

# Examining Vaping Policies in Substance Use Disorder Treatment Facilities

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## Abstract

**Background:** Unlike combustible cigarettes, vaping does not produce smoke, creating ambiguity around indoor vaping policies. Vaping policies in substance use disorder treatment facilities may directly impact how an individual engages with treatment.

**Objective:** To examine associated factors with vaping policies within substance use disorder treatment facilities in the United States.

**Design:** This cross-sectional study used data from the National Substance Use and Mental Health Services Survey to examine data from substance use disorder treatment facilities. Other data included the state percentage of adults who use e-cigarettes from the Behavioral Risk Factor Surveillance System, and state-level indoor e-cigarette restriction policies from the State Tobacco Activity Tracking and Evaluations System.

**Methods:** A total of N = 16 042 substance use disorder treatment facilities in 2022 were included. Factors that were examined include [a] state percentages of adults who vape, [b] state indoor vaping restrictions, [c] tobacco use screening in facilities, [d] smoking/tobacco education and counseling in facilities, [e] availability of nicotine pharmacotherapies in facilities, [f] facility smoking policies, [g] availability of outpatient or non-hospital residential treatment, and [h] availability of a treatment program specifically for adolescents or young adults. Facility vaping policies is the outcome variable in this study with three values: [a] vaping is restricted, [b] vaping in designated outdoor area(s), and [c] permissive vaping policies (anywhere outside, designated indoor areas, anywhere inside, anywhere without restriction).

**Results:** Vaping policies across all treatment facilities include 45.9% restricted vaping, 45.9% permitted vaping in designated outdoor area(s), and 8.2% had a permissive vaping policy. State-level percentage of adults who use e-cigarettes, state indoor e-cigarette restrictions, facility smoking policies, and services provided by facilities were associated with different vaping policies, ranging from restrictive to permissive policies.

**Conclusions:** Various vaping policies exist in substance use disorder treatment facilities. Different vaping policies may have varied impacts on individuals' treatment goals.

## Keywords

E-cigarette, facilities, policy, treatment, vaping

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## Introduction

In 2023, approximately 27 million people in the United States reported using a vape device or e-cigarette (vaping) to consume nicotine in the past 30 days.<sup>1</sup> Furthermore, the two age groups with the highest prevalence of vaping in the prior month were young adults (ages 18 to 25) at 24% and adolescents (ages 12 to 17) at 7%.<sup>1</sup> From a harm reduction perspective, vaping is viewed as a strategy to reduce the impact of combustible cigarettes among adults having difficulty with smoking cessation.<sup>2,3</sup> However, vaping is associated with multiple health risks,<sup>4-7</sup> and this is a public

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health concern, given how prevalent use is among adolescents and young adults.<sup>8-12</sup> Both physiological impairment and harm reduction are prominent considerations regarding the societal impact of vaping.<sup>3,13-15</sup>

Vaping is seen as a harm reduction technique placed within the context of smoking-related deaths and unsuccessful smoking cessation attempts. Approximately 420 000 to 450 000 annual deaths are attributed to first-hand smoking in the United States.<sup>16</sup> While 53% of adults who smoke had a quit attempt in the past year, only 9% of adults were able to quit smoking successfully.<sup>17</sup> Considering harm reduction centers on reducing the negative impacts experienced by individuals who use substances,<sup>18</sup> vaping is sometimes described as less harmful than smoking for adults experiencing difficulty with smoking cessation.<sup>2,3,19,20</sup> However, vaping still exposes individuals to harmful toxins, and youth vaping is prevalent. The relative societal benefits and risks of vaping are topics present in the research literature as some individuals use both cigarettes and vape,<sup>21</sup> youth smoking has decreased while youth vaping has increased, and emerging research presents the potential harms of vaping.<sup>3,4,22</sup> Some of these potential harms of vaping include exposing individuals to carcinogens and toxins that place them at risk for lung diseases and injuries.<sup>4,22</sup> Further, the prevalence of vaping among youth is a prominent public health concern. Overall, due to mixed and novel results regarding the physiological and societal impacts of vaping, clinicians and researchers call for research to examine these impacts and how economics and policies/regulations are associated.<sup>5,22-30</sup>

Considering policies/regulations, there are mixed perspectives regarding indoor vaping. Unlike combustible cigarettes, vaping does not produce smoke, which creates ambiguity around indoor vaping restrictions.<sup>13,31,32</sup> Historically, indoor smoking bans were supported by data highlighting the impact of secondhand smoke on morbidity and mortality.<sup>33-35</sup> Since vaping does not emit smoke, data on secondhand smoke is not necessarily applicable, although some studies suggest negative impacts of secondhand vaping exposure.<sup>36-38</sup> Therefore, there is variability in policies on indoor vaping, which causes difficulty in standardizing state e-cigarette regulations.

Examining the vaping policies of substance use disorder (SUD) treatment facilities is imperative. SUD treatment facilities are designed to assist individuals who have SUDs in obtaining their recovery goals. Considerations regarding vaping in SUD treatment facilities include individuals experiencing nicotine cravings, using vaping as a harm reduction strategy, experiencing difficulty with their recovery when exposed to others using substances (such as vaping), and individuals who vape reporting a desire for vaping cessation.<sup>39</sup> These considerations highlight potential real-world variability in how individuals may experience SUD treatment depending on their specific recovery goals. Smoking, which is differentiated from vaping due to combustion, has variability in policies related to its use in SUD treatment facilities, as described by previous studies.<sup>40-42</sup> For example, a study examining smoking policies of outpatient SUD treatment facilities in 2021

identified facilities with tobacco counseling, education, pharmacotherapy, and screening as being associated with having restrictive smoking policies on their campus.<sup>40</sup>

A study on SUD treatment facilities in 2021 found that state-level indoor smoking laws and whether the facilities offered services related to smoking cessation were associated with the permissiveness of a facility's smoking policy.<sup>40</sup> However, vaping policies at SUD treatment facilities have not been examined while focusing on [a] state percentages of adults who vape, [b] state indoor vaping restrictions, [c] tobacco use screening in facilities, [d] smoking/tobacco education and counseling in facilities, [e] availability of nicotine pharmacotherapies in facilities, [f] facility smoking policies, [g] availability of outpatient or non-hospital residential treatment, and [h] availability of a treatment program specifically for adolescents or young adults.

