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## Rules to prohibit the use of electronic vapor products inside homes and personal vehicles among adults in the U.S., 2017

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### Abstract

Most U.S. adults have voluntary rules prohibiting the use of smoked tobacco products in their homes and vehicles. However, the prevalence of similar rules for electronic vapor products (EVPs) is uncertain. This study assessed the prevalence and correlates of rules prohibiting EVP use inside homes and vehicles. Data from a 2017 Internet-based panel survey of U.S. adults aged ≥18 years (n=4,107) were analyzed. For homes and vehicles, prevalence of reporting that EVP use was not allowed, partially allowed, fully allowed, or unknown was assessed overall and by covariates. Correlates of prohibiting EVP use was assessed by multivariable logistic regression. In homes, 58.6% of adults did not allow EVP use, 7.7% partially allowed use, 10.1% fully allowed use, and 23.6% were unsure of the rules. In vehicles, 63.8% of respondents did not allow EVP use, 6.0% partially allowed use, 8.9% fully allowed use, and 21.4% were unsure of the rules. Following multivariable adjustment, prohibiting EVP use inside homes and vehicles was more likely among respondents with higher income and education, and with a child aged <18 years. Users of EVPs and other tobacco products, and respondents living with users of EVPs and other tobacco products, were less likely to prohibit EVP use in these locations. These findings show that about 6 in 10 U.S. adults have rules prohibiting EVP use inside homes and vehicles, but variations exist by population subgroups. Voluntary smoke-free rules in homes and vehicles that include EVPs can help protect children and non-users from secondhand EVP aerosol exposure.

### Keywords

Electronic Nicotine Delivery Systems; Home; Vehicle; Tobacco Smoke Pollution; Secondhand Smoke; Smoke-free Policy

## INTRODUCTION

The health effects of combustible tobacco product use and secondhand smoke (SHS) exposure are well established.<sup>1</sup> Over the past several decades, significant progress has occurred in the adoption of comprehensive smoke-free policies in indoor public places,

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including worksites, restaurants, and bars.<sup>2</sup> Public indoor smoke-free policies are strongly associated with the adoption of voluntary smoke-free rules in private settings such as homes and vehicles.<sup>3</sup> Accordingly, the prevalence of voluntary smoke-free home (83.7%) and vehicle (78.1%) rules has also increased among U.S. adults over time.<sup>4</sup>

In recent years, the tobacco product landscape has evolved to include a variety of newer products, including e-cigarettes and other electronic vapor products (EVPs).<sup>5</sup> In contrast to combustible tobacco products, EVPs do not produce sidestream emissions. Aerosol is only produced during activation of the device, some of which is exhaled into the environment as secondhand aerosol (SHA) where nonusers can be exposed.<sup>5</sup> Although these products generally emit fewer toxicants than combustible tobacco products,<sup>5</sup> SHA exposure can involuntarily expose nonusers, including children, to harmful and potentially harmful constituents such as nicotine, ultrafine particulates and volatile organic compounds, among others.<sup>5</sup>

Few studies have assessed voluntary rules prohibiting EVP use in homes and vehicles.<sup>6–8</sup> In the U.S., two small, non-nationally representative studies reported that 6% of current cigarette smokers,<sup>6</sup> and 32% of current and former smokers,<sup>7</sup> had rules prohibiting EVP use in their home; no current smokers reported having rules against EVP use in their vehicles.<sup>6</sup> To date, only one study has assessed EVP rules in homes among tobacco product users and non-users.<sup>8</sup> This nationally-representative study, conducted in Great Britain, reported that 57.5% of adults did not allow EVP use inside their homes, but did not report on rules inside vehicles.<sup>8</sup>

To date, no nationally-representative study has assessed the prevalence of voluntary rules regarding EVP use inside U.S. homes, and no national or international study has assessed the prevalence of voluntary rules for EVP use in vehicles. To address this knowledge gap, this study assessed the current prevalence and socio-demographic correlates of self-reported rules prohibiting EVP use inside homes and personal vehicles among U.S. adults.

## METHODS

### Data Source

Data were from the 2017 Summer Styles survey, an Internet-based survey of adults in the U.S. aged 18 years conducted by Porter Novelli. Respondents were drawn from KnowledgePanel® (GfK), an online panel utilizing a probability-based sampling design to recruit panelists regardless of landline phone or Internet access. In June and July 2017, 4,107 adult panelists completed this survey (response rate: 74%). This analysis used secondary de-identified data, and thus, did not require human subject review.

### Measures

**EVP Rules in Homes**—Participants were asked, “Which statement best describes the rules about using electronic vapor products inside your home?” Responses included: “It is not allowed anywhere or at any time inside my home” (not allowed), “It is allowed in some places or at some times inside my home” (partially allowed), “It is allowed anywhere and at any time inside my home” (fully allowed), and “Don’t know, Not Sure.”

