

U.S. Adult Attitudes About Electronic Vapor Product Use in Indoor Public Places



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Introduction: The U.S. Surgeon General has concluded that aerosol from electronic vapor products, such as e-cigarettes, can contain harmful and potentially harmful constituents. This study assessed the prevalence and determinants of U.S. adult attitudes toward electronic vapor product use in indoor public places.

Methods: Data from 2017 Summer Styles, an Internet survey of U.S. adults aged ≥ 18 years ($n = 4,107$) were analyzed in 2017. Respondents were asked, *Do you favor or oppose allowing the use of electronic vapor products in indoor public places such as workplaces, restaurants, and bars?* Responses were *strongly favor, somewhat favor, somewhat oppose, and strongly oppose*. Multivariate Poisson regression was used to determine sociodemographic correlates of opposition (somewhat or strongly).

Results: In 2017, a total of 82.4% of adults strongly or somewhat opposed the use of electronic vapor products in indoor public places, including 28.0% of current (past 30-day) electronic vapor product users and 52.7% of current cigarette smokers. After adjustment, opposition was significantly lower among current and former electronic vapor product users than never users, current cigarette smokers than never smokers, and people living with tobacco product users. Opposition was significantly higher among adults aged ≥ 45 years than those aged 18–24 years and among adults who had rules prohibiting electronic vapor product use in their vehicles or homes than those without such rules.

Conclusions: Approximately eight in ten U.S. adults, including more than one quarter of electronic vapor product users, opposed electronic vapor product use in indoor public places. Prohibiting electronic vapor product use in indoor public areas can protect bystanders from the health risks of secondhand electronic vapor product aerosol exposure.

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INTRODUCTION

The U.S. Surgeon General has concluded that aerosol from electronic vapor products (EVPs), such as e-cigarettes, can contain harmful and potentially harmful constituents, including nicotine, heavy metals, ultrafine particulates, volatile organic compounds, and other toxicants.¹

Currently, three quarters (75.4%) of the U.S. population live in states where EVP use is not prohibited in indoor areas of all worksites, restaurants, and bars.² This is a public health concern because EVP use in these settings can expose bystanders to secondhand aerosol,^{3–5} complicate enforcement of existing smoke-free policies, and influence the social acceptability of tobacco use.^{1,2,6}

Efforts to address these issues could be hindered by several factors, including lack of knowledge about recent public attitudes towards EVP-related policies, particularly as the awareness, use, and regulatory landscape of these products have evolved in recent years.^{1,7,8}

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To date, studies examining U.S. adults' opinions about EVP use have been limited to the context of e-cigarettes and smoke-free settings.^{9–11} Notably, no study has measured national attitudes toward any use of EVPs in indoor public settings. Given that population-level attitudes can guide implementation, enforcement, and sustainment of evidence-based tobacco control interventions,^{12–14} this study assesses attitudes toward any EVP use in public indoor places among U.S. adults in 2017.

METHODS

Data Source

Data came from Summer Styles, a cross-sectional Internet survey among U.S. adults aged ≥ 18 years, fielded by Porter Novelli. Respondents are randomly selected from GfK's Knowledge-Panel®, which recruits panelists using address-based probability sampling.¹⁵ During June through July 2017, a total of 4,107 respondents completed the survey (overall response rate: 74%). Data were weighted to represent the U.S. population using U.S. Current Population Survey proportions.¹⁶ As a secondary analysis of de-identified data, this study did not undergo human subjects review.

Measures

Respondents were asked, *Do you favor or oppose allowing the use of electronic vapor products (e.g., e-cigarettes, e-hookahs, e-cigars, e-pipes, hookah pens, vape pens, or some other electronic vapor product) in indoor public places such as workplaces, restaurants, and bars?* Response options were *strongly favor, somewhat favor, somewhat oppose, and strongly oppose*. Adults who responded *strongly oppose* or *somewhat oppose* were considered to oppose allowing EVP use in indoor public places.

Statistical Analysis

Weighted estimates and 95% CIs were calculated overall and by sociodemographics (sex, age, race/ethnicity, education, household income, and U.S. region), cigarette smoking, EVP use, other tobacco product use, tobacco product use among others living in the household, and rules regarding EVP use in homes and vehicles. Chi-square tests were used to examine differences within subgroups ($p < 0.05$). Multivariate Poisson regression was used to calculate adjusted prevalence ratios (APRs) and identify determinants of opposition (somewhat or strongly) toward allowing EVP use in public places. Analyses were conducted in 2017 using R, version 3.2.3.