This study sought to examine how state vaping policy, state vaping prevalence, SUD treatment type, availability of smoking cessation-related services, and availability of services specifically for adolescents and young adults, age groups with the highest rates of vaping was associated with vaping policies in SUD treatment facilities. This descriptive study will fill an important gap in the literature to describe national and state-level vaping policies in 16 042 SUD treatment facilities and build upon prior studies that examined smoking policies in SUD treatment facilities.<sup>40,41</sup> Filling this gap in the literature is essential, as vaping policies in SUD treatment settings may directly impact whether an individual enters treatment and how an individual experiences treatment toward achieving their recovery goals. Further, as vaping is a relatively recent method of nicotine consumption seen as both a harm reduction and public health concern, it is imperative to highlight state and national level percentages in different vaping policies in SUD treatment.

## Methods and Materials

This study was determined to be exempt from human subjects research oversight, according to the Institutional Review Board at the University of North Carolina at Chapel Hill. All data sources used for this study were publicly available and can be accessed using the Uniform Resource Locators provided in this study's Data Sharing Statement.

## Data Sources

Three data sources were used to conduct this study including: [a] the Behavioral Risk Factor Surveillance System (BRFSS),<sup>43</sup> [b] State Tobacco Activity Tracking and Evaluations (STATE) System,<sup>44</sup> and [c] the National Substance Use and Mental Health Services Survey (N-SUMHSS) 2022.<sup>45</sup> BRFSS contains national self-report health behavior data that were used to include data on the percentage of adults who use e-cigarettes in each state for this study.<sup>43</sup> The STATE contains national data on activities related to tobacco, including a variable used for this study which examined state-level data on indoor e-cigarette smoking restrictions.<sup>44</sup> N-SUMHSS 2022 contains self-report data describing all known SUD and mental

health treatment facilities in the United States.<sup>45</sup> The N-SUMHSS 2022 was used to identify and describe the sample of SUD treatment facilities examined in this study.

The SUD treatment facilities in N-SUMHSS 2022 were this study's primary unit of analysis. State-level data from the BRFSS and STATE datasets were integrated into the N-SUMHSS 2022 dataset by matching based on the state where a SUD treatment facility was located. No power analysis was conducted. While not all facilities respond, N-SUMHSS is an annual survey sent to all known SUD treatment facilities in the United States.

## Study Design and Population

This cross-sectional study examined N = 16 042 facilities identified using the following sample selection criteria: [a] provides SUD treatment, [b] based in the USA, [c] not missing data for the dependent variable, [d] not missing data for a facility's smoking policy, [e] not missing data for facility level of care, and [f] not missing data for a facility having an adolescent or young adult program/group. Listwise deletion was determined to be appropriate as the data were identified as Missing Completely at Random (MCAR) using Little's MCAR test.<sup>46</sup>

## Variables

Ten variables were examined in this study including, [a] state percentage of adults who use e-cigarettes, [b] state indoor e-cigarette restriction, [c] assessment screening for tobacco use, [d] education and counseling smoking/tobacco cessation, [e] pharmacotherapy: nicotine replacement, [f] pharmacotherapy: non-nicotine medication, [g] facility smoking policy, [h] level of care, [i] adolescent or young adult program/group, and [j] facility vaping policy. The facility vaping policy is the dependent variable in this study, whereas the remaining variables are independent variables.

**State Percentage of Adults Who Use E-Cigarettes.** This variable was captured using BRFSS data, which identified the percentage of adults who were current e-cigarette users in 2021 in 49 states and the District of Columbia (DC).<sup>43</sup> Data for the state of Florida were missing for the year 2021; to address this, data for Florida was added from the BRFSS 2022 data for this study.<sup>43</sup> Values for this variable are continuous. Another study used BRFSS data to describe patterns in e-cigarette use.

**State Indoor E-Cigarette Restriction.** This variable was identified using STATE data to describe whether any of the 50 states or DC had a smoke-free indoor law that included e-cigarettes before January 1, 2022.<sup>44</sup> Values for this variable are Yes and No.

**Assessment Screening for Tobacco Use.** This is a binary (Yes/No) variable that describes whether a facility screens patients for tobacco use.

**Education and Counseling Smoking/Tobacco Cessation.** This is a binary (Yes/No) variable describes whether a facility provides education and counseling for smoking/tobacco cessation.

**Pharmacotherapy: Nicotine Replacement.** This is a binary (Yes/No) variable that describes whether a facility provides nicotine replacement pharmacotherapy.

**Pharmacotherapy: Non-Nicotine Medication.** This is a binary (Yes/No) variable that describes whether a facility provides non-nicotine medication such as bupropion or varenicline.

**Facility Smoking Policy.** This variable used data from N-SUMHSS 2022 to identify a facility's smoking policy as [a] smoking is restricted (restrictions outside or within buildings), [b] smoking in designated outdoor area(s), and [c] permissive smoking policies (anywhere outside, designated indoor areas, anywhere inside, anywhere without restriction).<sup>45</sup>

**Level of Care.** Using N-SUMHSS 2022, this variable combined two binary variables which identified whether the facility's level of care included [a] has outpatient but no non-hospital residential treatment, [b] no outpatient but has non-hospital residential treatment, and [c] has outpatient and has non-hospital residential treatment.<sup>45</sup>

**Adolescent or Young Adult Program/Group.** This variable used N-SUMHSS 2022 to combine two binary variables, which identified whether the facility has a specific program/group for adolescents or young adults with the following categories: [a] no adolescent and no young adult program/group, [b] no adolescent but has young adult program/group, [c] has adolescent but no young adult program/group, and [d] has adolescent and has young adult program/group.<sup>45</sup>

**Facility Vaping Policy.** Like the Facility Smoking Policy variable, this variable used N-SUMHSS 2022 to describe a facility's vaping policy as [a] vaping is restricted (restrictions outside or within buildings), [b] vaping in designated outdoor area(s), and [c] permissive vaping policies (anywhere outside, designated indoor areas, anywhere inside, anywhere without restriction).<sup>45</sup>

## Statistical Analysis

The sample of treatment facilities was matched to the state percentage of adults who use e-cigarettes and state indoor e-cigarette restriction by the state in which the treatment facility was located. Univariable statistics were used to describe the characteristics of treatment facilities in the sample. An analysis of variance (ANOVA) was conducted to examine the differences in state percentages of adults who use e-cigarettes. Chi-Square analyses examined the association between vaping policies and the categorical independent variables. A multinomial logistic regression model was conducted to examine the adjusted odds ratios of the study's five primary independent variables, state percentage of adults who use e-cigarettes, state indoor e-cigarette restriction, facility smoking policy, level of care, and adolescent or young adult program/group. The multinomial logistic regression model compared the vaping policy: vaping is restricted to both [a] vaping in designated outdoor area(s) and [b] permissive vaping policies.

