

Combustible Tobacco and Smokeless Tobacco Use Among Working Adults—United States, 2012 to 2014

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Objective: The aim of this study was to examine tobacco use among working adults at least 18 years of age. **Methods:** The 2012 to 2014 National Health Interview Survey ($n = 105,779$) was used to estimate prevalences for cigarette smoking, other combustible tobacco use, and smokeless tobacco use and prevalence odds ratios (PORs) for any tobacco product use among working adults at least 18 years of age, by industry and occupation. **Results:** Of the estimated 144 million currently employed adults, 17% were cigarette smokers, 7.0% other noncigarette combustible tobacco users, and 3.4% smokeless tobacco users. Odds of using tobacco varied by sociodemographic characteristics and by industry and occupations. **Conclusions:** Disparities in tobacco use exist among working adults. Continued implementation of proven interventions to prevent and reduce all forms of tobacco use among U.S. workers is warranted, particularly among those workers with a higher burden of use.

Tobacco use is the leading cause of preventable diseases and death in the United States.¹ Cigarette smoking alone causes approximately 480,000 premature deaths annually, and more than 16 million U.S. adults live with a smoking-related disease.¹ Furthermore, the chemicals and toxins present in noncigarette tobacco products have been associated with serious health problems, including cancer, respiratory, and cardiovascular diseases.^{2–5} Smokeless tobacco use is associated with an increased risk of certain cancers (pancreatic, esophageal, and oral), respiratory diseases (bronchitis and emphysema), heart disease (heart attacks), and other cardiovascular (stroke and aneurysm) conditions.^{4–6} In addition, cigarette smoking can worsen the potential adverse health effects of occupational exposure.^{7–9} For example, according to Markowitz et al,⁸ exposure to asbestos and smoking separately increase lung cancer rate ratio by 5-fold and 10-fold, respectively; however, exposure to both simultaneously increases lung cancer rate ratio by 28-fold, which is more than additive. Similarly, the risk for COPD increases nearly seven-fold when both smoking and occupational factors are present.⁹ Despite progress in reducing cigarette smoking over the past several decades, in 2010, 19.1% (26.5 million) of working adults currently smoked cigarettes and 3.0% (4.2 million) used smokeless tobacco,¹⁰ which exceeded the Healthy People 2020 objectives set to reduce cigarette smoking to 12%, and smokeless tobacco use to 2.3% among U.S. adults aged 18 years and older.¹¹ In the United States, noncigarette tobacco products such as cigars, hookahs, and smokeless tobacco products are gaining popularity, with increasing sales and advertising.^{12,13} In 2012, over \$452

million was spent on advertising and promotion of smokeless tobacco products.¹⁴ In addition, consumption of other combustible tobacco products (ie, roll-your-own tobacco, pipe tobacco, and small and large cigars pipe tobacco, and large cigars) has increased from 3.4% in 2000 to 10.4% in 2011.¹⁵ Some of these increases might be due to users' perception of these products being less harmful than cigarettes, or lower taxes resulting in lower costs relative to cigarettes,^{15–17} and marketing strategies for these products as an alternative in areas wherein smoking is otherwise prohibited.¹⁸

Millions of U.S. adults continue to use combustible and other forms of tobacco with higher prevalences of use among certain groups.^{15–19} All tobacco products are harmful to individual health; therefore, monitoring the extent of any tobacco use could assist in guiding decisions on tobacco control strategies and tailoring interventions especially among the high-risk subpopulations.^{1,14,16,20} Furthermore, given the changing patterns of tobacco product use, comprehensive tobacco-free laws in indoor public places and tobacco-free workplace policies may include all tobacco products and not just cigarettes.

Disparities in cigarette smoking and smokeless tobacco use prevalence exist among working adults^{10,19}; however, limited data are available on the use of noncigarette combustible tobacco products among working adults. For the current study, we analyzed the 2012 to 2014 data from the National Health Interview Survey (NHIS) to determine the national estimates of combustible (cigarettes and other combustible tobacco products) and smokeless tobacco use prevalence. In addition, prevalence odds ratios (PORs) for tobacco use among U.S. working adults by industry, occupation, and sociodemographic characteristics were calculated.

