Tobacco Product Use Among Diverse Populations

Prevalence and Disparities in Tobacco Product Use Among American Indians/Alaska Natives — United States, 2010–2015

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An overarching goal of *Healthy People 2020* is to achieve health equity, eliminate disparities, and improve health among all groups.* Although significant progress has been made in reducing overall commercial tobacco product use,† disparities persist, with American Indians or Alaska Natives (AI/ANs) having one of the highest prevalences of cigarette smoking among all racial/ethnic groups (*1*,*2*). Variations in cigarette smoking among AI/ANs have been documented by sex and geographic location (*3*), but not by other sociodemographic characteristics. Furthermore, few data exist on use of tobacco products other than cigarettes among AI/ANs (*4*). CDC analyzed self-reported current (past 30-day) use of five tobacco product types among AI/AN adults from the 2010–2015 National Survey on Drug Use and Health (NSDUH); results were compared with six other racial/ethnic groups (Hispanic; non-Hispanic white [white]; non-Hispanic black [black]; non-Hispanic Native Hawaiian or other Pacific Islander [NHOPI]; non-Hispanic Asian [Asian]; and non-Hispanic multirace [multirace]). Prevalence of current tobacco product use was significantly higher among AI/ANs than among non-AI/ANs combined for any tobacco product, cigarettes, roll-your-own tobacco, pipes, and smokeless tobacco. Among AI/ANs, prevalence of current use of any tobacco product was higher among males, persons aged 18–25 years, those with less than a high school diploma, those with annual family income <$20,000, those who lived below the federal poverty level, and those who were never married. Addressing the social determinants of health and providing evidence-based, population-level, and culturally appropriate tobacco control interventions could help reduce tobacco product use and eliminate disparities in tobacco product use among AI/ANs (*1*).

NSDUH is an annual, national survey of the civilian, noninstitutionalized U.S. population aged ≥12 years (*4*). The analyses in this report were restricted to persons aged ≥18 years. Because of the limited sample size of AI/ANs, data were pooled across six NSDUH waves (2010–2015) to increase precision of estimates; pooled sample sizes were 3,655 for AI/AN adults and 235,262 for non-AI/AN adults.§ Annual response rates averaged 65.4% among all respondents. The AI/AN population included persons who identified AI/AN as their only race/ethnicity on the survey. Non-AI/AN populations comprised whites; blacks; NHOPIs; Asians; multiracial persons; and Hispanics. Current tobacco product use was defined as past 30-day use of the following tobacco products: cigarettes; cigars (big cigars, cigarillos, or little cigars); roll-your-own tobacco; pipes; and smokeless tobacco (chewing tobacco, snuff, dip, and snus).¶ Current users of any tobacco product** were persons who reported past 30-day use of one or more of the assessed tobacco product types.

Data were weighted to adjust for nonresponse and to yield nationally representative estimates. Prevalence was calculated overall and by sex, age group (18–25 years, 26–34 years, 35–49 years, and ≥50 years), education (less than a high school diploma, high school graduate, some college, college graduate), annual family income (<$20,000, $20,000–$49,999, $50,000–$74,999, and ≥$75,000), poverty,†† and marital status; prevalence estimates with relative standard errors ≥30% were suppressed. Non-AI/AN adults were used as comparison groups, both as a single combined group comprising the six other racial/ethnic groups and as individual racial/ethnic groups. Among AI/ANs, disparities in tobacco product use within sociodemographic subgroups were calculated using prevalence ratios (PRs) with 95% confidence intervals, with the group with the lowest prevalence of any tobacco use serving as the referent. Statistical comparisons were performed with Chi-square tests, with statistical significance defined as $p<0.05$.

During 2010–2015, prevalence among AI/ANs was significantly higher than that among non-AI/ANs combined for current use of any tobacco product (43.3% versus 27.7%, respectively); cigarettes (37.3% versus 23.0%); roll-your-own tobacco (7.1% versus 3.5%), pipes (1.9% versus 0.9%) and smokeless tobacco (6.6% versus 3.5%) (Table 1). With the exception of persons with a college degree or higher, current use of any tobacco product, cigarettes, and smokeless tobacco were

* https://www.healthypeople.gov/.

† Commercial tobacco is defined as tobacco that is manufactured by the tobacco industry for recreational use. http://keepitsacred.itcmi.org/tobacco-and-tradition/traditional-v-commercial/.

§ The survey weights were recalibrated by dividing by 6 (number of years pooled) to ensure that estimates were nationally representative.

¶ Until the 2014 survey, snus was not included in smokeless tobacco questions in NSDUH. It was first added in the 2015 survey.

** Respondents who had at least one missing response to any of the five tobacco product type questions were excluded from the analysis (752 [0.3%] respondents; 18 [0.5%] AI/AN respondents and 734 [0.3%] non-AI/AN respondents).

†† Poverty level was assessed since 2003. Poverty level indicates a person's family income relative to federal poverty thresholds. https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

TABLE 1. Current use of tobacco products among AI/AN and non-AI/AN adults aged ≥18 years, overall and by sociodemographic and socioeconomic characteristics — National Survey on Drug Use and Health, 2010–2015

Characteristic	Any tobacco product* % (95% CI)	Cigarettes % (95% CI)	Cigars (big cigars/ cigarillos/little cigars) % (95% CI)	Roll-your-own tobacco % (95% CI)	Pipe % (95% CI)	Smokeless tobacco (snuff/dip/ chewing/snus) % (95% CI)
AI/AN adults (N = 3,655)						
All	**43.3 (40.1–46.5)†**	**37.3 (34.2–40.3)†**	**5.9 (4.7–7.2)**	**7.1 (5.7–8.4)†**	**1.9 (1.1–2.8)†**	**6.6 (5.5–7.8)†**
Sex						
Male	49.7 (44.9–54.5)†	39.8 (35.3–44.3)†	9.6 (7.2–12.0)	8.6 (6.4–10.8)†	2.7 (1.2–4.2)†	11.7 (9.4–13.9)†
Female	37.8 (33.6–42.0)†	35.1 (31.0–39.2)†	2.7 (1.7–3.8)	5.7 (3.9–7.5)†	–§	2.3 (1.5–3.1)†
Age group (yrs)						
18–25	55.6 (51.6–59.7)†	47.3 (43.2–51.5)†	12.2 (9.4–14.9)	9.7 (7.3–12.1)†	2.3 (1.1–3.6)	10.1 (7.8–12.4)†
26–34	53.0 (46.9–59.1)†	47.8 (41.7–53.9)†	8.4 (4.8–12.0)	11.9 (7.3–16.6)†	–§	9.1 (5.7–12.5)†
35–49	49.7 (44.2–55.3)†	41.8 (36.4–47.2)†	7.2 (4.0–10.4)†	6.1 (4.2–8.1)†	2.4 (1.1–3.6)†	7.8 (5.5–10.0)†
≥50	29.6 (23.8–35.4)†	25.4 (19.9–31.0)†	–§	4.5 (2.2–6.8)†	–§	3.3 (1.7–4.9)†
Education						
<High school	49.8 (42.8–56.8)†	45.1 (38.3–51.9)†	7.2 (4.3–10.2)	9.7 (6.4–13.1)	–§	7.6 (4.9–10.3)†
High school	45.3 (40.2–50.4)†	39.7 (34.7–44.7)†	4.8 (3.1–6.5)	8.3 (5.7–10.9)†	1.1 (0.5–1.7)	7.5 (5.6–9.3)†
Some college	43.5 (37.6–49.4)†	36.5 (31.0–42.0)†	5.7 (3.6–7.8)	5 0.0(3.2–6.7)†	–§	6.3 (4.2–8.4)†
≥College	21.0 (13.9–28.1)	13.1 (7.6–18.5)	–§	–§	–§	2.5 (1.1–3.9)
Annual family income						
<$20,000	50.3 (44.7–55.9)†	45.8 (40.3–51.4)†	6.9 (4.6–9.2)	10.7 (7.8–13.6)†	2.7 (1.3–4.2)†	6.9 (4.8–8.9)†
$20,000–$49,999	41.2 (36.1–46.3)†	36.8 (32.0–41.7)†	5.0 (3.4–6.6)	6.5 (4.3–8.7)†	0.5 (0.2–0.8)	6.2 (4.5–7.9)†
$50,000–$74,999	40.6 (32.4–48.8)†	30.2 (23.1–37.3)†	3.4 (0.9–6.0)	4.2 (1.9–6.4)†	–§	7.3 (3.9–10.6)†
≥$75,000	32.4 (25.2–39.6)†	21.0 (15.4–26.6)†	8.3 (3.5–13.1)	–§	–§	6.7 (3.7–9.7)†
Poverty level**						
Poverty	51.3 (45.6–57.0)†	46.8 (41.2–52.5)†	7.6 (5.1–10.1)	10.5 (7.5–13.4)	2.6 (1.1–4.2)†	7.2 (5.0–9.4)†
Up to 2x threshold	43.5 (37.8–49.2)†	38.2 (32.7–43.7)†	4.4 (2.7–6.0)	7.3 (4.7–9.9)†	0.8 (0.4–1.3)	6.6 (4.6–8.6)†
>2x threshold	36.0 (31.1–40.9)†	28.1 (23.8–32.4)†	5.6 (3.5–7.7)	3.9 (2.2–5.5)†	–§	6.1 (4.3–7.8)†
Marital status						
Married	37.9 (33.0–42.8)†	31.4 (26.8–36.0)†	4.5 (2.7–6.2)	4.3 (2.3–6.3)†	–§	5.5 (3.7–7.4)†
Widowed/Divorced/ Separated	40.9 (33.7–48.1)†	36.8 (29.8–43.7)†	–§	6.0 (3.5–8.5)	–§	5.0 (3.0–7.1)†
Never married	50.5 (45.8–55.2)†	43.4 (38.9–47.9)†	9.8 (7.3–12.3)	10.6 (8.0–13.3)†	2.5 (1.1–3.9)†	9.0 (7.0–10.9)†

See table footnotes on next page.

all significantly higher among AI/ANs than their combined non-AI/AN counterparts within all subgroups. For current cigar smoking prevalence, a significant difference between AI/ANs and non-AI/ANs combined was seen among persons aged 35–49 years. Current use prevalence of roll-your-own tobacco was significantly higher among AI/ANs, compared with their combined non-AI/AN counterparts, for all subgroups except persons with less than a high school diploma; living in poverty; and widowed, divorced, or separated. Compared with their combined non-AI/AN counterparts, current pipe smoking prevalence was significantly higher among AI/AN males, as well as among persons aged 35–49 years; those with annual family income <$20,000; living in poverty; and who were never married (all p<0.05).

Among AI/ANs, the prevalence of current use of any tobacco product was 1.31 times higher among males than among females (Table 2). Compared with prevalence among persons aged ≥50 years, prevalence was higher among those aged 34–49 years (PR = 1.68); 26–34 years (PR = 1.79); and 18–25 years (PR = 1.88). By education attainment, prevalence was higher among persons with some college (PR = 2.07); a high school diploma (PR = 2.16); and less than a high school diploma (PR = 2.37) than among those with at least a college degree. Compared with prevalence among persons with annual family income ≥$75,000, prevalence was 1.55 times higher among those earning <$20,000. By poverty status, prevalence was higher among persons living at up to twice the federal poverty threshold (PR = 1.21) and in poverty (PR = 1.43) than among those living at more than twice the federal poverty threshold. Compared with those who were married, prevalence was 1.33 times higher among persons who were never married (all p<0.05).

AI/ANs had higher prevalence of any tobacco product use and cigarette smoking than any other individual racial/ethnic group (Figure). Prevalence of cigar smoking among AI/ANs was lower than among blacks, but higher than among Hispanics and Asians. Prevalence of roll-your-own tobacco and pipe use among AI/ANs was higher than among whites, blacks, Asians and Hispanics, and prevalence of smokeless tobacco use among AI/ANs was significantly higher than prevalence among all other racial/ethnic groups, with the exception of NHOPIs (all p<0.05).

TABLE 1. (*Continued*) Current use of tobacco products among AI/AN and non-AI/AN adults aged ≥18 years, overall and by sociodemographic and socioeconomic characteristics — National Survey on Drug Use and Health, 2010–2015

Characteristic	Any tobacco product* % (95% CI)	Cigarettes % (95% CI)	Cigars (big cigars/ cigarillos/little cigars) % (95% CI)	Roll-your-own tobacco % (95% CI)	Pipe % (95% CI)	Smokeless tobacco (snuff/dip/chewing/ snus) % (95% CI)
Non-AI/AN (N = 235,262)						
All	**27.7 (27.4–27.9)**	**23.0 (22.7–23.2)**	**5.1 (5.0–5.3)**	**3.5 (3.4–3.6)**	**0.9 (0.8–0.9)**	**3.5 (3.4–3.6)**
Sex						
Male	34.3 (33.9–34.8)	25.8 (25.4–26.2)	8.5 (8.3–8.8)	4.4 (4.2–4.6)	1.5 (1.4–1.6)	6.7 (6.5–7.0)
Female	21.5 (21.1–21.8)	20.3 (20.0–20.7)	2.0 (1.9–2.1)	2.6 (2.5–2.7)	0.3 (0.3–0.3)	0.4 (0.4–0.5)
Age group (yrs)						
18–25	37.2 (36.8–37.6)	30.7 (30.4–31.1)	10.3 (10.0–10.6)	5.0 (4.8–5.2)	1.9 (1.8–2.0)	5.7 (5.5–5.9)
26–34	36.9 (36.3–37.6)	31.6 (31.0–32.3)	7.3 (7.0–7.7)	4.4 (4.1–4.7)	0.9 (0.8–1.0)	4.6 (4.3–4.9)
35–49	30.1 (29.5–30.6)	24.8 (24.4–25.3)	4.6 (4.4–4.9)	3.6 (3.4–3.8)	0.5 (0.5–0.6)	4.2 (4–4.5.0)
≥50	19.7 (19.3–20.2)	16.2 (15.7–16.6)	2.9 (2.7–3.1)	2.5 (2.3–2.7)	0.7 (0.6–0.8)	1.9 (1.7–2.1)
Education						
<High school	36.0 (35.2–36.8)	31.8 (31.1–32.6)	6.0 (5.7–6.4)	7.3 (6.8–7.7)	1.4 (1.2–1.6)	4.2 (3.9–4.6)
High school	33.5 (32.9–34.0)	28.7 (28.2–29.3)	5.2 (4.9–5.4)	4.4 (4.2–4.6)	0.9 (0.8–1.0)	4.4 (4.1–4.6)
Some college	29.9 (29.4–30.5)	24.8 (24.3–25.3)	5.8 (5.5–6.0)	3.2 (3.0–3.4)	0.9 (0.8–0.9)	3.7 (3.5–3.9)
≥College	16.0 (15.6–16.5)	11.5 (11.2–11.9)	4.1 (3.9–4.3)	1.0 (0.9–1.2)	0.6 (0.5–0.7)	2.1 (1.9–2.2)
Annual family income						
<$20,000	37.5 (36.8–38.2)	33.6 (32.9–34.2)	6.7 (6.4–7.0)	7.8 (7.5–8.1)	1.5 (1.3–1.6)	3.3 (3.1–3.6)
$20,000–$49,999	30.3 (29.8–30.8)	26.3 (25.8–26.8)	4.8 (4.6–5.0)	3.8 (3.6–4.0)	0.9 (0.8–1.0)	3.3 (3.1–3.5)
$50,000–$74,999	25.2 (24.5–25.9)	20.5 (19.9–21.1)	4.4 (4.1–4.7)	2.3 (2.1–2.5)	0.8 (0.6–0.9)	3.7 (3.4–3.9)
≥$75,000	20.9 (20.4–21.4)	15.1 (14.7–15.5)	5.0 (4.7–5.2)	1.3 (1.2–1.4)	0.6 (0.5–0.7)	3.7 (3.5–3.9)
Poverty level¶						
Poverty	39.0 (38.2–39.7)	35.3 (34.6–36.0)	6.9 (6.6–7.3)	8.5 (8.1–8.9)	1.5 (1.3–1.6)	3.3 (3.0–3.5)
Up to 2x threshold	32.7 (32.0–33.3)	28.7 (28.1–29.4)	5.4 (5.1–5.6)	4.8 (4.5–5.1)	1.0 (0.9–1.1)	3.3 (3.1–3.5)
>2x threshold	23.6 (23.3–24.0)	18.5 (18.2–18.8)	4.6 (4.5–4.8)	1.9 (1.8–2.0)	0.7 (0.6–0.8)	3.6 (3.4–3.7)
Marital status						
Married	20.8 (20.4–21.1)	16.1 (15.7–16.4)	3.6 (3.4–3.8)	2.0 (1.9–2.1)	0.6 (0.5–0.6)	3.2 (3.1–3.4)
Widowed/Divorced/ Separated	31.7 (31.0–32.4)	28.3 (27.6–29.0)	3.7 (3.5–4.0)	4.6 (4.3–4.9)	0.9 (0.8–1.1)	2.6 (2.4–2.8)
Never married	38.0 (37.6–38.5)	32.4 (31.9–32.8)	9.1 (8.9–9.4)	5.4 (5.2–5.6)	1.5 (1.4–1.6)	4.6 (4.4–4.8)

Abbreviations: AI/AN = American Indian or Alaska Native; CI = confidence interval; NSDUH = National Survey on Drug Use and Health.

* Persons who reported current (past 30-day) use current (past 30-day) use of at least one of the five tobacco product types (cigarettes, cigars, roll-your-own tobacco, pipe, and smokeless tobacco) were considered to be current users of any tobacco product. Persons who had at least one missing response to any of the tobacco product use questions were excluded from the analysis (18, 0.5% of the AI/AN respondents). AI/AN population comprised persons who identified AI/AN as their only race/ethnicity. Non-AI/AN population comprised non-Hispanic White; non-Hispanic Black; non-Hispanic Native Hawaiian/other Pacific Islander; non-Hispanic Asian; non-Hispanic multirace; and Hispanic.

† Prevalence significantly different from corresponding estimate among non-AI/AN population.

§ Estimates not presented because of relative standard error (RSE) ≥30%.

¶ Poverty level indicates a person's family income relative to federal poverty level threshold. https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

Discussion

During 2010–2015, the prevalence of current use of any tobacco product was significantly higher among AI/ANs than among non-AI/ANs, overall and among all assessed subgroups, except persons with at least a college degree. Among AI/ANs, the greatest disparity was associated with level of education: prevalence of any tobacco product use was 2.37 times higher among persons with less than high school diploma than among those with a college degree or higher. Socioeconomic status has a strong, inverse relationship with tobacco product use (*5*). Given that a higher percentage of AI/ANs live in poverty than do non-AI/ANs (28.4% versus 15.3% nationally) or have less than a high school education (23% versus 14% nationally),[§§] addressing inequalities in education and poverty among AI/ANs might help reduce the high burden of tobacco product use among this population. Additional research is needed to identify the role of other factors (e.g., cultural, environmental, social) that might explain some of the observed differences.

Some American Indian tribes have long used traditional tobacco in cultural ceremonies of medicinal and spiritual importance (*6*). However, evidence suggests that commercial tobacco products, such as cigarettes and packaged loose

[§§] https://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb11-ff22.html.

TABLE 2. Disparities in current use of any tobacco product among American Indians/Alaska Natives — National Survey on Drug Use and Health, United States, 2010–2015

Characteristic	Current use of any tobacco product* (%)	Prevalence ratio† (95% CI)
Sex		
Male	49.7	1.31 (1.14–1.52)
Female	37.8	Referent
Age group (yrs)		
18–25	55.6	1.88 (1.53–2.32)
26–34	53.0	1.79 (1.43–2.25)
35–49	49.7	1.68 (1.34–2.11)
≥50	29.6	Referent
Education		
<High school	49.8	2.37 (1.64–3.43)
High school graduate	45.3	2.16 (1.51–3.09)
Some college	43.5	2.07 (1.44–2.99)
≥College graduate	21.0	Referent
Annual family income		
<$20,000	50.3	1.55 (1.21–1.99)
$20,000–$49,999	41.2	1.27 (0.99–1.64)
$50,000–$74,999	40.6	1.25 (0.93–1.69)
≥$75,000	32.4	Referent
Poverty level		
Poverty	51.3	1.43 (1.19–1.70)
Up to 2x threshold	43.5	1.21 (1.00–1.46)
>2x threshold	36.0	Referent
Marital status		
Married	37.9	Referent
Widowed/Divorced/Separated	40.9	1.08 (0.87–1.34)
Never married	50.5	1.33 (1.14–1.56)

Abbreviation: CI = confidence interval.

* Persons who reported current (past 30-day) use of at least one of the five tobacco product types (cigarettes, cigars, roll-your-own tobacco, pipe, and smokeless tobacco) were considered to be current users of any tobacco product. Persons who had at least one missing response to any of the tobacco product use questions were excluded from the analysis (18, 0.5% of the AI/AN respondents).

† Prevalence ratios were computed as regression coefficients, with the group with the lowest prevalence of any tobacco use serving as the referent.

tobacco, are being increasingly substituted for ceremonial purposes (*6,7*). In addition, tobacco products are less expensive on tribal lands, which might increase tobacco access and consumption (*8*). The tobacco industry has also been shown to target AI/ANs by marketing of cigarette brands with cultural icons, names, and symbols belonging exclusively to AI/ANs (*9*).

The equitable implementation of evidence-based tobacco control interventions, such as comprehensive smoke-free policies, is important to reduce tobacco product use among AI/ANs. CDC has implemented population-level strategies to help reduce disparities among AI/ANs, including Good Health and Wellness in Indian Country, an initiative that works to reduce commercial tobacco product use, while improving nutrition, physical activity, health literacy, and community-clinical linkages for AI/AN populations.¶¶ Moreover, CDC's Tips From Former Smokers tobacco education campaign uses culturally appropriate mass media campaigns to warn about the health risks of smoking. Some of this work is tailored toward racial/ethnic minorities, including AI/ANs.*** Reducing disparities in use of tobacco products will require focusing more attention on populations carrying a disproportionate burden of tobacco product use and dependence, and increasing reach to such groups through efforts that directly affect the scope of services and facilities serving those populations.

The findings in this report are subject to at least four limitations. First, tobacco product use and other sociodemographic characteristics were self-reported and subject to recall and social desirability bias. Second, small sample sizes resulted in imprecise estimates that could not be reported for some sociodemographic subgroups. Third, data were unavailable for certain tobacco products, including electronic cigarettes and hookahs. Finally, these analyses used data pooled across multiple years, and therefore, do not reflect possible secular trends in tobacco product use.

Tobacco use is associated with cultural norms and socioeconomic factors such as education and poverty (*1*). Thus, culturally appropriate strategies are important when addressing tobacco-related disparities among AI/ANs (*9*). These strategies could

Summary

What is already known about this topic?

Whereas significant progress has been made in reducing overall commercial tobacco product use, disparities persist, with American Indians/Alaska Natives (AI/ANs) having one of the highest cigarette smoking prevalences of all racial/ethnic groups.

What is added by this report?

Prevalence of current tobacco product use was significantly higher among AI/ANs than among non-AI/ANs for any tobacco product (43.3% versus 27.7%), cigarettes (37.3% versus 23.0%), roll-your-own tobacco (7.1% versus 3.5%), pipes (1.9% versus 0.9%), and smokeless tobacco (6.6% versus 3.5%). Among AI/ANs, prevalence of current use of any tobacco product was higher among males (49.7%), persons aged 18–25 years (55.6%), persons with less than a high school diploma (49.8%), persons with annual family income <$20,000 (50.3%), persons who lived below the poverty level (51.3%), and those who never married (50.5%).