RESULTS

Among adults, 82.4% opposed (26.4% somewhat, 56.0% strongly) EVP use in indoor public places (Table 1). Opposition was higher among females (85.8%) than males (78.8%). Opposition ranged from 75.0% among adults aged 18–24 years to 90.3% among those aged ≥ 65 years, from 79.2% among non-Hispanic blacks to 85.3% among non-Hispanic other races, from 72.9% among those with less than

high school education to 89.2% with a college degree or higher, and from 68.0% among those with annual household income $< \$15,000$ to 87.5% among those with income $\geq \$60,000$. By region, opposition ranged from 81.8% in the South to 83.7% in the West. Opposition was lower among those who lived with a tobacco product user (61.5%) than those who did not (88.4%). By tobacco product use, opposition ranged from 28.0% among past 30-day EVP users to 87.6% among never users, from 52.7% among current cigarette smokers to 89.1% among never smokers, and from 66.7% among past 30-day users of other tobacco products to 86.1% among never users. Opposition ranged from 51.2% among those with rules allowing EVP use at home to 92.7% among those with rules prohibiting it, and from 48.9% among those with rules allowing EVP use inside their vehicles to 91.7% among those with rules prohibiting it.

The adjusted likelihood of opposition was significantly higher among adults aged 45–64 years (APR=1.08) and ≥ 65 years (APR=1.11) than those aged 18–24 years, and among those with annual household income $\geq \$60,000$ (APR=1.15) than those with income $< \$15,000$ (Table 2). Likelihood of opposition was also higher among adults with rules prohibiting EVP use inside their homes (APR=1.39) or vehicles (APR=1.22) than those without. Conversely, likelihood of opposition was lower among those who lived with a tobacco product user (APR=0.90) than those who did not, among current (APR=0.53) and former (APR=0.88) EVP users than never users, and among current cigarette smokers (APR=0.81) than never smokers.

DISCUSSION

In 2017, more than eight in ten U.S. adults opposed allowing EVP use in public indoor places. A majority of all assessed sociodemographic groups opposed the use of EVP in these settings. By tobacco use status, these attitudes were shared by more than one quarter (28.0%) of current EVP users, about half (52.7%) of current cigarette smokers, and two thirds (66.7%) of other tobacco product users.

Attitudes varied widely among current and former EVP users relative to never users, and current cigarette smokers relative to never smokers. This finding aligns with previous studies indicating that tobacco product users are less likely to support comprehensive smoke-free policies.^{9,10} For example, a majority of adult ever e-cigarette users (64%) and current cigarette smokers (51%) in 2012 reported that e-cigarette use should be allowed in public areas where tobacco smoking is

Table 1. Attitudes^a Toward Allowing EVP Use in Indoor Public Places Among U.S. Adults, 2017