**EVP Rules in Vehicles**—Participants were asked, “Regardless of whether you use them, which statement best describes the rules about using electronic vapor products inside vehicles that you or your family members who live with you own or lease?” Responses included: “It is not allowed anywhere or at any time inside any vehicle” (not allowed), “It is allowed inside certain vehicles or during certain times” (partially allowed), “It is allowed anywhere and at any time inside any vehicle” (fully allowed), and “Don’t know, Not Sure.” Respondents who answered “My family and I do not lease or own any vehicles,” were excluded from the analysis.

**Covariates**—Tobacco-specific covariates included EVP use (never user, tried but not a current user, or current user), cigarette smoking status (never, former, or current smoker), and current (past 30-day) use of other tobacco products (cigars, smokeless tobacco, pipe tobacco, hookah, or some other product) (non-current user or current user). Other covariates included sex, age, race/ethnicity, U.S. region, having a child aged <18 years, educational attainment, annual household income, and living with someone who uses EVPs or other tobacco products.

## Analyses

Prevalence (with 95% confidence interval (CI)) of reporting that EVP use was not allowed, partially allowed, or fully allowed inside homes and vehicles was assessed overall and by each covariate; a response of “don’t know, not sure” was also assessed. Chi-squared tests were used to assess significant differences in EVP rules across covariates ( $p<0.05$ ).

For multivariable analyses, EVP rules were dichotomized as “not allowed” versus “allowed” (partially allowed, fully allowed, or don’t know/not sure). Adjusted prevalence ratios (aPR) were calculated using binary logistic regression modeling with predictive margins to assess the association between each covariate and reporting that EVP use was not allowed.

Data were weighted to represent the U.S. population using distributions from the U.S. Census Bureau’s Current Population Survey. All analyses were performed using SAS-callable SUDAAN version 11 (RTI International, Research Triangle Park, NC).

## RESULTS

Inside homes, 58.6% of adults did not allow EVP use; 7.7% partially allowed, 10.1% fully allowed, and 23.6% were unsure of the EVP rules. Never EVP users (63.0%) had a higher prevalence of not allowing EVP use at home compared to those who had ever tried EVPs but were not current users (38.5%) or current (21.6%) EVP users ( $p<0.05$ ). The prevalence of not allowing EVP use in homes was higher for never cigarette smokers (67.5%) than former (57.4%) or current smokers (30.1%;  $p<0.05$ ) and non-users of other tobacco products (59.7%) than current users (43.0%;  $p<0.05$ ) (Table 1).

Inside vehicles, 63.8% did not allow, 6.0% partially allowed, 8.9% fully allowed, and 21.4% did not know or were unsure of the EVP rules. By EVP use status, 68.7% of never users, 41.3% of those who had ever tried EVPs but were not current users, and 20.6% of current EVP users reported not allowing EVP use inside vehicles. The prevalence of not allowing

EVP use in vehicles was higher for never cigarette smokers (72.8%) than former (64.4%) or current smokers (30.7%;  $p<0.05$ ) and among non-users of other tobacco products (64.9%) than current users (45.8%;  $p<0.05$ ) (Table 1).

The adjusted likelihood of not allowing EVP use inside homes and vehicles was greater among adults with a college degree (home: aPR=1.27, CI=1.11–1.45; vehicle: aPR=1.16, CI=1.03–1.31) compared to less than high school; those with a child aged <18 years (home: aPR=1.15, CI=1.09–1.22; vehicle: aPR=1.12, CI=1.07–1.18) compared to no child; and higher annual household income categories compared to less than \$15,000 (Table 2). The likelihood of not allowing EVP use was lower among non-Hispanic black respondents (home: aPR=0.85, CI=0.76–0.95; vehicle: aPR=0.89, CI=0.82–0.98) than non-Hispanic white; and those living with an EVP user (home: aPR=0.68, CI=0.55–0.84; vehicle: aPR=0.71, CI=0.59–0.86) or other tobacco product user (home: aPR=0.87, CI=0.80–0.95; vehicle: aPR=0.84, CI=0.77–0.91) than not living with respective tobacco product users.

Compared to respective non-users, the adjusted likelihood of not allowing EVP use inside homes was lower among current EVP users (aPR=0.66, CI=0.48–0.90), those who had tried but were not current EVP users (aPR=0.77, CI=0.68–0.86), and current (aPR=0.73, CI=0.64–0.83) and former (aPR=0.92, CI=0.86–0.98) cigarette smokers. Not allowing EVP use inside vehicles was less likely among current EVP users (aPR=0.59, CI=0.43–0.81), those who had tried but were not current EVP users (aPR=0.78, CI=0.70–0.86), current (aPR=0.68, CI=0.60–0.77) and former (aPR=0.92, CI=0.86–0.97) cigarette smokers, and current users of other tobacco products (aPR=0.85, CI=0.74–0.97) than respective non-users.