However, this model was excluded and not interpreted due to errors from small cell sizes/poor model fit. We then added four independent variables to the study a posteriori to conduct nine multinomial logistic regression models to examine the unadjusted odds ratios for each independent variable. These separate models were conducted due to the exploratory nature of this study and small cell sizes when all independent variables were included in an adjusted model. Multinomial logistic regression was selected as it provides the opportunity to examine a categorical dependent variable with more than two levels. All study procedures were completed using IBM SPSS 29 (IBM Corp).

## Results

### Sample Description

Table 1 includes characteristics of the SUD treatment facilities included in this study. Regarding facility vaping policies, 45.9% (n = 7361) restricted vaping, 45.9% (n = 7363) permitted vaping in designated outdoor area(s), and 8.2% (n = 1318) had a permissive vaping policy.

### State Level Data

Table 2 provides data on the fifty states and DC. Seventeen states and DC had a smoke-free indoor law that included e-cigarettes before January 1, 2022. State level facility vaping policies of restricted vaping ranged from 21.1% in Kentucky to 87.1% in Oklahoma. State level facility vaping policies of permissive vaping policies ranged from 1.5% in Hawaii to 15.8% in Illinois.

### Multinomial Logistic Regression

Table 3 contains results from the five multinomial logistic regression models. Each model had a significant model fit, indicating that the included variables were better than the intercept alone.

**Vaping in Designated Outdoor Area(s) vs Vaping is Restricted.** Facilities were more likely to allow vaping in designated outdoor area(s), compared to vaping is restricted if they [1] were located in states with a higher percentage of adults who use e-cigarettes, [2] have a smoking in designated outdoor area(s) smoking policy, [3] have a permissive smoking policy, [4] have outpatient but do not have non-hospital residential treatment, or [5] have a young adult program/group but do not have a program/group for adolescents.

Alternatively, facilities were less likely to allow vaping in designated outdoor area(s), compared to vaping is restricted if they [1] were in states with indoor e-cigarette restriction, [2] have an adolescent program/group but do not have a young adult program/group, or [3] have both an adolescent and young adult program/group.

**Permissive Vaping Policies vs Vaping is Restricted.** Facilities were more likely to have permissive vaping policies relative to vaping is restricted if they [1] have a smoking in designated outdoor area(s) smoking policy, [2] have a

permissive smoking policy, [3] have outpatient but do not have non-hospital residential treatment, or [4] have non-hospital residential treatment but do not have outpatient treatment.

Facilities were less likely to have permissive vaping policies relative to vaping is restricted if they [1] were located in states with indoor e-cigarette restriction or [2] have an adolescent program/group but do not have a young adult program/group.

## Discussion

National-level survey studies have found that not all SUD treatment facilities screen patients for tobacco use or offer evidence-based medication to aid in smoking cessation efforts.<sup>40,41</sup> Approximately 64% of SUD facilities in 2016 screened for tobacco use.<sup>41</sup> Considering SUD treatment facilities' levels of care, approximately 81% of facilities with outpatient treatment and 80% of facilities with residential treatment screened for tobacco use in 2020.<sup>40</sup> This current study examining vaping policies in SUD treatment facilities also found that 81% of the facilities in the sample screen for tobacco use.

Some clinicians who work in SUD treatment facilities believe supporting tobacco cessation may disrupt SUD treatment.<sup>47,48</sup> However, it is essential to address nicotine cravings and withdrawal in SUD treatment to reduce the likelihood of individuals leaving against medical advice (AMA) or returning to prior patterns of substance use,<sup>49,50</sup> which are associated with poor health outcomes.<sup>51</sup> Providing evidence-based treatment for tobacco use disorder during addiction treatment is associated with a 25% increased likelihood of long-term abstinence from alcohol and illicit substances.<sup>52</sup> Vaping nicotine has been associated with illicit substance use, highlighting the importance of addressing nicotine use during SUD treatment.<sup>53,54</sup> Evidence also suggests that vaping electronic cigarettes that contain nicotine is effective in reducing the use of cigarettes among adults having difficulty with smoking cessation.<sup>3,55</sup> Findings from this study suggest that treatment facilities incorporating aspects of screening or treating tobacco use are less likely to have permissive vaping policies. These findings conform with the recommended that tobacco-free SUD treatment facilities also integrate tobacco cessation interventions such as pharmacotherapies.<sup>40,41</sup> However, prior research has primarily focused on smoke-free campuses and not necessarily vaping-free campuses. While vaping may reduce cigarette smoking for some adults, others may be interested in vaping cessation during SUD treatment.

One study of 1988 adults who vape identified that 15% of the sample had a past-year quit attempt and 61% planned to quit.<sup>39</sup> It is, therefore, reasonable to assume that should these individuals enter treatment, the facility's vaping policy could have an impact on their treatment goals related to vaping. Considering that some individuals smoke cigarettes and vape, the combination of vaping and smoking policies is also important for clinicians to consider.<sup>39,56</sup> This study found that even compared to models that examined the state percentage of adults who vape and state laws on indoor vaping, a SUD treatment facility's smoking policy



