

The Prevalence of Tobacco Usage Among Adolescents

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Introduction

In 2021, the National Youth Tobacco Survey reported that approximately 5.2 million high school students (34%) reported having ever used a tobacco product in their lives (Gentzke et al., 2022). Data from the Tobacco Epidemic Evaluation Network (TEEN+) study reported that of the high school population that currently used e-cigarettes, nearly 28% used them for twenty or more days the past month in 2018, and this proportion leaped drastically to 46% in 2022 (Seaman et al., 2024). Examples of tobacco products include cigarettes, e-cigarettes, hookahs, cigars, cigarillos, smokeless tobacco, and pipes, and the variety of products and flavors has grown throughout the past few decades, often showing a perceived appeal toward the youth population (Roberts et al., 2017).

Further research has linked youth tobacco usage to the growing mental health crisis, with data from VanFrank et al. showing that tobacco usage, specifically e-cigarettes, is often used as a method to cope with mental health by adolescents (VanFrank et al., 2025). Even more concerning is the fact that due to the fact that nicotine, the addictive chemical in tobacco, binds to neurotransmitter receptors to mimic the neurotransmitter action, and this can cause issues within the developing adolescent brain and actually initiate mental health issues or exacerbate existing ones (VanFrank et al., 2025).

Additionally, some of the most startling conclusions concerning tobacco usage are found in the Surgeon General's report from 2014, which reviewed the research conclusions concerning the causal linkages of tobacco usage to a variety of chronic diseases over the preceding fifty years (U.S. Department of Health and Human Services, 2014). The report listed that tobacco usage had established causal linkages to an astonishing five different cancers, including lung cancer, breast cancer, and colorectal cancer (U.S. Department of Health and Human Services, 2014). Furthermore, the report displays further causal linkages to four serious chronic respiratory conditions, cardiovascular diseases, such as heart attack and stroke, a variety of reproductive issues, including congenital defects and ectopic pregnancy, as well as a variety of ocular, dental, immune, and gastrointestinal diseases (U.S. Department of Health and Human Services, 2014). It is important to then consider the incredible danger of all of these physiological disruptions and how they could cause even more harm within the growing and developing adolescent and teen

body, as well as the compounding effect of tobacco usage that begins in adolescence (U.S. Department of Health and Human Services, 2014). This report also corroborates on the claims from VanFrank et al.'s paper concerning the dangerous effects of nicotine on the developing brain, specifically concluding that adolescent exposure or fetal exposure to nicotine via the mother can cause lasting impediments in brain development (U.S. Department of Health and Human Services, 2014).

Healthy People 2030 contains 27 different objectives addressing the behavior of tobacco usage, ranging from policy changes to behavioral intervention measures to objectives reducing the mortality rate of tobacco usage-linked chronic diseases (Office of Disease Prevention and Health Promotion, 2024). Even more intriguing is the fact that six of these objectives specifically address adolescent tobacco usage, showing a level of national recognition of the tobacco epidemic among adolescents. The adolescent-specific objectives of Healthy People 2030 includes objectives to address adolescent usage of specific tobacco products more common within the demographic such as e-cigarettes and cigarettes as well as measures to encourage more widespread national conformity with the age limit of 21 to purchase tobacco products and also an objective focused on limiting adolescent exposure to tobacco product advertisements (Office of Disease Prevention and Health Promotion, 2024).

Overall, the tobacco epidemic has been identified for many years within the adult population; recent years have revealed both the extensive danger of tobacco usage as well as the rising epidemic within the nation's adolescent population (Gentzke et al., 2022). While this is disturbing, the adolescent population also provides a prime opportunity to target the tobacco epidemic on a long-term scale, as successful interventions with this generation of adolescents would ultimately stem the epidemic within adults as this generation ages, while also equipping the current adolescents to protect future generations. Furthermore, the developmental stages of adolescence allow for multiple levels of intervention as they depend heavily on external information and relationships to form and mold their own behaviors and cognitions.