Characteristics ^b	Unweighted, n (%)	Weighted % (95% CI)			
		Strongly favor	Somewhat favor	Somewhat oppose	Strongly oppose
Overall	4,048	4.3 (3.6, 5.0)	13.2 (12.0, 14.5)	26.4 (24.9, 28.0)	56.0 (54.3, 57.8)
Sex					
Male	1,972 (48.7)	5.6 (4.4, 6.7)	15.6 (13.6, 17.6)	28.1 (25.8, 30.3)	50.8 (48.3, 53.3)
Female	2,076 (51.3)	3.1 (2.3, 4.0)	11.1 (9.5, 12.6)	24.9 (22.8, 27.0)	60.9 (58.6, 63.3)
Age, years					
18–24	257 (6.3)	3.2 (1.1, 5.3)	21.8 (16.5, 27.1)	29.9 (23.9, 35.9)	45.1 (38.7, 51.5)
25–44	1,328 (32.8)	6.0 (4.5, 7.6)	14.2 (12.1, 16.4)	28.9 (26.2, 31.6)	50.8 (47.9, 53.8)
45–64	1,700 (42.0)	4.3 (3.3, 5.4)	12.4 (10.6, 14.1)	25.7 (23.4, 28.0)	57.6 (55.0, 60.2)
≥65	763 (18.8)	1.9 (0.9, 2.9)	7.8 (5.6, 10.0)	21.2 (18.0, 24.5)	69.0 (65.4, 72.7)
Race/ethnicity					
White, NH	2,959 (73.1)	4.6 (3.8, 5.5)	12.5 (11.1, 13.8)	24.9 (23.2, 26.6)	58.1 (56.1, 60.0)
Black, NH	363 (9.0)	3.0 (1.1, 5.0)	17.8 (13.5, 22.0)	27.1 (22.0, 32.1)	52.1 (46.5, 57.8)
Other, NH	235 (5.8)	3.6 (1.0, 6.1)	11.1 (6.3, 15.9)	32.0 (25.1, 38.9)	53.3 (46.0, 60.7)
Hispanic	491 (12.1)	4.4 (2.3, 6.5)	14.2 (10.6, 17.8)	29.4 (24.8, 33.9)	52.0 (47.1, 56.9)
Education					
Less than high school	255 (6.3)	6.3 (3.2, 9.5)	20.7 (15.3, 26.1)	28.9 (22.9, 34.9)	44.0 (37.5, 50.6)
High school	1,269 (31.3)	4.8 (3.5, 6.0)	14.4 (12.2, 16.6)	26.9 (24.1, 29.6)	53.9 (50.9, 56.9)
Some college	1,212 (29.9)	4.4 (3.1, 5.7)	14.9 (12.5, 17.2)	24.8 (22.0, 27.5)	56.0 (52.9, 59.1)
College degree	1,312 (32.4)	3.0 (2.1, 4.0)	7.8 (6.2, 9.4)	26.6 (23.9, 29.2)	62.6 (59.7, 65.5)
Annual household income					
<\$15,000	205 (5.1)	10.0 (5.2, 14.8)	21.9 (15.6, 28.3)	29.9 (23.1, 36.7)	38.2 (30.8, 45.5)
\$15,000–\$24,999	202 (5.0)	3.4 (0.9, 5.8)	26.4 (19.7, 33.1)	32.0 (25.0, 39.1)	38.2 (31.0, 45.4)
\$25,000–\$39,999	607 (15.0)	5.1 (3.0, 7.1)	17.3 (13.9, 20.7)	25.4 (21.4, 29.4)	52.2 (47.8, 56.7)
\$40,000–\$59,999	668 (16.5)	3.5 (2.0, 5.1)	14.9 (11.9, 17.8)	25.6 (21.8, 29.3)	56.0 (51.9, 60.2)
≥\$60,000	2,366 (58.4)	3.7 (2.9, 4.4)	8.8 (7.5, 10.1)	25.6 (23.6, 27.5)	62.0 (59.8, 64.1)
U.S. Census region ^c					
Northeast	776 (19.2)	4.7 (3.1, 6.4)	12.5 (9.7, 15.2)	27.9 (24.3, 31.5)	54.9 (50.9, 58.8)
Midwest	882 (21.8)	4.1 (2.5, 5.8)	13.9 (11.2, 16.6)	25.5 (22.2, 28.8)	56.5 (52.8, 60.2)
South	1,470 (36.3)	4.5 (3.3, 5.7)	13.7 (11.6, 15.7)	28.0 (25.4, 30.6)	53.8 (50.9, 56.6)
West	920 (22.7)	3.8 (2.5, 5.1)	12.6 (10.0, 15.2)	23.6 (20.4, 26.8)	60.1 (56.4, 63.7)
Household member tobacco use					
No	2,967 (78.6)	2.9 (2.2, 3.6)	8.7 (7.5, 9.9)	25.5 (23.7, 27.3)	62.9 (60.9, 64.8)
Yes	807 (21.4)	9.2 (6.9, 11.5)	29.3 (25.6, 33.0)	26.9 (23.5, 30.30)	34.6 (30.9, 38.2)

(continued on next page)

Table 1. Attitudes^a Toward Allowing EVP Use in Indoor Public Places Among U.S. Adults, 2017 (continued)