**Table 1.** Characteristics of Substance Use Disorder Treatment Facility Vaping Policies

| Variable   | Study sample |       | Vaping is restricted |       | Vaping in designated outdoor Area(s) |       | Permissive vaping policies |       | F or $\chi^2$ (p) |
|--|--------------|-------|----------------------|-------|--------------------------------------|-------|----------------------------|-------|-------------------|
|  | n            | %     | n                    | %     | n                                    | %     | n                          | %     |                   |
| <b>Sample size</b>   | 16, 042      | 100.0 | 7361                 | 100.0 | 7363                                 | 100.0 | 1318                       | 100.0 |                   |
| State percentage of adults who use E-cigarettes, Mean (SD) | 6.6 1.3      | (1.3) | 6.6                  | (1.3) | 6.7 (1.3)                            | (1.3) | 6.6                        | (1.2) | 32.8 (<.001)      |
| State indoor E-cigarette restriction                       |              |       |                      |       |                                      |       |                            |       | 62.4 (<.001)      |
| Yes  | 6226         | 38.8  | 3030                 | 41.2  | 2801                                 | 38.0  | 395                        | 30.0  |                   |
| No   | 9816         | 61.2  | 4331                 | 58.8  | 4562                                 | 62.0  | 923                        | 70.0  |                   |
| Assessment screening for tobacco use                       |              |       |                      |       |                                      |       |                            |       | 258.1 (<.001)     |
| Yes  | 12, 950      | 80.7  | 6300                 | 85.6  | 5727                                 | 77.8  | 923                        | 70.0  |                   |
| No   | 3009         | 18.8  | 1024                 | 13.9  | 1592                                 | 21.6  | 393                        | 29.8  |                   |
| Missing  | 83           | 0.5   | 37                   | 0.5   | 44                                   | 0.6   | 2                          | 0.2   |                   |
| Education and counseling smoking/Tobacco cessation         |              |       |                      |       |                                      |       |                            |       | 377.0 (<.001)     |
| Yes  | 10, 902      | 68.0  | 5516                 | 74.9  | 4690                                 | 63.7  | 696                        | 52.8  |                   |
| No   | 5092         | 31.7  | 1812                 | 24.6  | 2659                                 | 36.1  | 621                        | 47.1  |                   |
| Missing  | 48           | 0.3   | 33                   | 0.4   | 14                                   | 0.2   | 1                          | 0.1   |                   |
| Pharmacotherapy: Nicotine replacement                      |              |       |                      |       |                                      |       |                            |       | 384.7 (<.001)     |
| Yes  | 5996         | 37.4  | 3296                 | 44.8  | 2420                                 | 32.9  | 280                        | 21.2  |                   |
| No   | 9977         | 62.2  | 4030                 | 54.7  | 4916                                 | 66.8  | 1031                       | 78.2  |                   |
| Missing  | 69           | 0.4   | 35                   | 0.5   | 27                                   | 0.4   | 7                          | 0.5   |                   |
| Pharmacotherapy: Non-nicotine medicine                     |              |       |                      |       |                                      |       |                            |       | 224.2 (<.001)     |
| Yes  | 5384         | 33.6  | 2883                 | 39.2  | 2210                                 | 30.0  | 291                        | 22.1  |                   |
| No   | 10, 590      | 66.0  | 4444                 | 60.4  | 5126                                 | 69.6  | 1020                       | 77.4  |                   |
| Missing  | 68           | 0.4   | 34                   | 0.5   | 27                                   | 0.4   | 7                          | 0.5   |                   |
| Facility smoking policy                                    |              |       |                      |       |                                      |       |                            |       | 19 202.4 (<.001)  |
| Smoking is restricted                                      | 5996         | 37.4  | 5833                 | 79.2  | 91                                   | 1.2   | 72                         | 5.5   |                   |
| Smoking in designated outdoor Area(s)                      | 9018         | 56.2  | 1447                 | 19.7  | 7224                                 | 98.1  | 347                        | 26.3  |                   |
| Permissive smoking policies                                | 1028         | 6.4   | 81                   | 1.1   | 48                                   | 0.7   | 899                        | 68.2  |                   |
| Level of care  |              |       |                      |       |                                      |       |                            |       | 226.0 (<.001)     |
| Has outpatient but No non-hospital residential treatment   | 12, 467      | 77.7  | 5493                 | 74.6  | 5746                                 | 78.0  | 1228                       | 93.2  |                   |
| No outpatient but has non-hospital residential treatment   | 2336         | 14.6  | 1229                 | 16.7  | 1037                                 | 14.1  | 70                         | 5.3   |                   |
| Has outpatient and has non-hospital residential treatment  | 1239         | 7.7   | 639                  | 8.7   | 580                                  | 7.9   | 20                         | 1.5   |                   |
| Adolescent or young adult program/Group                    |              |       |                      |       |                                      |       |                            |       | 226.8 (<.001)     |
| No adolescent and No young adult program/Group             | 8861         | 55.2  | 4014                 | 54.5  | 4072                                 | 55.3  | 775                        | 58.8  |                   |
| No adolescent but has young adult program/Group            | 3156         | 19.7  | 1210                 | 16.4  | 1702                                 | 23.1  | 244                        | 18.5  |                   |
| Has adolescent but No young adult program/Group            | 1227         | 7.6   | 791                  | 10.7  | 377                                  | 5.1   | 59                         | 4.5   |                   |
| Has adolescent and has young adult program/Group           | 2798         | 17.4  | 1346                 | 18.3  | 1212                                 | 16.5  | 240                        | 18.2  |                   |

had the largest effect size on their vaping policy with odds ratios as large as 320 and 899 (as seen in Table 3). A facility's vaping policy largely corresponds with their smoking policy. For example, approximately 70% of facilities with a permissive vaping policy also had a permissive smoking policy. Similarly, 80% of facilities with a restricted vaping policy also had a restrictive smoking policy and 98% of facilities permitting vaping in specific outdoor areas also had a similar policy for smoking. Essentially, these findings suggesting that the majority of facilities do not differentiate between smoking and vaping policies on campus.

Vaping is identified as being most prevalent among adolescents and young adults, with 24% of young adults and 7% of adolescents vaping in the past month.<sup>1</sup> Findings

from this study identified facilities with special treatment programs specifically for adolescents as having restrictive vaping policies. These findings were even identified regarding vaping in specific outdoor areas among facilities with programs both adolescent and young adult specific programs. These policies may reduce the visual exposure to vaping among the adolescent program attendees.

### Limitations

Data captured from the BRFSS 2021 did not include data for the state of Florida, which was supplemented with their 2022 data. While this served to address the exclusion of one state from the analysis, being unable to include data from the year 2021 which preceded the N-SUMHSS 2022 survey, is less