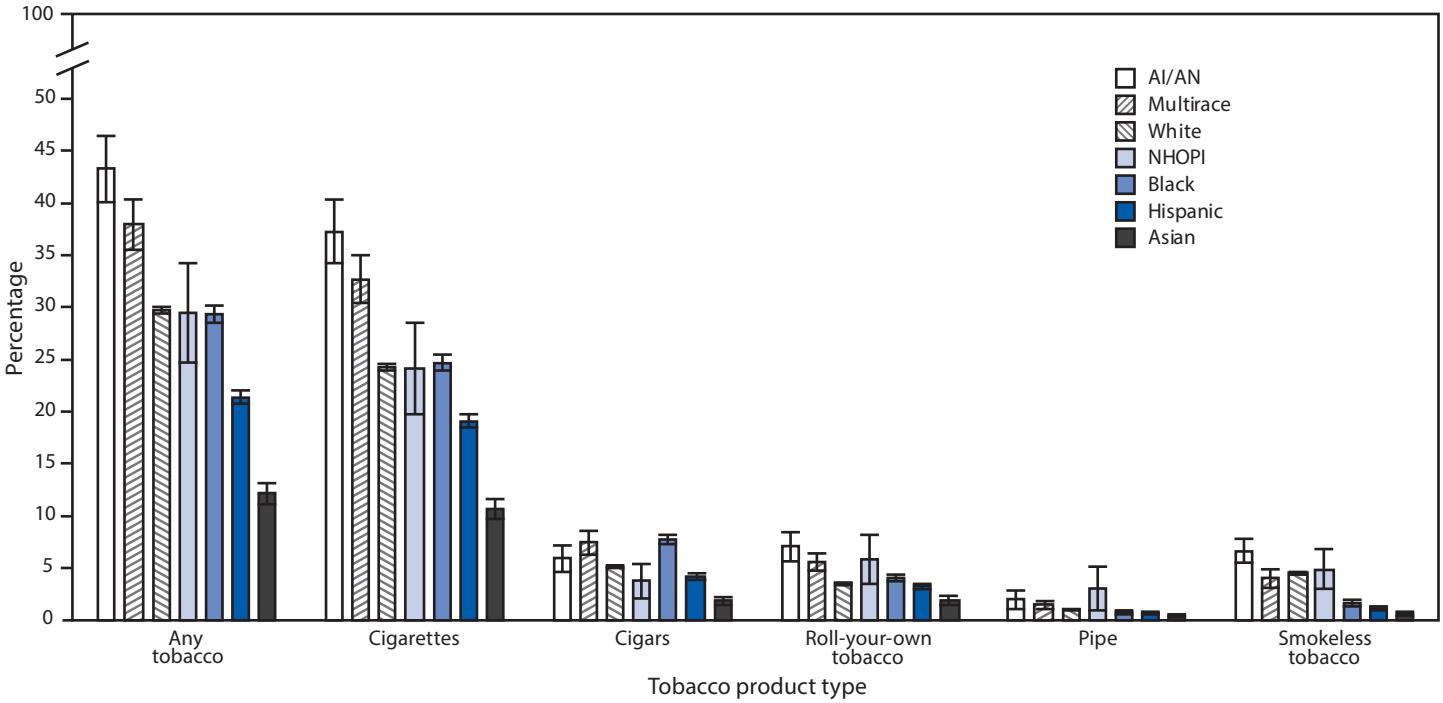
What are the implications for public health practice?

Addressing the social determinants of health and providing evidence-based, population-level, and culturally appropriate tobacco control interventions could help reduce tobacco product use and disparities in tobacco product use among AI/ANs. Such interventions could include engaging native community leaders and fostering respect for traditional/ceremonial use of tobacco as a reason for not using tobacco recreationally.

¶¶ https://www.cdc.gov/chronicdisease/tribal/factsheet.htm.

*** https://www.cdc.gov/tobacco/campaign/tips/.

FIGURE. Prevalence of tobacco product* use by race/ethnicity† — National Survey of Drug Use and Health, United States, 2010–2015



Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.

* Persons who reported current (past 30-day) use of at least one of the five tobacco product types (cigarettes, cigars, roll-your-own tobacco, pipe, and smokeless tobacco) were considered to be current users of any tobacco product. Cigars include big cigars, cigarillos, and little cigars. Smokeless tobacco includes snuff, dip, chewing, and snus.

† AI/AN population comprised persons who identified AI/AN as their only race/ethnicity. Unless otherwise specified, all racial/ethnic groups are non-Hispanic.

include engaging traditional healers and respected community elders and fostering respect for traditional/ceremonial use of tobacco as a reason for not using tobacco recreationally,††† while also addressing the social determinants of health (*10*). Creating partnerships within the AI/AN community might also help increase access to and use of evidence-based cessation resources.

††† http://keepitsacred.itcmi.org/tobacco-and-tradition/traditional-v-commercial/.

Conflict of Interest

No conflicts of interest were reported.

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Tobacco Product Use Among Military Veterans — United States, 2010–2015

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In 2015, an estimated 18.8 million U.S. adults were military veterans (*1*). Although the prevalence of tobacco-attributable conditions is high among veterans (*2*), there is a paucity of data on use of tobacco products, other than cigarettes, in this population. To monitor tobacco product use among veterans, CDC analyzed self-reported current (i.e., past 30-day) use of five tobacco product types (cigarettes, cigars [big cigars, cigarillos, or little cigars], roll-your-own tobacco, pipes, and smokeless tobacco [chewing tobacco, snuff, dip, or snus]) from the National Survey on Drug Use and Health (NSDUH). Overall, 29.2% of veterans reported current use of any of the assessed tobacco products. Cigarettes were the most commonly used tobacco product (21.6%), followed by cigars (6.2%), smokeless tobacco (5.2%), roll-your-own tobacco (3.0%), and pipes (1.5%); 7.0% of veterans currently used two or more tobacco products. Within subgroups of veterans, current use of any of the assessed tobacco products was higher among persons aged 18–25 years (56.8%), Hispanics (34.0%), persons with less than a high school diploma (37.9%), those with annual family income <$20,000 (44.3%), living in poverty (53.7%), reporting serious psychological distress (48.2%), and with no health insurance (60.1%). By age and sex subgroups, use of any of the assessed tobacco products was significantly higher among all veteran groups than their nonveteran counterparts, except males aged ≥50 years. Expanding the reach of evidence-based tobacco control interventions among veterans could reduce tobacco use prevalence in this population.

NSDUH is an annual, in-person survey of the civilian, non-institutionalized U.S. population aged ≥12 years conducted at the respondent's residence (*3*). The analyses in this report were restricted to adults aged ≥18 years. Data were pooled for 2010–2015 to increase statistical precision of estimates. Pooled sample size for adults aged ≥18 years was 238,917; annual response rate averaged 65.4%.*

Military veterans were those who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" (pooled n = 13,140). Nonveterans were those who had never been in the United States Armed Forces (pooled n = 224,648).† Respondents who reported currently being in a reserve component, or did not provide an answer were excluded from the analyses. Current users of cigarettes, cigars, roll-your-own tobacco, pipes, and smokeless tobacco were persons who had used the respective products during the past 30 days. Any tobacco product use was defined as use of any of the five assessed tobacco product types. Respondents who reported use of two or more tobacco product types during the past 30 days were further classified as current users of two or more tobacco product types.§ Prevalence estimates were calculated overall and by sex, age, race/ethnicity, education, annual family income, poverty status,¶ marital status, presence of serious psychological distress,** and health insurance coverage.†† Additionally, age- and sex-specific prevalence estimates were calculated among veterans and nonveterans separately to allow direct comparisons of the two groups, given differences between veterans and nonveterans by age and sex.§§ Cigarette quit ratio was calculated as the proportion of former

* Data are collected annually through handheld computer-assisted face-to-face interviews, using a combination of interviewer-administered and respondent self-administered questions. Sample sizes and response rates for adult population were 39,069; 65.9% (2010); 38,965; 64.7% (2011); 37,657; 67.1% (2012); 37,250; 64.5% (2013); 41,520; 61.2% (2014), and 43,401; 69.2% (2015). Of the 238,917 adults in the pooled sample, 13,140 were veterans, 224,648 were nonveterans, 1,040 were currently in a reserve component, and 89 did not provide an answer.

† To determine military veteran status, respondents were asked two questions. The first question was "Have you ever been in the United States Armed Forces?" Categorical response options were "Yes" or "No." Those who answered "Yes" were then asked "Are you currently on active duty in the United States Armed Forces, are you in a Reserve component, or are you now separated or retired from the military?" Categorical response options were "On active duty in the Armed Forces," "In a reserve component" or "Now separated/retired from reserves/active duty." Persons who reported currently being on active duty were not included in the survey. Respondents who reported currently being in a reserve component (1,040; 0.4% of respondents) and those did not provide an answer (89; 0.04% of respondents) were excluded from the analysis.

§ For the use of any tobacco product types and two or more tobacco product types, respondents who had at least one missing response to any of the five tobacco product type questions were excluded from the analysis (76; 0.03% of respondents).

¶ Poverty status was assessed in National Survey on Drug Use and Health since 2003. Poverty status indicates a person's family income relative to Federal poverty thresholds. https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

** The Kessler Serious Psychological Distress is a series of six questions that asks about feelings of sadness, nervousness, restlessness or fidgetiness, worthlessness, hopelessness, and feeling like everything is an effort during the past 30 days. Responses were scored on a Likert Scale ranging from "None of the time" (score = 0) to "All of the time" (score = 4). Responses were summed over the six questions; scores could range from 0–24. Respondents with a score ≥13 were coded as having serious psychological distress, and respondents with a score <13 were coded as not having serious psychological distress. https://jamanetwork.com/journals/jamapsychiatry/fullarticle/207204.

†† Respondents were classified as being insured if they had private insurance, Medicare, Medicaid/HIPCOV, Champus, ChampVA, VA, Military, or other health insurance. Among veterans, weighted proportions of those insured and uninsured were 94.3% and 5.7%, respectively.

§§ Veteran and nonveteran populations differed in distributions of sex (males: 93.1% versus 43.2%, veterans and nonveterans, respectively) and age (persons aged ≥50 years: 76.2% versus 40.3%, veterans and nonveterans, respectively).

cigarette smokers (persons who smoked ≥100 cigarettes during lifetime, but did not smoke in past 12 months) among ever cigarette smokers (persons who smoked ≥100 cigarettes during lifetime); quit ratios were not calculated for the other noncigarette tobacco products because of the absence of lifetime usage thresholds to distinguish actual former users from experimenters. The proportion of former cigarette smokers who still reported current (past 30-day) use of any noncigarette tobacco product (cigars, roll-your-own tobacco, pipes, and smokeless tobacco) was computed to determine complete tobacco abstinence among those who had quit cigarette smoking. Within-group differences and differences between veterans and nonveterans were assessed with Chi-squared tests, and trends in estimates were tested with logistic regression using orthogonal polynomials, with statistical significance at $p<0.05$. Estimates with relative standard errors ≥30% were suppressed.

Among veterans overall, 29.2% reported current use of any tobacco product, and 7.0% reported current use of two or more tobacco products (Table 1). By tobacco product type, current use was highest for cigarettes (21.6%), followed by cigars (6.2%), smokeless tobacco (5.2%), roll-your-own tobacco (3.0%), and pipes (1.5%). Significant differences existed within veteran subgroups in current use of any tobacco product. Prevalence was lowest among persons who were aged ≥50 years (23.8%), non-Hispanic white (28.3%), had a college degree or higher (17.2%), an annual family income of ≥$75,000 (23.9%), living at more than twice the Federal Poverty Threshold (25.2%), married (24.3%), did not report serious psychological distress (28.5%), and were insured (27.3%). Prevalence was highest among persons who were aged 18–25 years (56.8%), Hispanic (34.0%), had less than a high school diploma (37.9%), an annual family income of <$20,000 (44.3%), were living in poverty (53.7%), were never married (43.4%), who reported serious psychological distress (48.2%), and who were uninsured (60.1%).

The prevalence of current use of any tobacco product was significantly higher among veterans than nonveterans in all age and sex strata, except males aged ≥50 years (Table 2). Among both veterans and nonveterans, the prevalence of any tobacco product use was significantly higher among males than among females in each age stratum, except veterans aged ≥50 years.

Cigarette quit ratio estimates were not significantly different among veterans and nonveterans in any age/sex stratum except females aged 18–25 years (18.7%, veterans versus 10.4% nonveterans), females aged ≥50 years (50.8% versus 62.1%); and males aged ≥50 years (72.4% versus 61.1%,) ($p<0.05$) (Figure). For both veterans and nonveterans, sex-specific quit ratios increased with increasing age ($p<0.05$ for trend). Current use of noncigarette tobacco products among former cigarette smokers was not significantly different among veterans and nonveterans in any age/sex stratum except males aged 35–49 years (26.4% versus 17.9%, veterans versus nonveterans), and males aged ≥50 years (8.6% versus 11.7%) ($p<0.05$). Although sex-specific prevalence of noncigarette tobacco product use decreased with increasing age among nonveterans ($p<0.05$ for trend), trends were not significant for veterans.

Summary

What is already known about this topic?

In the United States, the prevalence of adverse health conditions caused by tobacco use is particularly high among veterans; however, data on use of tobacco products other than cigarettes in this population are limited.

What is added by this report?

Analysis of data from the 2010–2015 National Survey on Drug Use and Health indicates that 29.2% of veterans reported current tobacco product use. Cigarettes were the most commonly used tobacco product (21.6%), followed by cigars (6.2%), smokeless tobacco (5.2%), roll-your-own tobacco (3.0%), and pipes (1.5%); 7.0% of veterans currently used two or more tobacco products. Within veteran subgroups, current use of any of the assessed tobacco products was higher among persons aged 18–25 years (56.8%), Hispanics (34.0%), persons who had not completed high school (37.9%), whose annual family income was <$20,000 (44.3%), were living in poverty (53.7%), who reported serious psychological distress (48.2%), and who had no health insurance (60.1%). By age and sex subgroups, any tobacco product use was significantly higher among all veteran groups than their nonveteran counterparts, except males aged ≥50 years.

What are the implications for public health practice?

Evidence-based tobacco control interventions can be implemented to reach veterans, which could reduce tobacco use prevalence and tobacco-attributable disease and death among this population. Strategies could include promoting cessation to current military personnel and veterans, implementing tobacco-free policies at military installations and Veterans Affairs medical centers and clinics, increasing the age requirement to buy tobacco on military bases to 21 years, and eliminating tobacco product discounts through military retailers.

Discussion

During 2010–2015, close to three in 10 U.S. veterans were current users of any tobacco products, and prevalence of use of any tobacco product was higher among veterans than among nonveterans within all subgroups of age and sex, except males aged ≥50 years. Evidence-based strategies can help veterans quit tobacco use, including quitline services (e.g., 1–855-QUIT-VET and 1–800-QUIT-NOW[¶¶]); text messaging services (e.g., https://www.publichealth.va.gov/smoking/smokefreevet.asp); web resources (e.g., https://www.publichealth.va.gov/smoking/

[¶¶] https://www.publichealth.va.gov/smoking/quit/index.asp.

TABLE 1. Point prevalence estimates and 95% confidence intervals of past 30-day use of tobacco product among military veterans* aged ≥18 years, overall and by sociodemographic characteristics — National Survey on Drug Use and Health, United States, 2010–2015

Characteristic	Cigarettes % (95% CI)	Cigars (big cigars/ cigarillos/ little cigars) % (95% CI)	Roll-your-own tobacco % (95% CI)	Pipe % (95% CI)	Smokeless tobacco (chewing tobacco/snuff/ dip/snus) % (95% CI)	Any tobacco product¶ % (95% CI)	≥2 tobacco products** % (95% CI)
Overall (n = 13,140)	**21.6 (20.7–22.6)**	**6.2 (5.7–6.8)**	**3.0 (2.7–3.4)**	**1.5 (1.2–1.7)**	**5.2 (4.7–5.7)**	**29.2 (28.1–30.2)**	**7.0 (6.4–7.5)**
Sex							
Male	21.1 (20.1–22.1)†	6.5 (5.9–7.1)†	3.0 (2.6–3.4)	1.6 (1.3–1.9)†	5.6 (5.1–6.1)†	29.1 (28.0–30.2)	7.1 (6.5–7.7)†
Female	28.9 (25.3–32.5)†	2.1 (1.3–2.9)†	3.4 (1.9–5.0)	—§	—§	29.7 (26.1–33.3)	4.8 (3.1–6.5)†
Age group (yrs)							
18–25	47.3 (43.5–51.2)†	13.3 (10.7–16.0)†	5.3 (3.8–6.7)†	2.5 (1.2–3.8)	15.4 (12.7–18)†	56.8 (52.9–60.6)†	21.2 (18.1–24.3)†
26–34	43.7 (40.2–47.2)†	11.2 (9.0–13.4)†	6.0 (4.5–7.4)†	1.6 (0.7–2.4)	12 (9.8–14.2)†	52.7 (49.1–56.2)†	17.6 (15–20.2)†
35–49	31.5 (29.4–33.6)†	8.8 (7.4–10.1)†	3.8 (3.0–4.6)†	1.1 (0.6–1.5)	11.3 (9.8–12.7)†	43.2 (41.0–45.5)†	10.8 (9.4–12.3)†
≥50	17.3 (16.2–18.5)†	5.2 (4.5–5.8)†	2.6 (2.2–3.0)†	1.5 (1.2–1.9)	3.2 (2.7–3.7)†	23.8 (22.5–25.1)†	5.0 (4.4–5.7)†
Race/Ethnicity							
Non-Hispanic white	20.2 (19.2–21.2)†	5.9 (5.3–6.5)†	2.9 (2.5–3.3)	1.5 (1.2–1.9)	5.8 (5.2–6.3)†	28.3 (27.1–29.4)†	6.7 (6.0–7.3)
Non-Hispanic black	26.3 (23.2–29.4)†	9.4 (7.4–11.4)†	3.6 (2.2–4.9)	1.2 (0.5–1.9)	1.9 (1.1–2.8)†	32.1 (28.7–35.4)†	8.3 (6.4–10.1)
Hispanic	29.1 (24.1–34.1)†	6.0 (3.8–8.3)†	—§	—§	4.7 (2.8–6.6)†	34.0 (28.9–39.1)†	7.7 (5.0–10.3)
Non-Hispanic other	29.0 (22.8–35.2)†	—§	5.4 (2.9–7.9)	—§	3.2 (1.8–4.5)†	33.6 (27.1–40.0)†	8.6 (5.7–11.4)
Education							
Less than high school	30.4 (26.6–34.1)	6.6 (4.6–8.7)†	6.1 (4.2–8.0)†	2.8 (1.5–4.1)	6.3 (4.4–8.2)†	37.9 (34.0–41.9)†	10.4 (8–12.7)†
High school	26.3 (24.5–28.1)	5.9 (4.9–6.9)†	4.2 (3.4–4.9)†	1.4 (0.9–1.9)	6.3 (5.4–7.2)†	33.9 (31.9–35.8)†	8.8 (7.7–9.9)†
Some college	25.7 (23.8–27.5)	6.9 (5.9–7.9)†	3.3 (2.6–4.0)†	1.4 (0.9–1.8)	6.1 (5.2–6.9)†	33.6 (31.6–35.5)†	7.9 (6.9–9.0)†
College degree or higher	10.1 (8.7–11.5)	5.8 (4.7–6.8)†	0.7 (0.4–1.1)†	1.3 (0.8–1.8)	2.9 (2.1–3.6)†	17.2 (15.5–18.9)†	3.0 (2.2–3.8)†
Annual family income ($)							
<$20,000	37.7 (34.5–40.9)†	8.2 (6.6–9.9)†	10.3 (8.4–12.3)†	3.0 (1.9–4.0)†	5.2 (3.9–6.6)	44.3 (41.0–47.6)†	15.9 (13.6–18.1)†
$20,000–$49,999	24.8 (23.0–26.5)†	5.6 (4.7–6.5)†	3.5 (2.8–4.2)†	1.6 (1.1–2.1)†	4.9 (4.1–4.9)	31.5 (29.6–33.3)†	7.5 (6.5–7.5)†
$50,000–$74,999	18.7 (16.7–20.8)†	5.6 (4.3–6.8)†	1.5 (0.8–2.1)†	1.6 (0.9–2.3)†	4.6 (3.7–4.6)	25.8 (23.5–28.1)†	4.9 (3.8–4.9)†
>$75,000	15.0 (13.5–16.4)†	6.6 (5.6–7.6)†	1.1 (0.7–1.4)†	0.8 (0.5–1.1)†	5.8 (4.9–6.7)	23.9 (22.1–25.6)†	4.6 (3.8–5.5)†
Poverty status††							
Living in poverty	46.2 (41.9–50.5)†	9.9 (7.5–12.3)†	14.1 (11.1–17.2)†	3.2 (1.8–4.6)†	7.4 (5.2–9.6)†	53.7 (49.4–58.1)†	21.0 (17.5–24.4)†
Up to 2X Federal Poverty Threshold	32.0 (29.3–34.6)†	6.5 (5.2–7.9)†	5.6 (4.4–6.8)†	1.8 (1.0–2.6)†	5.7 (4.6–6.8)†	38.7 (35.9–41.4)†	10.6 (9.0–12.3)†
More than 2X Federal Poverty Threshold	17.5 (16.5–18.6)†	5.9 (5.2–6.5)†	1.6 (1.3–1.9)†	1.3 (1.0–1.6)†	5.0 (4.4–5.5)†	25.2 (24.1–26.4)†	5.1 (4.5–5.6)†
Marital status							
Married	16.6 (15.5–17.7)†	5.6 (4.9–6.3)†	2.1 (1.7–2.5)†	1.1 (0.8–1.3)†	5.1 (4.5–5.7)†	24.3 (23.1–25.6)†	5.2 (4.6–5.9)†
Widowed/Divorced/ Separated	30.4 (28.2–32.6)†	6.7 (5.5–7.9)†	4.9 (4.0–5.9)†	2.6 (1.8–3.4)†	4.8 (4.0–5.7)†	37.4 (35.1–39.8)†	9.6 (8.2–10.9)†
Never married	36.1 (33.0–39.3)†	9.9 (8.0–11.8)†	5.2 (4.1–6.3)†	1.5 (0.8–2.1)†	7.4 (5.8–8.9)†	43.4 (40.1–46.8)†	12.9 (11.0–14.8)†
Serious psychological distress§§							
No	21.0 (20.0–22.0)†	6.1 (5.6–6.7)†	2.8 (2.5–3.2)†	1.4 (1.1–1.7)†	5.2 (4.7–5.7)	28.5 (27.4–29.6)†	6.7 (6.1–7.2)†
Yes	40.8 (35.0–46.5)†	9.4 (6.1–12.7)†	9.2 (6.2–12.2)†	4.1 (1.9–6.3)†	6.6 (4.4–8.8)	48.2 (42.2–54.2)†	15.7 (11.9–19.5)†
Health insurance coverage¶¶							
Uninsured	51.4 (46.7–56.1)†	12.0 (9.4–14.5)†	8.8 (6.7–10.8)†	2.6 (1.3–4.0)†	10.5 (7.8–13.2)†	60.1 (55.4–64.8)†	19.4 (16.2–22.6)†
Insured	19.8 (18.9–20.8)†	5.9 (5.3–6.5)†	2.7 (2.3–3.1)†	1.4 (1.1–1.7)†	4.9 (4.4–5.4)†	27.3 (26.2–28.4)†	6.2 (5.6–6.8)†

Abbreviation: CI = confidence interval.