## DISCUSSION

In 2017, approximately 6 in 10 adults in the U.S. reported having rules that prohibited EVP use inside their homes (58.6%) and vehicles (63.8%). This is lower than previously reported estimates of smoke-free rules in homes (83.7%) and vehicles (78.1%) for combustible tobacco products.<sup>4</sup> These findings may reflect limited knowledge of the harmful and potentially harmful constituents documented in SHA or common EVP marketing strategies, some of which have promoted their use in locations where combustible tobacco product smoking is prohibited.<sup>5</sup>

Over 20% of adults reported being unsure of the rules for EVP use inside homes and vehicles. Limited knowledge or awareness of EVPs,<sup>9,10</sup> varied harm perceptions toward SHA exposure,<sup>11</sup> limited experience with SHA exposures,<sup>8,12</sup> or other factors may have contributed to a lack of definitive rules related to EVP use in these environments. Thus, these individuals may represent an important segment of the population for targeted educational interventions to promote EVP rules in these locations.

Variations in prohibiting EVP use inside homes and vehicles were observed by tobacco product use status. Only about 20% of current EVP users, 30% of current cigarette smokers, and 40% of other tobacco product users reported not allowing EVP use inside these locations. Thus, opportunities exist to educate all tobacco product users about the harms of

SHA exposure and the importance of including EVPs in voluntary smoke-free rules in private settings.

Approximately one-third of respondents with children either did not prohibit EVP use or were unsure of the rules toward EVP use inside their home or vehicle. Secondhand exposure to emissions from EVPs and conventional cigarettes can result in similar increases in serum cotinine levels among never tobacco users,<sup>13</sup> suggesting comparable nicotine exposures from SHS and SHA. The U.S. Surgeon General has concluded that nicotine exposure during adolescence can harm the developing adolescent brain.<sup>5</sup> SHA also can contain other harmful constituents that can be particularly problematic for children, including ultrafine particulates, which can be inhaled deeply into the lungs. Opportunities exist to educate parents about the importance of protecting children from SHA exposure inside homes and vehicles.

Non-Hispanic black respondents and those with lower income and education were less likely to report not allowing EVP use inside homes and vehicles, similar to previous findings for rules toward combustible tobacco products.<sup>4</sup> Furthermore, prohibiting EVP use in these locations was less likely among respondents who lived with EVP and other tobacco product users. These variations underscore the importance of targeted efforts to educate these populations about the harms of SHA exposure, particularly those with the greatest burden of exposure.

In recent decades, there has been significant progress in the adoption of smoke-free policies in public places.<sup>2</sup> However, policies that explicitly address EVP emissions in public places are limited. As of December 2017, 9 U.S. states, Washington D.C., Puerto Rico, and about 500 municipalities have included EVPs in comprehensive smoke-free legislation,<sup>14,15</sup> while five states prohibit EVP use inside personal vehicles when children are present.<sup>16</sup> Although the inclusion of EVPs in smoke-free policies is increasing,<sup>17</sup> most of the U.S. population currently lives in a state where bystanders may be exposed to SHA in public places.<sup>15</sup> Thus, voluntary smoke-free rules that include EVPs inside homes and vehicles may further protect non-users from secondhand emissions to these products. Such rules are particularly important for children, who may spend a greater amount of time in these private spaces.<sup>18</sup> Furthermore, voluntary smoke-free rules in these environments that include EVPs could help prevent the renormalization of tobacco product use, particularly among youth.<sup>5</sup> EVPs and SHA can resemble combustible tobacco products and SHS, and youth are particularly vulnerable to visual cues and other social norms.<sup>5,19</sup>

This paper is subject to at least three limitations. First, participants were drawn from an Internet-based panel, which may limit generalizability compared to traditional population-based surveys. Second, the limited sample size prevented the ability to report results separately for never and ever EVP users. Finally, a large percentage of respondents reported they did not know, or were unsure of, the rules toward EVP use inside their home or vehicle. Although respondents who selected this response were maintained for multivariable-adjusted analyses, they were considered to have no definitive rule to prohibit the use of EVPs in these locations.

## CONCLUSIONS

In 2017, a majority of adults in the U.S. had voluntary rules prohibiting the use of EVPs inside their homes and vehicles. However, variations existed by EVP and other tobacco product use. Further, many adults reported being unsure of the rules regarding EVP use in these locations. Opportunities exist to educate all adults on the importance of voluntary rules that protect non-users from secondhand emissions to all tobacco products, including e-cigarettes and other electronic vapor products.

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## Abbreviations

<b>EVP</b>	Electronic Vapor Product
<b>SHA</b>	Secondhand Aerosol
<b>SHS</b>	Secondhand Smoke
<b>aPR</b>	adjusted Prevalence Ratio
<b>CI</b>	Confidence Interval

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**HIGHLIGHTS**

- 6 in 10 US adults prohibit electronic vapor product (EVP) use in homes and vehicles
- Over 20% of US adults are unsure of the rules toward EVP use in homes and vehicles
- Opportunities exist to promote voluntary private smoke-free rules that include EVPs
- Smoke-free rules that include EVPs can protect non-users from EVP aerosol exposure



Table 1

Prevalence of having rules regarding the use of electronic vapor products inside homes and vehicles by demographic characteristic and tobacco product use among adults, *Summer Styles Survey – United States, 2017*