Characteristics ^b	Unweighted, n (%)	Weighted % (95% CI)			
		Strongly favor	Somewhat favor	Somewhat oppose	Strongly oppose
EVP use at home ^d					
Allowed	689 (17.1)	13.1 (10.4, 15.8)	35.7 (31.6, 39.8)	29.7 (25.9, 33.5)	21.5 (18.1, 24.9)
Not allowed	2,459 (61.0)	1.8 (1.3, 2.4)	5.5 (4.4, 6.6)	22.9 (21.0, 24.8)	69.8 (67.7, 71.9)
Don't know	881 (21.9)	3.7 (2.2, 5.2)	15.8 (13.0, 18.5)	32.5 (29.0, 36.0)	48.1 (44.4, 51.8)
EVP use in vehicle ^e					
Allowed	569 (14.5)	13.4 (10.4, 16.4)	37.8 (33.3, 42.3)	29.0 (24.8, 33.2)	19.9 (16.3, 23.5)
Not allowed	2,603 (66.2)	2.3 (1.6, 2.9)	6.0 (4.9, 7.1)	23.4 (21.6, 25.3)	68.3 (66.3, 70.3)
Don't know	762 (19.4)	4.1 (2.4, 5.8)	17.3 (14.1, 20.5)	33.9 (30.1, 37.8)	44.7 (40.7, 48.7)
EVP use ^f					
Never	3,457 (85.7)	2.9 (2.2, 3.5)	9.5 (8.3, 10.7)	25.9 (24.2, 27.5)	61.8 (59.9, 63.6)
Current (past 30-day)	121 (3.0)	20.7 (13.1, 28.4)	51.3 (41.2, 61.3)	18.0 (10.8, 25.2)	10.0 (4.8, 15.2)
Former	457 (11.3)	10.2 (7.2, 13.3)	29.8 (25.0, 34.5)	32.7 (27.8, 37.5)	27.4 (22.7, 32.0)
Cigarette smoking ^g					
Never	2,308 (59.0)	2.9 (2.1, 3.6)	8.1 (6.7, 9.4)	25.8 (23.7, 27.8)	63.3 (61.0, 65.5)
Current	552 (13.3)	12.5 (9.4, 15.7)	34.7 (30.1, 39.4)	30.7 (26.2, 35.2)	22.0 (18.0, 26.0)
Former	1,084 (27.7)	3.8 (2.5, 5.0)	14.0 (11.5, 16.5)	25.5 (22.6, 28.5)	56.6 (53.3, 60.0)
Other tobacco product use ^h					
Never	2,644 (65.4)	3.4 (2.6, 4.2)	10.5 (9.1, 11.9)	25.6 (23.7, 27.5)	60.4 (58.3, 62.6)
Current (past 30-day)	168 (4.2)	8.1 (3.0, 13.2)	25.2 (17.6, 32.9)	27.4 (20.0, 34.8)	39.3 (31.1, 47.5)
Former	1,228 (30.4)	5.8 (4.4, 7.3)	18.1 (15.5, 20.6)	28.1 (25.3, 30.9)	48.0 (44.9, 51.1)

^aRespondents were asked: Do you favor or oppose allowing the use of electronic vapor products (e.g., e-cigarettes, e-hookahs, e-cigars, e-pipes, hookah pens, vape pens, or some other electronic vapor product) in indoor public places such as workplaces, restaurants, and bars? Responses were strongly oppose, somewhat oppose, somewhat favor, and strongly favor.

^bWithin-group differences were determined using standard χ^2 tests. Significant differences ($p < 0.05$) were observed by all subgroups except for U.S. Census region.

^cNortheast: 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.

^dEVP use in vehicles was categorized as "allowed" for those who responded it is allowed anywhere and at any time or it is allowed inside certain vehicles or during certain times. Use was categorized as "not allowed" for those who responded it is not allowed anywhere or at any time inside any vehicle. A response of don't know, not sure was also assessed.

^eEVP use at home was categorized as "allowed" for those who responded it is allowed anywhere and at any time inside my home or it is allowed in some places or at sometimes inside my home. Use was categorized as "not allowed" for those who responded it is not allowed anywhere or at any time inside my home.

^fCurrent cigarette smokers smoked ≥ 100 cigarettes in their lifetime and reported smoking everyday or some days at the time of the survey. Former smokers smoked ≥ 100 cigarettes in their lifetime and reported smoking not at all at the time of the survey. Never smokers reported no to smoking ≥ 100 cigarettes in their lifetime.

^gRespondents were asked about ever or past 30-day use of EVPs (e.g., e-cigarettes, e-hookahs, e-cigars, e-pipes, hookah pens, vape pens, or some other electronic vapor product).

^hRespondents were asked about ever or past 30-day use of the following other tobacco products: cigars or big cigars; cigarillos; little cigars; chewing tobacco, snuff or dip; water pipes; roll your own cigarettes; flavored cigars; snus; and dissolvable tobacco products.

EVP, electronic vapor product; NH, non-Hispanic.