* Persons who reported having ever been in the U.S. Armed Forces and currently being separated or retired from reserves/active duty at the time of the survey (pooled n = 13,140).

† Estimates significantly varied within sociodemographic subgroups (p<0.05).

§ Estimates not presented because of relative standard error ≥30%.

¶ Any tobacco product–users were persons who reported past-30 day use of at least one of the five tobacco product types (cigarettes, cigars, roll-your-own tobacco, pipe, and smokeless tobacco). Respondents who had at least one missing response to any of the tobacco product use questions were excluded from the analysis (76, 0.03% of respondents).

** ≥2 tobacco product–users were persons who reported past-30 day use of ≥2 tobacco products. Respondents who had at least one missing response to any of the tobacco product use questions were excluded from the analysis (76, 0.03% of respondents).

†† Poverty status indicates a person's family income relative to Federal Poverty Threshold. https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

§§ The Kessler Serious Psychological Distress is a series of six questions that asks about feelings of sadness, nervousness, restlessness, worthlessness, hopelessness, and feeling like everything is an effort during the past 30 days. Participants responded using a Likert Scale ranging from "None of the time" (score = 0) to "All of the time" (score = 4). Responses were summed over the six questions for a total possible score of 0–24; respondents with a score ≥13 were coded as having serious psychological distress, and respondents with a score <13 were coded as not having serious psychological distress. https://jamanetwork.com/journals/jamapsychiatry/fullarticle/207204.

¶¶ Respondents were classified as being insured if they had private insurance, Medicare, Medicaid/HIPCOV, Champus, ChampVA, VA, Military, or other health insurance. Among veterans, weighted proportions of those insured and uninsured were 94.7% and 5.7%, respectively.

TABLE 2. Comparisons of age and sex-specific point prevalence estimates of past 30-day use of tobacco product between military veterans* and nonveterans — National Survey on Drug Use and Health, United States, 2010–2015

Age group, yrs (sex)	Cigarettes % (95% CI)	Cigars (big cigars/ cigarillos/ little cigars) % (95% CI)	Roll-your-own tobacco % (95% CI)	Pipe % (95% CI)	Smokeless tobacco (chewing tobacco/snuff/ dip/snus) % (95% CI)	Any tobacco product¶ % (95% CI)	≥2 tobacco products** % (95% CI)
Veterans (n = 13,140)							
18–25 (male)	50.2 (45.8–54.5)†	14.7 (11.6–17.8)	5.6 (3.9–7.4)	3.2 (1.5–4.8)	18.9 (15.7–22.2)†	61.7 (57.4–66.0)†	23.7 (20.1–27.4)†
18–25 (female)	36.4 (28.8–44.0)†	8.0 (3.4–12.5)	—§	—§	—§	37.9 (30.2–45.5)†	11.4 (6.4–16.4)†
26–34 (male)	45.5 (41.6–49.5)†	12.7 (10–15.3)	6.2 (4.6–7.9)	1.8 (0.8–2.8)	14.0 (11.4–16.6)†	55.9 (51.9–59.8)†	19.3 (16.3–22.4)†
26–34 (female)	35.2 (28.2–42.3)†	—§	—§	—§	—§	37.4 (30.3–44.5)†	9.5 (5.3–13.7)†
35–49 (male)	31.5 (29.2–33.7)†	9.6 (8.2–11.1)†	4.0 (3.1–4.8)	1.2 (0.7–1.8)	12.9 (11.3–14.5)†	44.8 (42.3–47.2)†	11.9 (10.3–13.5)†
35–49 (female)	31.5 (26.3–36.7)†	—§	—§	—§	—	32.7 (27.5–38.0)†	3.5 (1.7–5.3)
≥50 (male)	17.0 (15.8–18.1)	5.4 (4.7–6.1)	2.6 (2.1–3.0)†	1.6 (1.2–2.0)	3.3 (2.8–3.9)	23.7 (22.5–25.0)	5.1 (4.4–5.7)
≥50 (female)	24.8 (18.8–30.8)†	—§	—§	—§	—§	24.9 (10.9–30.9)†	—§
Nonveterans (n = 224,648)							
18–25 (male)	35.3 (34.7–35.9)†	15.2 (14.7–15.6)	6.7 (6.4–7.0)	2.7 (2.5–2.9)	10.4 (10.1–10.8)†	45.3 (44.7–45.9)†	18.8 (18.3–19.3)†
18–25 (female)	26.0 (25.5–26.5)†	5.4 (5.1–5.6)	3.5 (3.3–3.7)	1.1 (1.0–1.2)	0.7 (0.6–0.7)	28.8 (28.3–29.3)†	6.5 (6.3–6.8)†
26–34 (male)	36.3 (35.3–37.3)†	11.5 (10.8–12.2)	5.9 (5.5–6.4)	1.4 (1.2–1.7)	8.4 (7.9–9.0)†	45.2 (44.2–46.3)†	14.8 (14.1–15.5)†
26–34 (female)	26.7 (25.9–27.5)†	3.1 (2.8–3.4)	3.0 (2.7–3.2)	0.4 (0.3–0.5)	0.5 (0.3–0.6)	28.3 (27.5–29.1)†	4.6 (4.3–5.0)†
35–49 (male)	26.3 (25.5–27.1)†	7.3 (6.9–7.8)†	4.5 (4.2–4.8)	0.9 (0.8–1.1)	7.8 (7.3–8.2)†	35.6 (34.7–36.4)†	9.3 (8.8–9.8)†
35–49 (female)	23.0 (22.3–23.6)†	1.8 (1.6–2.0)	2.9 (2.7–3.2)	0.2 (0.1–0.2)	0.3 (0.2–0.4)	23.8 (23.2–24.4)†	3.9 (3.6–4.2)
≥50 (male)	18.1 (17.2–18.9)	5.7 (5.2–6.2)	3.3 (2.9–3.7)	1.3 (1.1–1.6)	3.7 (3.3–4.1)	25.1 (24.2–26.1)	5.7 (5.2–6.2)
≥50 (female)	14.8 (14.2–15.3)†	0.6 (0.5–0.7)	2.0 (1.8–2.2)	0.1 (0.1–0.2)	0.4 (0.3–0.6)	15.4 (14.8–16.0)†	2.4 (2.2–2.6)

Abbreviation: CI = confidence interval.

* Veterans were persons who reported having ever been in the U.S. Armed Forces and being separated or retired from reserves/active duty at the time of the survey (pooled n = 13,140). Nonveterans were persons who reported having never been in the U.S. Armed Forces (pooled n = 224,648).

† Estimates significantly different from corresponding estimate among veteran and nonveteran populations.

§ Estimates not presented because of relative standard error ≥30%.

¶ Any tobacco product users were persons who reported past-30 day use of at least one of the five tobacco product types (cigarette, cigar, roll-your-own tobacco, pipe, and smokeless tobacco). Respondents who had at least one missing response to any of the tobacco product use question were excluded from the analysis (76, 0.03% of respondents).

** ≥2 tobacco-product–users were persons who reported past-30 day use of ≥2 tobacco products. Respondents who had at least one missing response to any of the tobacco product use questions were excluded from the analysis (76, 0.03% of respondents).

and https://smokefree.gov/veterans); group/individual counseling; and use of FDA approved cessation medications. Additionally, CDC's Tips From Former Smokers' Campaign (https://www.cdc.gov/tobacco/campaign/tips/index.html) features real stories of smokers, including military service members and veterans who live with smoking-related diseases and disabilities, to motivate smokers to quit.***

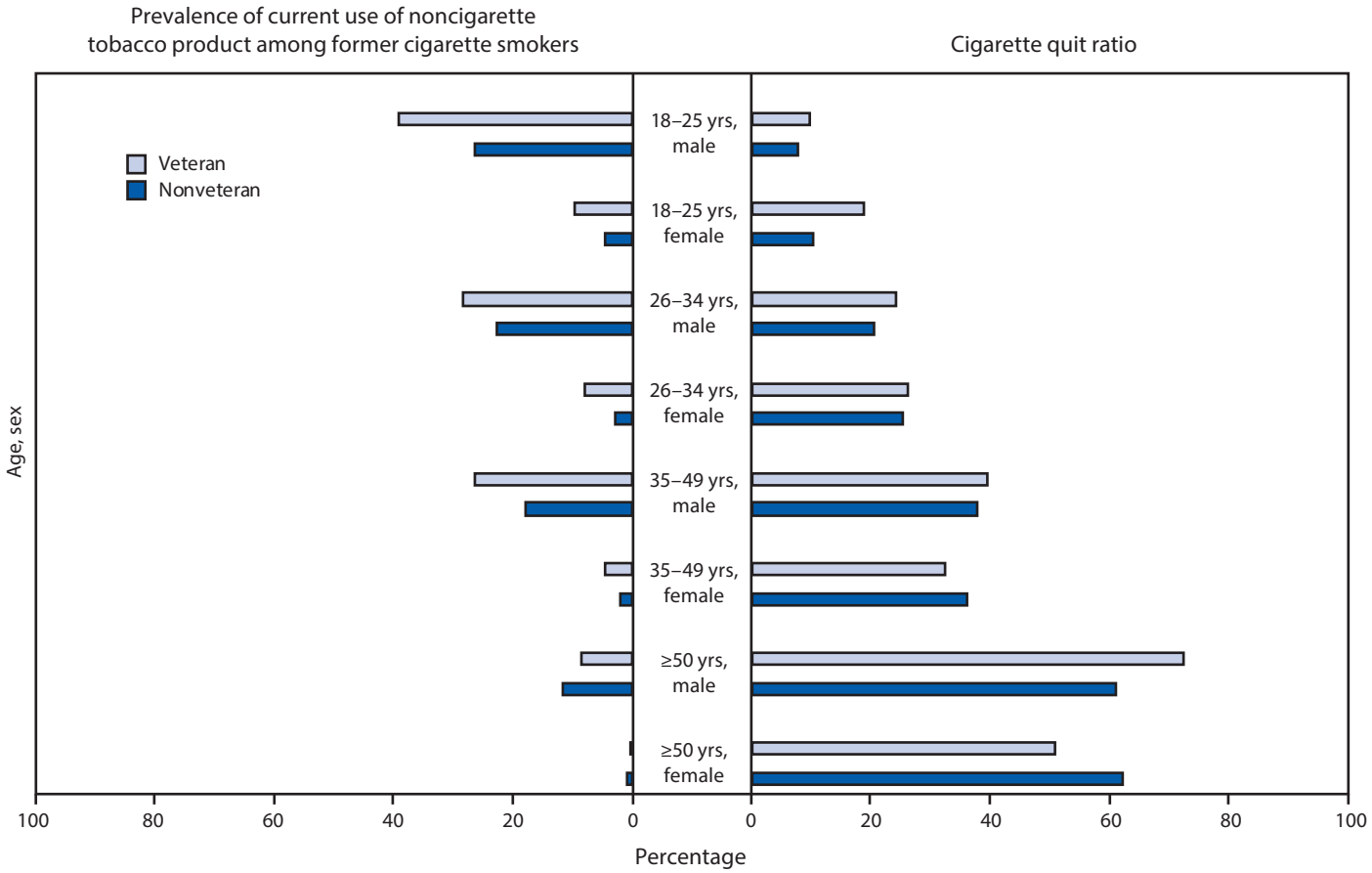
Despite similar quit ratios among veterans and nonveterans, the prevalence of current cigarette smoking was higher among veterans in most age groups. These findings are consistent with those of previous studies showing high rates of smoking initiation among military personnel (*4*,*5*). Approximately 38% of current military smokers initiate tobacco use after enlisting in military service (*6*). Factors encouraging or enabling tobacco use in the military include stress, peer influence, and easy access to cheap tobacco products (*7*,*8*).

The high prevalence of tobacco use among military personnel and veterans also has a significant financial impact. During 2010, the Veterans Health Administration (VHA) spent an estimated $2.7 billion (7.6% of the VHA expenditures on health services for which the cost of smoking could be attributed) on smoking-related ambulatory care, prescription drugs, hospitalization, and home health care for the segment of the veteran population receiving VHA services (*2*). Tobacco use among active military personnel can eventually contribute to VHA expenditures as these become veterans. Reducing tobacco use among both active duty military and veterans can therefore result in a substantial reduction in tobacco-related morbidity and mortality and billions of dollars in savings from averted medical costs.

Implementation of evidence-based tobacco control interventions among military and veteran populations can help reduce prevalence by preventing initiation and relapse, and encouraging quitting. Because more than a third of current smokers in active duty military initiate smoking after enlistment (*6*), and because veterans continue to have access to military installations after retirement from the military, interventions that impact both current and former military members are important to reduce tobacco use among veterans. Strategies could include promoting cessation to current military personnel and veterans, implementing tobacco-free policies at military installations and Veterans Affairs medical centers and clinics, increasing the age requirement to buy tobacco on military bases to 21 years, and eliminating tobacco product discounts through military retailers (*9*,*10*).

*** https://www.cdc.gov/tobacco/campaign/tips/groups/military.html.

FIGURE. Prevalence of current (past 30-day) use of noncigarette tobacco product* among former cigarette smokers and cigarette quit ratios,† among military veterans and nonveterans,§ by age and sex — National Survey on Drug Use and Health, United States, 2010–2015



* Noncigarette tobacco product includes cigars, roll-your-own tobacco, pipes, and smokeless tobacco.

† Cigarette quit ratio was calculated as the proportion of former smokers (persons who smoked ≥100 cigarettes during lifetime and did not smoke in the past 12 months) among ever smokers (persons who smoked ≥100 cigarettes during lifetime).

§ Veterans were individuals who reported having ever been in the U.S. Armed Forces and currently being separated or retired from reserves/active duty at the time of the survey (pooled n = 13,140). Nonveterans were individuals who reported having never been in the U.S. Armed Forces (pooled n = 224,648). Prevalence of current use of noncigarette tobacco product among former smokers was significantly different among veterans and nonveterans in males aged 35–49 years and males aged ≥50 years ($p<0.05$). Cigarette quit ratios were significantly different among veterans and nonveterans in females aged 18–25 years; males aged ≥50 years; and females aged ≥50 years ($p<0.05$).

The findings in this report are subject to at least five limitations. First, these cross-sectional data do not allow a comparison of prevalence estimates for the same cohort as they age. Second, the definition of veterans used in this study possibly includes persons who served in the U.S. Armed Forces but might not meet the statutory definition of "veterans" (e.g., dishonorably discharged persons). Third, data were not available for newer tobacco products such as hookah and electronic cigarettes. Fourth, these analyses used data pooled from multiple years; therefore, only time-averaged prevalence estimates could be assessed. Finally, multivariable analyses were not performed to identify independent predictors of tobacco use, especially among subgroups where multiple risk factors for tobacco use might exist simultaneously.

The health and economic costs of tobacco use among veterans are high (*2*). Opportunities exist to make tobacco products less acceptable and accessible for both active duty military personnel and veterans. For example, U.S. Department of Veterans Affairs health care facilities are required by Federal law to have designated smoking areas.††† Progress has been made in recent years in promoting tobacco cessation and denormalizing smoking among military personnel and veterans. This includes VHA's efforts to increase access to tobacco use treatment options§§§ as well as the U.S. Department of Defense's (DOD) prohibition of tobacco use on DOD medical campuses

††† https://www.gpo.gov/fdsys/pkg/STATUTE-106/pdf/STATUTE-106-Pg4943.pdf.

§§§ https://www.publichealth.va.gov/smoking/quit/index.asp.

and medical treatment facilities, with a goal to achieve tobacco-free installations by 2020.¶¶¶ Continued implementation of these and other evidence-based tobacco control interventions on military and veteran facilities can help reduce tobacco use and tobacco-attributable disease and death among veterans.

¶¶¶ http://www.med.navy.mil/sites/nmcphc/Documents/health-promotion-wellness/tobacco-free-living/INCOMING-CARTER-Tobacco-Policy-Memo.pdf.

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Conflict of Interest

No conflicts of interest were reported.

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Tobacco Use Among Working Adults — United States, 2014–2016

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Cigarette smoking has declined considerably among U.S. adults over several decades (*1*); however, increases have occurred in the use of noncigarette tobacco products in recent years, and the use of multiple tobacco products has become common among current users of noncigarette tobacco products (*2*,*3*). Differences in tobacco use have also been observed across population subgroups, including among working adults (*2*,*4*). CDC analyzed National Health Interview Survey (NHIS) data for 2014–2016 to describe the most recent prevalence estimates of current (every day or some days) tobacco product use among working U.S. adults by industry and occupation. Among working adults, 22.1% (32.7 million) currently used any form of tobacco; 15.4% used cigarettes, 5.8% used other combustible tobacco (cigars, pipes, water pipes or hookahs, very small cigars, and bidis), 3.0% used smokeless tobacco, and 3.6% used electronic cigarettes (e-cigarettes); 4.6% (6.9 million) reported current use of two or more tobacco products. By industry, any tobacco use ranged from 11.0% among education services to 34.3% among construction workers; current use of two or more tobacco products was highest among construction workers (7.1%). By occupation, any tobacco use ranged from 9.3% among life, physical, and social science workers to 37.2% among installation, maintenance, and repair workers; current use of two or more tobacco products was highest among installation, maintenance, and repair workers (10.1%). Proven interventions to prevent and reduce tobacco product use, including current use of multiple products, among working adults are important (*5*,*6*). Workplace tobacco-control interventions have been especially effective in reducing cigarette smoking prevalence (*7*).

NHIS data* are collected annually from a nationally representative sample of the noninstitutionalized U.S. population through a personal interview. Basic health and demographic information is collected for all family members. One adult aged ≥18 years per family is randomly selected to participate in the NHIS Sample Adult component of the survey, which contains questions on employment status and tobacco use. To improve the precision and reliability of estimates, NHIS data collected during 2014–2016 were combined. The NHIS Sample Adult component included 36,697 respondents in 2014, 33,672 respondents in 2015, and 33,028 respondents in 2016; response rates for those years were 60.8%, 55.2%, and 54.3%, respectively. The analysis was restricted to working adults (59,690; 57.7%). Respondents were considered to be currently working if, when asked about their employment status during the week before their interview, they reported that they were "working at a job or business," "with a job or business but not at work," or "working, but not for pay, at a family-owned job or business." Information on participants' current industry and occupation was coded by trained coders and grouped into 21 industry groups and 23 occupation groups.†

Current cigarette smokers were defined as respondents who reported having smoked ≥100 cigarettes during their lifetime and who reported now smoking "every day" or "some days." Current other combustible tobacco smokers were those who reported smoking tobacco products other than cigarettes (including cigars, pipes, water pipes or hookahs, very small cigars, and bidis) at least once during their lifetime and currently smoking "every day" or "some days." Current smokeless tobacco users were those who reported using smokeless tobacco products (including chewing tobacco, snuff, dip, snus, or dissolvable tobacco) at least once during their lifetime and who currently use "every day" or "some days." Current e-cigarette users were those who reported using e-cigarettes at least once during their lifetime and current use "every day" or "some days." Any current tobacco users were those who reported using one or more tobacco products (cigarettes, other combustible tobacco products, smokeless tobacco, or e-cigarettes). Multiple tobacco users were those who reported current use of two or more tobacco products.

Data were adjusted for nonresponse and weighted to be nationally representative. Prevalence estimates and corresponding 95% confidence intervals were calculated overall and by sociodemographic characteristics, industry, and occupation. Estimates with a relative standard error >30% are not reported. Two-sided t-tests§ were used to determine statistically significant ($p<0.05$) differences between point estimates.

During 2014–2016, among the annual estimated 242 million adults aged ≥18 years, 148 million (61.2%) were employed during the week before the interview. Among currently employed adults, 22.1% currently used any form of tobacco, including 15.4% who used cigarettes, 5.8% who used other

* https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2015/srvydesc.pdf.

† Additional information about industry and occupation groups and codes is available at ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2015/samadult_layout.pdf on pages 378–384.

§ https://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf.

combustible tobacco, 3.0% who used smokeless tobacco, and 3.6% who used e-cigarettes; 4.6% reported using two or more tobacco products.

Any current tobacco use was highest among men (27.4%), non-Hispanic whites (whites) (24.8%), persons aged 18–34 years (24.9%), those with high school education or less (30.1%), those with no health insurance (33.9%), those living below the federal poverty level[¶] (28.5%), and those living in the Midwest (25.8%). Multiple tobacco product use was highest among men (6.5%), whites (5.5%), persons aged 18–34 years (6.0%), persons with a high school education or less (6.2%), and persons with no health insurance (7.7%) (Table 1).

Current tobacco use varied by industry (Table 2) and occupation (Table 3). Workers in the construction industry (34.3%) and installation, maintenance, and repair occupations (37.2%) had the highest reported use of any tobacco. Multiple tobacco product use was highest among workers in the construction industry (7.1%) and installation, maintenance, and repair occupations (10.1%). Cigarette smoking was highest among workers in the accommodation and food services industry (24.0%) and construction and extraction occupations (25.8%). Other combustible tobacco product use was highest among workers in the utilities industry (9.0%) and protective services occupations (10.2%). Smokeless tobacco use was highest among workers in the mining industry (14.3%) and installation, maintenance and repair occupations (9.6%). E-cigarette use was highest among workers in the accommodation and food services industry (5.8%) and installation, maintenance, and repair occupations (7.9%).

Summary

What is already known about this topic?

Differences exist in tobacco use by industry and occupation among U.S. working adults. Workplace tobacco-control interventions have been effective in reducing cigarette smoking prevalence and exposure to secondhand smoke.

What is added by this report?

Analysis of National Health Interview Survey data for 2014–2016 found that among working adults, 22.1% currently (every day or some days) used any form of tobacco product; 15.4% currently used cigarettes, 5.8% used other combustible tobacco products, 3.0% used smokeless tobacco, and 3.6% used electronic cigarettes; overall, 4.6% used two or more tobacco products. By industry, any tobacco product use ranged from 11.0% among education services to 34.3% among construction workers; use of two or more tobacco products was highest among construction industry workers. By occupation, any tobacco use ranged from 9.3% among life, physical, and social science workers to 37.2% among installation, maintenance, and repair workers; use of two or more tobacco products was highest among installation, maintenance, and repair workers.

What are the implications for public health action?

These findings underscore the importance of continued implementation of proven strategies to prevent and reduce tobacco product use, including current use of multiple products among working adults. To maximize the health of workers, employers could also consider integrating comprehensive and effective tobacco cessation programs into health promotion programs in the workplace.

Discussion

During 2014–2016, an estimated one in five working U.S. adults (32.7 million; 22.1%) currently used some form of tobacco, and cigarettes were the most commonly used tobacco product. Overall, a decline in cigarette smoking, smokeless tobacco, and e-cigarette use was observed among U.S. workers (*2*,*4*). However, tobacco use varied by product type, sociodemographic characteristics, and industry and occupation, with a higher prevalence of any tobacco use among workers in the construction industries and installation, maintenance, and repair occupations. These findings underscore the importance of implementation of evidence-based interventions, in coordination with continued surveillance of all forms of tobacco products use, to reduce tobacco-related disease and death[**] among U.S. working adults, particularly industry and occupation groups with higher tobacco use prevalences (*1*).

Among working adult tobacco users, an estimated 6.9 million adults used two or more tobacco products. Use of multiple tobacco products is associated with increased risk for nicotine addiction, dependence, and adverse health effects (*3*,*8*). These health effects can lead to increased risks for tobacco-related morbidity and mortality (*3*). In addition, variations in multiple tobacco product use were observed across population groups, which is consistent with previous findings of higher prevalences of combustible and smokeless tobacco use among workers in certain industries and occupations (*2*). These findings underscore the importance of opportunities for targeted efforts to reduce tobacco use among populations with the greatest prevalence of tobacco use, including multiple tobacco product users.