	Rules inside Homes <sup>a</sup>				Rules inside Vehicles <sup>b</sup>			
	Not Allowed % (95% CI)	Partially Allowed % (95% CI)	Fully Allowed % (95% CI)	Don't Know, Not Sure % (95% CI)	Not Allowed % (95% CI)	Partially Allowed % (95% CI)	Fully Allowed % (95% CI)	Don't Know, Not Sure % (95% CI)
<b>Overall</b>	58.6 (56.9–60.3)	7.7 (6.8–8.7)	10.1 (9.1–11.2)	23.6 (22.1–25.1)	63.8 (62.0–65.4)	6.0 (5.2–6.9)	8.9 (8.0–10.0)	21.4 (19.9–22.9)
<b>Sex</b>								
Male	54.8 (52.2–59.3) <sup>c</sup>	9.1 (7.7–10.8)	11.0 (9.5–12.7)	25.1 (22.9–27.4)	60.9 (58.3–63.4) <sup>c</sup>	5.7 (4.7–7.0)	10.6 (9.1–12.3)	22.7 (20.6–25.1)
Female	62.2 (59.9–64.5)	6.5 (5.4–7.7)	9.2 (7.9–10.7)	22.1 (20.2–24.2)	66.4 (64.1–68.6)	6.2 (5.1–7.5)	7.3 (6.2–8.7)	20.1 (18.2–22.1)
<b>Age</b>								
18–24	58.7 (52.3–64.9) <sup>c</sup>	8.6 (5.7–12.9)	10.5 (7.1–15.1)	22.2 (17.4–27.9)	59.0 (52.6–65.2) <sup>c</sup>	9.5 (6.4–13.9)	9.6 (6.4–14.0)	21.9 (17.0–27.7)
25–44	54.0 (51.0–57.0)	9.5 (7.9–11.4)	11.0 (9.2–13.0)	25.5 (22.9–28.2)	59.4 (56.3–62.3)	7.1 (5.7–8.7)	10.2 (8.5–12.3)	23.3 (20.7–26.1)
45–64	60.4 (57.8–63.0)	7.3 (6.0–8.9)	10.8 (9.2–12.6)	21.4 (19.3–23.7)	65.5 (62.9–68.0)	5.6 (4.5–7.0)	9.4 (7.9–11.1)	19.5 (17.4–21.7)
65+	63.4 (59.6–67.1)	4.8 (3.4–6.8)	7.0 (5.3–9.2)	24.8 (21.5–28.4)	71.2 (67.5–74.6)	2.5 (1.6–4.0)	5.4 (3.8–7.4)	21.0 (17.9–24.4)
<b>Race</b>								
White, Non-Hispanic	61.3 (59.4–63.3) <sup>c</sup>	7.7 (6.7–8.9)	11.1 (9.9–12.5)	19.8 (18.3–21.4)	66.4 (64.5–68.3) <sup>c</sup>	6.5 (5.5–7.6)	9.6 (8.4–10.9)	17.5 (16.0–19.1)
Black, Non-Hispanic	45.5 (40.0–51.1)	7.1 (4.6–10.8)	8.3 (5.7–11.8)	39.2 (33.8–44.8)	53.8 (48.1–59.4)	3.8 (2.3–6.1)	7.8 (5.2–11.4)	34.7 (29.4–40.4)
Hispanic	53.1 (48.2–58.0)	9.6 (7.0–13.1)	8.4 (6.1–11.6)	28.8 (24.6–33.5)	58.7 (53.6–63.5)	6.4 (4.5–9.1)	8.5 (6.1–11.8)	26.4 (22.2–31.2)
Other, Non-Hispanic	66.4 (59.2–73.0)	<sup>d</sup>	7.7 (4.8–12.4)	20.7 (15.4–27.4)	66.7 (59.4–73.3)	<sup>d</sup>	5.9 (3.3–10.3)	22.9 (17.2–29.8)
<b>Education</b>								
<High School	41.5 (35.2–48.2) <sup>c</sup>	8.4 (5.4–12.7)	13.8 (9.9–18.9)	36.3 (30.2–42.9)	46.6 (39.8–53.4) <sup>c</sup>	5.9 (3.5–9.7)	12.0 (8.3–17.1)	35.5 (29.2–42.4)
High School	51.0 (47.9–54.0)	10.2 (8.4–12.3)	10.6 (8.9–12.5)	28.3 (25.6–31.1)	57.7 (54.6–60.7)	6.6 (5.2–8.3)	10.2 (8.5–12.2)	25.5 (22.9–28.3)
Some College	58.0 (54.9–61.1)	7.5 (6.0–9.3)	12.3 (10.3–14.6)	22.2 (19.7–24.9)	63.8 (60.6–66.8)	7.0 (5.5–8.8)	10.8 (9.0–13.0)	18.4 (16.1–21.0)
College Degree	72.8 (70.1–75.3)	5.5 (4.3–7.0)	6.2 (4.9–7.8)	15.6 (13.5–17.8)	75.5 (72.8–78.0)	4.5 (3.4–6.0)	4.9 (3.8–6.3)	15.1 (13.1–17.5)

