2012;102(5):785–788. doi:10.2105/AJPH.2011.300586
9. US Census Bureau. Los Angeles County. Accessed April 6, 2023. https://data.census.gov/profile/Los_Angeles_County,_California?g=050XX00US06037
10. Stanford Prevention Research Center. California Tobacco Health Assessment Tool. Accessed April 6, 2023. https://cthat.org
11. Zou G. A modified Poisson regression approach to prospective studies with binary data. *Am J Epidemiol.* 2004;159(7):702–706. doi:10.1093/aje/kwh090
12. Fundytus K, Santamaria-Plaza C, McLaren L. Policy diffusion theory, evidence-informed public health, and public health political science: a scoping review. *Can J Public Health.* 2023;114(3):331–345. doi:10.17269/s41997-023-00752-x
13. Volden C. States as policy laboratories: Emulating success in the Children's Health Insurance Program. *Am J Pol Sci.* 2006;50(2):294–312. doi:10.1111/j.1540-5907.2006.00185.x
14. California Legislative Information. Flavored tobacco products, SB 793, 2019–2020. August 28, 2020. Accessed August 9, 2023. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB793

Tables

Table 1. Attributes of the 86 Jurisdictions[a] Included in Study Analyses, by Implementation of a Flavored Tobacco Ban Campaign, Los Angeles County, 2019–2021[b]

Attribute	Flavored Tobacco Ban Campaign		*P* value
	Yes (n = 20)	No (n = 66)	
Population size, median (range)	61,873 (17,243–3,902,440)	39,931 (244–466,565)	.24[c]
Geographic region, no. (%)			
Central Los Angeles	1 (5.0)	1 (1.5)	.41[d]
Northwest/Antelope Valley	1 (5.0)	3 (4.6)	>.99[d]
San Gabriel Valley	6 (30.0)	22 (33.3)	>.99[d]
San Fernando Valley	4 (20.0)	3 (4.6)	.05[d]
Pomona Valley	2 (10.0)	2 (3.0)	.23[d]
Southeast	8 (40.0)	14 (21.2)	.14[d]
Harbor	2 (10.0)	5 (7.6)	.66[d]
South Bay	5 (25.0)	10 (15.2)	.33[c]
Westside	3 (15.0)	1 (1.5)	.04[d]
Santa Monica Mountains	1 (1.5)	5 (7.6)	>.99[d]
Socioeconomic			
Revenue per capita, median (range), $	1,608 (443–7,155)	1,302 (467–1,295,313)	.47[c]
Annual household income, median (range), $	74,494 (54,535–126,683)	86,378 (50,311–2,500,015)	.54[c]
Households below the federal poverty level, mean % (95% CI)	11.6 (9.5–13.7)	10.4 (9.1–11.7)	.32[e]
No. of tobacco retailers, median (range)	53.5 (10–3,469)	30.5 (0–409)	.20[c]
Age, mean % (95% CI)			
<21 y	25.7 (24.0–27.4)	25.7 (24.4–27.0)	.99[e]
21–60 y	53.5 (52.1–55.0)	51.6 (50.2–53.1)	.06[e]
>60 y	20.8 (18.5–23.0)	22.7 (21.1–24.2)	.16[e]
Race and ethnicity, mean % (95% CI)			
Asian/Pacific Islander	19.4 (10.9–27.8)	18.5 (13.9–23.0)	.85[e]
Black	7.3 (2.5–12.0)	4.4 (3.1–5.7)	.23[e]
Hispanic	47.6 (35.6–59.7)	43.8 (36.6–51.1)	.58[e]
White	22.4 (12.5–32.4)	29.7 (23.8–35.7)	.20[e]
Other	3.3 (2.2–4.4)	3.7 (3.1–4.3)	.85[e]
Highest level of education attained, mean % (95% CI)			
Less than Grade 9	11.8 (7.8–16.0)	9.3 (7.2–16.0)	.28[e]
Grade 9–11	7.7 (5.5–9.9)	7.0 (5.8–8.3)	.57[e]

Abbreviations: e-cigarette, electronic cigarette; TRL, tobacco retail license.
[a] Includes the 85 cities and 1 large unincorporated area that had not adopted or strengthened a TRL ordinance to prohibit flavored tobacco products, as of 2019.
[b] Data sources: 1) the Tobacco Control and Prevention Program ordinance tracking database (unpublished data, 2023), 2) the Los Angeles County Health Survey (unpublished data, LACDPH, 2018), 3) US Census Bureau (9), and 4) the California Tobacco Health Assessment Tool (10).
[c] Kruskal–Wallis test.
[d] Fisher exact test.
[e] Satterthwaite *t* test.

(continued on next page)

(continued)

Table 1. Attributes of the 86 Jurisdictions[a] Included in Study Analyses, by Implementation of a Flavored Tobacco Ban Campaign, Los Angeles County, 2019–2021[b]