[¶] Poverty status is based on family income and family size using the U.S. Census Bureau's poverty thresholds for the previous calendar year. In the National Health Interview Survey, "'poor" persons are defined as having incomes less than the poverty threshold, "near poor"' are defined as having incomes of 100% to less than 200% of the poverty threshold, and "not poor" are defined as having incomes that are 200% of the poverty threshold or greater. ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2015/samadult_layout.pdf.

[**] Task Force on Community Preventive Services. https://www.thecommunityguide.org/tobacco/tobacco.pdf.

TABLE 1. Estimated prevalence of current tobacco use among working* adults, by product type and selected characteristics — National Health Interview Survey, United States, 2014–2016

Characteristic	No. currently employed adults† (x 1000)	% (95%CI)					
		Cigarette smokers§	Other combustible tobacco products¶	Smokeless tobacco products**	E-cigarettes††	Any tobacco product§§	≥2 Tobacco products¶¶
Total (100%)	**148,481**	**15.4 (15.0–15.8)**	**5.8 (5.5–6.1)**	**3.0 (2.8–3.3)**	**3.6 (3.3–3.8)**	**22.1 (21.6–22.6)**	**4.6 (4.4–4.9)**
Age group (yrs)							
≥18–34	51,289	16.3 (15.5–17.1)	7.9 (7.4–8.5)	3.6 (3.3–4.0)	4.8 (4.4–5.2)	24.8 (23.9–25.8)***	6.0 (5.6–6.5)***
≥35–54	64,600	16.2 (15.6–16.8)	5.0 (4.6–5.5)	3.2 (2.9–3.5)	3.5 (3.1–3.8)	22.6(21.9–22.3)	4.4 (4.1–4.8)
≥55	32,592	12.4 (11.7–13.1)	3.9 (3.4–4.3)	1.7 (1.4–2.0)	1.9 (1.6–2.2)	16.6 (15.8–17.4)	2.8 (2.4–3.1)
Sex							
Men	78,858	16.9 (16.3–17.5)	9.0 (8.6–9.5)	5.5 (5.1–5.9)	4.3 (3.9–4.6)	27.4 (26.7–28.2)***	6.5 (6.0–6.9)***
Women	69,623	13.7 (13.2–14.3)	2.1 (1.9–2.3)	0.2 (0.1–0.3)	2.8 (2.6–3.1)	16.0 (15.4–16.5)	2.6 (2.3–2.8)
Race/Ethnicity							
Hispanic	24,331	11.2 (10.3–12.1)	3.8 (3.3–4.4)	0.7 (0.5–0.9)	2.1 (1.7–2.5)	15.0 (14.0–16.0)	2.3 (1.9–2.7)
White, non-Hispanic	96,908	16.9 (16.4–17.5)	6.3 (6.0–6.7)	4.2 (3.9–4.5)	4.2 (3.9–4.6)	24.8 (24.1–25.4)***	5.5 (5.2–5.9)***
Black, non-Hispanic	17,131	14.9 (13.8–16.0)	7.0 (6.2–7.8)	0.8 (0.6–1.0)	2.2 (1.8–2.7)	20.6 (19.3–21.9)	3.7 (3.1–4.2)
Other	10,111	11.8 (10.6–13.1)	3.0 (2.3–3.6)	1.2 (0.7–1.7)	3.4 (2.6–4.3)	15.7 (14.3–17.1)	3.1 (2.4–4.2)
Education							
≤High school, GED	45,932	23.6 (22.8–24.4)	5.4 (4.9–5.8)	4.3 (3.8–4.7)	4.6 (4.1–5.0)	30.1 (29.2–31.0)***	6.2 (5.7–6.7)***
>High school	101,999	11.7 (11.2–12.2)	6.0 (5.6–6.4)	2.5 (2.2–2.7)	3.2 (2.9–3.4)	18.4 (17.8–19.0)	3.9 (3.6–4.2)
Unknown	550	—†††	—†††	—†††	—†††	—†††	—†††
Poverty index§§§							
Poor	11,313	22.9 (21.4–24.4)	6.3 (5.4–7.2)	2.3 (1.7–2.9)	4.4 (3.7–5.1)	28.5 (26.9–30.2)***	6.1 (5.3–6.9)***
Near poor	21,065	22.9 (21.7–24.0)	5.2 (4.6–5.9)	2.6 (2.1–3.0)	5.1 (4.4–5.8)	28.1 (26.8–29.4)***	6.2 (5.5–6.9)***
Not poor	107,453	13.4 (12.9–13.9)	6.0 (5.6–6.4)	3.2 (3.0–3.6)	3.3 (3.0–3.6)	20.6 (19.9–21.2)	4.3 (4.0–4.6)
Unknown	8,650	12.1 (10.6–13.7)	3.6 (2.7–4.6)	2.2 (1.5–2.9)	2.9 (2.0–3.7)	17.1 (15.2–19.0)	2.8 (2.1–3.5)
Health insurance							
Not insured	17,095	27.5 (26.1–28.9)	7.0 (6.2–7.8)	3.4 (2.8–4.0)	5.5 (4.7–6.3)	33.9 (32.3–35.5)***	7.7 (6.9–8.5)***
Insured	130,460	13.8 (13.4–14.2)	5.6 (5.3–5.9)	3.0 (2.7–3.2)	3.3 (3.1–3.5)	20.5 (20.0–21.0)	4.2 (3.9–4.5)
Unknown	926	—†††	—†††	—†††	—†††	—†††	—†††
U.S. Census region¶¶¶							
Northeast	25,712	14.1 (13.2–15.1)	5.6 (4.8–6.4)	1.4 (1.1–1.8)	2.5 (2.0–3.0)	19.9 (18.7–21.1)	3.3 (2.7–3.8)
Midwest	34,657	18.8 (17.9–19.8)	5.9 (5.4–6.5)	4.1 (3.6–4.7)	3.9 (3.4–4.4)	25.8 (24.8–26.9)***	5.5 (5.0–6.0)
South	53,050	16.0 (15.3–16.7)	5.8 (5.3–6.3)	3.6 (3.2–4.0)	3.8 (3.3–4.2)	22.9 (22.0–23.8)	4.9 (4.5–5.4)
West	35,062	12.1 (11.4–12.8)	5.8 (5.2–6.4	2.3 (2.0–2.7)	3.9 (3.4–4.3)	18.7 (17.8–19.6)	4.3 (3.7–4.8)

Abbreviations: CI = confidence interval; GED = General Educational Development certificate or diploma.

* Adults who reported "working at a job or business"; "with a job or business but not at work"; or "working, but not for pay, at a family-owned job or business" during the week before the interview.

† Weighted to provide national annual average estimates for current employment.

§ Cigarette smokers were defined as persons who reported smoking ≥100 cigarettes during their lifetime and who currently smoke every day or some days (estimated n = 22.8 million).

¶ Other combustible tobacco product users were defined as persons who reported smoking cigars, cigarillos, or little filtered cigars or smoking tobacco in a regular pipe, water pipe, or hookah at least once during their lifetime and who currently use every day or some days (estimated n = 8.4 million).

** Smokeless tobacco product users were defined as persons who reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and who currently use every day or some days (estimated n = 4.4 million).

†† E-cigarette users were defined as persons reported who reported using electronic cigarettes at least once during their lifetime and who currently use every day or some days (n = 5.2 million).

§§ Any tobacco product users were defined as persons who reported current use of cigarettes or other combustible tobacco or smokeless tobacco or e-cigarettes every day or some days (estimated n = 32.7 million).

¶¶ Persons who reported current use of two or more individual tobacco products (estimated n = 6.9 million).

*** Statistically significant differences (p<0.05).

††† Estimate suppressed (relative standard error >30%).

§§§ Poverty status is based on family income and family size using the U.S. Census Bureau's poverty thresholds for the previous calendar year. In National Health Interview Survey, "poor" persons are defined as having incomes below the poverty threshold, "near poor" are defined as having incomes of 100% to less than 200% of the poverty threshold, and "not poor" are defined as having incomes that are 200% of the poverty threshold or greater. Additional information available at ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2015/srvydesc.pdf.

¶¶¶ https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf.

TABLE 2. Estimated prevalence of current tobacco use among working* adults, by tobacco product type and industry — National Health Interview Survey, United States, 2014–2016

Industry group	No. currently employed adults† (x 1000)	% (95% CI)					
		Cigarette smokers§	Other combustible tobacco products¶	Smokeless tobacco products**	E-cigarettes††	Any tobacco product§§	≥2 Tobacco products¶¶
Accommodation and Food Services	9,907	24.0 (22.2–25.7)	6.9 (5.6–8.1)	2.1 (1.4–2.8)	5.8 (4.7–6.8)	29.9 (28.0–31.9)	7.0 (5.9–8.1)
Construction	9,346	23.4 (21.6–25.3)	7.9 (6.7–9.1)	7.8 (6.5–9.0)	4.2 (3.3–5.1)	34.3 (32.3–36.3)	7.1 (6.0–8.3)
Administrative and Support and Waste Management and Remediation Services	6,641	22.4 (20.3–24.5)	6.9 (5.5–8.3)	3.8 (2.7–5.0)	5.2 (3.9–6.4)	30.0 (27.8–32.3)	6.9 (5.4–8.4)
Transportation and Warehousing	6,052	20.3 (18.2–22.3)	7.4 (5.9–8.9)	5.3 (4.0–6.5)	5.2 (3.6–6.7)	30.2 (27.6–32.8)	6.5 (5.1–7.9)
Manufacturing	14,940	19.6 (18.2–20.9)	6.6 (5.4–7.8)	4.9 (4.2–5.6)	3.9 (2.8–5.1)	27.3 (25.7–28.9)	5.9 (4.9–7.0)
Retail Trade	14,968	17.8 (16.5–19.1)	6.1 (5.3–6.9)	2.3 (1.8–2.9)	4.8 (4.1–5.6)	24.3 (22.9–25.8)	5.5 (4.7–6.4)
Mining	859	17.5 (10.6–24.4)	5.2 (2.7–7.7)	14.3 (6.7–21.8)	—***	30.4 (23.3–37.5)	—***
Other Services (except Public Administration)	7,346	16.1 (14.3–17.9)	5.6 (4.3–6.8)	2.1 (1.5–2.8)	4.2 (3.1–5.2)	21.2 (19.1–23.2)	5.5 (4.3–6.7)
Wholesale Trade	3,810	16.0 (13.4–18.7)	6.5 (4.7–8.4)	4.0 (2.6–5.4)	3.6 (2.4–4.8)	24.2 (21.2–27.2)	4.9 (3.5–6.4)
Real Estate and Rental and Leasing	2,932	14.9 (12.3–17.5)	5.5 (3.8–7.2)	2.8 (1.5–4.1)	3.6 (2.2–5.0)	21.9 (18.8–25.0)	4.2 (2.7–5.6)
Agriculture, Forestry, Fishing, and Hunting	2,105	14.3 (11.5–17.2)	3.9 (2.5–5.3)	7.3 (5.2–9.5)	—***	21.4 (18.0–24.8)	5.0 (3.3–6.8)
Utilities	1,350	13.4 (9.4–17.4)	9.0 (5.7–12.4)	8.8 (4.5–13.1)	—***	25.3 (19.6–31.1)	5.4 (3.1–7.8)
Health Care and Social Assistance	19,755	13.0 (11.9–14.1)	3.3 (2.8–3.9)	1.2 (0.8–1.5)	2.4 (1.9–2.8)	16.4 (15.1–17.7)	2.7 (2.3–3.2)
Information	3,071	11.7 (9.3–14.0)	6.6 (4.8–8.5)	1.9 (0.9–2.9)	3.2 (1.8–4.5)	19.3 (16.4–22.2)	3.2 (2.0–4.5)
Finance and Insurance	6,775	11.2 (9.5–12.8)	5.6 (4.2–6.9)	1.7 (0.8–2.6)	3.2 (2.2–4.1)	17.6 (15.6–19.7)	3.2 (2.2–4.3)
Arts, Entertainment, and Recreation	3,059	11.1 (9.1–13.0)	6.4 (4.5–8.3)	2.3 (1.0–3.5)	3.6 (2.2–4.9)	17.4 (14.9–19.9)	5.1 (3.5–6.8)
Public Administration	7,358	10.9 (9.5–12.3)	6.4 (5.1–7.7)	3.8 (2.9–4.8)	2.1 (1.5–2.7)	19.0 (17.1–20.9)	3.6 (2.7–4.4)
Professional, Scientific, and Technical Services	11,286	9.6 (8.4–10.8)	7.1 (6.1–8.2)	1.5 (1.1–1.9)	3.9 (3.1–4.7)	17.7 (16.2–19.2)	3.4 (2.7–4.1)
Education services	14,135	7.2 (6.3–8.0)	3.3 (2.7–4.0)	1.2 (0.8–1.6)	1.4 (1.1–1.8)	11.0 (10.0–12.1)	1.7 (1.3–2.1)
Armed Forces	224	—***	—***	—***	—***	—***	—***
Management of Companies and Enterprises	83	—***	—***	—***	—***	—***	—***

Abbreviation: CI = confidence interval.

* Adults who reported "working at a job or business"; "with a job or business but not at work"; or "working, but not for pay, at a family-owned job or business" during the week before the interview.

† Weighted to provide national annual average estimates for current employment.

§ Cigarette smokers were defined as persons who reported smoking ≥100 cigarettes during their lifetime and who currently smoke every day or some days (estimated n = 22.8 million).

¶ Other combustible tobacco product users were defined as persons who reported smoking cigars, cigarillos, or little filtered cigars or smoking tobacco in a regular pipe, water pipe, or hookah at least once during their lifetime and who currently use every day or some days (estimated n = 8.4 million).

** Smokeless tobacco product users were defined as persons who reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and who currently use every day or some days (estimated n = 4.4 million).

†† E-cigarette users were defined as persons who reported using electronic cigarettes at least once during their lifetime and who currently use every day or some days (n = 5.2 million).

§§ Any tobacco product users were defined as persons who reported current use of cigarettes or other combustible tobacco or smokeless tobacco or e-cigarettes every day or some days (estimated n = 32.7 million).

¶¶ Persons who reported current use of two or more individual tobacco products (estimated n = 6.9 million).

*** Estimate suppressed (relative standard error >30%).

The findings in this report are subject to at least three limitations. First, the collected employment information applied only to the week before the interview. Some workers might have changed jobs, and thus, might have been in a different occupation or industry at the time of the survey interview. However, supplemental analyses examining the longest held job yielded similar results. Second, the extent of under- or overreporting of tobacco use could not be determined because tobacco use information was self-reported, and thus, was not validated by biochemical tests. However, comparison of self-reported smoking status with measured serum cotinine levels suggests generally high levels of correlation (*9*). Finally, estimates for some groups (e.g., management of companies and enterprises industry workers) and tobacco product use were unreliable and suppressed because of small sample sizes.

TABLE 3. Estimated prevalence of current tobacco use among working* adults, by tobacco product type and occupation — National Health Interview Survey, United States, 2014–2016

Occupation group	No. currently employed adults† (x 1000)	% (95% CI)					
		Cigarette smokers§	Other combustible tobacco products¶	Smokeless tobacco products**	E-cigarettes††	Any tobacco product§§	≥2 Tobacco products¶¶
Construction and Extraction	7,175	25.8 (23.7–28.0)	7.3 (5.9–8.7)	9.0 (7.5–10.4)	3.9 (3.0–4.8)	36.5 (34.1–38.9)	7.5 (6.2–8.9)
Food Preparation and Serving Related	7,501	25.1 (22.9–27.3)	6.5 (5.1–7.8)	1.7 (1.1–2.4)	5.3 (4.2–6.4)	29.8 (27.5–32.1)	6.8 (5.6–8.0)
Production	8,563	23.7 (21.8–25.6)	6.7 (5.6–7.8)	5.8 (4.8–6.7)	4.2 (3.3–5.1)	31.1 (29.0–33.3)	7.4 (6.3–8.5)
Installation, Maintenance, and Repair	5,043	23.1 (19.6–26.5)	10.1 (7.2–12.9)	9.6 (7.5–11.7)	7.9 (5.2–10.7)	37.2 (33.0–41.3)	10.1 (6.7–13.4)
Transportation and Material Moving	8,410	22.5 (20.6–24.4)	7.7 (6.4–8.9)	5.2 (4.4–6.1)	5.1 (4.0–6.2)	31.8 (29.7–33.9)	7.0 (5.8–8.2)
Building and Grounds Cleaning and Maintenance	5,896	22.0 (19.7–24.3)	4.8 (3.5–6.0)	2.9 (1.9–3.9)	3.3 (2.4–4.2)	26.5 (24.0–29.0)	5.3 (4.0–6.5)
Healthcare Support	3,298	18.6 (15.7–21.5)	2.4 (1.4–3.5)	1.3 (0.6–2.0)	3.4 (2.3–4.6)	21.8 (18.7–24.8)	3.3 (2.2–4.5)
Personal Care and Service	5,281	17.6 (14.2–21.0)	4.9 (3.6–6.2)	—***	4.0 (2.9–5.2)	21.4 (17.9–24.9)	5.2 (3.9–6.5)
Office and Administrative Support	17,481	16.3 (15.2–17.4)	3.8 (3.2–4.4)	1.2 (0.9–1.6)	4.1 (3.4–4.9)	21.1 (19.8–22.3)	3.9 (3.3–4.4)
Protective Service	3,067	15.8 (12.8–18.7)	10.2 (7.7–12.6)	8.3 (6.1–10.6)	3.5 (2.0–5.0)	29.1 (25.5–32.7)	6.8 (4.4–9.1)
Farming, Fishing, and Forestry	1,128	15.6 (11.7–19.5)	4.2 (2.4–6.1)	8.9 (5.8–12.1)	—***	23.8 (19.3–28.3)	5.6 (3.2–8.0)
Sales and Related	14,639	15.2 (13.9–16.5)	6.9 (6.0–7.9)	2.7 (2.0–3.4)	4.2 (3.5–4.9)	22.7 (21.2–24.2)	5.0 (4.2–5.8)
Management	14,856	12.0 (10.9–13.1)	6.9 (6.0–7.7)	3.0 (2.4–3.6)	3.0 (2.4–3.6)	19.8 (18.4–21.2)	4.0 (3.3–4.6)
Computer and Mathematical	5,218	9.6 (7.9–11.2)	5.8 (4.7–7.0)	1.3 (0.7–2.0)	2.8 (1.9–3.7)	16.5 (14.4–18.5)	2.6 (1.8–3.3)
Business and Financial Operations	7,664	9.2 (7.9–10.5)	5.3 (4.2–6.4)	1.9 (1.1–2.7)	2.5 (1.8–3.2)	15.0 (13.4–16.7)	3.1 (2.3–3.9)
Community and Social Services	2,756	8.9 (6.8–11.0)	5.3 (3.3–7.2)	—***	2.2 (1.3–3.1)	13.5 (11.0–16.1)	2.7 (1.3–4.0)
Architecture and Engineering	3,295	8.8 (6.7–10.8)	7.8 (5.6–10.0)	2.9 (1.7–4.2)	3.0 (1.7–4.4)	18.3 (15.2–21.3)	3.7 (2.3–5.1)
Arts, Design, Entertainment, Sports, and Media	3,083	8.7 (6.9–10.6)	7.2 (5.4–9.1)	1.8 (0.9–2.8)	2.9 (1.5–4.2)	16.7 (14.1–19.2)	3.2 (1.9–4.5)
Healthcare Practitioners and Technical	8,642	8.1 (6.9–9.3)	2.8 (2.1–3.6)	0.9 (0.4–1.3)	2.2 (1.5–2.8)	11.7 (10.4–13.1)	2.0 (1.3–2.6)
Legal	1,766	7.3 (5.0–9.5)	5.7 (3.5–8.0)	—***	2.4 (1.0–3.7)	14.1 (11.1–17.1)	—***
Education, Training, and Library	9,474	5.7 (4.7–6.6)	3.3 (2.5–4.1)	1.2 (0.6–1.7)	1.3 (0.9–1.8)	9.5 (8.3–10.8)	1.5 (1.0–2.0)
Life, Physical, and Social Science	1,535	5.6 (3.5–7.7)	3.9 (2.1–5.7)	—***	—***	9.3 (6.8–11.8)	—***
Military	234	—***	—***	—***	—***	—***	—***

Abbreviation: CI = confidence interval.

* Adults who reported "working at a job or business"; "with a job or business but not at work"; or "working, but not for pay, at a family-owned job or business" during the week before the interview.

† Weighted to provide national annual average estimates for current employment.

§ Cigarette smokers were defined as persons who reported smoking ≥100 cigarettes during their lifetimes and who currently smoke every day or some days (estimated n = 22.8 million).

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** Smokeless tobacco product users were defined as persons who reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and who currently use every day or some days (estimated n = 4.4 million).

†† E-cigarettes users were defined as persons who reported using electronic cigarettes at least once during their lifetime and who currently use every day or some days (n = 5.2 million).

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¶¶ Persons who reported current use of two or more individual tobacco products (estimated n = 6.9 million).

*** Estimate suppressed (relative standard error >30%).

Continued implementation of proven strategies to address tobacco use among U.S. adults is important (*6*,*8*,*10*). Proven strategies include anti-tobacco messages; comprehensive tobacco-free laws covering public places and worksites; providing comprehensive coverage for tobacco cessation treatments for employees; increased tobacco prices; and tailored interventions that help prevent initiation and encourage cessation among workers. Workplace tobacco-control interventions have been especially effective in reducing cigarette smoking prevalence (*7*). Previous research has indicated that workers at worksites that adopted or maintained smoke-free policies were twice as likely to quit smoking than those whose worksites did not implement such policies (*7*). To maximize the health of workers, employers can also consider integrating

comprehensive and effective tobacco cessation programs into workplace health promotion programs (*7*,*10*).

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Conflict of Interest

No conflicts of interest were reported.

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Great American Smokeout — November 16, 2017

The American Cancer Society's Great American Smokeout is an annual event that encourages smokers to make a plan to quit smoking (*1*). The 42nd annual Great American Smokeout will be held on November 16, 2017.

In the more than 50 years since the Surgeon General's first report on smoking and health, cigarette smoking among U.S. adults has been reduced by approximately half. Nonetheless, since 1964, the year of that first report, an estimated 20 million persons have died because of smoking. Smoking remains the leading preventable cause of disease, disability, and death in the United States (*2*).

About two out of three adult smokers want to quit smoking cigarettes, and approximately half of smokers made a quit attempt in the preceding year (*2*). However, in 2016, more than one in seven U.S. adults were current cigarette smokers (*3*). Getting effective help through counseling and use of medications can increase the chances of quitting by as much as threefold (*4*).

Information and support for quitting smoking is available by telephone at 800-QUIT-NOW (800–784–8669). CDC's Tips From Former Smokers campaign offers additional quit resources at https://www.cdc.gov/tips.