**Table 2.** State Level Vaping Data

| State | State percentage of adults who use E-cigarettes | State indoor E-cigarette restriction | Vaping is restricted <sup>a</sup> | Vaping in designated outdoor Area(s) <sup>a</sup> | Permissive vaping policies <sup>a</sup> |
|-------|---|--------------------------------------|-----------------------------------|---|---|
| AK    | 6.2   | No                                   | 66.0%                             | 30.9%   | 3.2%                                    |
| AL    | 9.1   | No                                   | 28.7%                             | 62.0%   | 9.3%                                    |
| AR    | 7.3   | No                                   | 39.7%                             | 55.8%   | 4.5%                                    |
| AZ    | 8.8   | No                                   | 33.7%                             | 62.0%   | 4.4%                                    |
| CA    | 5.2   | Yes                                  | 38.9%                             | 54.3%   | 6.8%                                    |
| CO    | 6.8   | Yes                                  | 40.5%                             | 50.5%   | 9.1%                                    |
| CT    | 5.0   | Yes                                  | 59.5%                             | 33.8%   | 6.7%                                    |
| DC    | 4.8   | Yes                                  | 60.0%                             | 33.3%   | 6.7%                                    |
| DE    | 6.1   | Yes                                  | 40.7%                             | 51.9%   | 7.4%                                    |
| FL    | 6.2   | No                                   | 37.7%                             | 49.2%   | 13.1%                                   |
| GA    | 7.8   | No                                   | 47.9%                             | 42.6%   | 9.6%                                    |
| HI    | 7.3   | Yes                                  | 71.2%                             | 27.3%   | 1.5%                                    |
| IA    | 6.4   | No                                   | 65.1%                             | 27.9%   | 7.0%                                    |
| ID    | 7.4   | No                                   | 22.8%                             | 71.9%   | 5.3%                                    |
| IL    | 6.4   | No                                   | 42.3%                             | 42.0%   | 15.8%                                   |
| IN    | 8.1   | No                                   | 52.5%                             | 40.1%   | 7.3%                                    |
| KS    | 6.6   | No                                   | 47.3%                             | 45.5%   | 7.2%                                    |
| KY    | 9.3   | No                                   | 21.1%                             | 68.2%   | 10.7%                                   |
| LA    | 9.0   | No                                   | 46.8%                             | 46.8%   | 6.5%                                    |
| MA    | 4.7   | Yes                                  | 54.8%                             | 41.9%   | 3.3%                                    |
| MD    | 4.5   | No                                   | 35.6%                             | 49.7%   | 14.7%                                   |
| ME    | 5.8   | No                                   | 56.1%                             | 36.1%   | 7.7%                                    |
| MI    | 7.6   | No                                   | 49.0%                             | 43.6%   | 7.4%                                    |
| MN    | 5.7   | Yes                                  | 35.6%                             | 58.3%   | 6.1%                                    |
| MO    | 7.4   | No                                   | 50.7%                             | 43.6%   | 5.7%                                    |
| MS    | 6.4   | No                                   | 36.2%                             | 53.5%   | 10.2%                                   |
| MT    | 6.1   | No                                   | 35.2%                             | 55.7%   | 9.0%                                    |
| NC    | 6.8   | No                                   | 49.5%                             | 37.2%   | 13.3%                                   |
| ND    | 7.4   | Yes                                  | 54.0%                             | 39.7%   | 6.3%                                    |
| NE    | 6.7   | No                                   | 55.9%                             | 32.2%   | 11.9%                                   |
| NH    | 4.9   | No                                   | 51.7%                             | 44.2%   | 4.2%                                    |
| NJ    | 6.0   | Yes                                  | 31.1%                             | 58.4%   | 10.5%                                   |
| NM    | 7.3   | Yes                                  | 40.8%                             | 52.4%   | 6.8%                                    |
| NV    | 7.0   | No                                   | 34.1%                             | 61.8%   | 4.1%                                    |
| NY    | 5.3   | Yes                                  | 80.8%                             | 14.9%   | 4.3%                                    |
| OH    | 7.8   | Yes                                  | 36.0%                             | 56.1%   | 7.8%                                    |
| OK    | 9.4   | No                                   | 87.1%                             | 10.3%   | 2.6%                                    |
| OR    | 6.6   | Yes                                  | 67.2%                             | 31.1%   | 1.7%                                    |
| PA    | 6.1   | No                                   | 41.6%                             | 48.9%   | 9.5%                                    |
| RI    | 6.2   | Yes                                  | 46.4%                             | 46.4%   | 7.1%                                    |
| SC    | 7.2   | No                                   | 50.0%                             | 44.2%   | 5.8%                                    |
| SD    | 6.1   | Yes                                  | 54.7%                             | 40.6%   | 4.7%                                    |
| TN    | 9.1   | No                                   | 44.6%                             | 48.0%   | 7.4%                                    |
| TX    | 6.0   | No                                   | 58.1%                             | 34.5%   | 7.4%                                    |
| UT    | 7.2   | Yes                                  | 44.2%                             | 47.6%   | 8.2%                                    |
| VA    | 6.8   | No                                   | 27.1%                             | 57.4%   | 15.4%                                   |
| VT    | 5.0   | Yes                                  | 71.4%                             | 26.8%   | 1.8%                                    |
| WA    | 6.5   | No                                   | 38.3%                             | 56.2%   | 5.5%                                    |
| WI    | 6.2   | No                                   | 53.9%                             | 32.0%   | 14.1%                                   |
| WV    | 7.1   | No                                   | 44.8%                             | 49.7%   | 5.6%                                    |
| WY    | 7.5   | No                                   | 61.0%                             | 28.8%   | 10.2%                                   |

<sup>a</sup>Percentage of Facilities with this vaping policy.

than ideal. However, it served as a solution to address the missing data and excluding facilities based in Florida. Another limitation is BRFSS and N-SUMHSS being self-report which may present response bias. This study focused exclusively on nicotine vaping overall; however, cannabis is

also vaped. Another limitation is that all five independent variables are unable to be added to one multinomial logistic regression model due to small cell sizes. While this limitation exists, the novelty of this study presents new avenues for future research inquiry at the intersection of SUD treatment