Table 2. APRs^a of Opposition^b Toward Allowing EVP Use in Indoor Public Places Among U.S. Adults, 2017

Characteristics	n (%)	Opposition, % (95% CI)	APR (95% CI)
Overall	4,048	82.4 (81.1, 83.8)	—
Sex			
Male	1,972 (48.7)	78.8 (76.7, 81.0)	ref
Female	2,076 (51.3)	85.8 (84.1, 87.5)	1.03 (1.00, 1.06)
Age, years			
18–24	257 (6.3)	75.0 (69.4, 80.5)	ref
25–44	1,328 (32.8)	79.7 (77.2, 82.2)	1.06 (0.98, 1.15)
45–64	1,700 (42.0)	83.3 (81.3, 85.3)	1.08 (1.00, 1.16)
≥65	763 (18.8)	90.3 (87.9, 92.6)	1.11 (1.03, 1.20)
Race/ethnicity			
White, NH	2,959 (73.1)	82.9 (81.4, 84.5)	ref
Black, NH	363 (9.0)	79.2 (74.7, 83.8)	0.96 (0.91, 1.02)
Other, NH	235 (5.8)	85.3 (80.0, 90.6)	1.01 (0.95, 1.07)
Hispanic	491 (12.1)	81.4 (77.4, 85.3)	1.01 (0.96, 1.07)
Education			
Less than high school	255 (6.3)	72.9 (67.1, 78.8)	ref
High school	1,269 (31.3)	80.8 (78.3, 83.2)	1.05 (0.97, 1.14)
Some college	1,212 (29.9)	80.7 (78.2, 83.3)	1.04 (0.96, 1.13)
College degree	1,312 (32.4)	89.2 (87.3, 91.0)	1.02 (0.94, 1.11)
Annual household income			
<\$15,000	205 (5.1)	68.0 (60.8, 75.2)	ref
\$15,000–\$24,999	202 (5.0)	70.2 (63.3, 77.1)	1.04 (0.88, 1.22)
\$25,000–\$39,999	607 (15.0)	77.7 (73.9, 81.4)	1.08 (0.95, 1.24)
\$40,000–\$59,999	668 (16.5)	81.6 (78.4, 84.8)	1.14 (1.00, 1.30)
≥\$60,000	2,366 (58.4)	87.5 (86.0, 89.0)	1.15 (1.01, 1.31)
U.S. Census region ^c			
Northeast	776 (19.2)	82.8 (79.7, 85.9)	ref
Midwest	882 (21.8)	82.0 (79.0, 85.0)	0.97 (0.93, 1.01)
South	1,470 (36.3)	81.8 (79.5, 84.0)	0.97 (0.93, 1.01)
West	920 (22.7)	83.7 (80.8, 86.5)	0.98 (0.94, 1.03)
Household member tobacco use			
No	2,967 (78.6)	88.4 (87.0, 89.7)	ref
Yes	807 (21.4)	61.5 (57.6, 65.3)	0.90 (0.84, 0.95)
EVP use rule at home ^d			
Allowed	689 (17.1)	51.2 (47.0, 55.4)	ref
Not allowed	2,459 (61.0)	92.7 (91.5, 93.9)	1.39 (1.25, 1.54)
Don't know	881 (21.9)	80.6 (77.5, 83.6)	1.31 (1.17, 1.47)
EVP use rule in vehicle ^e			
Allowed	569 (14.5)	48.9 (44.3, 53.5)	ref
Not allowed	2,603 (66.2)	91.7 (90.5, 93.0)	1.22 (1.09, 1.36)
Don't know	762 (19.4)	78.6 (75.2, 82.0)	1.14 (1.01, 1.29)
EVP use ^f			
Never	3,457 (85.7)	87.6 (86.3, 88.9)	ref
Current (past 30-day)	121 (3.0)	28.0 (19.6, 36.4)	0.53 (0.39, 0.71)
Former	457 (11.3)	60.0 (55.0, 65.1)	0.88 (0.81, 0.96)
Cigarette smoking ^g			
Never	2,308 (59.0)	89.1 (87.5, 90.6)	ref
Current	552 (13.3)	52.7 (47.9, 57.6)	0.81 (0.73, 0.89)
Former	1,084 (27.7)	82.2 (79.5, 84.9)	0.99 (0.95, 1.03)

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Table 2. APRs^a of Opposition^b Toward Allowing EVP Use in Indoor Public Places Among U.S. Adults, 2017 (continued)

Characteristics	n (%)	Opposition, % (95% CI)	APR (95% CI)
Other tobacco product use ^b			
Never	2,644 (65.4)	86.1 (84.5, 87.6)	ref
Current (past 30-day)	168 (4.2)	66.7 (58.4, 75.0)	0.97 (0.87, 1.08)
Former	1,228 (30.4)	76.1 (73.3, 78.9)	0.97 (0.93, 1.01)

Note: Boldface indicates statistical significance ($p < 0.05$).