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Tobacco Product Use Among Adults — United States, 2015

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Tobacco use remains the leading cause of preventable disease and death in the United States (*1*). Despite declining cigarette smoking prevalence among U.S. adults, shifts in the tobacco product landscape have occurred in recent years (*2*,*3*). Previous estimates of tobacco product use among U.S. adults were obtained from the National Adult Tobacco Survey, which ended after the 2013–2014 cycle. This year, CDC and the Food and Drug Administration (FDA) assessed the most recent national estimates of tobacco product use among adults aged ≥18 years using, for the first time, data from the 2015 National Health Interview Survey (NHIS), an annual, nationally representative, in-person survey of the noninstitutionalized U.S. civilian population. The 2015 NHIS adult core

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questionnaire included 33,672 adults aged ≥18 years, reflecting a 55.2% response rate. Data were weighted to adjust for differences in selection probability and nonresponse, and to provide nationally representative estimates. In 2015, 20.1 % of U.S. adults currently (every day or some days) used any tobacco product, 17.6% used any combustible tobacco product, and 3.9% used ≥2 tobacco products. By product, 15.1% of adults used cigarettes; 3.5% used electronic cigarettes (e-cigarettes); 3.4% used cigars, cigarillos, or filtered little cigars; 2.3% used smokeless tobacco; and 1.2% used regular pipes, water pipes, or hookahs.* Current use of any tobacco product was higher among males; persons aged <65 years; non-Hispanic American Indian/Alaska natives (AI/AN), whites, blacks, and persons of multiple races; persons living in the Midwest; persons with a General Educational Development (GED) certificate; persons with annual household income of <$35,000; persons who were single, never married, or not living with a partner or divorced, separated, or widowed; persons who were insured through Medicaid or uninsured; persons with a disability; and persons who identified as lesbian, gay, or bisexual (LGB). Current use of any tobacco product was 47.2% among adults with serious psychological distress compared with 19.2% among those without serious psychological distress. Proven population-level interventions that focus on the diversity of tobacco product use are important to reducing tobacco-related disease and death in the United States (*1*).

Consistent with previous reports (*2*,*3*), current cigarette smokers were defined as persons who reported they had smoked ≥100 cigarettes during their lifetime, and smoked either "every day" or "some days" at the time of survey. Current users of all other assessed tobacco products were defined as persons who reported use "every day" or "some days" at the time of survey. Prevalence estimates for current use of any current tobacco product, any combustible tobacco product (cigarettes, cigars, cigarillos, filtered little cigars, pipes, water pipes, or hookahs), and use of two or more tobacco products were calculated. Estimates were assessed overall and by sex, age, race/ethnicity, U.S. Census region,† education, marital status, annual household income, sexual orientation,§ health

* Because of phrasing of the question in the 2015 NHIS, it was not possible to distinguish between regular pipe use and water pipe or hookah use in this analysis.

† *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.

§ Sexual orientation was determined based on the question, "Which of the following best represents how you think of yourself?" with response options of "gay" ("lesbian or gay" for female respondents), "heterosexual," that is, "not gay" ("not lesbian or gay" for female respondents), "bisexual," "something else," and "I don't know the answer." Responses were considered to be "LGB" if persons responded "gay," "lesbian or gay," or "bisexual."

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insurance coverage,[¶] disability,[**] and presence of serious psychological distress.[††] Significant differences between groups were assessed using chi-squared statistics; differences presented were all statistically significant ($p<0.05$).

Among U.S. adults in 2015, 20.1% (an estimated 48.7 million) currently used any tobacco product, 17.6% (42.6 million; 87.4% of current tobacco product users) currently used any combustible tobacco product, and 3.9% (9.5 million; 19.5%) currently used ≥2 tobacco products. By product, 15.1% (36.5 million; 74.9% of current users) of adults currently used cigarettes; 3.5% (7.9 million; 16.1%) used e-cigarettes; 3.4% (7.8 million; 16.0%) used cigars, cigarillos, or filtered little cigars; 2.3% (5.1 million; 10.5%) used smokeless tobacco; and 1.2% (2.7 million; 5.5%) used pipes, water pipes, or hookahs.

Differences in tobacco product use were observed across population groups (Table). The prevalence of any current tobacco use was significantly higher among males (25.2%) than among females (15.4%) and among adults aged 25–44 years (23.3%) than among those aged ≥65 years (11.1%). Notably, the age distribution of current tobacco users varied by product type, and for pipes, water pipes, hookahs and e-cigarettes, use was highest among younger adults (Figure). By race/ethnicity, current use was higher among non-Hispanic AI/AN (26.6%), multiple races (25.4%), whites (22.6%), and blacks (20.8%), and lowest among non-Hispanic Asians (9.0%). By region, prevalence was highest among adults living in the Midwest (24.0%) and lowest among those living in the West (17.4%). Prevalence was highest among adults with a GED certificate (37.6%) and lowest among those with a graduate degree (6.9%), and was higher among adults who were single, never married, or not living with a partner (23.1%) or divorced, separated, or widowed (23.2%) than among adults who were married or living with a partner (18.2%). Prevalence of tobacco use was highest among persons with an income of <$35,000 (27.8%) and lowest among those with an annual household income of ≥$100,000 (13.4%); it was also higher among LGB adults (27.4%) than among heterosexual adults (20.1%), and among uninsured persons (32.3%) and Medicaid enrollees (31.7%) than among those covered by private health insurance (16.6%) or by Medicare only (11.4%). Adults with a disability had higher prevalence (25.8%) of tobacco use than did those reporting no disability (19.7%), and prevalence was higher among adults with serious psychological distress (47.2%) than adults without serious psychological distress (19.2%).

[¶] Private coverage: includes adults who had any comprehensive private insurance plan (including health maintenance organizations and preferred provider organizations). Medicaid: for adults aged <65 years, includes adults who do not have private coverage, but who have Medicaid or other state-sponsored health plans including Children's Health Insurance Program (CHIP); for adults aged ≥65 years, includes adults aged ≥65 years who do not have any private coverage but have Medicare and Medicaid or other state-sponsored health plans including CHIP; Medicare only: includes adults aged ≥65 years who only have Medicare coverage; Other coverage: includes adults who do not have private insurance, Medicaid, or other public coverage, but who have any type of military coverage, coverage from other government programs, or Medicare. Uninsured: includes adults who have not indicated that they are covered at the time of the interview under private health insurance, Medicare, Medicaid, CHIP, a state-sponsored health plan, other government programs, or military coverage.

[**] Disability was defined based on self-reported presence of selected limitations including vision, hearing, cognition, and movement. Limitations in performing activities of daily living were defined based on response to the question, "Does [person] have difficulty dressing or bathing?" Limitations in performing instrumental activities of daily living were defined based on response to the question, "Because of a physical, mental, or emotional condition, does [person] have difficulty doing errands alone such as visiting a doctor's office or shopping?" Any disability was defined as a "yes" response pertaining to at least one of the limitations listed (i.e., vision, hearing, cognition, movement, activities of daily living, or instrumental activities of daily living). A random sample of half of the respondents from the 2015 Person File were asked about limitations.

[††] The Kessler psychological distress scale is a series of six questions that ask about feelings of sadness, nervousness, restlessness, worthlessness, and feeling like everything is an effort in the past 30 days. Participants were asked to respond on a Likert Scale ranging from "None of the time" (score = 0) to "All of the time" (score = 4). Responses were summed over the six questions; persons with a score of ≥13 were coded as having serious psychological distress, and respondents with a score <13 were coded as not having serious psychological distress.

Discussion

In 2015, approximately one in five U.S. adults (48.7 million) currently used any tobacco product, with most using combustible tobacco products. Any tobacco product use was significantly higher among males; adults aged <65 years; non-Hispanic AI/AN, whites, blacks, and persons of multiple races; persons living in the Midwest; persons with a GED; persons with annual household income <$35,000; persons who were single/never married/not living with a partner or divorced/separated/widowed; persons who were uninsured or insured through Medicaid; persons with a disability; and persons who identified as LGB. Adults with serious psychological distress had the highest prevalence of any tobacco product use of any subpopulation.

The burden of death and disease from tobacco use is overwhelmingly caused by cigarettes and other combusted tobacco products (*1*). Cigarette smoking has been declining among U.S. adults for several decades (*1*); in more recent years, prevalence declined from 20.9% in 2005 to 15.1% in 2015 (*3*). The findings from this report show that in 2015, cigarettes remained the most commonly used tobacco product among adults, and combustible tobacco products were currently used by 17.6% of adults, or 87.4% of current any tobacco users. Despite the popularity of emerging products such as pipes, water pipes, hookahs, and e-cigarettes among youths, these findings highlight the importance of also continuing to use targeted evidence-based, population-level strategies to combat combustible product use. These strategies include tobacco price increases, high-impact antitobacco mass media campaigns,

TABLE. Percentage of persons aged ≥18 years who reported tobacco product use "every day" or "some days," by tobacco product and selected characteristics — National Health Interview Survey, United States, 2015

Characteristic	Tobacco product use, % (95% CI)							
	Any tobacco product*	Any combustible tobacco product†	Cigarettes§	Cigars/ Cigarillos/ Filtered little cigars¶	Regular pipe/ Water pipe/ Hookah**	E-cigarettes††	Smokeless tobacco§§	≥2 tobacco products¶¶
Overall	**20.1 (19.5–20.8)**	**17.6 (17.0–18.2)**	**15.1 (14.6–15.7)**	**3.4 (3.1–3.7)**	**1.2 (1.0–1.4)**	**3.5 (3.2–3.8)**	**2.3 (2.0–2.6)**	**3.9 (3.6–4.2)**
Sex								
Male	25.2 (24.2–26.3)	21.0 (20.1–22.0)	16.7 (15.9–17.6)	6.0 (5.4–6.5)	1.8 (1.5–2.2)	4.3 (3.9–4.8)	4.4 (3.9–5.0)	5.8 (5.3–6.3)
Female	15.4 (14.7–16.1)	14.4 (13.8–15.1)	13.6 (12.9–14.3)	1.1 (0.9–1.3)	0.6 (0.4–0.8)	2.6 (2.3–3.0)	0.2 (0.1–0.3)	2.2 (1.9–2.5)
Age group (yrs)								
18–24	21.4 (19.3–23.5)	17.6 (15.8–19.5)	13.0 (11.4–14.8)	4.2 (3.3–5.3)	3.4 (2.6–4.4)	5.2 (4.3–6.3)	3.2 (2.4–4.3)	5.4 (4.4–6.7)
25–44	23.3 (22.2–24.5)	20.3 (19.3–21.4)	17.7 (16.8–18.8)	3.9 (3.4–4.5)	1.3 (1.0–1.7)	4.3 (3.8–4.9)	2.7 (2.3–3.1)	4.8 (4.2–5.4)
45–64	21.6 (20.5–22.7)	19.2 (18.2–20.3)	17.0 (16.0–18.0)	3.7 (3.2–4.2)	0.5 (0.4–0.8)	3.3 (2.8–3.7)	2.1 (1.7–2.5)	3.9 (3.5–4.4)
≥65	11.1 (10.2–12.0)	9.8 (9.0–10.7)	8.4 (7.7–9.2)	1.7 (1.4–2.1)	0.6 (0.4–0.9)	1.1 (0.8–1.5)	1.2 (0.9–1.7)	1.5 (1.2–1.9)
Race/Ethnicity								
White, non-Hispanic	22.6 (21.7–23.5)	19.3 (18.5–20.1)	16.6 (15.8–17.40)	3.7 (3.3–4.1)	1.2 (1.0–1.4)	4.1 (3.7–4.6)	3.2 (2.8–3.6)	4.6 (4.2–5.1)
Black, non-Hispanic	20.8 (19.1–22.6)	19.9 (18.2–21.6)	16.7 (15.2–18.3)	4.8 (3.9–5.7)	1.4 (1.0–2.1)	1.9 (1.4–2.5)	0.7 (0.5–1.0)	3.7 (3.1–4.6)
Asian, non-Hispanic	9.0 (7.5–10.8)	8.0 (6.7–9.7)	7.0 (5.7–8.6)	0.9 (0.5–1.6)	—***	2.3 (1.4–3.6)	—***	1.5 (0.9–2.4)
American Indian/Alaska Native, non-Hispanic	26.6 (20.1–34.4)	24.8 (18.3–32.6)	21.9 (17.0–27.6)	—***	—***	—***	—***	—***
Hispanic	12.9 (11.8–14.1)	11.8 (10.8–12.9)	10.1 (9.1–11.1)	1.9 (1.5–2.5)	0.8 (0.5–1.1)	2.0 (1.5–2.5)	0.4 (0.2–0.6)	1.6 (1.3–2.0)
Non-Hispanic multirace	25.4 (21.3–29.9)	23.6 (19.6–28.1)	20.2 (16.3–24.8)	6.8 (4.4–10.3)	—***	7.1 (4.2–11.8)	—***	9.3 (6.6–13.0)
U.S. Census region†††								
Northeast	18.2 (16.7–19.9)	16.6 (15.1–18.2)	13.5 (12.3–14.9)	3.8 (2.9–4.8)	1.3 (0.9–1.9)	2.6 (1.9–3.4)	1.1 (0.7–1.6)	3.1 (2.4–4.1)
Midwest	24.0 (22.6–25.5)	21.1 (19.8–22.4)	18.7 (17.4–20.1)	3.7 (3.1–4.4)	1.1 (0.8–1.6)	3.8 (3.2–4.5)	3.1 (2.4–4.0)	4.7 (4.0–5.5)
South	20.4 (19.4–21.6)	17.5 (16.6–18.4)	15.3 (14.5–16.3)	3.3 (3.0–3.8)	0.9 (0.7–1.2)	3.5 (3.1–4.0)	2.7 (2.3–3.2)	3.9 (3.5–4.4)
West	17.4 (16.3–18.5)	15.1 (14.1–16.2)	12.4 (11.4–13.5)	3.1 (2.5–3.8)	1.5 (1.2–2.0)	3.7 (3.2–4.3)	1.6 (1.2–2.1)	3.7 (3.1–4.4)
Education (results are adults aged ≥25 yrs)								
0–12 yrs (no diploma)	27.6 (25.7–29.6)	25.0 (23.2–26.9)	24.2 (22.5–26.1)	3.0 (2.2–4.0)	1.2 (0.7–2.0)	3.3 (2.5–4.3)	2.9 (2.2–3.9)	5.0 (4.0–6.2)
GED	37.6 (33.3–42.3)	35.9 (31.7–40.3)	34.1 (30.0–38.4)	4.7 (3.2–7.0)	—***	6.3 (4.6–8.5)	2.6 (1.6–4.2)	8.5 (6.6–10.9)
High school diploma	24.4 (22.8–26.0)	21.4 (20.0–22.9)	19.8 (18.5–21.2)	3.4 (2.8–4.2)	0.6 (0.4–0.9)	3.6 (3.0–4.4)	2.8 (2.2–3.5)	4.5 (3.9–5.3)
Some college, no degree	23.8 (22.2–25.3)	20.5 (19.2–21.9)	18.5 (17.2–19.8)	3.3 (2.7–4.1)	0.7 (0.5–1.1)	4.6 (3.8–5.6)	2.2 (1.8–2.9)	4.4 (3.7–5.2)
Associate degree (academic or technical/vocational)	22.2 (20.4–24.1)	19.4 (17.8–21.2)	16.6 (15.0–18.3)	3.9 (3.1–4.9)	1.0 (0.6–1.5)	4.2 (3.3–5.2)	2.5 (1.7–3.8)	4.5 (3.5–5.8)
Undergraduate degree (BA, BS, AB, BBA)	12.6 (11.5–13.8)	10.6 (9.6–11.7)	7.4 (6.5–8.3)	3.4 (2.8–4.2)	1.2 (0.8–1.7)	2.4 (1.9–3.0)	1.5 (1.1–2.0)	2.4 (1.9–2.0)
Graduate degree (Master's, Professional, or Doctoral)	6.9 (5.9–8.0)	6.3 (5.4–7.4)	3.6 (3.0–4.5)	2.5 (1.9–3.4)	0.7 (0.4–1.1)	0.6 (0.4–1.0)	0.7 (0.4–1.2)	0.9 (0.6–1.4)
Marital status								
Married/living with partner	18.2 (17.3–19.1)	15.5 (14.8–16.3)	13.1 (12.4–13.9)	3.3 (2.9–3.7)	0.7 (0.5–0.9)	3.1 (2.8–3.5)	2.3 (2.0–2.7)	3.3 (2.9–3.7)
Divorced/Separated/ Widowed	23.2 (22.0–24.6)	21.3 (20.1–22.5)	20.0 (18.8–21.2)	2.8 (2.3–3.4)	0.8 (0.6–1.1)	3.1 (2.6–3.6)	2.1 (1.6–2.7)	4.3 (3.7–5.0)
Single/Never married/Not living with a partner	23.1 (21.8–24.6)	20.3 (19.1–21.6)	16.6 (15.4–17.9)	4.4 (3.8–5.2)	2.9 (2.3–3.6)	4.7 (4.0–5.5)	2.3 (1.8–2.9)	5.4 (4.7–6.1)
Annual household income ($)								
<35,000	27.8 (26.6–29.0)	25.4 (24.2–26.6)	23.3 (22.2–24.5)	3.8 (3.4–4.3)	1.6 (1.3–2.1)	4.6 (4.1–5.2)	2.1 (1.7–2.6)	5.8 (5.2–6.4)
35,000–74,999	21.2 (20.0–22.5)	18.6 (17.5–19.8)	16.6 (15.6–17.8)	2.9 (2.4–3.4)	1.2 (0.9–1.6)	3.5 (3.0–4.1)	2.3 (1.9–2.9)	3.9 (3.4–4.6)
75,000–99,999	18.1 (16.3–20.2)	14.7 (13.0–16.5)	11.9 (10.5–13.4)	3.7 (2.7–4.9)	—***	4.2 (3.2–5.3)	2.7 (1.9–3.8)	3.8 (2.9–5.0)
≥100,000	13.4 (12.3–14.7)	10.9 (9.8–12.1)	7.1 (6.2–8.2)	3.8 (3.1–4.5)	1.2 (0.8–1.7)	2.3 (1.8–2.8)	2.3 (1.8–2.9)	2.3 (1.8–2.9)
Sexual orientation								
Heterosexual/Straight	20.1 (19.4–20.8)	17.5 (16.9–18.1)	14.9 (14.4–15.5)	3.4 (3.1–3.7)	1.1 (0.9–1.3)	3.4 (3.1–3.7)	2.3 (2.0–2.6)	3.9 (3.6–4.3)
LGB	27.4 (23.5–31.7)	24.3 (20.5–28.4)	20.6 (17.1–24.6)	3.8 (2.4–5.8)	4.0 (2.5–6.2)	8.9 (6.5–11.9)	—***	7.6 (5.6–10.2)
Health insurance coverage§§§								
Private insurance	16.6 (15.8–17.4)	13.8 (13.1–14.6)	11.1 (10.5–11.8)	3.2 (2.9–3.6)	1.1 (0.9–1.3)	2.9 (2.6–3.3)	2.4 (2.0–2.8)	3.0 (2.7–3.4)
Medicaid	31.7 (29.8–33.7)	29.4 (27.6–31.3)	27.8 (26.0–29.7)	4.0 (3.2–4.9)	1.5 (1.0–2.2)	5.7 (4.7–6.8)	1.6 (1.1–2.4)	6.7 (5.7–7.9)
Medicare only (aged ≥65 yrs)	11.4 (9.9–13.1)	10.2 (8.8–11.8)	8.9 (7.6–10.5)	1.5 (1.0–2.1)	0.7 (0.4–1.3)	1.2 (0.8–1.9)	1.0 (0.6–1.7)	1.6 (1.1–2.4)
Other public insurance	25.4 (22.6–28.4)	21.9 (19.4–24.7)	19.0 (16.8–21.4)	4.7 (3.4–6.4)	—***	5.0 (3.9–6.4)	2.8 (2.0–4.1)	6.0 (4.8–7.5)
Uninsured	32.3 (30.1–34.5)	30.1 (28.0–32.2)	27.4 (25.5–29.4)	4.7 (3.8–5.9)	1.4 (1.0–2.1)	5.1 (4.2–6.2)	2.4 (1.8–3.3)	6.5 (5.5–7.7)

See table footnotes on the next page.

TABLE. (*Continued*) Percentage of persons aged ≥18 years who reported tobacco product use "every day" or "some days," by tobacco product and selected characteristics — National Health Interview Survey, United States, 2015

Characteristic	Tobacco product use, % (95% CI)							
	Any tobacco product*	Any combustible tobacco product†	Cigarettes§	Cigars/ Cigarillos/ Filtered little cigars¶	Regular pipe/ Water pipe/ Hookah**	E-cigarettes††	Smokeless tobacco§§	≥2 Tobacco products¶¶
Disability/Limitation¶¶¶								
Yes	25.8 (23.9–27.8)	23.4 (21.6–25.4)	22.0 (20.2–24.0)	3.7 (2.9–4.6)	1.1 (0.8–1.7)	4.9 (4.0–6.1)	1.8 (1.3–2.5)	6.2 (5.2–7.4)
No	19.7 (18.8–20.6)	17.0 (16.2–17.9)	14.4 (13.7–15.2)	3.4 (3.0–3.8)	1.1 (0.9–1.3)	3.3 (2.9–3.7)	2.3 (1.9–2.7)	3.5 (3.1–3.9)
Serious psychological distress (Kessler scale)****								
Yes	47.2 (43.4–51.2)	43.5 (39.7–47.4)	40.6 (37.0–44.3)	6.3 (4.3–9.1)	4.3 (2.5–7.2)	9.7 (7.4–12.7)	3.5 (2.1–5.6)	12.8 (10.1–16.0)
No	19.2 (18.5–19.9)	16.6 (16.0–17.2)	14.0 (13.5–14.6)	3.3 (3.0–3.6)	1.0 (0.9–1.2)	3.2 (2.9–3.5)	2.2 (1.9–2.5)	3.7 (3.5–4.1)

Abbreviations: CI = confidence interval; E-cigarettes = electronic cigarettes; GED = General Education Development certificate; HS = high school; LGB = lesbian, gay, or bisexual.

* Any tobacco use was defined as use either "every day" or "some days" of at least one tobacco product among individuals (for cigarettes, users were defined as persons who reported use either "every day" or "some days" and had smoked ≥100 cigarettes during their lifetime).

† Any combustible tobacco use was defined as use either "every day" or "some days" of at least one combustible tobacco product: cigarettes; cigars, cigarillos, filtered little cigars; pipes, water pipes, or hookah (for cigarettes, users were defined as persons who reported use either "every day" or "some days" and had smoked ≥100 cigarette during their lifetime).

§ Current cigarette smokers were defined as persons who reported smoking ≥100 cigarettes during their lifetime and now smoked cigarettes "every day" or "some days."

¶ Reported smoking cigars, cigarillos, or little filtered cigars at least once during their lifetime and now smoked at least one of these products "every day" or "some days."

** Reported smoking tobacco in a regular pipe, water pipe, or hookah at least once during their lifetime and now smoked at least one of these products "every day" or "some days."

†† Reported using electronic cigarettes at least once during their lifetime and now used e-cigarettes "every day" or "some days."

§§ Reported using chewing tobacco, snuff, dip, snus, or dissolvable tobacco at least once during their lifetime and now used at least one of these products "every day" or "some days."

¶¶ Use was defined as use either "every day" or "some days" for at least two or more of the following tobacco products: cigarettes (≥100 cigarettes during lifetime); cigars, cigarillos, filtered little cigars; pipes, water pipes, or hookah; electronic cigarettes; or smokeless tobacco products.

*** Prevalence estimates with a relative standard error ≥30% are not presented.

††† *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.

§§§ Private coverage: includes adults who had any comprehensive private insurance plan (including health maintenance organizations and preferred provider organizations). *Medicaid*: For adults aged <65 years, includes adults who do not have private coverage, but who have Medicaid or other state-sponsored health plans including Children's Health Insurance Program (CHIP); for adults aged ≥65 years, includes adults aged ≥65 years who do not have any private coverage but have Medicare and Medicaid or other state-sponsored health plans including CHIP. *Medicare only*: includes adults aged ≥65 years who only have Medicare coverage. *Other coverage*: includes adults who do not have private insurance, Medicaid, or other public coverage, but who have any type of military coverage, coverage from other government programs, or Medicare. *Uninsured*: includes adults who have not indicated that they are covered at the time of the interview under private health insurance, Medicare, Medicaid, CHIP, a state-sponsored health plan, other government programs, or military coverage. Insurance coverage is "as of time of survey."