Theory

When considering health behaviors and interventions to address them, theory provides a firm and logical framework and structure for the consideration of factors affecting health behavior and further suggests methods and interventions by which we can target different

influences on behavior to create change. Within the context of tobacco usage, especially among the adolescent and young adult population, there have been a few theories that have shown significant efficacy due to their broad considerations of the varying external and internal factors that affect behavior in this malleable group. Major theoretical models that have been applied to the issue of tobacco usage among adolescents include the Social Cognitive Theory, the Socioecological Model, the Diffusion of Innovation Theory, and the Theory of Planned Behavior (Gaddy et al., 2022; Kcomt et al., 2023; Kelder et al., 2021; Mantey et al., 2022).

Social Cognitive Theory

The Social Cognitive Theory is one of the most prominent theories in the realm of health behavior and behavioral interventions due to its consideration of the importance of how an individual, his or her social environment or community, and his or her behavior interact. This consideration forms its main construct, radical determinism. This allows for SCT-based considerations and interventions to address both individual and social factors as drivers of behavior as seen in a study performed by Gaddy et al. This study investigated both individual and social predictors related to tobacco usage through the lens of SCT constructs and collated the data concerning the predictors and tobacco usage data to discern the accuracy of the predictors for actual tobacco usage (Gaddy et al., 2022). Their study targeted the individual factor of intention and the social factor of friendship network exposure to tobacco usage, and the data affirmed existing literature that these factors showed significant efficacy as predictors for true tobacco usage (Gaddy et al., 2022). This not only affirms the SCT constructs as predictors but also displays how SCT constructs can then be utilized to form interventions at the levels identified as having the most influence on the target population (Gaddy et al., 2022).

Another example of application of the Social Cognitive Theory to the issue of adolescent nicotine usage is found in the “Catch My Breath” (CMB) program designed and described by Kelder et al. (Kelder et al., 2021). This program utilized the main construct of the SCT, radical determinism, to form interventions at the individual, social environmental, and behavioral levels to provide targeted interventions to address the e-cigarette usage epidemic within the adolescent population (Kelder et al., 2021). Some specific interventions included classes to increase knowledge and address perceived risk at the intrapersonal level, parent education resources as well as the creation of new school policies and programs to address the social environment level,

and rehearsing how to refuse the offer of an e-cigarette as a behavioral intervention for students (Kelder et al., 2021).

Socioecological Model

The socioecological model provides a 7-level framework for analyzing the different factors that impact decisions concerning health behavior and provides a full visual of how these factors combine to influence behavior. This framework also allows researchers to identify specific methods of intervention at each level to target the most influential entities for a certain population or demographic. A study by Kcomt et al. utilized this model as a structure to investigate the differing influences that led to tobacco usage among gender-stable and gender-unstable populations, specifically investigating the individual, interpersonal, community, and policy influences on each of these populations in relation to the health behavior of tobacco and nicotine usage (Kcomt et al., 2023). This study displays the mechanisms of both observation and measurement which are guided by the socioecological model, while also providing a rationale to create multi-level interventions which aim to provide a comprehensive approach to health behavior intervention (Kcomt et al., 2023).

Other literature, such as Mantey et al.'s research into the prevalence of tobacco usage restriction among households in differing geographic qualifications, portrays how the socioecological model and its seven levels of influence effectively consider the spectrum of influences that impact health behavior while acknowledging each level has a different magnitude of influence for different demographics, populations, and people (Mantey et al., 2022).