**Respondent has Child <18 years**

	Rules inside Homes <sup>a</sup>				Rules inside Vehicles <sup>b</sup>				Don't Know, Not Sure
	Not Allowed	Partially Allowed	Fully Allowed		Not Allowed	Partially Allowed	Fully Allowed		
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	
Yes	62.7 (59.6–65.6) <sup>c</sup>	8.0 (6.4–9.9)	9.2 (7.4–11.3)	20.2 (17.8–22.8)	67.2 (64.2–70.1) <sup>c</sup>	7.1 (5.7–8.9)	7.4 (5.9–9.3)	18.2 (15.9–20.9)	
No	57.0 (55.0–59.1)	7.6 (6.6–8.9)	10.5 (9.3–11.8)	24.8 (23.0–26.7)	62.4 (60.3–64.4)	5.6 (4.7–6.6)	9.5 (8.3–10.8)	22.6 (20.8–24.4)	
<b>EVP use Status<sup>c</sup></b>									
Never user	63.0 (61.2–64.9) <sup>c</sup>	5.8 (5.0–6.9)	6.4 (5.5–7.4)	24.7 (23.1–26.4)	68.7 (66.8–70.4) <sup>c</sup>	3.8 (3.2–4.6)	5.5 (4.7–6.5)	22.0 (20.4–23.7)	
Tried, not current user	38.5 (33.5–43.7)	16.0 (12.7–20.0)	26.3 (22.1–30.9)	19.3 (15.4–23.8)	41.3 (36.3–46.6)	16.6 (13.0–20.9)	24.4 (20.3–29.1)	17.6 (14.0–22.0)	
Current User	21.6 (14.3–31.3)	20.7 (14.0–29.4)	49.5 (39.5–59.5)	20.6 (13.7–29.8)	20.6 (13.7–29.8)	22.5 (15.1–32.2)	44.5 (34.8–54.8)	<sup>d</sup>	
<b>Cigarette Smoking Status<sup>f</sup></b>									
Never Smoker	67.5 (65.3–69.7) <sup>c</sup>	6.0 (5.0–7.2)	5.7 (4.7–6.9)	20.7 (18.9–22.6)	72.8 (70.7–74.9) <sup>c</sup>	3.7 (2.9–4.7)	4.6 (3.7–5.7)	18.9 (17.1–20.8)	
Former Smoker	57.4 (54.1–60.7)	7.8 (6.1–9.9)	12.2 (10.1–14.6)	22.6 (19.9–25.6)	64.4 (61.0–67.6)	4.8 (3.6–6.5)	11.8 (9.6–14.3)	19.0 (16.4–21.9)	
Current Smoker	30.1 (25.8–34.7)	16.8 (13.5–20.8)	26.5 (22.5–30.9)	26.7 (22.5–31.3)	30.7 (26.4–35.5)	19.1 (15.6–23.3)	24.5 (20.6–28.9)	25.6 (21.4–30.3)	
<b>Other Tobacco Product Use<sup>g</sup></b>									
Non-current User	59.7 (57.9–61.4) <sup>c</sup>	7.0 (6.2–8.0)	9.8 (8.8–11.0)	23.4 (21.9–25.0)	64.9 (63.1–66.6) <sup>c</sup>	5.5 (4.7–6.3)	8.4 (7.5–9.5)	21.2 (19.7–22.8)	
Current User	43.0 (34.9–51.5)	18.8 (12.8–26.8)	14.2 (9.4–20.8)	24.0 (17.5–31.9)	45.8 (37.5–54.4)	14.9 (9.6–22.3)	18.1 (12.3–25.8)	21.2 (14.9–29.3)	
<b>U.S. Census Region<sup>h</sup></b>									
Northeast	58.0 (54.0–61.8)	8.9 (6.8–11.5)	10.6 (8.4–13.3)	22.5 (19.4–26.0)	61.2 (57.3–65.1)	5.7 (4.1–7.8)	9.2 (7.1–11.7)	23.9 (20.6–27.6)	
Midwest	58.1 (54.3–61.7)	7.4 (5.6–9.6)	10.7 (8.5–13.3)	23.9 (20.8–27.3)	64.2 (60.5–67.8)	6.6 (5.0–8.8)	9.6 (7.5–12.2)	19.5 (16.6–22.8)	
South	57.7 (54.8–60.5)	7.8 (6.3–9.5)	9.9 (8.3–11.8)	24.7 (22.2–27.3)	63.1 (60.2–65.9)	5.9 (4.7–7.3)	8.8 (7.2–10.6)	22.3 (19.8–24.9)	
West	61.1 (57.4–64.6)	7.1 (5.5–9.2)	9.5 (7.6–11.8)	22.3 (19.4–25.6)	66.2 (62.6–69.7)	5.8 (4.2–7.9)	8.3 (6.5–10.6)	19.6 (16.8–22.8)	
<b>Annual Household Income</b>									
<\$15,000	28.0 (21.9–35.1) <sup>c</sup>	12.3 (8.1–18.2)	16.2 (11.4–22.6)	43.5 (36.2–51.1)	35.1 (28.2–42.7) <sup>c</sup>	<sup>d</sup>	15.7 (10.8–22.2)	45.0 (37.3–53.0)	
\$15,000–\$24,999	43.1 (36.0–50.5)	14.5 (9.9–20.7)	14.7 (10.2–20.7)	27.7 (21.5–34.9)	53.3 (45.6–60.9)	7.4 (4.4–12.3)	15.0 (10.3–21.4)	24.2 (18.2–31.5)	
\$25,000–\$39,999	55.4 (50.9–59.8)	8.5 (6.4–11.3)	10.2 (7.8–13.2)	25.9 (22.1–30.1)	60.3 (55.8–64.7)	8.7 (6.5–11.5)	9.6 (7.3–12.5)	21.4 (17.9–25.4)	
\$40,000–\$59,999	53.6 (49.4–57.7)	8.0 (6.1–10.4)	13.4 (10.8–16.5)	25.0 (21.5–28.8)	59.2 (55.0–63.3)	5.7 (4.1–7.9)	10.2 (8.0–12.9)	24.9 (21.4–28.8)	
\$60,000	67.2 (65.1–69.2)	5.9 (4.9–7.0)	7.7 (6.6–8.9)	19.3 (17.6–21.1)	70.9 (68.9–73.0)	5.5 (4.5–6.7)	6.7 (5.7–7.9)	16.9 (15.2–18.6)	