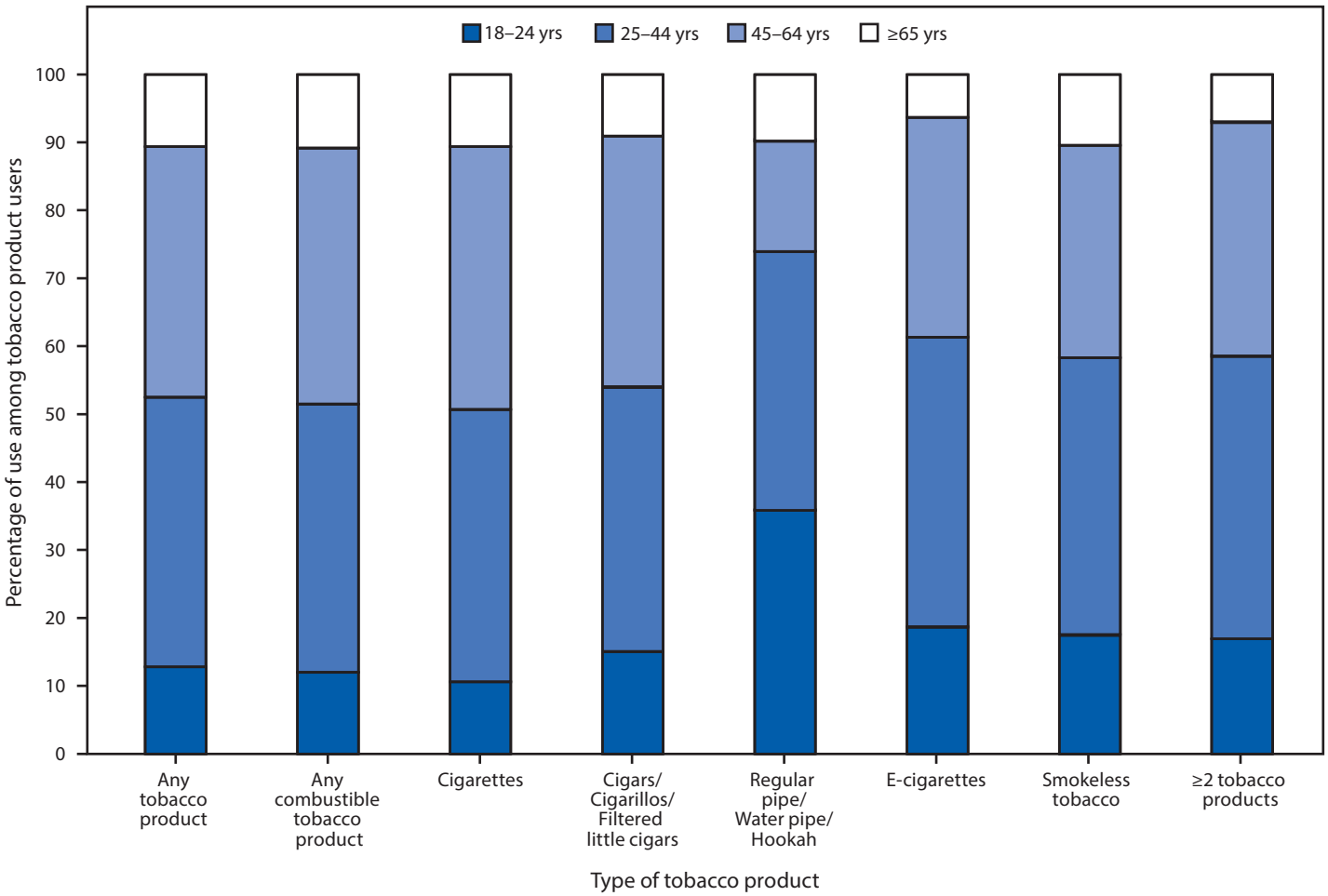
¶¶¶ Disability was defined based on self-reported presence of selected limitations including vision, hearing, cognition, and movement. Limitations in performing activities of daily living were defined based on response to the question, "Does [person] have difficulty dressing or bathing?" Limitations in performing instrumental activities of daily living were defined based on response to the question, "Because of a physical, mental, or emotional condition, does [person] have difficulty doing errands alone such as visiting a doctor's office or shopping?" Any disability was defined as a "yes" response pertaining to at least one of the limitations listed (i.e., vision, hearing, cognition, movement, activities of daily living, or instrumental activities of daily living). A random sample of half of the respondents from the 2015 Person File were asked about limitations.

**** The Kessler psychological distress scale is a series of six questions that ask about feelings of sadness, nervousness, restlessness, worthlessness, and feeling like everything is an effort in the past 30 days. Participants were asked to respond on a Likert Scale ranging from "None of the time" (score = 0) to "All of the time" (score = 4). Responses were summed over the six questions; persons with a score of ≥13 were coded as having serious psychological distress, and respondents with a score <13 were coded as not having serious psychological distress.

comprehensive smoke-free laws, and enhanced access to help quitting tobacco to reduce smoking-related death and disease in the United States (*1*).

Observed disparities in tobacco product use across population groups likely have multiple contributing factors. For example, disparities in tobacco use by race/ethnicity might be partly explained by socio-cultural influences, norms surrounding the acceptability of tobacco use, and targeted marketing (*1*,*4*). Differences by education might be partly attributable to variations in understanding of the range of health hazards caused by tobacco product use (*1*,*4*). Differences by health insurance coverage and income might be attributable in part to variations in tobacco cessation coverage across insurance types and access to evidence-based cessation treatments, respectively (*1*,*5*). Furthermore, the higher prevalence of current tobacco product use among persons who identified as LGB might be due, in part, to social stressors including stigma and discrimination, in addition to targeted marketing efforts by the tobacco industry (*1*,*6*). Similarly, the higher rates of pipe, water pipe, hookah, and e-cigarette use among younger adults could be due to the manner in which these products are marketed and used socially (*1*,*7*). The tobacco industry has targeted marketing

FIGURE. Percentage of use of tobacco product types* among adults aged ≥18 years who reported using tobacco products "every day" or "some days," by age group — National Health Interview Survey, United States, 2015



* For cigarettes, users were defined as persons who reported use either "every day" or "some days" and had smoked ≥100 cigarettes during their lifetime.

toward minority communities, persons of lower socioeconomic status, and younger persons (*4*,*6*). Lastly, the high prevalence of tobacco use among persons with serious psychological distress possibly reflects nicotine's stimulant or relaxation effects, nicotine's effects on drug metabolism, misperceptions about quitting smoking and abstinence success, and allowing smoking in mental health facilities (*4*,*8*).

The findings in this report are subject to at least three limitations. First, tobacco use estimates were self-reported and not validated by biochemical tests. However, previous studies have shown that self-reported tobacco product use is highly correlated with serum cotinine levels (*9*,*10*). Second, the NHIS response rate (55.2%) could introduce nonresponse bias if respondents and nonrespondents systematically differ in ways not accounted for in the development of the weights. Finally, NHIS does not include institutionalized populations and persons in the military, so the results are not generalizable to those groups.

Sustained, comprehensive state tobacco control programs can accelerate progress toward reducing tobacco-related diseases and deaths.[§§] Full implementation of comprehensive tobacco control programs, in conjunction with FDA regulation of tobacco products, across the spectrum of tobacco products, are vital (*1*). Targeted interventions are also warranted to reach subpopulations with the greatest burden of use, which might vary by tobacco product type.

[§§] https://www.cdc.gov/tobacco/stateandcommunity/best_practices/pdfs/2014/comprehensive.pdf.

Acknowledgment

Andrea Gentzke, PhD, Office on Smoking and Health, CDC.

Summary

What is already known about this topic?

Tobacco use continues to be the leading cause of preventable disease and death in the United States. Despite declining cigarette smoking prevalence among U.S. adults, notable shifts in the tobacco product landscape have occurred in recent years.

What is added by this report?

In 2015, 20.1% of U.S. adults currently (every day or some days) used any tobacco product, 17.6% used any combustible tobacco product, and 3.9% used ≥2 tobacco products. Current use of any tobacco product was higher among males; persons aged <65 years; non-Hispanic American Indian/Alaska natives, whites, blacks, and persons of multiple races; persons living in the Midwest; persons with a General Educational Development certificate; persons with annual household income <$35,000; persons who were single/never married/not living with a partner or divorced/separated/widowed; persons who were insured through Medicaid or uninsured; persons with a disability; and persons who identified as lesbian, gay, or bisexual. Current use of any tobacco product was 47.2% among adults with serious psychological distress compared with 19.2% among those without serious psychological distress.

What are the implications for public health practice?

Full implementation of comprehensive tobacco control programs, in conjunction with FDA regulation of tobacco products, are vital across the spectrum of tobacco products. Targeted interventions are also warranted to reach subpopulations with the greatest burden of use, which might vary by tobacco product type.

Conflict of Interest

No conflicts of interest were reported.

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Tobacco Use in Top-Grossing Movies — United States, 2010–2016

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The Surgeon General has concluded that there is a causal relationship between depictions of smoking in the movies and the initiation of smoking among young persons (*1*). The more youths see smoking on screen, the more likely they are to start smoking; youths who are heavily exposed to onscreen smoking imagery are approximately two to three times as likely to begin smoking as are youths who receive less exposure (*1*,*2*). A *Healthy People 2020* objective is to reduce the proportion of youths exposed to onscreen tobacco marketing in movies and television (Tobacco Use Objective 18.3) (*3*). To assess the recent extent of tobacco use imagery in youth-rated movies (G, PG, PG-13*), 2010–2016 data from Thumbs Up! Thumbs Down! (TUTD), a project of Breathe California of Sacramento-Emigrant Trails were analyzed and compared with previous reports.† In 2016, 41% of movies that were among the 10 top-grossing movies in any calendar week included tobacco use, compared with 45% in 2010. Among youth-rated movies, 26% included tobacco use in 2016 (including 35% of PG-13 movies) compared with 31% in 2010 (including 43% of PG-13 movies). The steady decline in the number of tobacco incidents in youth-rated movies from 2005–2010 stopped after 2010. The total number of individual occurrences of tobacco use in a movie (tobacco incidents) in top-grossing movies increased 72%, from 1,824 in 2010 to 3,145 in 2016, with an increase of 43% (from 564 to 809) occurring among PG-13 rated movies. Reducing tobacco use in youth-related movies could help prevent the initiation of tobacco use among young persons.

TUTD counts occurrences of tobacco incidents, defined as the use or implied use of a tobacco product (cigarettes, cigars, pipes, hookah, smokeless tobacco products, and electronic cigarettes) by an actor, in U.S. top-grossing movies each year. Trained monitors count all tobacco incidents in those movies that are among the 10 top-grossing movies in any calendar week of the year. Previous reports have used this criterion because U.S. movies ranked in the 10 top-grossing movies for at least 1 week have accounted for 96% of U.S. ticket sales (*4*–*6*). At least two monitors independently evaluate each film; any differences are resolved by a supervisor who independently watches the film using the same protocol. Incidents of implied use have been rare and occur when a person is handed or is holding, but does not necessarily use, a tobacco product. A new incident was counted each time 1) a tobacco product went off screen and then came back on screen; 2) a different actor was shown with a tobacco product; or 3) a scene changed and the new scene contained the use or implied use of a tobacco product.§

* Ratings assigned by the Motion Picture Association of America (a trade organization that represents the major movie studios) include the following: General Audiences (G): all ages admitted; Parental Guidance Suggested (PG): some material might not be suitable for children; Parents Strongly Cautioned (PG-13): some material might be inappropriate for children under 13; and Restricted (R): under 17 requires accompanying parent or adult guardian.

† https://smokefreemovies.ucsf.edu/.

§ Two common methods used to count smoking incidents in movies are to count the number of scenes in which tobacco use occurs or to count the number of cuts in which tobacco use occurs. Despite the difference in methods, both metrics have consistent results and are valid for comparing the results across ratings, years, companies, etc.

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To calculate the percentage of movies with tobacco incidents, the number of movies with tobacco incidents was divided by the total number of movies, and the average number of tobacco incidents per movie was calculated for each motion picture company. For each year during 2010–2016, the number of top-grossing movies with tobacco incidents and overall number of tobacco incidents were calculated. Results were also analyzed by Motion Picture Association of America (MPAA) ratings (G, PG, PG-13, R). Findings were also compared with data from reports from 1991–2010 (*4*,*5*).

In 2016, among 143 top-grossing movies, 59 (41%) had tobacco incidents, compared with 62 (45%) of 137 in 2010; among top-grossing R-rated movies, 35 (67%) of 52 had tobacco incidents in 2016, compared with 35 (71%) of 49 in 2010 (Table 1). Among youth-rated movies (G, PG, or PG-13), 24 (26%) of 91 had tobacco incidents in 2016, compared with 27 (31%) of 88 in 2010. Overall, from 2010 to 2016, the number of top-grossing movies with tobacco incidents ranged from 58 in 2014 to 76 in 2013 (Table 1).

Although the percentage of top-grossing movies with tobacco incidence decreased during 2010–2016, the total number of tobacco incidents in top-grossing movies increased by 72%, from 1,824 to 3,145 (Table 2). The total number of incidents in G or PG movies decreased by 87% (from 30 to 4), whereas the number in PG-13 movies increased 43% (from 564 to 809), and the number in R-rated movies increased 90% (from 1,230 to 2,332). Compared with previous studies (*4*,*5*), smoking incidents had peaked at 3,962 incidents in 2005; the year with the lowest number of recorded smoking incidents (1,613) was 1998 (Figure). During 2010–2016, the lowest number of tobacco incidents (1,743) occurred in 2015; the highest number since 2010 (3,145) occurred in 2016, representing an 80% increase compared with the previous year.

Discussion

The findings in this report indicate that although there were previously reported declines in the number of youth-rated movies with tobacco incidents observed during 2005–2010 (*4*,*5*), since 2010 there has been no progress in reducing the total number of tobacco incidents in youth-rated movies. Had the trend established from 2005 to 2010 continued, all youth-rated films would have been smoke-free by 2015. Although there were fewer top-grossing movies depicting tobacco use in 2016 compared with 2010, an increase in the number of such incidents occurred, thereby concentrating exposure to tobacco use in fewer films. The average number of tobacco incidents increased 55% in youth-rated movies with any tobacco depiction, from 22 incidents in 2010 to 34 incidents in 2016, and increased 91% in R-rated films with any tobacco depictions, from 35 incidents in 2010 to 67 incidents in 2016. Tobacco use depictions are now uncommon in G and PG films; however, the 43% increase in the total number of tobacco-use incidents in PG-13 movies, from 564 in 2010 to 809 in 2016, is of particular public health concern because of the established causal relationship between youths' exposure to smoking in movies and smoking initiation (*1*).

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TABLE 1. Number and percentage of top-grossing movies with any tobacco incidents, by Motion Picture Association of America (MPAA) rating and movie company — United States, 2010–2016

		No. (%)							
Movie company	**MPAA rating***	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**Total**
Comcast (Universal)	G/PG	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	**0 (0)**
	PG-13	1 (17)	4 (40)	3 (50)	2 (29)	6 (67)	3 (30)	2 (18)	**21 (36)**
	R	6 (86)	6 (86)	8 (73)	10 (77)	5 (71)	5 (50)	2 (22)	**42 (66)**
Disney	G/PG	1 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	**1 (2)**
	PG-13	0 (0)	3 (60)	1 (33)	2 (40)	0 (0)	2 (50)	1 (20)	**9 (32)**
	R	0 (0)	1 (100)	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	**2 (100)**
Fox	G/PG	0 (0)	2 (29)	1 (17)	0 (0)	0 (0)	0 (0)	0 (0)	**3 (7)**
	PG-13	3 (38)	3 (50)	2 (40)	2 (33)	4 (57)	4 (36)	4 (67)	**22 (45)**
	R	5 (71)	2 (100)	3 (100)	6 (100)	5 (63)	5 (100)	4 (80)	**30 (83)**
Independents†	G/PG	3 (60)	0 (0)	1 (50)	2 (67)	1 (20)	2 (67)	1 (17)	**10 (37)**
	PG-13	6 (55)	6 (46)	12 (52)	10 (50)	9 (47)	10 (59)	6 (38)	**59 (50)**
	R	15 (83)	6 (67)	15 (68)	19 (83)	7 (58)	16 (70)	16 (70)	**94 (72)**
Sony	G/PG	0 (0)	1 (17)	1 (33)	1 (33)	2 (50)	1 (20)	0 (0)	**6 (24)**
	PG-13	8 (67)	7 (58)	6 (60)	4 (57)	5 (71)	3 (50)	3 (33)	**36 (57)**
	R	2 (67)	7 (78)	6 (75)	5 (83)	5 (83)	4 (100)	5 (100)	**34 (83)**
Time Warner (Warner Bros.)	G/PG	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	**1 (8)**
	PG-13	2 (22)	4 (33)	4 (44)	3 (27)	2 (25)	4 (50)	2 (20)	**21 (31)**
	R	4 (50)	3 (50)	5 (83)	3 (50)	3 (33)	6 (60)	4 (67)	**28 (55)**
Viacom (Paramount)	G/PG	0 (0)	3 (60)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	**3 (23)**
	PG-13	3 (75)	3 (50)	2 (40)	1 (25)	2 (25)	2 (67)	5 (56)	**18 (46)**
	R	3 (50)	1 (33)	3 (75)	4 (100)	2 (67)	2 (67)	4 (100)	**19 (70)**
Subtotal by ratings	All G/PG	4 (11)	6 (14)	3 (11)	4 (21)	3 (12)	3 (13)	1 (4)	**24 (13)**
	All PG-13	23 (43)	30 (47)	30 (49)	24 (40)	28 (46)	28 (47)	23 (35)	**186 (44)**
	All youth-rated§	27 (31)	36 (37)	33 (37)	28 (35)	31 (36)	31 (38)	24 (26)	**210 (34)**
	All R	35 (71)	26 (70)	40 (74)	48 (81)	27 (60)	38 (69)	35 (67)	**249 (71)**
All ratings		**62 (45)**	**62 (46)**	**73 (51)**	**76 (55)**	**58 (44)**	**69 (50)**	**59 (41)**	**459 (51)**

* G = General Audiences (all ages admitted); PG-13 = Parents Strongly Cautioned (some material might be inappropriate for preteenagers); R = Restricted (under age 17 requires accompanying parent or adult guardian).
† Independent movie companies include producer-distributors that are not members of MPAA, but regularly adhere to MPAA ratings and advertising rules.
§ Youth-rated includes G/PG and PG-13.

The six major motion picture companies have policies to reduce depictions of tobacco use in youth-rated films,¶ which likely contributed to the reduction in the number of movies with tobacco incidents during 2005–2010. TUTD started systematic data collection of onscreen tobacco use in movies in 1991. Occurrences of tobacco use in movies varied from 1991 to 2010, reaching a peak in 2005 then declining by almost half by 2010 (*4*,*5*). Public health organizations, investors, state health departments, and state attorneys general raised concerns regarding tobacco incidents in movies beginning in 2001, which might account, in part, for the decrease in onscreen tobacco incidents after 2005 and before major motion picture companies adopted policies regarding tobacco imagery in youth-rated films (*4*,*5*). However, the lack of progress in recent years suggests that enhanced measures to address tobacco incidents in movies are warranted.

One such intervention would be the assignment of an R rating to any movie with smoking or other tobacco-use imagery (unless the portrayal is of actual historical figures who smoked, a documentary, or if the portrayal includes the negative effects of tobacco use) (*7*–*9*). Other interventions include certifying that no payments have been received by the studio or producers for depicting tobacco use in the movies and ending the onscreen depiction of actual tobacco brands (*7*,*8*). These and additional interventions, if implemented, could help eliminate tobacco incidents in youth-rated movies (*7*–*9*). State and local health departments could also work with state agencies that manage movie subsidies to ensure that such subsidies do not go to films that include depictions of tobacco use. During 2010–2016, approximately 24 states awarded approximately $3.5 billion in public subsidies, such as tax credits, to productions of movies with tobacco incidents, including youth-rated movies.**

Currently the MPAA does not assign R ratings to movies based on tobacco use incidents. In 2007, the MPAA developed a smoking "rating descriptor" that is applied to a few movies that contain smoking. These descriptors can appear in fine print in the box with the letter rating for a movie and can appear on advertisements and promotions to describe the type of content in a movie, such as language, violence, nudity, or sexual content. However, 89% of top-grossing, youth-rated movies with smoking did not carry the MPAA "smoking descriptor" in 2015 (*9*).

¶ https://smokefreemovies.ucsf.edu/sites/default/files/All%20tobacco%20depiction%20policies%200916.pdf.

** https://smokefreemovies.ucsf.edu/policy-solutions/end-public-subsidies/how-you-pay.

TABLE 2. Number of tobacco incidents in top-grossing movies, by Motion Picture Association of America (MPAA) rating and movie company — United States, 2010–2016

Movie company	MPAA rating*	2010	2011	2012	2013	2014	2015	2016	Total
Comcast (Universal)	G/PG	0	0	0	0	0	0	0	**0**
	PG-13	19	78	39	53	173	11	266	**639**
	R	35	154	251	398	76	113	50	**1,077**
Disney	G/PG	10	0	0	0	0	0	0	**10**
	PG-13	0	148	102	57	0	123	6	**436**
	R	0	20	0	4	0	0	0	**24**
Fox	G/PG	0	3	2	0	0	0	0	**5**
	PG-13	96	174	205	3	101	150	145	**874**
	R	274	36	47	278	210	59	47	**951**
Independents†	G/PG	20	0	19	2	15	5	4	**65**
	PG-13	132	22	282	315	625	187	128	**1,691**
	R	582	216	720	511	559	456	889	**3,933**
Sony	G/PG	0	9	2	1	12	83	0	**107**
	PG-13	198	166	178	26	184	15	144	**911**
	R	33	537	246	155	225	156	576	**1,928**
Time Warner (Warner Bros.)	G/PG	0	0	0	5	0	0	0	**5**
	PG-13	4	106	265	309	16	30	40	**770**
	R	80	62	267	233	343	322	541	**1,848**
Viacom (Paramount)	G/PG	0	95	0	0	0	0	0	**95**
	PG-13	115	50	92	12	66	3	80	**418**
	R	226	4	166	217	34	30	229	**906**
Subtotals by ratings	All G/PG	30	107	23	8	27	88	4	**287**
	All PG-13	564	744	1,163	775	1,165	519	809	**5,739**
	All youth-rated§	594	851	1,186	783	1,192	607	813	**6,026**
	All R	1,230	1,029	1,697	1,796	1,447	1,136	2,332	**10,667**
All ratings		**1,824**	**1,880**	**2,883**	**2,579**	**2,639**	**1,743**	**3,145**	**16,693**

* G = General Audiences (all ages admitted); PG-13 = Parents Strongly Cautioned (some material might be inappropriate for preteenagers); R = Restricted (under age 17 requires accompanying parent or adult guardian).
† Independent movie companies include producer-distributors that are not members of MPAA, but regularly adhere to MPAA ratings and advertising rules.
§ Youth-rated includes G/PG and PG-13.