METHODS

Data Source

NHIS is an annual, nationally representative, in-person survey of the noninstitutionalized U.S. civilian population. The 2012 to 2014 NHIS Sample adult (18 years and older) data ($n = 105,779$) were used for the current analysis. The data were aggregated to improve precision and reliability of the estimates.²¹ The final sample adult survey response rates were 61.2% in 2012, 61.2% in 2013, and 58.9% in 2014. The 2012 to 2014 NHIS was approved by the Research Ethics Review Board of the National Center for Health Statistics (NCHS).²¹ For this study, we restricted the data to respondents 18 years and older who were working in the week before the interview ($n = 61,402$). Individuals who reported their family income as missing/unknown (6.4% of workers) a separate category were included in the regression model, to decrease the precision of estimates and the generalizability of study results.

Measures

Employment Status

Currently working adults are those who were “working at a job or business,” “with a job or business but not at work,” or “working, but not for pay, at a job or business” during the week BEFORE the interview. Of those who reported with a job or business but not at work and responded “retired” or “laid off”

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to the question “main reason for not currently working in the week prior to the survey” were excluded from the analysis ($n = 123$). Information on participants’ industry of employment and occupation was classified by trained coders from the Census Bureau.²¹

Tobacco Use

Current cigarette smokers were those who smoked at least 100 cigarettes during their lifetime, and currently smoke every day or some days.²¹ Other current combustible tobacco users were those who at the time of the survey reported smoking tobacco products other than cigarettes (including cigars, pipes, water pipes or hookahs, very small cigars, bidis) every day, some days, or rarely.²¹ Smokeless tobacco users were those who at the time of the survey reported using smokeless tobacco products (including chewing tobacco, snuff, dip, snus, or dissolvable tobacco) every day, some days, or rarely.²¹ Any tobacco users were those who at the time of the survey reported using one or more tobacco products (cigarettes, other combustible tobacco products/smokeless tobacco) every day, some days, or rarely.

Statistical Analysis

SAS 9.3 software (SAS Institute Inc., Cary, NC) was used for analyses. Data were adjusted for nonresponse and weighted to provide nationally representative estimates. To achieve annualized results, weights provided in the 2012 to 2014 sample adult files were adjusted for the number of years combined for the analysis (ie, divided by 3).²¹

The annual average prevalences for combustible and smokeless tobacco use with corresponding 95% confidence intervals (CIs) were calculated. Bivariate logistic regression was used to assess factors associated with tobacco use and multivariable logistic regression to calculate age-adjusted PORs. The referent group (for industry/occupation) was all other currently employed adults who were not in the industry/occupation of interest. All tests were two-sided, and differences were considered significant at a P value less than 0.05. Estimates with relative standard error (RSE, calculated as standard error divided by the prevalence) more than 30% are not reported.

RESULTS

During 2012 to 2014, an estimated 144 million U.S. adults were working in the week before the survey interview. Of those, 53.0% were men, 43.7% were aged 25 to 44 years, 66.5% were non-Hispanic whites, 67.1% had greater than a high school education, and 83.5% had health insurance coverage.

During 2012 to 2014, an estimated 23.1% (33 million) of working adults currently used any tobacco (combustible or smokeless tobacco). The odds of using any tobacco were significantly ($P < 0.05$) higher among working adults aged 18 to 24 years (POR, 1.36), males (POR, 2.08), non-Hispanic whites (POR, 1.98), those with less than a high school education (POR, 1.89), those with a household income of less than or equal to \$34,999 (POR, 1.74), those with no health insurance coverage (POR, 1.67%), and current cigarette smokers (POR, 3.67) as compared with respective reference groups (Table 1).

Among working adults, cigarette smoking (17.0%) was the most frequently used form of tobacco product, followed by other combustible tobacco products (7.0%) and smokeless tobacco (3.4%). Age-adjusted odds of using any tobacco were significantly higher among those with fair or poor physical health (POR, 2.23) than those with excellent health, with chronic obstructive pulmonary disease [COPD (bronchitis and/or emphysema); POR, 1.94], heart disease (POR, 1.20), and with any cancer (POR, 1.09) than those without these specific health conditions (Table 1).

By industry, cigarette smoking prevalence ranged from 26.2% among workers in the construction industry to 8.0% among

workers in the education services industry. Other combustible tobacco use prevalence ranged from 10.0% among workers in the arts, entertainment, and recreation industry to 3.6% among workers in the health care and social assistance industry. Smokeless tobacco use prevalence ranged from 15.1% among workers in the mining industry to 1.1% among workers in the health care and social assistance industry. Workers in the construction industry had twice (POR, 2.01) the odds of using any tobacco products compared with all other workers. Workers in 9 of 21 industry groups had significantly higher odds of using any tobacco products than all other workers (Table 2).