Diffusion of Innovations Theory

The Diffusion of Innovations Theory is not a behavioral theory, but it is a theory that provides a framework to disseminate a program or initiative, and it has been used as a method to increase the diffusion of intervention programs addressing tobacco usage in some research studies. This theory has five constructs (Relative Advantage, Compatibility, Complexity, Trialability, and Observability) that provide a framework for how intervention programs can be presented to the target entities to encourage widespread adoption as well as the goal of increasing exposure to program-promoting agencies that would take license on their own

to further advance the program (Kelder et al., 2021). An example of this is found in the “CATCH My Breath” (CMB) program described in Kelder et al.’s paper which used the Diffusion of Innovation theory and its constructs to spread the CMB and encourage its adoption by schools, the target of intervention, as well as larger entities which support and promote health programs for schools that would possess other avenues to reach schools or larger audiences, all in an effort to disseminate the CMB program to more schools (Kelder et al., 2021). Their review of the effectiveness of these policies showed that the application of DOI constructs significantly expedited the process of spreading the CMB program and increasing the prevalence of adoption (Kelder et al., 2021).

Intrapersonal

When considering the influences on any behavior, one of the most highly investigated levels is the intrapersonal level, which is composed of the innate characteristics that compose an individual. These include beliefs, values, and cognitions as well as gender, age, intelligence, and emotional stability. When considering the teenage and young adult population, these factors are considered often in higher regard in research, as their brains and especially centers for behavioral control are still developing (U.S. Department of Health and Human Services, 2014). When considering the behavior of adolescent tobacco usage, the main relevant intrapersonal factors are their individual beliefs and perceptions about tobacco products, including risk perceptions, nicotine cravings, natural appeals, and stress or other mental factors (Gentzke et al., 2022).

Gentzke et al. investigated a variety of factors that affected teen and adolescent tobacco use behaviors, and their data identified several factors that fall under the intrapersonal category (Gentzke et al., 2022). Their research specifically targeted the identification of specific reasons why adolescents engaged in tobacco usage behavior (Gentzke et al., 2022). One of the factors they identified was harm perceptions, which described the ideas or beliefs that adolescents carried toward the health affects of tobacco products (Gentzke et al., 2022). One of the main reasons identified however, was anxiety and stress, which was cited by over 25% of students that were included in the study as the reason they first tried tobacco products, and by 43.4% as the reason they continue to use tobacco products. (Gentzke et al., 2022). This data is especially concerning given the acknowledged correlation of nicotine usage with adolescent mental health issues, and the mental health symptoms of nicotine dependence that have been identified in

adolescents (Gentzke et al., 2022). Their study also cited that the craving for the perceived “high” that is attributed to tobacco use was cited by nearly 24% of students in the study as their reason for initiating tobacco use, and then was attributed as the reason for continued tobacco usage by 42.8% of adolescents that currently used tobacco products. Possibly the most alarming data is that the simple factor of adolescent curiosity was one of the most commonly expressed reasons for first tobacco use, with 47.6% of high school students claiming this cognition as one of the reasons they tried tobacco products (Gentzke et al., 2022).

Furthermore, a study by Kcomt et al. investigated how other intrapersonal factors, such as gender, gender stability, and stress levels had an impact on tobacco usage in youth (Kcomt et al., 2023). Their data showed that individuals qualifying as gender-diverse were at significantly higher risk of tobacco use, and furthermore, that these gender minority populations had a history of being targeted by tobacco companies with pro-tobacco ads (Kcomt et al., 2023). Furthermore, their study acknowledged evidence supporting the existing framework that psychological stress is also a risk factor for tobacco usage (Kcomt et al., 2023).

A further example is found in a study performed by Record et al., which investigated the applicability of the Theory of Planned Behavior for understanding tobacco usage behavior and compliance with tobacco-free policies (Record, 2017). Their study specifically investigated the attitudes, subjective norms, and perceived behavioral control associated with compliance to tobacco-free policies, and their data and analysis displayed how each of these constructs affected tobacco usage behavior and compliance with the tobacco-free policies on the campus (Record, 2017). This study highlighted how these internal factors contributed to actual behavior, as well as displaying how the presence of a specific policy and resources concerning tobacco usage behavior served to create more pressure to cease tobacco usage through attitude change and increasing perceived behavioral control, which will also be elaborated on in the policy section of this paper (Record, 2017).