A longitudinal cohort study of smoking onset among youths viewing movies released during 1998–2003 concluded that classifying movies with smoking with an R rating could reduce the number of teen smokers by approximately 18% (*7*). The Surgeon General notes that the magnitude of the effect of an R rating for smoking would be similar to increasing the price of cigarettes from $6.00 to $7.50 per pack (*10*).

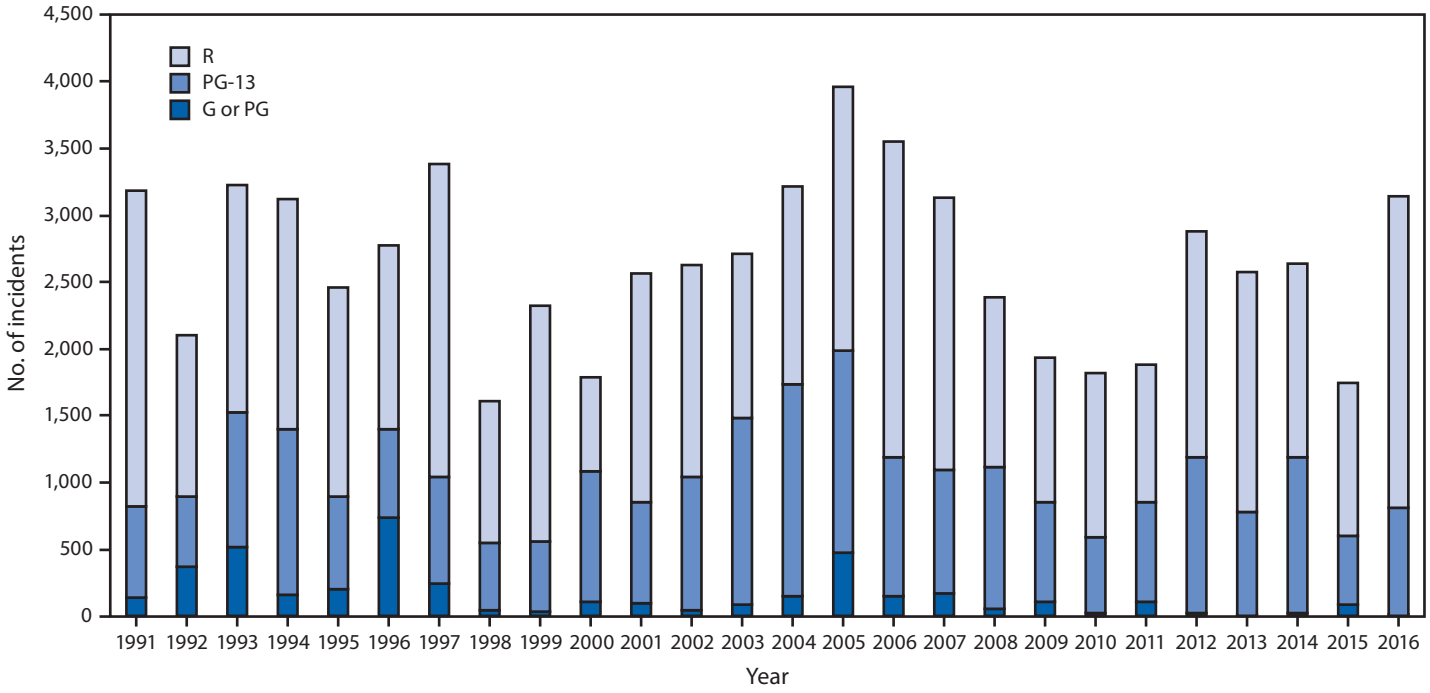
The findings in this report are subject to at least three limitations. First, detailed audience composition data are not publicly available; therefore, the number of tobacco use impressions (one person seeing one tobacco incident one time, a measure of total audience exposure) delivered by a particular movie to children and adolescents could not be determined. Second, the sample did not include all movies. However, the samples of top grossing movies were used because they are expected to account for approximately 95% of theater tobacco-use impressions (*4*–*6*). Finally, the measure used to assess tobacco exposure from movies should be interpreted cautiously because movies can be viewed through other channels (e.g., recorded media, such as DVDs and Blu-ray; television; and online streaming) that do not contribute to the calculation of in-theater impressions. As viewing platforms expand, it is important to identify whether youths are being exposed to tobacco imagery through other media sources, such as broadcast and cable television, on-demand services, and social media. Further research into youths' exposure to tobacco imagery in these and other forms of media could also help identify the impact that exposure through these sources has on youths' tobacco use.

If current trends continue, 5.6 million youths who are alive today are projected to die from tobacco-related diseases (*10*). Whereas the number of top-grossing movies with tobacco use incidents continued to decline from 2010 to 2016, one in four youth-rated movies featured tobacco imagery, which is harmful to youths and causes youths to start using tobacco. The frequency and increase in tobacco incidents in PG-13 movies is of public health concern because these movies are rated as appropriate for youths. Opportunities exist for movie studios to reduce tobacco incidents that appear in youth-related movies, including rating films with smoking R, which would help prevent or delay the initiation of tobacco use among young persons and prevent premature deaths from tobacco-related diseases.

Conflict of Interest

Jonathan R. Polansky, Kori Titus, and Stanton Glantz report grants from Truth Initiative during the conduct of this study. No other conflicts of interest were reported.

FIGURE. Tobacco incidents in top-grossing movies, by movie rating* — United States, 1991–2016



* Ratings are assigned by the Motion Picture Association of America, the trade organization that represents the six major movies studios. G = General Audiences (all ages admitted); PG = Parental Guidance Suggested (some material may not be suitable for children); PG-13 = Parents Strongly Cautioned (some material may be inappropriate for children under 13); and R = Restricted (under 17 requires accompanying parent or adult guardian).

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Summary

What is already known about this topic?

The Surgeon General has concluded that there is a causal relationship between depictions of smoking in the movies and the initiation of smoking among young persons. The more frequently youths see smoking on screen, the more likely they are to start smoking; youths who are heavily exposed to onscreen smoking imagery are approximately two to three times more likely to begin smoking than are youths who are less exposed.

What is added by this report?

Previously reported declines in number of top-grossing movies with tobacco use has continued; however, the decline in the total number of tobacco incidents has not progressed since 2010. From 2010 to 2016, the total number of tobacco incidents in top-grossing movies increased, with a 43% increase occurring among movies rated PG-13.

What are the implications for public health practice?

Although there were fewer youth-rated films with tobacco incidents in 2016 than in 2010, total depictions of tobacco use has remained stable, concentrating such exposure in fewer films. Reducing tobacco incidents that appear in youth-related movies would prevent the initiation of tobacco use among young persons. An R rating for movies with tobacco use could potentially reduce the number of teen smokers by 18% and prevent their premature deaths from tobacco-related diseases.

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Tobacco Use Among Middle and High School Students — United States, 2011–2016

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Tobacco use is the leading cause of preventable disease and death in the United States; nearly all tobacco use begins during youth and young adulthood (*1*,*2*). Among youths, use of tobacco products in any form is unsafe (*1*,*3*). CDC and the Food and Drug Administration (FDA) analyzed data from the 2011–2016 National Youth Tobacco Surveys (NYTS) to determine recent patterns of current (past 30-day) use of seven tobacco product types among U.S. middle (grades 6–8) and high (grades 9–12) school students. In 2016, 20.2% of surveyed high school students and 7.2% of middle school students reported current tobacco product use. In 2016, among current tobacco product users, 47.2% of high school students and 42.4% of middle school students used ≥2 tobacco products, and electronic cigarettes (e-cigarettes) were the most commonly used tobacco product among high (11.3%) and middle (4.3%) school students. Current use of any tobacco product did not change significantly during 2011–2016 among high or middle school students, although combustible tobacco product use declined. However, during 2015–2016, among high school students, decreases were observed in current use of any tobacco product, any combustible product, ≥2 tobacco products, e-cigarettes, and hookahs. Among middle school students, current use of e-cigarettes decreased. Comprehensive and sustained strategies can help prevent and reduce the use of all forms of tobacco products among U.S. youths (*1*–*3*).

NYTS is a cross-sectional, voluntary, school-based, self-administered, pencil-and-paper questionnaire administered to U.S. middle and high school students. A three-stage cluster sampling procedure was used to generate a nationally representative sample of U.S. students attending public and private schools in grades 6–12. This report uses data from six NYTS waves (2011–2016). Sample sizes and response rates for 2011, 2012, 2013, 2014, 2015, and 2016 were 18,866 (72.7%), 24,658 (73.6%), 18,406 (67.8%), 22,007 (73.3%), 17,711 (63.4%), and 20,675 (71.6%), respectively.

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Participants were asked about current use of cigarettes, cigars, smokeless tobacco,* e-cigarettes,† hookahs (water pipes used to smoke tobacco),§ pipe tobacco,¶ and bidis (small imported cigarettes wrapped in a leaf). Current use for each product was defined as use on ≥1 day during the past 30 days. "Any tobacco product use" was defined as current use of one or more tobacco products, and "≥2 tobacco product use" was defined as current use of two or more tobacco products.** "Any combustible tobacco product use" was defined as current use of cigarettes, cigars, hookahs, pipe tobacco, and/or bidis.

Data were weighted to account for the complex survey design and adjusted for nonresponse; national prevalence estimates, 95% confidence intervals, and population estimates were computed and rounded down to the nearest 10,000. Current use estimates for 2016 are presented for any tobacco product, any combustible tobacco product, ≥2 tobacco products, and each tobacco product individually, by selected demographics for each school type (high school and middle school). Results were assessed for the presence of linear and quadratic trends during 2011–2016, adjusting for race/ethnicity, sex, and school

* Beginning in 2015, the definition of smokeless tobacco included chewing tobacco/snuff/dip, snus, and dissolvable tobacco because of limited sample sizes for individual products (snus, dissolvable). In figures 1 and 2, this definition was applied across all years (2011–2016) for comparability purposes. The definition of smokeless tobacco in previously published reports (NYTS 2014 and earlier) included only chewing tobacco/snuff/dip, whereas snus and dissolvable tobacco were reported as separate products.

† In 2015 and 2016, current use of e-cigarettes was assessed by the question "During the past 30 days, on how many days did you use electronic cigarettes or e-cigarettes?" E-cigarette questions were preceded by an introductory paragraph. In 2016, this paragraph read: "The next thirteen questions are about electronic cigarettes or e-cigarettes. E-cigarettes are battery-powered devices that usually contain a nicotine-based liquid that is vaporized and inhaled. You may also know them as vape-pens, hookah-pens, e-hookahs, e-cigars, e-pipes, personal vaporizers or mods. Some brand examples are NJOY, Blu, Vuse, MarkTen, Logic, Vapin Plus, eGo, Halo." A similar introductory paragraph preceded e-cigarette questions in 2015. In 2014, current use of e-cigarettes was assessed by the question "During the past 30 days, on how many days did you use e-cigarettes such as Blu, 21st Century Smoke, or NJOY?"; and in 2011 to 2013, e-cigarette use was assessed by the question "In the past 30 days, which of the following products have you used on at least one day?," and the response option for e-cigarettes was "Electronic cigarettes or e-cigarettes such as Ruyan or NJOY."

§ In 2016, current use of hookahs was assessed by the question "In the past 30 days, on how many days did you smoke tobacco in a hookah or waterpipe? Hookah questions were preceded by an introductory statement: "The next eight questions are about smoking tobacco in a hookah, which is a type of waterpipe. Shisha (or hookah tobacco) is smoked in a hookah." From 2011–2015, current hookah use was assessed by the question "In the past 30 days, which of the following products have you used on at least one day?" Hookah was the fourth response option in 2015, the first response option in 2014, and was the fourth or fifth response option from 2011 to 2013.

¶ From 2014 to 2016, current use of tobacco pipes was assessed by the question "In the past 30 days, which of the following products have you used on at least one day?" and the response option for pipe tobacco was "Pipe filled with tobacco (not waterpipe)." Pipe tobacco was the second response option available in 2016, the fifth option in 2015, and the second option available in 2014. From 2011 to 2013, tobacco pipe use was assessed by the question "During the past 30 days, on how many days did you smoke tobacco in a pipe?"

** In 2015 and 2016, the definition of ≥2 tobacco product–use includes the updated definition of smokeless tobacco, thereby analyzing chewing tobacco/snuff/dip, snus, and dissolvable tobacco as a single tobacco product type compared with previously published NYTS reports, which analyzed chewing tobacco/snuff/dip, snus, and dissolvable tobacco as separate products.

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grade.†† T-tests were performed to examine differences between findings in 2015 and 2016. For all analyses, p-values <0.05 were considered statistically significant.

†† A test for linear trend is significant if an overall statistically significant decrease or increase occurs during the study period. Data were also assessed for the presence of quadratic trends; a significant quadratic trend indicates that the rate of change accelerated or decelerated across the study period. Trends were only assessed when statistically stable data were available for all 6 years. A significant positive linear trend and nonsignificant quadratic trend signifies the presence of a linear increase; a significant negative linear trend and nonsignificant quadratic trends signifies the presence of a linear decrease; a significant positive linear trend and significant positive or negative quadratic trend signifies the presence of a nonlinear increase; a significant negative linear trend and significant positive or negative quadratic trend signifies the presence of a nonlinear decrease; a nonsignificant linear trend and significant positive or negative quadratic trend signifies the presence of a nonlinear change.

In 2016, 20.2% of high school students (estimated 3.05 million) reported current use of any tobacco product, including 9.6% (1.44 million; 47.2% of current tobacco product users) who reported current use of ≥2 tobacco products. Among high school students, e-cigarettes were the most commonly used tobacco product (11.3% of current users), followed by cigarettes (8.0%), cigars (7.7%), smokeless tobacco (5.8%), hookahs (4.8%), pipe tobacco (1.4%), and bidis (0.5%) (Table). Males reported higher use of any tobacco product, ≥2 tobacco products, cigars, smokeless tobacco, and pipe tobacco than did females. E-cigarettes were the most commonly used tobacco product among non-Hispanic white (13.7%) and Hispanic

TABLE. Estimated percentage of middle and high school students who used tobacco products in the past 30 days, by product,* school level, sex, and race/ethnicity — National Youth Tobacco Survey, United States, 2016

	Sex % (95% CI)		Race/Ethnicity % (95% CI)				Total	
Tobacco product	Female	Male	White, non-Hispanic	Black, non-Hispanic	Hispanic	Other, non-Hispanic	% (95% CI)	Estimated no. of users†
High school students								
Electronic cigarettes	9.5 (7.8–11.5)	13.1 (11.4–14.9)	13.7 (11.9–15.7)	6.2 (4.8–7.9)	10.3 (8.2–12.8)	5.4 (3.6–8.0)	**11.3 (9.9–12.9)**	**1,680,000**
Cigarettes	6.9 (5.4–8.8)	9.1 (7.6–11.0)	9.9 (8.2–11.8)	3.9 (2.9–5.3)	6.4 (4.9–8.4)	4.8 (3.1–7.6)	**8.0 (6.7–9.6)**	**1,180,000**
Cigars	5.6 (4.3–7.2)	9.0 (8.6–11.2)	7.9 (6.5–9.6)	9.5 (7.8–11.5)	7.2 (5.7–9.1)	3.7 (2.4–5.7)	**7.7 (6.6–8.9)**	**1,130,000**
Smokeless tobacco	3.3 (2.4–4.4)	8.3 (6.8–10.1)	7.4 (6.0–9.1)	2.1 (1.5–3.1)	4.4 (3.4–5.7)	3.8 (2.1–6.8)	**5.8 (4.8–7.0)**	**860,000**
Hookah	5.1 (4.1–6.3)	4.5 (3.8–5.4)	4.5 (3.7–5.4)	4.1 (3.2–5.3)	6.4 (4.8–8.3)	3.4 (2.1–5.5)	**4.8 (4.1–5.7)**	**700,000**
Pipe tobacco	0.9 (0.7–1.2)	1.8 (1.5–2.4)	1.4 (1.1–1.8)	1.2 (0.7–2.0)	1.2 (0.9–1.8)	—§	**1.4 (1.1–1.7)**	**190,000**
Bidis	0.3 (0.2–0.6)	0.7 (0.5–0.9)	0.4 (0.2–0.7)	—	0.6 (0.4–1.1)	—	**0.5 (0.3–0.7)**	**70,000**
Any tobacco product¶	**17.0 (14.9–19.3)**	**23.5 (21.3–25.8)**	**23.0 (20.7–25.6)**	**16.4 (14.1–18.9)**	**18.3 (15.8–21.0)**	**11.3 (8.7–14.5)**	**20.2 (18.4–22.3)**	**3,050,000**
≥2 tobacco products**	7.8 (6.3–9.7)	11.4 (9.9–13.0)	11.3 (9.6–13.2)	6.1 (5.2–7.3)	8.9 (7.1–11.2)	5.0 (3.2–7.7)	**9.6 (8.3–11.1)**	**1,440,000**
Any combustible tobacco product††	12.4 (10.7–14.4)	15.3 (13.7–17.1)	15.1 (13.1–17.3)	12.9 (11.0–15.1)	12.9 (11.1–14.9)	8.1 (5.9–11.1)	**13.8 (12.3–15.5)**	**2,080,000**
Middle school students								
Electronic cigarettes	3.4 (2.7–4.3)	5.1 (4.2–6.1)	3.7 (3.0–4.7)	4.0 (2.6–6.0)	5.6 (4.3–7.4)	—	**4.3 (3.7–4.9)**	**500,000**
Cigarettes	1.8 (1.3–2.5)	2.5 (1.8–3.4)	1.9 (1.4–2.6)	—	2.5 (1.8–3.5)	—	**2.2 (1.7–2.7)**	**250,000**
Cigars	1.7 (1.1–2.4)	2.7 (1.9–3.9)	1.4 (0.9–2.2)	4.5 (2.8–7.1)	2.8 (1.9–4.2)	—	**2.2 (1.7–2.9)**	**260,000**
Smokeless tobacco	1.5 (0.9–2.4)	3.0 (2.2–4.0)	2.1 (1.5–3.0)	—	3.0 (2.1–3.4)	—	**2.2 (1.6–3.1)**	**260,000**
Hookah	1.9 (1.5–2.5)	2.1 (1.5–2.9)	0.9 (0.6–1.4)	2.8 (1.8–4.4)	3.7 (3.0–4.7)	—	**2.0 (1.6–2.5)**	**230,000**
Pipe tobacco	0.6 (0.3–1.0)	0.8 (0.5–1.3)	—	—	1.7 (1.1–2.6)	—	**0.7 (0.5–1.0)**	**70,000**
Bidis	—	0.4 (0.2–0.7)	—	—	0.6 (0.4–1.1)	—	**0.3 (0.2–0.5)**	**30,000**
Any tobacco product¶	**5.9 (4.9–7.3)**	**8.3 (6.8–9.9)**	**5.9 (4.7–7.3)**	**7.5 (5.5–10.1)**	**9.5 (7.5–11.8)**	**—**	**7.2 (6.1–8.4)**	**850,000**
≥2 tobacco products**	2.5 (1.8–3.4)	3.6 (2.7–4.7)	2.3 (1.7–3.0)	3.0 (2.0–4.3)	4.5 (3.3–6.1)	—	**3.1 (2.5–3.8)**	**360,000**
Any combustible tobacco product††	3.9 (3.0–5.0)	4.6 (3.4–6.2)	2.9 (2.2–3.7)	5.8 (4.0–8.3)	6.1 (4.7–7.9)	—	**4.3 (3.5–5.2)**	**510,000**

Abbreviation: CI = confidence interval.

* Past 30-day use of electronic cigarettes was determined by asking, "During the past 30 days, on how many days did you use electronic cigarettes or e-cigarettes?" Past 30-day use of cigarettes was determined by asking, "During the past 30 days, on how many days did you smoke cigarettes?" Past 30-day use of cigars was determined by asking, "During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?" Past 30-day use of hookahs was determined by asking, "During the past 30 days, on how many days did you smoke tobacco in a hookah or waterpipe?" Smokeless tobacco was defined as use of chewing tobacco, snuff, dip, snus, and/or dissolvable tobacco products. Past 30-day use of smokeless tobacco was determined by asking the following question regarding chewing tobacco, snuff, and dip: "During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip?," and the following question for use of snus and dissolvable tobacco products: "In the past 30 days, which of the following products did you use on at least one day: snus, dissolvable tobacco products?." Responses from these questions were combined to derive overall smokeless tobacco use. Past 30-day use of pipe tobacco and bidis were determined by asking, "In the past 30 days, which of the following products have you used on at least one day: pipe filled with tobacco (not waterpipe), bidis (small brown cigarettes wrapped in a leaf)?"

† Estimated total number of users is rounded down to the nearest 10,000 persons.

§ Data are statistically unreliable because samples size was <50 or relative standard error was >0.3.

¶ Any tobacco product use is defined as use of any tobacco product (electronic cigarettes, cigarettes, cigars, smokeless tobacco, hookahs, pipe tobacco, and/or bidis) on at least one day in the past 30 days.

** ≥2 tobacco product use is defined as use of two or more tobacco products (electronic cigarettes, cigarettes, cigars, smokeless tobacco, hookahs, pipe tobacco, and/or bidis) on at least one day in the past 30 days.

†† Any combustible tobacco use defined as use of cigarettes, cigars, hookahs, pipe tobacco, and/or bidis on at least one day in the past 30 days.

(10.3%) high school students, whereas cigars were the most commonly used tobacco product among non-Hispanic black high school students (9.5%).

Among middle school students, 7.2% (0.85 million) reported current use of any tobacco product, and 3.1% (0.36 million; 42.4% of current tobacco users) reported current use of ≥2 tobacco products (Table). Among middle school students, e-cigarettes were the most commonly used tobacco product (4.3%), followed by cigarettes (2.2%), cigars (2.2%), smokeless tobacco (2.2%), hookahs (2.0%), pipe tobacco (0.7%), and bidis (0.3%). Among males, current use of any tobacco product was 8.3%, and among females, was 5.9%. Hispanics reported higher use of any tobacco product, use of ≥2 tobacco products, and use of hookahs than did non-Hispanic whites (Table).

Among all high school students, current use of any tobacco product did not change significantly from 2011 (24.2%) to 2016 (20.2%); however, a nonlinear decrease occurred in current use of any combustible tobacco product (21.8% to 13.8%), and ≥2 tobacco products (12.0% to 9.6%) during this time (Figure 1). By product type, nonlinear increases occurred for current use of e-cigarettes (1.5% to 11.3%) and hookahs (4.1% to 4.8%) (p for trend <0.05); however, a linear decrease occurred in current use of cigarettes (15.8% to 8.0%), cigars (11.6% to 7.7%), and smokeless tobacco (7.9% to 5.8%), and a nonlinear decrease occurred in current use of pipe tobacco (4.0% to 1.4%) and bidis (2.0% to 0.5%) (p<0.05 for trend) (Figure 1). During 2011–2016, among middle school students, a linear decrease occurred in current use of any combustible tobacco products (6.4% to 4.3%), cigarettes (4.3% to 2.2%), cigars (3.5% to 2.2%), and pipe tobacco (2.2% to 0.7%) (p for trend <0.05), whereas no significant linear or quadratic trends were observed for current use of any tobacco product or ≥2 tobacco products (Figure 2). A nonlinear increase occurred in current use of e-cigarettes (0.6% to 4.3%), and a linear increase occurred for current use of hookahs (1.0% to 2.0%) (p for trend <0.05).