^aAdjusted for sex, age, race/ethnicity, education, annual household income, U.S. Census region, EVP rules at home, EVP rules in vehicles, household member tobacco use, EVP use, cigarette smoking status, and noncigarette tobacco product use.

^bOpposition was defined as a response of strongly oppose or somewhat oppose to the question: Do you favor or oppose allowing the use of electronic vapor products (e.g., e-cigarettes, e-hookahs, e-cigars, e-pipes, hookah pens, vape pens, or some other electronic vapor product) in indoor public places such as workplaces, restaurants, and bars?

^cNortheast: 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.

^dEVP use in vehicles was categorized as “allowed” for those who responded it is allowed anywhere and at any time or it is allowed inside certain vehicles or during certain times. Use was categorized as “not allowed” for those who responded it is not allowed anywhere or at any time inside any vehicle. A response of don’t know, not sure was also assessed.

^eEVP use at home was categorized as “allowed” for those who responded it is allowed anywhere and at any time inside my home or it is allowed in some places or at sometimes inside my home. Use was categorized as “not allowed” for those who responded it is not allowed anywhere or at any time inside my home.

^fCurrent cigarette smokers smoked ≥ 100 cigarettes in their lifetime and reported smoking everyday or some days at the time of the survey. Former smokers smoked ≥ 100 cigarettes in their lifetime and reported smoking not at all at the time of the survey. Never smokers reported no to smoking ≥ 100 cigarettes in their lifetime.

^gRespondents were asked about ever or past 30-day use of EVPs (e.g., e-cigarettes, e-hookahs, e-cigars, e-pipes, hookah pens, vape pens, or some other electronic vapor product).

^hRespondents were asked about ever or past 30-day use of the following other tobacco products: cigars or big cigars; cigarillos; little cigars; chewing tobacco, snuff or dip; water pipes; roll your own cigarettes; flavored cigars; snus; and dissolvable tobacco products.

APR, adjusted prevalence ratio; EVP, electronic vapor product; NH, non-Hispanic.

prohibited, whereas a substantial proportion (40%) of U.S. adults overall were uncertain.⁹

Although the present study did not assess risk beliefs, these attitudinal differences may be due, in part, to potential misperceptions of harm toward secondhand EVP aerosol exposure.^{17,18} In 2014, most (82.9%) adult e-cigarette users did not think e-cigarette emissions were harmful to themselves or to bystanders, and a majority (59.5%) used e-cigarettes in smoke-free settings.¹⁹ Nevertheless, there is scientific evidence demonstrating that EVP aerosol is not harmless water vapor.^{1,20} Furthermore, EVPs can be used to aerosolize marijuana or other illicit drugs.^{1,21,22} Accordingly, targeted educational initiatives warning about the potential harms of EVP aerosol exposure, along with federal regulation of the manufacturing, marketing, and sale of all tobacco products, may help address these knowledge gaps and minimize observed differences in support for EVP-free policies. Additional research examining risk perceptions and other potential underlying reasons for attitudinal differences towards EVP use is also warranted.

As of July 2018, nine states (California, Delaware, Hawaii, New Jersey, New York, North Dakota, Oregon, Utah, Vermont), the District of Columbia, Puerto Rico, and at least 400 localities included EVPs in their comprehensive smoke-free indoor air laws.^{23,24}

However, opportunities exist for states and localities to give an estimated 243.6 million U.S. residents, including 55.7 million children, greater protection from secondhand EVP aerosol exposure in indoor public places.²

Limitations

First, Summer Styles estimates can yield diminished precision compared with those of large population-based household surveys. Second, respondents were asked about indoor public places as a whole; attitudes may have differed by individual location, including workplaces, restaurants, and bars that also have outdoor settings. Third, this study did not capture respondents’ coverage by state or local smoke-free policies. Lastly, these self-reported data may be subject to recall and social desirability bias.

CONCLUSIONS

Most U.S. adults oppose EVP use in indoor public places, such as worksites, restaurants, and bars. Policies that prohibit EVP use in indoor public areas can help protect bystanders from the preventable health risks of exposure and reinforce tobacco-free norms in settings where they live, work, and gather.

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