By occupation, cigarette smoking prevalence ranged from 28.6% among workers in construction and extraction to 7.4% among workers in education, training, and library occupations. Other combustible tobacco use ranged from 11.3% among workers in installation, maintenance, and repair to 2.6% among workers in health care support occupations. Smokeless tobacco use prevalence ranged from 11.0% among workers in farming, forestry, and fishing to 1.2% among workers in health care practitioners and technical occupations. Workers in installation, maintenance and repair (POR, 2.19), and construction and extraction (POR, 2.12) occupations had approximately twice the odds of using any tobacco products compared with all other workers. Workers in 7 of the 23 occupation groups had significantly higher odds of using any tobacco products (combustible or smokeless) than all other workers (Table 2).

DISCUSSION

To our knowledge, this is the first study to assess the prevalence of any tobacco use (including cigarette smoking, other combustible tobacco products use, and smokeless tobacco use) among U.S. working adults by industry, occupation, and sociodemographic characteristics. The findings indicate that during 2012 to 2014, approximately one in four working adults used cigarettes, other combustible tobacco, or smokeless tobacco. Consistent with previous findings,^{10,21,22} combustible or smokeless tobacco use varied by sociodemographic characteristics, with higher prevalences among males, non-Hispanic whites, and those with no health insurance. The odds of currently using any tobacco also varied by industry and occupation, and the highest odds of using any tobacco was among workers in construction industry and among workers in installation, maintenance, and repair occupations. Findings of higher use of any tobacco products (combustible or smokeless tobacco) in certain groups highlight opportunities for reducing the health and economic burdens of tobacco use among U.S. workers and indicate a need for continued surveillance, especially among those with higher tobacco use prevalence.

Despite a 23% decline in cigarette smoking (from 22.2% in 2005 to 17.0% during 2012 to 2014),¹⁰ an increase in smokeless tobacco use was observed among working adults, 26% increase since 2010 (from 2.7% in 2010 to 3.4% during 2012 to 2014).¹⁰ In addition, the observed smokeless tobacco use prevalence is greater than the Healthy People 2020 goal of reducing smokeless tobacco use to 2.3% in U.S. adults aged 18 years and older.¹¹ Findings from previous studies suggest that people may be using smokeless products in areas wherein cigarettes and other combustibles are otherwise prohibited.^{12,13,17} Furthermore, the increase in cigarette prices, marketing, and the strict smoke-free policies may be associated with the increase in use of noncigarette tobacco products.^{17,18,21} In the current study, 7% of working adults used noncigarette combustible tobacco products. Although limited data are available on other combustible tobacco use among working adults, these findings were similar to those observed among all U.S. adults.²¹ A previous study using the National Adult Tobacco Survey data indicated that during 2009 to 2010, 6.6% of all U.S. adults used cigars/cigarillos/small cigars during the past 30 days.²¹ Continued

TABLE 1. Estimates of Current Tobacco Use Among U.S. Working Adults 18 Years and Older, by Selected Characteristics—National Health Interview Survey, United States, 2012–2014