During 2015–2016, among high school students, decreases occurred in the use of any tobacco product (25.3% to 20.2%), any combustible tobacco product (17.2% to 13.8%), ≥2 tobacco products (13.0% to 9.6%), e-cigarettes (16.0% to 11.3%), and hookahs (7.2% to 4.8%) (p<0.05). Among middle school students, e-cigarette use decreased from 5.3% in 2015 to 4.3% in 2016 (p<0.05). Among middle and high school students, use of other tobacco products, including cigarettes, cigars, smokeless tobacco, pipe, and bidis, did not change significantly during 2015–2016.

Summary

What is already known about this topic?

Tobacco use is the leading cause of preventable disease and death in the United States, and nearly all tobacco use begins during youth and young adulthood. Among youths, use of tobacco products in any form is unsafe.

What is added by this report?

In 2016, one in five high school students and one in 14 middle school students reported current use of a tobacco product on ≥1 of the past 30 days (3.9 million tobacco users). Moreover, 47.2% of high school students and 42.4% of middle school students who used a tobacco product in the past 30 days used ≥2 tobacco products. During 2015–2016, current use of electronic cigarettes (e-cigarettes) decreased among middle school students, and decreases in current use of any tobacco product, any combustible tobacco product, ≥2 tobacco products, e-cigarettes, and hookahs occurred among high school students. However, decreases in cigarette and cigar use during 2011–2016 were offset by increases in hookah and e-cigarette use, resulting in no significant change in any tobacco use. In 2016, e-cigarettes remained the most commonly used tobacco product among high (11.3%) and middle (4.3%) school students.

What are the implications for public health practice?

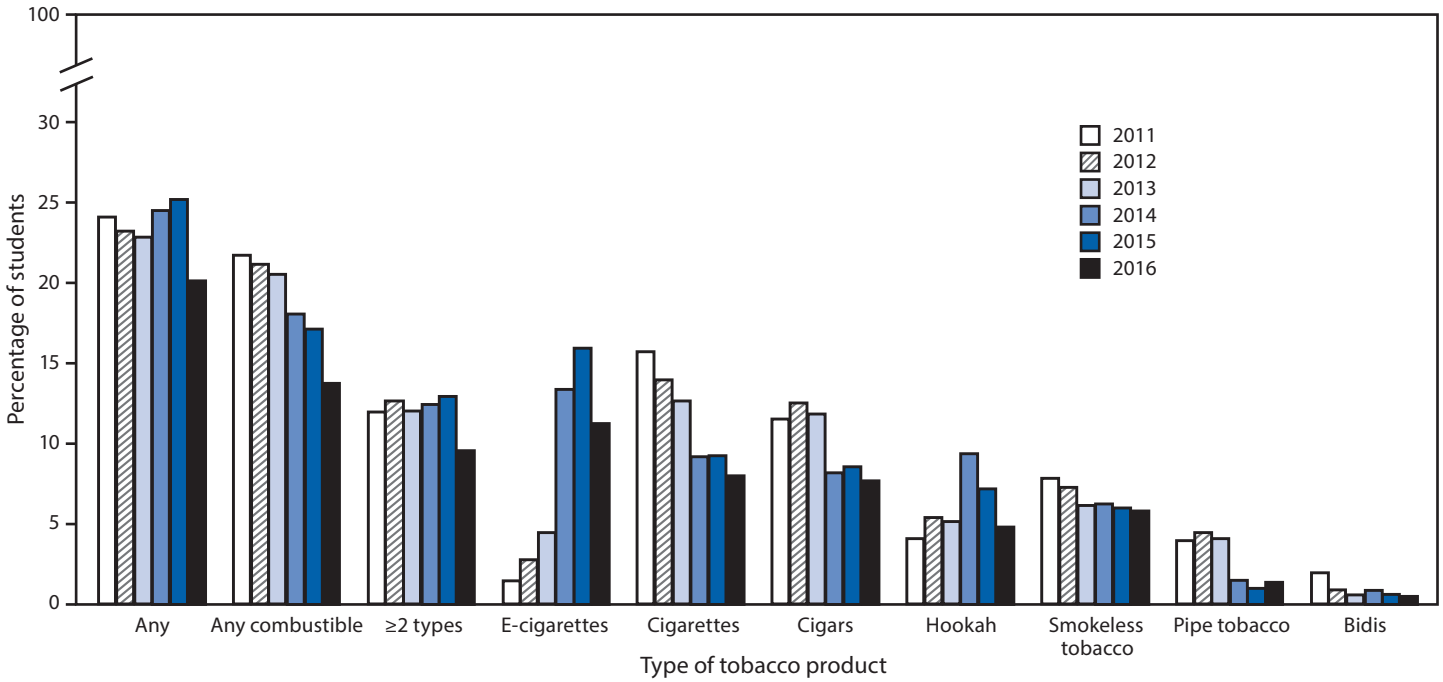
Sustained efforts to implement proven tobacco control strategies focusing on all types of tobacco products are critical to reduce tobacco product use among U.S. youths.

Discussion

During 2015–2016, the use of any tobacco product, any combustible tobacco product, ≥2 tobacco products, e-cigarettes, and hookahs declined among high school students, and e-cigarette use declined among middle school students. This is in contrast to prior recent years, when declines in the reported use of cigarettes and cigars occurred alongside increases in the use of other tobacco products, including e-cigarettes and hookahs, resulting in no change in the use of any tobacco product during 2011–2016. In 2016, an estimated 3.9 million U.S. middle and high school students currently used any tobacco product, with 1.8 million reporting current use of ≥2 tobacco products. Among youths, symptoms of nicotine dependence are increased in multiple tobacco product–users compared with single product–users (*4*).

Tobacco prevention and control strategies at the national, state, and local levels likely have contributed to the reduction in use of certain tobacco products, including e-cigarettes, among youths in recent years (*2*). Efforts to address youths' use of tobacco products include youth access restrictions, smoke-free policies that include e-cigarettes, and media campaigns warning about the risks of youth tobacco product use. For example, since February 2014, FDA's first national tobacco public education campaign, The Real Cost, has broadcasted tobacco education advertising designed for youths aged 12–17 years; the campaign was associated with an estimated 348,398 U.S. youths who did not initiate cigarette smoking during

FIGURE 1. Estimated percentage of high school students who currently use any tobacco products,* any combustible tobacco products,† ≥2 tobacco products,§ and selected tobacco products — National Youth Tobacco Survey, United States, 2011–2016¶,,††**



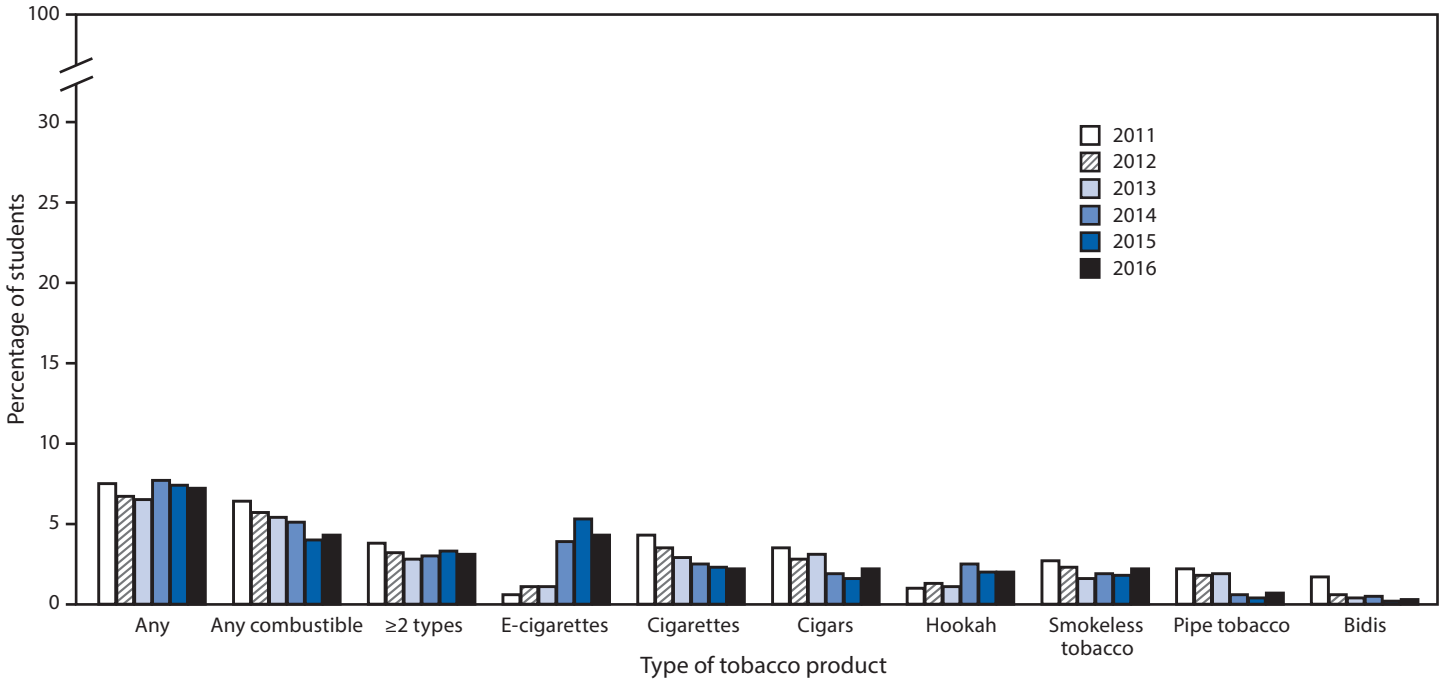
* Any tobacco product use is defined as past 30-day use of electronic cigarettes, cigarettes, cigars, hookahs, smokeless tobacco, pipe tobacco and/or bidis.
† Any combustible tobacco use is defined as use of cigarettes, cigars, hookahs, pipe tobacco, and/or bidis on at least one day in the past 30 days.
§ ≥2 tobacco product use is defined as past 30-day use of two or more of the following tobacco products: electronic cigarettes, cigarettes, cigars, hookahs, smokeless tobacco, pipe tobacco, and/or bidis.
¶ From 2015 to 2016, a significant decrease in use of any tobacco product, any combustible tobacco product, ≥2 tobacco products, electronic cigarettes, and hookahs was observed ($p<0.05$).
** During 2011–2016, use of electronic cigarettes and hookahs exhibited a nonlinear increase ($p<0.05$). Use of cigarettes, cigars, and smokeless tobacco exhibited a linear decrease ($p<0.05$). Any combustible tobacco use, pipe tobacco, and bidis exhibited a nonlinear decrease ($p<0.05$). There was a nonlinear change during this time in the use of ≥2 types of tobacco products ($p<0.05$). No significant trend in current use of any tobacco product was observed during 2011–2016.
†† Beginning in 2015, the definition of smokeless tobacco included chewing tobacco/snuff/dip, snus, and dissolvable tobacco because of limited sample sizes for individual products; this definition was applied across 2011–2016 for comparability purposes. In previous reports (National Youth Tobacco Survey 2014 and earlier) smokeless tobacco included only chewing tobacco/snuff/dip; snus and dissolvable tobacco were reported as separate products.

February 2014–March 2016 (*5*). Continued implementation of these strategies can help prevent and further reduce the use of all forms of tobacco product among U.S. youths (*1*–*3*).

The findings in this report are subject to at least three limitations. First, NYTS only recruited students from public and private schools; therefore, the findings might not be generalizable to youths who are being home-schooled, have dropped out of school, or are in detention centers. Second, data were self-reported; thus, the findings are subject to recall and response bias. Finally, changes in the wording and placement of survey questions about certain products (e.g., e-cigarettes, hookahs, and pipe tobacco) during 2011–2016 might have had an impact on reported use. Despite these limitations, overall trends are generally similar to those found in other nationally representative surveys (*6*,*7*).

Sustained efforts to implement proven tobacco control policies and strategies are critical to preventing youth use of all tobacco products. Effective August 8, 2016, FDA finalized its deeming rule, which gave FDA jurisdiction over products made or derived from tobacco, including e-cigarettes, cigars, pipe tobacco, and hookah tobacco (*8*). Regulation of the manufacturing, distribution, and marketing of tobacco products by FDA, coupled with full implementation of comprehensive tobacco control and prevention strategies at CDC-recommended funding levels (*9*), could reduce youth tobacco product initiation and use (*1*,*2*,*9*). Strategies to reduce youth tobacco product use include increasing the price of tobacco products, protecting people from secondhand exposure to combustible tobacco smoke and e-cigarette aerosol, implementing advertising and promotion restrictions and national public education media campaigns, and raising the minimum age of purchase for tobacco products to 21 years (*9*,*10*). Continued monitoring of all forms of youth tobacco product use is critical to determine whether current patterns in use persist over time.

FIGURE 2. Estimated percentage of middle school students who currently use any tobacco products,* any combustible tobacco product,† ≥2 tobacco products,§ and selected tobacco products — National Youth Tobacco Survey, 2011–2016¶,,††**



* Any tobacco product use is defined as past 30-day use of electronic cigarettes, cigarettes, cigars, hookahs, smokeless tobacco, pipe tobacco and/or bidis.
† Any combustible tobacco use is defined as use of cigarettes, cigars, hookahs, pipe tobacco, and/or bidis on at least one day in the past 30 days.
§ ≥2 tobacco product use is defined as past 30-day use of two or more of the following tobacco products: electronic cigarettes, cigarettes, cigars, hookahs, smokeless tobacco, pipe tobacco, and/or bidis.
¶ From 2015 to 2016, a significant decrease in use of electronic cigarettes was observed ($p<0.05$).
** During 2011–2016, electronic cigarette use exhibited a nonlinear increase ($p<0.05$). Hookah use exhibited a linear increase ($p<0.05$). Use of any combustible tobacco, cigarettes, cigars, and pipe tobacco exhibited a linear decrease ($p<0.05$). Bidi use exhibited a nonlinear decrease ($p<0.05$). Smokeless tobacco use exhibited a nonlinear change over this time period ($p<0.05$). No change in current use of any product or ≥2 types of products was observed during 2011–2016.
†† Beginning in 2015, the definition of smokeless tobacco included chewing tobacco/snuff/dip, snus, and dissolvable tobacco because of limited sample sizes for individual products; this definition was applied across 2011–2016 for comparability purposes. In previous reports (National Youth Tobacco Survey 2014 and earlier) smokeless tobacco included only chewing tobacco/snuff/dip; snus and dissolvable tobacco were reported as separate products.

Conflict of Interest

No conflicts of interest were reported.

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Electronic Cigarettes as an Introductory Tobacco Product Among Eighth and 11th Grade Tobacco Users — Oregon, 2015

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During 2011–2015, increased electronic cigarette (e-cigarette) and hookah use offset declines in cigarette and other tobacco product use among youths (persons aged <18 years) (*1*). Limited information exists about which tobacco product introduced youths to tobacco product use. Patterns of first use of e-cigarettes among Oregon youths who were tobacco users were assessed in the Oregon Healthy Teens 2015 survey, a cross-sectional survey of eighth and 11th grade students in Oregon. Respondents were asked, "The very first time you used any tobacco or vaping product, which type of product did you use?" Among students who had ever used any tobacco product (ever users), e-cigarettes were the most common introductory tobacco product reported by both eighth (43.5%) and 11th (34.4%) grade students. Among students who used a tobacco product for ≥1 day during the past 30 days (current users), e-cigarettes were the most common introductory tobacco product reported by eighth grade students (44.4%) and the second most common introductory tobacco product reported by 11th grade students (31.0%). Introductory use of e-cigarettes was commonly reported among youths in Oregon who were ever or current tobacco users, underscoring the importance of proven interventions to prevent all forms of tobacco use among youths (*2*,*3*).

Tobacco use is the leading cause of preventable disease and death in the United States, and the majority of adult cigarette smokers first try smoking before age 18 years (*2*). During the past 3 decades, cigarette smoking among youths has declined substantially, in both Oregon and nationally (*3*–*5*). However, during 2011–2015, increased electronic cigarette and hookah use offset declines in cigarette and other tobacco product use among youths nationally; in 2014, e-cigarettes surpassed cigarettes as the most commonly used tobacco product among youths (*1*).

Among youths, use of e-cigarettes is strongly associated with use of other tobacco products, including combustible tobacco products (*3*,*6*). In 2015, the majority of students in U.S. middle and high school who used combustible tobacco (including conventional cigarettes) concurrently used e-cigarettes; however, which type of tobacco product these students are likely to use first remains unknown (*3*). Limited information exists about which product was used as an introduction to tobacco products after e-cigarettes became commonly used among U.S. youths (*7*). Using data from the Oregon Health Teens surveys, patterns of first use of e-cigarettes were assessed among youths in Oregon who were tobacco users.

Oregon Healthy Teens is a cross-sectional, school-based, biennial survey of health behaviors administered to Oregon eighth and 11th grade students. A statewide representative sample is obtained from a random sample of public high schools and their feeder middle schools, stratified by county. Students' parents are notified before survey administration and can decline participation for their child. Students can opt out of participating at the time of survey administration. Responses are anonymous, and data are weighted based on statewide school enrollment numbers to represent students across Oregon proportionally. During February–May 2015, a total of 16,104 eighth grade and 13,570 11th grade students participated in the surveys; response rate was 83% among 308 schools that were contacted for survey recruitment.

In 2015, respondents were asked, "The very first time you used any tobacco or vaping product, which type of product did you use?" Response options included the following: I have never used any tobacco or vaping product; cigarette; chewing tobacco; small cigar; large cigar; hookah; e-cigarette or other vaping product; and another type of product. The introductory tobacco product used was assessed among ever and current tobacco product users. Respondents were considered ever users if they indicated tobacco product use for the following survey questions: "How old were you when you smoked a whole cigarette for the first time?" or "How old were you when you first used any form of tobacco other than cigarettes?" Respondents were considered current users if they indicated use of a tobacco product ≥1 day during the past 30 days. Tobacco products were categorized as cigarettes, e-cigarettes, hookahs, and other tobacco products (small cigars, large cigars, chewing tobacco, and unspecified tobacco products).

In 2015, among Oregon eighth grade students, 21.9% reported having ever used any tobacco product and 12.3% reported current use; among Oregon 11th grade students, 41.7% reported having ever used any tobacco product, and 23.7% reported current use. E-cigarettes were the most common introductory tobacco product among ever (43.5%) and current (44.4%) eighth grade users (Table). Among 11th grade users of any tobacco product, e-cigarettes were the most commonly reported introductory tobacco product among ever users (34.4%) and the second most commonly reported

TABLE. Introductory tobacco products used among eighth and 11th grade students who ever used or currently use any tobacco product and cigarettes — Oregon Healthy Teens Survey, 2015

		Ever user % (95% CI)		Current user % (95% CI)		
School grade	Introductory product	Any tobacco	Cigarettes	Any tobacco	Cigarettes	Cigarettes and e-cigarettes
8	E-cigarettes	43.5 (39.9–47.2)	25.1 (21.9–28.5)	44.4 (40.8–48.2)	22.2 (18.3–26.7)	30.5 (25.4–36.1)
	Cigarettes	27.2 (23.7–30.9)	48.7 (43.5–53.9)	25.0 (21.4–29.0)	53.9 (47.5–60.3)	44.1 (37.0–51.4)
	Hookah	16.7 (13.6–20.2)	11.9 (9.5–14.8)	16.9 (12.9–21.9)	9.9 (7.0–13.7)	12.2 (8.9–16.4)
	Other tobacco product*	12.6 (10.5–15.1)	14.3 (10.5–19.3)	13.6 (11.3–16.3)	14.0 (9.7–19.8)	13.3 (8.6–20.0)
11	E-cigarettes	34.4 (31.9–37.0)	17.7 (15.4–20.4)	31.0 (28.2–34.0)	14.7 (10.6–19.9)	15.4 (10.7–21.7)
	Cigarettes	29.6 (27.3–32.0)	52.6 (49.5–55.7)	31.1 (28.5–33.7)	57.9 (52.4–63.1)	57.1 (50.3–63.7)
	Hookah	18.8 (17.1–20.5)	12.8 (11.1–14.8)	15.8 (13.7–18.1)	10.4 (8.4–12.7)	10.0 (7.8–12.7)
	Other tobacco product*	17.2 (15.4–19.2)	16.8 (14.8–19.1)	22.1 (19.5–25.0)	17.1 (14.2–20.5)†	17.5 (14.2–21.3)†

Abbreviation: CI = confidence interval.
* Other tobacco products include cigars, large cigars, chewing tobacco, or unspecified.
† Percent reflects total for composite variable (i.e., other tobacco product); however, when examined by individual introductory product, e-cigarettes were the second most common introductory tobacco product among 11th grade students who were current cigarette users, regardless of concurrent e-cigarette use.

introductory product among current users (31.0% of current users reported first using e-cigarettes and 31.1% reported first using conventional cigarettes).

Among eighth and 11th grade students who were conventional cigarette users, e-cigarettes were the second most common introductory tobacco product among ever (25.1% and 17.7%, respectively) and current (22.2% and 14.7%) users (Table). Among current conventional cigarette users who currently also used e-cigarettes, e-cigarettes were the second most common introductory tobacco product for both eighth (30.5%) and 11th grade students (15.4%).

Discussion

In 2015, e-cigarettes were the most common introductory tobacco product used among Oregon eighth and 11th grade students who had ever tried tobacco products. E-cigarettes were also a common introductory tobacco product for current conventional cigarette users among eighth and 11th grade students in Oregon. Although e-cigarettes were a commonly reported introductory product in both grades, the lower prevalence of introductory use of e-cigarettes among 11th grade students might reflect tobacco use initiation that occurred before the widespread availability of e-cigarettes. This study extends reports on the increases in e-cigarette use by examining introductory tobacco products among youths who were users of tobacco products. However, further studies are needed to establish temporality of e-cigarette and conventional tobacco product use among youths.

The findings in this report are subject to at least four limitations. First, the data were self-reported, and therefore, subject to recall and reporting bias. Second, observational data do not allow for evaluation of a causal link between e-cigarette use and initiation of cigarette smoking. Third, because the survey question of interest was first asked in 2015, it is not possible at this time to report a trend in introductory tobacco products.

Summary

What is already known about this topic?

Electronic cigarette (e-cigarette) use among youths is strongly associated with use of other tobacco products, including combustible tobacco products. Limited information exists about which tobacco product introduced youths to the use of tobacco products after e-cigarettes became widely available in the late 2000s.

What is added by this report?

In 2015, e-cigarettes were commonly reported as the introductory tobacco product among youths who had ever used or currently use any tobacco product and cigarette smokers in eighth and 11th grades in Oregon.

What are the implications for public health practice?

The findings of this study underscore the importance of proven interventions to prevent all forms of tobacco use, including e-cigarettes, among youths.

Finally, data are only collected from eighth and 11th grade students who attend public schools and are therefore not representative of all Oregon youths.

Introductory use of e-cigarettes was commonly reported among youths in Oregon who were ever or current tobacco users. A 2016 Surgeon General's report concerning e-cigarettes concludes that use of nicotine-containing products in any form, including e-cigarettes, among youths is unsafe (*3*). The report notes that action can be taken at the national, state, local, tribal, and territorial levels to address e-cigarette use among youths and young adults. Public health interventions could include smoke-free policies that include e-cigarettes, restrictions on youths' access to e-cigarettes, pricing strategies, retail licensure, regulation of e-cigarette marketing likely to attract youths, and educational initiatives focused toward youths and young adults (*3*). CDC has issued evidence-based guidelines to establish comprehensive tobacco control programs, and in 2016, the

Food and Drug Administration finalized rules extending its regulatory authority of tobacco products to include e-cigarettes (*8*,*9*). The findings of this study underscore the importance of proven interventions to prevent all forms of tobacco use, including e-cigarette use, among youths.

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Conflict of Interest

No conflicts of interest were reported.

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