Interpersonal

The next level of factors influencing tobacco usage are interpersonal factors, which include any close relationships that serve as behavior models for the teenager. The influence of these factors was discussed in Kcomt et al.’s study, in which they investigated social ecological influences on tobacco usage, specifically with a focus on the effect of gender instability (Kcomt

et al., 2023). Their results displayed how both close friends and family members who used tobacco products served to increase the risk of adolescents and even other adults using tobacco products (Kcomt et al., 2023).

A study referenced above by Zheng et al. also displays the manner in which social media can act as a pressor at the interpersonal level as well (Zheng et al., 2025). Their data displayed several disturbing correspondences that resulted from viewing social media content containing tobacco products posted by friends (Zheng et al., 2025). This study displayed a correspondence between exposure to a friend's social media containing tobacco products and several perception alterations and increased susceptibility to tobacco products (Zheng et al., 2025). The study specifically described how interpersonal interactions via social media can not only encourage experimentation with tobacco products but also can inhibit cessation attempts, therefore showing that these factors carry significant weight in affecting decision-making and behavior (Zheng et al., 2025).

A further study by Moran et al. showed how social media ads for e-cigarettes and tobacco products utilized appeals to specific intrapersonal perceptions in order to subtly target youth populations (Moran et al., 2025). Some of these included flavor promotion, which targets innate desires for immediate satisfaction, and also claims about ease of use, which was correlated with increased curiosity among the youth population (Moran et al., 2025). Furthermore, this study showed that ads with themes concerning increased socialization target the innate human desire for socialization and acceptance (Moran et al., 2025). The factor of social media promotion and its appeals toward adolescents display how this is another interpersonal factor that can wield significant influence, especially when considering the frequency of social media usage among this generation of teens (Moran et al., 2025).

Gentzke et al. also addressed interpersonal factors within their study performed on the data from the National Youth Tobacco Survey, and specifically highlighted how interpersonal relationships served as strong driving factors behind initiation and continuation of tobacco use, as well as serving as a mechanism of access to tobacco products. Their data displayed that nearly 60% of high schoolers currently using tobacco products first tried a tobacco product because their friends used them, and that over 31% of current teen users had a friend or close relation purchasing the tobacco products for them (Gentzke et al., 2022).

Organizational, Community, Environment, and Policy

Outside of the direct influences of interpersonal and interpersonal factors, there are several significant factors that are considered in the social ecological model that influence health behavior and choices concerning these behaviors. These include organizational norms, community influences, environmental factors, and public policy, all of which exert influence on one's behavior and choices but often go unnoticed due to the more ambiguous and indirect nature of their influence.

A prime example of this is found in Gelino et al.'s paper in which they performed a study to first craft tobacco-free policies to implement on a university campus, and then measured the effect of the policy implementation on the measured rate of tobacco usage, which was measured through tracking the number of used cigarette butts around campus and comparing it to values tracked before policy implementation (Gelino et al., 2022). Their data and analysis displayed a significant decrease in cigarette, and therefore an inferred significant reduction in tobacco usage on campus in response to policy implementation, displaying the effects of policy on tobacco usage behavior that was inferred in the beginning of their study (Gelino et al., 2022).

Record et al. performed a study which examined the efficacy of the Theory of Planned Behavior in describing compliance with university tobacco-free policies, which revealed several interesting findings concerning the efficacy of policy in addressing tobacco usage behavior (Record, 2017). The article acknowledged several times that tobacco-free policies were essential public health measures in combating tobacco usage, especially at the organizational level of college (Record, 2017). The structure of the organization allowed for policy usage to create new organizational and community norms within universities, further allowing them to act similar to focus groups (Record, 2017). This article also emphasized the importance of perceived organizational and community norms, and how policies and organization-based information sharing and campaigning can influence and alter these norms to help individuals be fully informed and encourage healthy behavior (Record, 2017).