Characteristics	Estimated Working Population (1000s)	Cigarette Smokers*		Other Combustible† Tobacco Users		Smokeless§ Tobacco Users		Any Tobacco¶ Users		Any Tobacco¶ Users (Excluding e-cigarettes)	
		P	95% CI	P	95% CI	P	95% CI	P	95% CI	POR	95% CI
Age group, years											
18–24	17,774	17.2	15.8–18.6	12.6 ^{††}	11.5–13.8	5.4 ^{††}	4.5–6.2	26.8	25.2–28.2	1.36 ^{††}	1.23–1.49
25–44	63,085	18.8 ^{††}	18.1–19.4	7.3	6.8–7.8	4.0	3.6–4.3	25.1	24.4–25.9	1.24 ^{††}	1.17–1.32
45–64	56,268	16.2	15.5–16.8	5.3	4.9–5.8	2.4	2.1–2.6	21.3	20.6–22.0	Ref	—
>65	7,097	7.3	6.2–8.3	2.8	2.1–3.5	1.4	0.9–1.9	10.3	9.0–11.5	0.43 ^{††}	0.37–0.49
Gender											
Males	76,421	19.0 ^{††}	18.3–19.6	10.9 ^{††}	10.4–11.4	6.1 ^{††}	5.7–6.5	29.0	28.3–29.7	2.08 ^{††}	1.97–2.19
Females	67,803	14.8	14.2–15.3	2.6	2.3–2.9	0.4	0.3–0.5	16.5	15.9–17.1	Ref	—
Race/Ethnicity											
Hispanic	22,810	12.4	11.5–13.3	4.0	3.5–4.6	0.9	0.7–1.2	15.4	14.5–16.3	0.93	0.82–1.07
Non-Hispanic white	95,974	18.7 ^{††}	18.2–19.3	8.0 ^{††}	7.6–8.4	4.6 ^{††}	4.3–4.9	26.1	25.4–26.7	1.98 ^{††}	1.77–2.23
Non-Hispanic black	16,275	15.7	14.8–16.6	6.7	6.1–7.4	0.9	0.7–1.2	20.5	19.4–21.6	1.37 ^{††}	1.21–1.56
Other multiple	9,165	12.7	11.3–14.0	3.7	3.0–4.3	1.2	0.8–1.6	15.5	14.1–17.0	Ref	—
Education											
≤High school	46,919	25.9 ^{††}	22.9–26.0	6.2	5.7–6.7	4.8 ^{††}	4.3–5.2	31.0	30.1–31.9	1.89 ^{††}	1.78–2.00
>High school	967,36	12.7	12.2–13.1	7.4 ^{††}	7.0–7.8	2.8	2.5–3.0	19.3	18.7–19.8	Ref	—
Unknown	569	17.3	10.5–24.2	—	—	—	—	18.5	11.5–25.5	—	—
Household income											
\$0–\$34,999	30,802	25.4 ^{††}	24.5–26.3	7.9 ^{††}	7.2–8.5	3.0	2.7–3.4	30.4	29.5–31.3	1.74 ^{††}	1.63–1.86
\$35,000–\$74,999	44,094	18.8	18.1–19.5	6.4	5.9–6.9	3.7	3.4–4.1	24.5	23.7–25.3	1.35 ^{††}	1.26–1.44
≥\$75,000	60,054	11.7	11.0–12.3	7.3	6.8–7.9	3.5	3.1–3.9	18.9	18.2–19.7	Ref	—
Unknown	9,274	14.8	13.1–16.5	4.4	3.4–5.4	2.6	1.8–3.3	19.1	17.2–21.0	1.02	0.90–1.16
Health insurance											
Not insured	23,119	27.8 ^{††}	26.6–29.0	7.7 ^{††}	6.9–8.4	4.0 ^{††}	3.4–4.5	32.5	31.2–33.8	1.67 ^{††}	1.56–1.78
Insured	120,476	14.9	14.5–15.3	6.8	6.5–7.1	3.3	3.1–3.5	21.2	20.7–21.7	Ref	—
Unknown	629	18.8	11.8–25.8	—	—	—	—	29.8	21.2–38.4	—	—
Cigarette smoking status											
Current	24,379	17.0	16.0–17.4	15.6	14.6–16.7	6.7	6.0–7.4	38.1	35.8–40.3	3.67 ^{††}	3.23–4.04
Former	27,376	19.3	18.9–19.7	6.9	6.3–7.5	4.8	4.3–5.4	19.0	17.3–20.8	2.28 ^{††}	2.06–2.53
Never	91,385	63.7	63.1–64.3	4.7	4.4–5.0	2.1	1.9–2.3	42.9	40.7–45.1	Ref	—
Unknown	1,084	—	—	—	—	—	—	—	—	—	—
Physical health ^{§§}											
Excellent	48,864	11.8	11.2–12.5	6.6	6.1–7.1	3.3	3.0–3.7	18.4	17.7–19.2	Ref	—
Very good/Good	87,123	19.1	18.5–19.6	7.3	6.9–7.7	3.5	3.2–3.7	25.0	24.4–25.7	1.60 ^{††}	1.51–1.69
Fair/Poor	8,189	25.9	24.1–27.7	6.0	5.0–7.0	3.2	2.6–3.9	30.1	28.3–32.0	2.23 ^{††}	2.02–2.47
Unknown	48	— ^{**}	— ^{**}	— ^{**}	— ^{**}	—	—	—	—	—	—
Chronic disease¶¶											
COPD	4,015	31.0	28.2–33.7	8.0	6.0–10.1	3.6	2.5–4.7	34.8	32.0–37.7	1.94 ^{††}	1.71–2.20
Current asthma	9,109	17.3	15.8–18.9	6.9	5.8–8.0	2.8	2.1–3.5	23.3	21.5–25.0	1.00	0.90–1.10
Heart disease	6,472	18.3	16.3–20.3	7.7	6.3–9.1	3.1	2.2–3.9	24.3	22.1–26.5	1.20 ^{††}	1.05–1.36
Any cancer	7,397	16.4	14.2–18.6	6.2	4.2–8.3	2.0	1.4–2.7	21.1	18.6–23.6	1.20	0.93–1.29
Total working adults	144,224	17.0	16.6–17.4	7.0	6.7–7.3	3.4	3.2–3.6	23.1	22.6–23.6	1.09 ^{††}	1.05–1.14