Attribute	Flavored Tobacco Ban Campaign		*P* value
	Yes (n = 20)	No (n = 66)	
High school diploma	21.4 (18.2–24.6)	19.2 (17.2–21.1)	.24[e]
Some college	19.0 (17.1–20.8)	18.6 (17.5–19.8)	.76[e]
Associate degree	7.2 (6.3–8.1)	7.4 (6.6–8.1)	.78[e]
Bachelor's degree	21.4 (16.5–26.3)	23.8 (20.9–26.7)	.39[e]
Graduate or professional degree	11.6 (7.4–15.8)	14.7 (12.0–17.5)	.20[e]
Tobacco use, mean % (95% CI)			
Current smoker	10.7 (9.5–11.9)	9.9 (9.3–10.6)	.23[e]
Current e-cigarette user	6.5 (5.9–7.2)	6.9 (6.6–7.2)	.31[e]
Ever e-cigarette user	12.7 (11.8–13.6)	13.0 (12.6–13.5)	.53[e]
Tobacco-related ordinance or policy campaign, no. (%)			
Adoption of tobacco-related ordinance for outdoor areas before 2019	19 (95.0)	46 (69.7)	.02[d]
Adoption of tobacco-related ordinance for multiunit housing before 2019	8 (40.0)	4 (6.1)	<.001[d]
Adoption of any TRL ordinance before 2019	16 (80.0)	27 (40.9)	.004[d]
Adoption of any tobacco-related ordinance before 2019	19 (95.0)	48 (72.7)	.06[d]
Other concurrent tobacco-related campaign	4 (20.0)	47 (71.2)	<.001[d]
Neighboring jurisdictions (other communities) that had previously adopted a TRL ordinance, no. (95% CI)	4.7 (1.5–7.7)	2.2 (1.9–2.6)	.12[e]

Abbreviations: e-cigarette, electronic cigarette; TRL, tobacco retail license.
[a] Includes the 85 cities and 1 large unincorporated area that had not adopted or strengthened a TRL ordinance to prohibit flavored tobacco products, as of 2019.
[b] Data sources: 1) the Tobacco Control and Prevention Program ordinance tracking database (unpublished data, 2023), 2) the Los Angeles County Health Survey (unpublished data, LACDPH, 2018), 3) US Census Bureau (9), and 4) the California Tobacco Health Assessment Tool (10).
[c] Kruskal–Wallis test.
[d] Fisher exact test.
[e] Satterthwaite *t* test.

Table 2. Association Between Jurisdictional Attributes and the Adoption of Local Ordinances to Restrict or Ban the Sale of Flavored Tobacco Products After 2019 in 86 Jurisdictions, Los Angeles County

Attribute	No./total (%) of jurisdictions[a] adopting a Flavored Tobacco Ban		Crude RR[b] (95% CI) [*P* value]	Adjusted RR[b] (95% CI) [*P* value]
	Jurisdictions with attribute	Jurisdictions without attribute		
Implemented a flavored tobacco ban campaign	11/20 (55.0)	10/66 (15.2)	3.6 (1.8–7.3) [<.001]	2.2 (1.0–5.0) [.05][c]
Previous adoption of tobacco-related ordinance for outdoor areas	21/65 (32.3)	0/21 (0)	Does not converge[d]	Does not converge[d]
Previous adoption of tobacco-related ordinance for multiunit housing	8/12 (66.7)	13/74 (17.6)	3.8 (2.0–7.2) [<.001]	3.2 (1.7–6.2) [.003][e]
Previous adoption of TRL ordinance	17/43 (39.5)	4/43 (9.3)	4.3 (1.6–11.6) [.005]	3.7 (1.4–10.9) [.01][e]
Previous adoption of any tobacco-related ordinance	21/67 (31.3)	0/19(0)	Does not converge[d]	Does not converge[d]
>15% of Population living below the federal poverty level	7/17 (41.2)	14/69 (20.3)	2.0 (1.0–4.2)[.06]	1.5 (0.7–3.0) [.31][f]
>50% of Population aged 21–59 years	19/65 (29.2)	2/21 (9.5)	3.1 (0.8–12.1) [.11]	1.6 (0.4–6.6) [.52][g]
Population size >100,000	8/16 (50.0)	13/70 (18.6)	2.7 (1.3–5.4) [.005]	—[h]
Geographic region				
Central Los Angeles	2/2 (100.0)	19/84 (22.6)	4.4 (3.0–6.6) [<.001]	—[h]
Northwest/Antelope Valley	2/4 (50.0)	19/82 (23.2)	2.2 (0.8–6.2) [.15]	—[h]
San Gabriel Valley	5/28 (17.9)	16/58 (27.6)	0.6 (0.3–1.6) [.34]	—[h]
San Fernando Valley	5/7 (71.4)	16/79 (20.3)	3.5 (1.9–6.7) [<.001]	—[h]
Pomona Valley	2/4 (50.0)	19/82 (23.2)	2.2 (0.8–6.2) [.02]	—[h]
Southeast	5/22 (22.7)	16/64 (25.0)	0.9 (0.4–2.2) [.83]	—[h]
Harbor	4/7 (57.1)	17/79 (21.5)	2.7 (1.2–5.7) [.01]	—[h]
South Bay	4/15 (26.7)	17/71 (23.9)	1.1 (0.4–2.8) [.82]	—[h]
Westside	3/4 (75.0)	18/82 (22.0)	3.4 (1.7–6.9) [<.001]	—[h]
Santa Monica Mountains	2/6 (33.3)	19/80 (23.8)	1.4 (0.4–4.7) [.58]	—[h]

Abbreviations: RR, risk ratio; TRL, tobacco retail license.

[a] Jurisdictions include the 85 cities and 1 large unincorporated area that had not adopted or strengthened a TRL ordinance to prohibit flavored tobacco products, as of 2019.

[b] Estimates were obtained by using a modified Poisson regression analysis.

[c] Adjusted for a previously adopted tobacco-related ordinance for multiunit housing; any other concurrent tobacco-related campaign; and the geographic regions Westside and San Fernando Valley. Similar point estimates were observed when the analysis was adjusted for previously adopted TRL ordinance instead of a previously adopted tobacco-related ordinance for multiunit housing.

[d] Could not estimate RRs because values in cells were too small; none of the jurisdictions without the attribute adopted a flavored tobacco ban.

[e] Adjusted for population size.

[f] Adjusted for population size and proportion of the population aged 21 to 59 years.

[g] Adjusted for population size, the proportion of the population living below the federal poverty level, and adoption of a previous TRL ordinance.

[h] No adjustment was needed.

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