Mantey et al. performed an interesting study that viewed how different environments affected the prevalence of smoke-free home policies, and this study provides an interesting view on not just environmental affects on tobacco usage among adolescents, but also on how the communities each of these environments fall into have specific norms that affect tobacco usage behaviors (Mantey et al., 2022). Their study focused on rural, suburban, and urban areas,

measuring the prevalence of households with smoke-free policies in each of these as a means of comparing the effect of these different environments of tobacco usage behavior and associated indicators (Mantey et al., 2022). Their data displayed that rural and urban areas were much less likely to have smoke-free home policies, which can protect children from tobacco usage behaviors, and this lack can increase the likelihood of adolescents engaging in tobacco usage behaviors (Mantey et al., 2022). Their data suggests the importance of considering geographic environments in addressing tobacco usage among adolescents, and also identifies environments that are in more significant need of these interventions (Mantey et al., 2022).

Buszkiewicz et al. in their article acknowledged how the implementation of smoke-free air laws (SALs) had already shown efficacy in adolescent tobacco usage behavior, and how these had also created shifts in organizational and community norms where they had been implemented which had led to sustained decreased in adolescent tobacco usage, which displays how policies and organizational and community norms can all influence adolescent tobacco behaviors (Buszkiewicz et al., 2026). Their study sought to build upon these findings and apply them to the realm of vape-free air laws (VALs) and to determine if the widespread coverage of workplaces and organizations by VALs had led to correlating decreases in teen tobacco behavior (Buszkiewicz et al., 2026). Their data provided inconclusive evidence, overall showing a lack of association between VAL coverage and youth e-cigarette behaviors, but showing some significant data and results within certain adolescent populations (Buszkiewicz et al., 2026).

A further study by Friedman and Wu corroborated the effectiveness of policy, as they investigated specifically the effects of local tobacco age restriction (21+) policies on the age group of 18 to 20 year olds in metropolitan or micropolitan areas. Their data displayed clear and significant differences in tobacco usage behavior among this population between areas that had local policies and areas that lacked such policies. Their data indicated specifically that having a local policy caused approximately a 3% decrease in likelihood of smoking, and displays the efficacy of policy is not limited to organizational policy but also applies to government policy.

A final example is found in the CATCH My Breath (CMB) program described by Kelder et al., which was a tobacco use prevention program that focused on the middle school population (Kelder et al., 2021). This program utilized several intervention effects, however primarily focused on organizational level interventions through the medium of schools, including school-level policies and norms as well as multiple informational classes provided in schools to

address the harms of tobacco usage and equip students with tools to aid in quitting or refuse tobacco products (Kelder et al., 2021). Further organization level interventions included teacher training to promote positive organizational norms and school posters to emphasize these norms (Kelder et al., 2021). Pilot programs of CMB in middle schools displayed a staggering 46% reduction in e-cigarette initiation incidence, showing the efficacy of these organizational level interventions in addressing adolescent vaping behaviors (Kelder et al., 2021).

Suggestions for Intervention

Tobacco usage is one of the most widely researched health behavior, and has been the target of public health interventions for decades since scientists realized the extreme dangers posed by tobacco and nicotine, as described in the Surgeon General's report (U.S. Department of Health and Human Services, 2014). My research identified several previous programs for intervention on adolescent and teen tobacco usage, and each of these programs displayed specific factors that are the most influential levels of intervention for this health behavior.