	Rules inside Homes <sup>a</sup>				Rules inside Vehicles <sup>b</sup>			
	Not Allowed	Partially Allowed	Fully Allowed	Don't Know, Not Sure	Not Allowed	Partially Allowed	Fully Allowed	Don't Know, Not Sure
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
<b>Lives with EVP user<sup>i</sup></b>								
No	60.1 (58.3–61.9) <sup>c</sup>	6.8 (5.9–7.7)	8.8 (7.8–9.9)	24.3 (22.8–25.9)	65.5 (63.7–67.2) <sup>c</sup>	5.1 (4.3–5.9)	7.6 (6.7–8.6)	21.9 (20.4–23.5)
Yes	30.2 (23.2–38.2)	27.5 (21.0–35.2)	35.7 (28.6–43.6)	6.5 (3.8–10.9)	32.3 (25.1–40.4)	23.3 (17.3–30.6)	35.0 (27.8–42.9)	9.5 (6.1–14.5)
<b>Lives with other tobacco user<sup>i</sup></b>								
No	66.6 (64.7–68.5) <sup>c</sup>	5.7 (4.8–6.7)	8.3 (7.2–9.4)	19.4 (17.9–21.0)	72.7 (70.9–74.5) <sup>c</sup>	4.0 (3.3–4.9)	6.7 (5.8–7.9)	16.5 (15.1–18.1)
Yes	42.7 (38.7–46.8)	17.0 (14.1–20.4)	19.9 (16.7–23.5)	20.4 (17.2–24.1)	44.7 (40.5–48.9)	15.8 (13.0–19.1)	21.2 (17.9–24.9)	18.3 (15.1–22.0)

Abbreviations: CI = Confidence Interval; EVP = Electronic Vapor Product

<sup>a</sup>Based on the question: "Which statement best describes the rules about using electronic vapor products inside your home?" Responses included, "It is not allowed anywhere or at any time inside my home" (not allowed), "It is allowed in some places or at some times inside my home" (partially allowed), "It is allowed anywhere and at any time inside my home" (fully allowed), or "Don't Know, Not Sure".

<sup>b</sup>Based on the question: "Regardless of whether you use them, which statement best describes the rules about using electronic vapor products inside vehicles that you or your family members who live with you own or lease?" Responses included, "It is not allowed anywhere or at any time inside any vehicle", (not allowed), "It is allowed inside certain vehicles or during certain times" (partially allowed), "It is allowed anywhere and at any time inside any vehicle" (fully allowed), or "Don't Know, Not Sure". An additional response, "My family and I do not lease or own any vehicles" was excluded from the analysis.

<sup>c</sup>Significant chi-square test ( $p < 0.05$ ) indicates difference in EVP rules across groups within specified characteristic.

<sup>d</sup>Estimate is suppressed because the relative standard error was  $> 30\%$  and estimate may be unstable.

<sup>e</sup>Current EVP use status based on the following questions regarding "Electronic vapor products (e.g., e-cigarettes, e-hookahs, e-pipes, hookah pens, vape pens, or some other electronic vapor product)": (1) "The next few questions are about nicotine. Have you ever tried any of the following products, even just one time?" and (2) "In the past 30 days, which of the following products have you used at least once?" Never users reported never trying EVPs. Tried, not current users reported ever trying EVPs, but did not report use of an EVP in the past 30 days. Current EVP users reported ever trying an EVP, and reported using an EVP at least once in the past 30 days.