**Table 3.** Separate Multinomial Logistic Regression Models of Substance Use Disorder Facility Vaping Policies

|   |                       | Vaping in designated outdoor Area(s)<br>vs.<br>Vaping is restricted |            |                       | Permissive vaping policies<br>vs.<br>Vaping is restricted |            |  |
|---|-----------------------|---|------------|-----------------------|---|------------|--|
| Variable  | Unadjusted odds ratio | 95% Confidence Interval   | Std. Error | Unadjusted odds ratio | 95% Confidence Interval                                   | Std. Error |  |
| State percentage of adults who use E-cigarettes   | 1.110***              | 1.082, 1.138  | 0.013      | 1.044                 | 0.997, 1.093  | 0.023      |  |
| State indoor E-cigarette restriction (Ref: No)  |                       |   |            |                       |   |            |  |
| Yes   | 0.878***              | 0.821, 0.938  | 0.034      | 0.612***              | 0.539, 0.694  | 0.065      |  |
| Assessment screening for tobacco use (Ref: No)  |                       |   |            |                       |   |            |  |
| Yes   | 0.585***              | 0.536, 0.637  | 0.044      | 0.382***              | 0.333, 0.437  | 0.069      |  |
| Education and counseling smoking/Tobacco cessation (Ref: No)                                  |                       |   |            |                       |   |            |  |
| Yes   | 0.579***              | 0.540, 0.622  | 0.036      | 0.368***              | 0.326, 0.415  | 0.061      |  |
| Pharmacotherapy: Nicotine replacement (Ref: No)   |                       |   |            |                       |   |            |  |
| Yes   | 0.602***              | 0.563, 0.644  | 0.034      | 0.332***              | 0.289, 0.382  | 0.071      |  |
| Pharmacotherapy: Non-nicotine medicine (Ref: No)  |                       |   |            |                       |   |            |  |
| Yes   | 0.665***              | 0.621, 0.712  | 0.035      | 0.440***              | 0.383, 0.505  | 0.071      |  |
| Facility smoking policy (Ref: Smoking is restricted)  |                       |   |            |                       |   |            |  |
| Smoking is designated in outdoor Area(s)  | 320.007***            | 258.199, 396.611  | 0.109      | 19.428***             | 14.976, 25.203  | 0.133      |  |
| Permissive smoking policies   | 37.985***             | 25.140, 57.391  | 0.211      | 899.154***            | 649.578, 1244.621   | 0.166      |  |
| Level of care (Ref: Has outpatient and has non-hospital residential treatment)                |                       |   |            |                       |   |            |  |
| Has outpatient but No non-hospital residential treatment                                      | 1.152*                | 1.024, 1.297  | 0.060      | 7.143***              | 4.557, 11.195   | 0.229      |  |
| No outpatient but has non-hospital residential treatment                                      | 0.930                 | 0.809, 1.069  | 0.071      | 1.820*                | 1.097, 3.019  | 0.258      |  |
| Adolescent or young adult program/Group (Ref: No adolescent and No young adult program/Group) |                       |   |            |                       |   |            |  |
| No adolescent but has young adult program/Group   | 1.387***              | 1.273, 1.511  | 0.044      | 1.044                 | 0.892, 1.223  | 0.080      |  |
| Has adolescent but No young adult program/Group   | 0.470***              | 0.412, 0.535  | 0.066      | 0.386***              | 0.293, 0.509  | 0.141      |  |
| Has adolescent and has young adult program/Group  | 0.888**               | 0.812, 0.970  | 0.045      | 0.924                 | 0.789, 1.081  | 0.080      |  |
| Ref: Reference group  |                       |   |            |                       |   |            |  |

Ref: Reference group

\* $<.05$ .\*\* $<.01$ .\*\*\* $<.001$ 

facility vaping policies, facility characteristics, state-level data vaping prevalence, and state-level vaping policy. Another limitation is the pronounced effect of a facility's smoking policy on its vaping policies, with one odds ratio being nearly 900.0. Before this study, it may have been assumed that smoking policies in these facilities were associated with vaping policies; no study has tested the association, which uniquely positions this study to confirm this initial assumption. While state-level vaping policy and prevalence data were included in this study, we did not examine state-level smoking policy data or smoking prevalence data. Future studies should consider methods to assess the individual risks and benefits of individuals vaping in SUD treatment facilities. Future studies should also examine the risks and benefits of the combined smoking and vaping policies in SUD treatment settings. While this study examined vaping policies in SUD treatment settings, future studies are also needed to explore these policies in mental health treatment settings.

Findings from this study may only be generalizable to the United States.

## Conclusions

This study identified state and national levels of variability for vaping policies in SUD treatment facilities across the United States. Vaping currently holds a unique position in the SUD treatment landscape, as different perspectives identify the potential of vaping as a harm reduction tool for smoking cessation. Others identify vaping's overall impact to exacerbate the substance use disorder crises that already exists. Different vaping policies may have varied impacts on individuals' treatment goals, highlighting the importance of this study.

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## Data Availability Statement

This paper utilizes three publicly available datasets; the Behavioral Risk Factor Surveillance System, the National Substance Use and Mental Health Services Survey, and the State Tobacco Activity Tracking and Evaluations System. Websites for these three datasets are [1] <https://www.cdc.gov/brfss/brfssprevalence/index.html>, [2] <https://www.samhsa.gov/data/data-we-collect/n-sumhss-national-substance-use-and-mental-health-services-survey>, and [3] <https://www.cdc.gov/statesystem/factsheets/ECigarette/EcigSFIA.html>.