In the CATCH My Breath (CMB) program, the researchers created a framework of interventions that targeted several different levels simultaneously in order to catalyze positive behavior change and manage variables at each of the most influential levels (Kelder et al., 2021). This program identified the intrapersonal, interpersonal, and organizational levels as the most impactful interventions for this behavior (Kelder et al., 2021). At the intrapersonal level, the CATCH My Breath program targeted several specific cognitions and perceptions, specifically identifying risk perception of e-cigarettes, outcome expectations of use and non-use, perceived harm susceptibility, and self efficacy for refusal behaviors as intrapersonal factors to address within the student population of the intervention (Kelder et al., 2021). These were targeted through an intentional series of classroom lessons that conveyed information to students of the risks and harms associated with tobacco usage, and especially e-cigarette usage, as well as partner facilitated exercises to practice refusal behaviors and increase self efficacy in this capacity (Kelder et al., 2021). These interventions were the most comprehensive and focused target of the CMB program, and this displays the incredible influence that cognitions and perceptions have on tobacco usage behavior, both in initiation, continuation, and quitting behaviors (Kelder et al., 2021).

The second main intervention level of the CMB program was the interpersonal level, specifically the student's parents (Kelder et al., 2021). The CMB program targeted parents through packet of information and videos that provided methods to prevent or address e-cigarette usage from adolescents within the household (Kelder et al., 2021). The goals of this intervention were increasing parent's knowledge of the risks of e-cigarettes and their perceptions of their children's susceptibility to these behaviors, as well as targeting their self-efficacy in monitoring adolescent behavior and creating and enforcing rules and expectations in the household to prevent engagement in e-cigarette usage by their children (Kelder et al., 2021). The ultimate goal of these interventions were to equip parents to act as a positive environmental influence and pressure to guard adolescents from e-cigarette usage and provide a healthy environment for abstinence from this behavior or for behavior change for adolescents that currently used e-cigarettes (Kelder et al., 2021). These measures highlight the potency of interpersonal relationships as a method of intervention to alter tobacco usage behavior and support positive behavior change.

The last intervention level targeted within the CMB program was the organizational level, in this case specifically through the vehicle of public schools, which are an extremely efficient intervention vessel due to the governmental enforcement of school attendance for the adolescent and teenage populations (Kelder et al., 2021). Not only did the school serve as the vehicle for dissemination of the interventions at both the intrapersonal and interpersonal level, but the CMB included specific interventions meant to target organizational norms and policies in order to create a health-encouraging environment at this level as well (Kelder et al., 2021). One method through which the CMB specifically targeted the school environment was through the avenues of teacher training, which served to increase their perceptions and knowledge of the risks and prevalence of e-cigarette usage (Kelder et al., 2021). The goal of this intervention was to equip teachers to serve as an environmental influence to enforce policy and organizational norms of abstaining from e-cigarettes, as well as for them to serve as vessels of information to communicate the dangers of e-cigarette usage to students (Kelder et al., 2021). Another method used to intervene at the organizational level was the use of school posters to provide visual messages and stimuli opposing vaping, ultimately contributing to the creation of strong organizational norms and expectations opposing the use of e-cigarettes (Kelder et al., 2021).

These interventions display the efficacy of organizations and their policies and norms as methods to address tobacco usage behavior within the adolescent population.

A further important level of intervention was the policy level, with the specific policy factors that were shown within research being organizational policies such as those within schools and universities (Gelino et al., 2022). Gelino et al.'s study investigated how the creation and implementation of university tobacco-free policies affected the prevalence of tobacco usage on a college campus, and their data upon reviewing the policy implementation impact displayed a significant decrease in tobacco smoking measures within the population and displayed how organization-level policies can affect tobacco smoking behavior through creating organizational expectations and norms and increasing risk perceptions due to the consequences that come with policy violation (Gelino et al., 2022).