<sup>f</sup>Current cigarette smoking status based on the following questions: "Have you smoked at least 100 cigarettes in your entire life? One hundred cigarettes is equal to 5 packs of cigarettes." (Yes, No), and "Do you now smoke cigarettes every day, some days, or not at all?" Never smokers reported they had not smoked at least 100 cigarettes in their lifetime. Former smokers reported they had smoked at least 100 cigarettes in their lifetime, but currently smoked cigarettes "not at all". Current smokers reported they had smoked at least 100 cigarettes in their lifetime, and currently smoked cigarettes "every day" or "some days".

<sup>g</sup>Current users of other tobacco products reported use of the following tobacco products on one or more of the past 30 days: "Cigars (big cigars, cigarillos, or little cigars that look like cigarettes)", "Smokeless Tobacco (chewing tobacco, snuff, dip, snus, or dissolvable tobacco)", "Pipes filled with tobacco", "Water pipes, also known as hookahs filled with tobacco", or "Some other tobacco product".

<sup>h</sup>*Northeast*: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwest*: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *South*: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North

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Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. *West Virginia*. Washington, and Wyoming.

<sup>i</sup>Based on the question, "Does anyone who lives with you now do any of the following?" Respondents could select one or more of the following: "Smoke cigarettes", "Use electronic vapor products", "Use smokeless tobacco such as snus, chewing tobacco", "Smoke cigars, cigarillos, or filtered cigars", or "Use any other form of tobacco"; respondents could alternatively select "No one who lives with me now uses any form of tobacco". Respondents who selected "Uses electronic vapor products" were considered as living with an EVP user. Respondents who selected one or more of responses for cigarettes, smokeless tobacco, cigars, or other forms of tobacco were considered as living with other tobacco product users.

**Table 2**

Socio-demographic and tobacco use correlates <sup>a</sup> of prohibiting the use of electronic vapor products inside homes and vehicles among adults, *Summer Styles Survey* – United States, 2017

	Overall Sample <sup>b</sup>	Home <sup>c</sup>	Vehicle <sup>d</sup>
	n (%)	aPR (95% CI)	aPR (95% CI)
<b>Sex</b>			
Male	2,004 (48.2)	ref	ref
Female	2,103 (51.8)	1.00 (0.95–1.05)	0.98 (0.93–1.03)
<b>Age</b>			
18–24	261 (12.0)	ref	ref
25–44	1,350 (34.1)	0.84 (0.76–0.94)	0.94 (0.85–1.05)
45–64	1,724 (34.3)	0.91 (0.82–1.00)	1.00 (0.91–1.10)
65+	772 (19.5)	0.95 (0.85–1.05)	1.05 (0.95–1.17)
<b>Race</b>			
White, Non-Hispanic	3,004 (64.4)	ref	ref
Black, Non-Hispanic	369 (11.8)	0.85 (0.76–0.95)	0.89 (0.82–0.98)
Hispanic	497 (15.7)	0.94 (0.86–1.03)	0.93 (0.86–1.01)
Other, Non-Hispanic	237 (8.0)	1.05 (0.94–1.18)	0.99 (0.89–1.10)
<b>Education</b>			
<High School	257 (11.6)	ref	ref
High School	1,269 (29.0)	1.06 (0.93–1.20)	1.05 (0.94–1.17)
Some College	1,228 (28.6)	1.12 (0.98–1.28)	1.09 (0.97–1.23)
College Degree	1,326 (30.8)	1.27 (1.11–1.45)	1.16 (1.03–1.31)
<b>Respondent has Child &lt;18 years</b>			
No	2,742 (72.7)	ref	ref
Yes	1,346 (37.3)	1.15 (1.09–1.22)	1.12 (1.07–1.18)
<b>Current EVP use Status <sup>e</sup></b>			
Never user	3,481 (85.0)	ref	ref
Tried, not current user	463 (11.8)	0.77 (0.68–0.86)	0.78 (0.70–0.86)
Current User	123 (3.3)	0.66 (0.48–0.90)	0.59 (0.43–0.81)
<b>Current Smoking Status <sup>f</sup></b>			
Never Smoker	2,339 (60.4)	ref	ref
Former Smoker	1,093 (25.9)	0.92 (0.86–0.98)	0.92 (0.86–0.97)
Current Smoker	529 (13.7)	0.73 (0.64–0.83)	0.68 (0.60–0.77)
<b>Other Tobacco Product Use <sup>g</sup></b>			
Non-current User	3,889 (95.9)	ref	ref
Current User	170 (4.1)	0.90 (0.78–1.04)	0.85 (0.74–0.97)