## References

1. Substance Abuse and Mental Health Services Administration. *Key Substance Use and Mental Health Indicators in the United States: Results from the 2023 National Survey on Drug Use and Health (HHS Publication No. PEP24-07-021, NSDUH Series H-59)*. Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/data/report/2023-nsduh-annual-national-report>
2. Cordery S, Thompson K, Stevenson M, et al. The product science of electrically heated tobacco products: an updated narrative review of the scientific literature. *Cureus*. 2024; 16(5):e61223. doi:10.7759/cureus.61223
3. Balfour DJK, Benowitz NL, Colby SM, et al. Balancing consideration of the risks and benefits of E-cigarettes. *Am J Public Health*. 2021;111(9):1661-1672. doi:10.2105/AJPH.2021.306416
4. Feeney S, Rossetti V, Terrien J. E-Cigarettes-a review of the evidence-harm versus harm reduction. *Tob Use Insights*. 2022; 15:1179173X221087524. doi:10.1177/1179173X221087524
5. Jonas A. Impact of vaping on respiratory health. *BMJ*. 2022; 378:e065997. doi:10.1136/bmj-2021-065997
6. Blagev DP, Harris D, Dunn AC, Guidry DW, Grissom CK, Lanspa MJ. Clinical presentation, treatment, and short-term outcomes of lung injury associated with e-cigarettes or vaping: a prospective observational cohort study. *Lancet*. 2019; 394(10214):2073-2083. doi:10.1016/S0140-6736(19)32679-0
7. Tattan-Birch H, Brown J, Jackson SE, Jarvis MJ, Shahab L. Secondhand nicotine absorption from E-cigarette vapor vs tobacco smoke in children. *JAMA Netw Open*. 2024;7(7): e2421246. doi:10.1001/jamanetworkopen.2024.21246
8. Becker TD, Rice TR. Youth vaping: a review and update on global epidemiology, physical and behavioral health risks, and clinical considerations. *Eur J Pediatr*. 2022;181(2): 453-462. doi:10.1007/s00431-021-04220-x
9. The Lancet Respiratory M. Vaping in adolescents and young adults: it's time to act. *Lancet Respir Med*. 2022;10(9):811. doi:10.1016/S2213-2600(22)00303-4
10. Miech R, Leventhal A, Johnston L, O'Malley PM, Patrick ME, Barrington-Trimis J. Trends in use and perceptions of nicotine vaping among US youth from 2017 to 2020. *JAMA Pediatr*. 2021;175(2):185-190. doi:10.1001/jamapediatrics.2020.5667
11. Singh S, Windle SB, Filion KB, et al. E-cigarettes and youth: patterns of use, potential harms, and recommendations. *Prev Med*. 2020;133:106009. doi:10.1016/j.ypmed.2020.106009
12. Graham AL, Cha S, Jacobs MA, et al. A vaping cessation text message program for adolescent E-cigarette users: a randomized clinical trial. *JAMA*. 2024;332:713-721. doi:10.1001/jama.2024.11057
13. Bhalerao A, Sivandzade F, Archie SR, Cucullo L. Public health policies on E-cigarettes. *Curr Cardiol Rep*. 2019; 21(10):111. doi:10.1007/s11886-019-1204-y
14. Brady BR, De La Rosa JS, Nair US, Leischow SJ. Electronic cigarette policy recommendations: a scoping review. *Am J Health Behav*. 2019;43(1):88-104. doi:10.5993/AJHB.43.1.8
15. Marques P, Piqueras L, Sanz MJ. An updated overview of e-cigarette impact on human health. *Respir Res*. 2021;22(1): 151. doi:10.1186/s12931-021-01737-5
16. Le TTT, Mendez D, Warner KE. New estimates of smoking-attributable mortality in the U.S. From 2020 through 2035. *Am J Prev Med*. 2024;66(5):877-882. doi:10.1016/j.amepre.2023.12.017
17. VanFrank B, Malarcher A, Cornelius ME, Schecter A, Jamal A, Tynan M. Adult smoking cessation - United States, 2022. *MMWR Morb Mortal Wkly Rep*. 2024;73(29):633-641. doi:10.15585/mmwr.mm7329a1
18. Des Jarlais DC. Harm reduction in the USA: the research perspective and an archive to David Purchase. *Harm Reduct J*. 2017;14(1):51. doi:10.1186/s12954-017-0178-6
19. Lindson N, Butler AR, McRobbie H, et al. Electronic cigarettes for smoking cessation. *Cochrane Database Syst Rev*. 2024;1(1):CD010216. doi:10.1002/14651858.CD010216.pub8
20. Auer R, Schoeni A, Humair JP, et al. Electronic nicotine-delivery systems for smoking cessation. *N Engl J Med*. 2024; 390(7):601-610. doi:10.1056/NEJMoa2308815
21. Coleman SRM, Piper ME, Byron MJ, Bold KW. Dual use of combustible cigarettes and E-cigarettes: a narrative review of current evidence. *Curr Addict Rep*. 2022;9(4):353-362. doi:10.1007/s40429-022-00448-1
22. Besaratinia A, Tommasi S. Vaping epidemic: challenges and opportunities. *Cancer Causes Control*. 2020;31(7):663-667. doi:10.1007/s10552-020-01307-y
23. Honeycutt L, Huerne K, Miller A, et al. A systematic review of the effects of e-cigarette use on lung function. *NPJ Prim Care Respir Med*. 2022;32(1):45. doi:10.1038/s41533-022-00311-w
24. Watts C, Rose S, McGill B, Yazidjoglou A. New image, same tactics: global tobacco and vaping industry strategies to promote youth vaping. *Health Promot Int*. 2024;39(5): daae126. doi:10.1093/heapro/daae126