When considering new factors for interventions, there are several factors that were considered in my research that have not actually been utilized in interventions despite their possible efficacy in addressing tobacco behaviors in the teenage and adolescent population. One of these is the significant linkage of mental health issues and distress and tobacco usage within the adolescent populations, which was displayed in VanFrank et al.'s research (VanFrank et al., 2025). A new intervention would be to target this false perception within the youth population that tobacco usage is a healthy method of addressing stress or mental health issues, and increasing risk perceptions of the correlation between tobacco usage and increasing mental health issues. One method of intervention would be to use counselors, both in schools and youth mental health professionals, to address the dangers of tobacco usage in initiating mental health issues as well as augmenting existing mental health issues as acknowledged by the previously mentioned study (VanFrank et al., 2025). A further intervention would be to educate parents, possibly through the avenue of a school-based parent newsletter, of the symptoms of nicotine dependence, which VanFrank et al. acknowledged as a factor of tobacco usage that can contribute to mental health issues (VanFrank et al., 2025).

A further new avenue of intervention would be intervening at the economy level, which has been done in some capacities through the taxation of tobacco products, which was shown by Buckell and Sindelar to have potential in reducing youth tobacco usage (Buckell & Sindelar, 2019). Their data displayed that youth were less likely to engage in tobacco usage behavior if the

prices of these products were increased, and this highlights higher taxation policies as a possible new intervention to decrease adolescent tobacco usage behavior.

A final new intervention opportunity would be policies to increase adherence to existing policies restricting youth tobacco usage. A suggestion for this would be a mandated nicotine test at adolescent's yearly appointments, as this would create a standardized accountability measure to ensure more widespread adherence to existing public health policies. Furthermore, such an intervention would raise parental awareness of tobacco usage behaviors by their children, and would facilitate stronger influence from parents to discourage or ban tobacco products within the home, which was shown to be a strong factor affecting quitting intentions within the youth population (Ahuja et al., 2022).

References

- Ahuja, N. A., Kedia, S. K., Jiang, Y., Ward, K. D., Pichon, L. C., Dillon, P. J., Yu, X., & Xie, L. (2022). Factors Associated with E-Cigarette Quit Intention Among Adolescents in the United States. *Substance Use & Misuse*, 1–11.
<https://doi.org/10.1080/10826084.2022.2130000>
- Buckell, J., & Sindelar, J. L. (2019). The impact of flavors, health risks, secondhand smoke and prices on young adults' cigarette and e-cigarette choices: a discrete choice experiment. *Addiction*, 114(8), 1427–1435. <https://doi.org/10.1111/add.14610>
- Buszkiewicz, J. H., Xie, Y., Vander Woude, C. A., Cook, S., Peters, B. U., Patrick, M. E., Elliott, M. R., Thrasher, J. F., & Fleischer, N. L. (2026). Associations Between County-Level Vape-Free Air Law Coverage and E-Cigarette Use Behaviors Among U.S. Adolescents in Monitoring the Future. *Journal of Adolescent Health*, 78(2), 348–355.
<https://doi.org/10.1016/j.jadohealth.2025.10.021>
- Friedman, A. S., & Wu, R. J. (2019). Do Local Tobacco-21 Laws Reduce Smoking Among 18 to 20 Year-Olds? *Nicotine & Tobacco Research*, 22(7), 1195–1201.
<https://doi.org/10.1093/ntr/ntz123>
- Gaddy, M. Y., Vasquez, D., & Brown, L. D. (2022). Predictors of e-cigarette initiation and use among middle school youth in a low-income predominantly Hispanic community. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.883362>
- Gelino, B. W., Salzer, A. R., Harsin, J. D., Naudé, G. P., Gilroy, S. P., & Reed, D. D. (2022). Tobacco-free policy reduces combustible tobacco byproduct on a large university campus. *Journal of Applied Behavior Analysis*. <https://doi.org/10.1002/jaba.967>