CI, confidence interval; COPD, chronic obstructive pulmonary disease; P, Prevalence.

"—" Estimates suppressed because relative standard error for the estimate was >30%.

†Reported having smoked ≥100 cigarettes during their lifetime and currently smoke every day or some days.

‡Reported smoking tobacco products other than cigarettes (including cigars, pipes, water pipes or hookahs, very small cigars that look like cigarettes, bidis, or cigarillos) and currently smoke every day, some days, rarely.

§Reported using smokeless tobacco products that are placed in the mouth or nose (including chewing tobacco, snuff, dip, snus, or dissolvable tobacco, snuff or chewed tobacco) and are currently using every day, some days, rarely.

¶Cigarettes or other combustible tobacco use or smokeless tobacco use.

**POR adjusted for age.

††P < 0.05.

§§Responded "yes" to: Would you say your health in general is ... excellent, very good, good, fair, or poor?

¶¶Responded "yes" to self-reported physician diagnosis of chronic obstructive pulmonary disease (COPD, bronchitis and/or emphysema), heart disease/condition, stroke, current asthma, or any type of cancer.

surveillance of all forms of tobacco use is needed to inform evidence-based tobacco control strategies that encourage cessation.

The findings from this study indicate that cigarette, other combustible tobacco, and smokeless tobacco use prevalence varied by industry and occupation. More than one-third of the workers in the mining and construction industries and in the construction and

extraction, installation, maintenance, and repair occupations used combustible or smokeless tobacco. The odds of using any form of tobacco among workers in these industries/occupations were almost twice the odds as compared with all other workers. Observed industry and occupational disparities in cigarette smoking and smokeless tobacco use among the working population are consistent with

TABLE 2. Estimates of Current Tobacco Use Among US Working Adults 18 Years and Older, by Industry and Occupation—National Health Interview Survey, United States, 2012–2014