25. Reiter A, Hebert-Losier A, Mylocopos G, et al. Regulatory strategies for preventing and reducing nicotine vaping among youth: a systematic review. *Am J Prev Med.* 2024;66(1):169-181. doi:[10.1016/j.amepre.2023.08.002](https://doi.org/10.1016/j.amepre.2023.08.002)
26. Sindelar JL. Regulating vaping - policies, possibilities, and perils. *N Engl J Med.* 2020;382(20):e54. doi:[10.1056/NEJMp1917065](https://doi.org/10.1056/NEJMp1917065)
27. Douglass B, Solecki S, Fay-Hillier T. The harmful consequences of vaping: a public health threat. *J Addict Nurs.* 2020;31(2):79-84. doi:[10.1097/JAN.0000000000000332](https://doi.org/10.1097/JAN.0000000000000332)
28. Traboulsi H, Cherian M, Abou Rjeili M, et al. Inhalation toxicology of vaping products and implications for pulmonary health. *Int J Mol Sci.* 2020;21(10):3495. doi:[10.3390/ijms21103495](https://doi.org/10.3390/ijms21103495)
29. Polosa R, Cibella F, Caponnetto P, et al. Health impact of E-cigarettes: a prospective 3.5-year study of regular daily users who have never smoked. *Sci Rep.* 2017;7(1):13825. doi:[10.1038/s41598-017-14043-2](https://doi.org/10.1038/s41598-017-14043-2)
30. Seiler-Ramadas R, Sandner I, Haider S, Grabovac I, Dorner TE. Health effects of electronic cigarette (e-cigarette) use on organ systems and its implications for public health. *Wien Klin Wochenschr.* 2021;133(19-20):1020-1027. doi:[10.1007/s00508-020-01711-z](https://doi.org/10.1007/s00508-020-01711-z)
31. Seidenberg AB, Braganza K, Chomas M, et al. Coverage of indoor smoking and vaping restrictions in the US, 1990-2021. *Am J Prev Med.* 2024;67:494-502. doi:[10.1016/j.amepre.2024.06.007](https://doi.org/10.1016/j.amepre.2024.06.007)
32. O'Connell M, Kephart L. Local and state policy action taken in the United States to address the emergence of E-cigarettes and vaping: a scoping review of literature. *Health Promot Pract.* 2022;23(1):51-63. doi:[10.1177/1524839920963691](https://doi.org/10.1177/1524839920963691)
33. Koh HK, Joossens LX, Connolly GN. Making smoking history worldwide. *N Engl J Med.* 2007;356(15):1496-1498. doi:[10.1056/NEJMp068279](https://doi.org/10.1056/NEJMp068279)
34. Strassmann A, Colak Y, Serra-Burriel M, et al. Nationwide indoor smoking ban and impact on smoking behaviour and lung function: a two-population natural experiment. *Thorax.* 2023;78(2):144-150. doi:[10.1136/thoraxjnl-2021-218436](https://doi.org/10.1136/thoraxjnl-2021-218436)
35. Driezen P, Fong GT, Hyland A, et al. Self-reported exposure to secondhand smoke and support for complete smoking bans in multiunit housing among smokers in the United States, Canada, and the United Kingdom. *Prev Chronic Dis.* 2020;17:E147. doi:[10.5888/pcd17.200201](https://doi.org/10.5888/pcd17.200201)
36. Islam T, Braymiller J, Eckel SP, et al. Secondhand nicotine vaping at home and respiratory symptoms in young adults. *Thorax.* 2022;77(7):663-668. doi:[10.1136/thoraxjnl-2021-217041](https://doi.org/10.1136/thoraxjnl-2021-217041)
37. Czogala J, Goniewicz ML, Fidelus B, Zielinska-Danch W, Travers MJ, Sobczak A. Secondhand exposure to vapors from electronic cigarettes. *Nicotine Tob Res.* 2014;16(6):655-662. doi:[10.1093/ntr/ntt203](https://doi.org/10.1093/ntr/ntt203)
38. Li L, Lin Y, Xia T, Zhu Y. Effects of electronic cigarettes on indoor air quality and health. *Annu Rev Public Health.* 2020;41:363-380. doi:[10.1146/annurev-publhealth-040119-094043](https://doi.org/10.1146/annurev-publhealth-040119-094043)
39. Palmer AM, Smith TT, Nahhas GJ, et al. Interest in quitting e-cigarettes among adult e-cigarette users with and without cigarette smoking history. *JAMA Netw Open.* 2021;4(4):e214146. doi:[10.1001/jamanetworkopen.2021.4146](https://doi.org/10.1001/jamanetworkopen.2021.4146)
40. Holt AG, Hussong A, Castro MG, et al. Smoking policies of outpatient and residential substance use disorder treatment facilities in the United States. *Tob Use Insights.* 2024;17:1179173X241254803. doi:[10.1177/1179173X241254803](https://doi.org/10.1177/1179173X241254803)
41. Marynak K, VanFrank B, Tetlow S, et al. Tobacco cessation interventions and smoke-free policies in mental health and substance abuse treatment facilities - United States, 2016. *MMWR Morb Mortal Wkly Rep.* 2018;67(18):519-523. doi:[10.15585/mmwr.mm6718a3](https://doi.org/10.15585/mmwr.mm6718a3)
42. El-Guebaly N, Cathcart J, Currie S, Brown D, Gloster S. Public health and therapeutic aspects of smoking bans in mental health and addiction settings. *Psychiatr Serv.* 2002;53(12):1617-1622. doi:[10.1176/appi.ps.53.12.1617](https://doi.org/10.1176/appi.ps.53.12.1617)
43. Centers for Disease Control and Prevention. Behavioral risk factor surveillance System: prevalence & trends data. <https://www.cdc.gov/brfss/brfssprevalence/index.html>
44. Centers for Disease Control and Prevention. Smokefree indoor air laws, including e-cigarette. <https://www.cdc.gov/statesystem/factsheets/ECigarette/EcigSFIA.html>. Accessed 20 June 2024.
45. Substance Abuse and Mental Health Services Administration. *Data from: National Substance Use and Mental Health Services Survey (N-SUMHSS), 2022. 2023.* Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.
46. Little RJA. A test of missing completely at random for multivariate data with missing values. *J Am Stat Assoc.* 1988;83(404):1198-1202. doi:[10.1080/01621459.1988.10478722](https://doi.org/10.1080/01621459.1988.10478722)
47. Ziedonis DM, Guydish J, Williams J, Steinberg M, Foulds J. Barriers and solutions to addressing tobacco dependence in addiction treatment programs. *Alcohol Res Health.* 2006;29(3):228-235.
48. Pagano A, Tajima B, Guydish J. Barriers and facilitators to tobacco cessation in a nationwide sample of addiction treatment programs. *J Subst Abuse Treat.* 2016;67:22-29. doi:[10.1016/j.jsat.2016.04.004](https://doi.org/10.1016/j.jsat.2016.04.004)
49. Prochaska JJ. Failure to treat tobacco use in mental health and addiction treatment settings: a form of harm reduction? *Drug Alcohol Depend.* 2010;110(3):177-182. doi:[10.1016/j.drugalcdep.2010.03.002](https://doi.org/10.1016/j.drugalcdep.2010.03.002)
50. Weinberger AH, Platt J, Esan H, Galea S, Erlich D, Goodwin RD. Cigarette smoking is associated with increased risk of substance use disorder relapse: a nationally representative, prospective longitudinal investigation. *J Clin Psychiatry.* 2017;78(2):e152-e160. doi:[10.4088/JCP.15m10062](https://doi.org/10.4088/JCP.15m10062)
51. Lail P, Fairbairn N. Patients with substance use disorders leaving against medical advice: strategies for improvement. Review. *J Addict Med.* 2018;12(6):421-423. doi:[10.1097/ADM.0000000000000432](https://doi.org/10.1097/ADM.0000000000000432)
52. Prochaska JJ, Delucchi K, Hall SM. A meta-analysis of smoking cessation interventions with individuals in substance abuse treatment or recovery. *J Consult Clin Psychol.* 2004;72(6):1144-1156. doi:[10.1037/0022-006X.72.6.1144](https://doi.org/10.1037/0022-006X.72.6.1144)
53. McCabe SE, West BT, McCabe VV. Associations between early onset of E-cigarette use and cigarette smoking and other substance use among US adolescents: a national study. *Nicotine Tob Res.* 2018;20(8):923-930. doi:[10.1093/ntr/ntx231](https://doi.org/10.1093/ntr/ntx231)
54. Grant JE, Lust K, Fridberg DJ, King AC, Chamberlain SR. E-cigarette use (vaping) is associated with illicit drug use, mental health problems, and impulsivity in university students. *Ann Clin Psychiatry.* 2019;31(1):27-35.
55. Tuisku A, Rahkola M, Nieminen P, Toljamo T. Electronic cigarettes vs varenicline for smoking cessation in adults: a randomized clinical trial. *JAMA Intern Med.* 2024;184(8):915-921. doi:[10.1001/jamainternmed.2024.1822](https://doi.org/10.1001/jamainternmed.2024.1822)
56. Kramarow EA, Elgaddal N. Current electronic cigarette use among adults aged 18 and over: United States, 2021. *NCHS Data Brief.* 2023;475:1-8.