	Overall Sample <sup>b</sup>	Home <sup>c</sup>	Vehicle <sup>d</sup>
	n (%)	aPR (95% CI)	aPR (95% CI)
<b>U.S. Census Region <sup>h</sup></b>			
Northeast	792 (18.0)	ref	ref
Midwest	893 (21.0)	1.00 (0.92–1.09)	1.05 (0.97–1.13)
South	1,496 (37.4)	1.01 (0.94–1.09)	1.03 (0.96–1.11)
West	926 (23.5)	1.07 (0.99–1.16)	1.10 (1.02–1.19)
<b>Annual Household Income</b>			
<\$15,000	208 (7.9)	ref	ref
\$15,000–\$24,999	206 (8.0)	1.23 (0.98–1.55)	1.18 (0.98–1.42)
\$25,000–\$39,999	614 (12.8)	1.38 (1.12–1.70)	1.23 (1.04–1.46)
\$40,000–\$59,999	678 (15.0)	1.27 (1.03–1.56)	1.16 (0.98–1.37)
≥\$60,000	2,401 (56.2)	1.39 (1.14–1.70)	1.23 (1.05–1.45)
<b>Lives with EVP user <sup>i</sup></b>			
No	3,877 (95.1)	ref	ref
Yes	195 (4.9)	0.68 (0.55–0.84)	0.71 (0.59–0.86)
<b>Lives with other tobacco product user <sup>i</sup></b>			
No	3,098 (80.6)	ref	ref
Yes	713 (19.4)	0.87 (0.80–0.95)	0.84 (0.77–0.91)

Abbreviations: aPR= Adjusted Prevalence Ratio CI = Confidence Interval; EVP = Electronic Vapor Product

<sup>a</sup> aPRs were calculated as model-adjusted risk ratios using binary logistic regression modeling with predictive margins. All covariates were entered into the model simultaneously. Associations between levels of each covariate and prohibiting EVP use are compared to each specified referent group.

<sup>b</sup> Overall sample size: n based on unweighted data; % based on weighted data. Data were weighted to Current Population Survey distributions. n's may not add up to the total sample size (n=4,107) due to missing data; %'s may not add up to 100% due to rounding.

<sup>c</sup> Based on the question: "Which statement best describes the rules about using electronic vapor products inside your home?" Responses were dichotomized as "not allowed" (It is not allowed anywhere or at any time inside my home") or "allowed" ("It is allowed in some places or at some times inside my home", "It is allowed anywhere and at any time inside my home", or "Don't Know, Not Sure").

<sup>d</sup> Based on the question: "Regardless of whether you use them, which statement best describes the rules about using electronic vapor products inside vehicles that you or your family members who live with you own or lease?" Responses were dichotomized as "not allowed" ("It is not allowed anywhere or at any time inside any vehicle") or "allowed" ("It is allowed inside certain vehicles or during certain times", "It is allowed anywhere and at any time inside any vehicle", or "Don't Know, Not Sure"). An additional response, "My family and I do not lease or own any vehicles" was excluded from the analysis.

<sup>e</sup> Current EVP use status based on the following questions regarding "Electronic vapor products (e.g., e-cigarettes, e-hookahs, e-cigars, e-pipes, hookah pens, vape pens, or some other electronic vapor product)": (1) "The next few questions are about nicotine. Have you ever tried any of the following products, even just one time?" and (2) "In the past 30 days, which of the following products have you used at least once?" Never users reported never trying EVPs. Tried, not current users reported ever trying EVPs, but did not report use of an EVP in the past 30 days. Current EVP users reported ever trying an EVP, and reported using an EVP at least once in the past 30 days.

<sup>f</sup> Current cigarette smoking status based on the following questions: "Have you smoked at least 100 cigarettes in your entire life? One hundred cigarettes is equal to 5 packs of cigarettes." (Yes, No), and "Do you now smoke cigarettes every day, some days, or not at all?" Never smokers reported they had not smoked at least 100 cigarettes in their lifetime. Former smokers reported they had smoked at least 100 cigarettes in their lifetime, but currently smoked cigarettes "not at all". Current smokers reported they had smoked at least 100 cigarettes in their lifetime, and currently smoked cigarettes "every day" or "some days".

<sup>g</sup>Current users of other tobacco products reported use of the following tobacco products on one or more of the past 30 days: “Cigars (big cigars, cigarillos, or little cigars that look like cigarettes)”, “Smokeless Tobacco (chewing tobacco, snuff, dip, snus, or dissolvable tobacco)”, “Pipes filled with tobacco”, “Water pipes, also known as hookahs filled with tobacco”, or “Some other tobacco product”.

<sup>h</sup>*Northeast:* Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwest:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *South:* Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. *West:* Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

<sup>i</sup>Based on the question, “Does anyone who lives with you now do any of the following?” Respondents could select one or more of the following: “Smoke cigarettes”, “Use electronic vapor products”, “Use smokeless tobacco such as snus, chewing tobacco”, “Smoke cigars, cigarillos, or filtered cigars”, or “Use any other form of tobacco”; respondents could alternatively select “No one who lives with me now uses any form of tobacco”. Respondents who selected “Uses electronic vapor products” were considered as living with an EVP user. Respondents who selected one or more of responses for cigarettes, smokeless tobacco, cigars, or other forms of tobacco were considered as living with other tobacco product users.