- Gentzke, A. S., Wang, T. W., Cornelius, M., Park-Lee, E., Ren, C., Sawdey, M. D., Cullen, K. A., Loretan, C., Jamal, A., & Homa, D. M. (2022). Tobacco Product Use and Associated Factors Among Middle and High School Students — National Youth Tobacco Survey, United States, 2021. *MMWR. Surveillance Summaries*, 71(5).
<https://doi.org/10.15585/mmwr.ss7105a1>
- Kcomt, L., Evans-Polce, R. J., Engstrom, C. W., Takahashi, J., Matthews, P. A., Veliz, P. T., West, B. T., & McCabe, S. E. (2023). Social Ecological Influences on Nicotine/Tobacco Use Among Gender-Varying and Gender-Stable Adolescents and Adults in the USA. *Annals of Behavioral Medicine*, 58(1), 1–11. <https://doi.org/10.1093/abm/kaad066>
- Kelder, S. H., Mantey, D. S., Van Dusen, D., Vaughn, T., Bianco, M., & Springer, A. E. (2021). Dissemination of CATCH My Breath, a middle school E-Cigarette prevention program. *Addictive Behaviors*, 113, 106698. <https://doi.org/10.1016/j.addbeh.2020.106698>
- Mantey, D. S., Omega-Njemnobi, O., Hunt, E. T., Lanza, K., Cristol, B., & Kelder, S. H. (2022). Home Smoke-Free Policies as Children Age: Urban, Rural, and Suburban Differences. *Nicotine & Tobacco Research*, 24(12), 1985–1993. <https://doi.org/10.1093/ntr/ntac186>
- Moran, M. B., Czaplicki, L., Kennedy, R. D., Ibrahim, M., Tfayli, D., & Richter, A. (2025). Youth Appeal in Tobacco Advertising: A Closer Look at What Resonates With Young Adults Ages 18–20. *Substance Use & Misuse*, 1–9.
<https://doi.org/10.1080/10826084.2025.2501168>
- Office of Disease Prevention and Health Promotion. (2024). *Healthy People 2030*. Healthy People 2030. <https://odphp.health.gov/healthypeople>

- Record, R. A. (2017). Tobacco-Free Policy Compliance Behaviors among College Students: A Theory of Planned Behavior Perspective. *Journal of Health Communication*, 22(7), 562–567. <https://doi.org/10.1080/10810730.2017.1318984>
- Roberts, M. E., Doogan, N. J., Stanton, C. A., Quisenberry, A. J., Villanti, A. C., Gaalema, D. E., Keith, D. R., Kurti, A. N., Lopez, A. A., Redner, R., Cepeda-Benito, A., & Higgins, S. T. (2017). Rural Versus Urban Use of Traditional and Emerging Tobacco Products in the United States, 2013–2014. *American Journal of Public Health*, 107(10), 1554–1559. <https://doi.org/10.2105/ajph.2017.303967>
- Seaman, E. L., Kreslake, J. M., Cordova, J., Schillo, B., Barlas, F., & Marynak, K. (2024). Developing a National Longitudinal Tobacco Cohort of Youth and Young Adults: The Tobacco Epidemic Evaluation Network (TEEN+) Study. *Nicotine & Tobacco Research: Official Journal of the Society for Research on Nicotine and Tobacco*, ntae064. <https://doi.org/10.1093/ntr/ntae064>
- U.S. Department of Health and Human Services. (2014). *The health consequences of smoking—50 years of progress: A report of the Surgeon General*. Centers for Disease Control and Prevention; U.S. Department of Human and Health Services. <https://www.ncbi.nlm.nih.gov/books/NBK179276/>
- VanFrank, B., Williams, T. R., Alcantara, I. C., Hertz, M., Maeh Al-Shawaf, Meyers, C., & West, A. (2025). E-Cigarette Use and Symptoms of Depression and Anxiety Among US Middle and High School Students. *PubMed*, 22, E51–E51. <https://doi.org/10.5888/pcd22.250186>
- Zheng, X., Yang, M., Li, W., & Lin, H.-C. (2025). Meme Exposure on Social Media Associated with More Positive E-Cigarette Perceptions and Greater Usage Among Youth. *Journal of Health Communication*, 1–12. <https://doi.org/10.1080/10810730.2025.2543168>