Industry/Occupation	Estimated Working Population (in 1000s)	Cigarette Smokers*		Other Combustible [†] Tobacco Users		Smokeless Tobacco Users [§]		Any Tobacco Current Users [¶]		Any Tobacco Current Users [¶]	
		P	95% CI	P	95% CI	P	95% CI	P	95% CI	POR**	95% CI
Industry											
Construction	9,066	26.2	24.2–28.2	9.6	8.4–10.9	8.2	7.1–9.4	36.2	34.2–38.2	2.01 ^{¶¶}	1.83–2.20
Mining	954	25.2	18.9–31.5	7.8	4.7–11.0	15.1	9.0–21.1	36.8	31.2–42.4	1.94 ^{¶¶}	1.54–2.45
Transportation and warehousing	5,958	21.4	19.3–23.5	7.7	6.3–9.0	5.0	3.8–6.3	29.3	26.9–31.8	1.46 ^{¶¶}	1.30–1.65
Wholesale trade	3,385	18.5	15.5–21.5	9.1	7.0–11.2	5.2	3.6–6.8	26.8	23.7–29.9	1.46 ^{¶¶}	1.30–1.65
Utilities	1,233	16.8	12.4–21.1	9.2	5.7–12.7	9.4	4.9–13.8	28.8	23.1–34.5	1.44 ^{¶¶}	1.10–1.89
Manufacturing	14,958	21.3	20.0–22.7	8.3	7.1–9.5	5.1	4.3–5.9	28.4	26.8–30.0	1.41 ^{¶¶}	1.30–1.53
Accommodation and food services	9,680	25.5	23.7–27.3	8.7	7.4–10.0	2.4	1.6–3.2	30.2	28.3–32.1	1.31 ^{¶¶}	1.19–1.43
Administrative and support and waste management and remediation services	6,168	22.6	20.5–24.7	8.0	6.6–9.5	4.4	3.2–5.7	28.1	25.8–30.4	1.31 ^{¶¶}	1.16–1.47
Retail trade	14,780	19.9	18.6–21.2	7.3	6.4–8.2	3.0	2.3–3.6	25.5	24.1–27.0	1.10 ^{¶¶}	1.01–1.19
Real estate and rental and leasing	2,822	16.3	13.7–19.0	7.1	5.0–9.1	2.6	1.4–3.7	22.3	19.4–25.3	1.04	0.87–1.23
Other services (except Public administration)	7,223	18.2	16.4–20.1	6.3	5.1–7.5	2.7	2.0–3.5	23.2	21.3–25.1	1.02	0.91–1.14
Arts, Entertainment, and Recreation	3,015	15.8	13.1–18.4	10.0	7.4–12.5	3.7	2.0–5.4	24.1	20.7–27.4	1.01	0.84–1.20
Agriculture, forestry, fishing, and hunting	2,161	13.6	10.6–16.6	5.1	3.2–7.0	9.3	6.9–11.7	22.8	19.1–26.4	1.01	0.81–1.25
Information	3,176	16.4	13.9–19.0	8.8	6.7–10.9	2.4	1.5–3.3	22.5	19.7–25.3	0.96	0.82–1.13
Public Administration	7,013	11.8	10.4–13.2	7.0	5.8–8.2	4.1	3.2–5.0	19.2	17.6–20.8	0.83 ^{¶¶}	0.75–0.92
Professional, scientific, and technical services	10,327	10.0	8.8–11.2	8.2	7.2–9.2	1.7	1.3–2.2	17.2	15.7–18.7	0.68 ^{¶¶}	0.61–0.76
Health Care and Social Assistance	19,456	14.3	13.1–15.6	3.6	3.1–4.2	1.1	0.8–1.4	17.3	16.0–18.6	0.67 ^{¶¶}	0.61–0.73
Finance and Insurance	6,538	9.9	8.4–11.3	7.2	5.6–8.8	1.9	1.0–2.8	17.0	15.0–18.9	0.67 ^{¶¶}	0.58–0.77
Education Services	13,422	8.0	7.1–9.0	4.2	3.5–4.9	1.6	1.2–2.0	12.4	11.3–13.5	0.45 ^{¶¶}	0.41–0.50
All others ^{§§}	2,889	12.1	9.7–14.5	4.8	2.8–6.7	1.7	0.8–2.6	16.5	13.6–19.5	—	—
Occupation											
Installation, maintenance, and repair	5,134	27.3	23.8–30.8	11.3	8.7–13.8	9.3	6.9–11.7	38.4	34.2–42.6	2.19 ^{¶¶}	1.82–2.62
Construction and extraction	7,192	28.6	26.4–30.7	8.9	7.6–10.2	8.8	7.4–10.1	37.8	35.5–40.1	2.12 ^{¶¶}	1.91–2.35
Transportation and material moving	8,224	24.9	22.9–27.0	9.2	7.8–10.5	7.0	5.6–8.3	32.8	30.5–35.0	1.70 ^{¶¶}	1.53–1.89
Production	8,427	25.2	23.3–27.1	7.7	6.6–8.8	6.2	5.2–7.3	31.6	29.8–33.5	1.62 ^{¶¶}	1.48–1.77
Food preparation and serving-related	7,620	26.0	23.8–28.2	8.5	7.1–9.9	2.2	1.3–3.1	30.4	28.1–32.7	1.31 ^{¶¶}	1.18–1.47
Protective service	2,979	16.3	13.7–18.9	9.4	7.2–11.6	8.2	6.1–10.4	27.4	24.5–30.2	1.26 ^{¶¶}	1.09–1.45
Building and grounds cleaning and maintenance	5,812	22.3	20.0–24.5	5.7	4.3–7.1	3.3	2.2–4.4	26.0	23.7–28.4	1.21 ^{¶¶}	1.04–1.37
Sales and related	14,349	17.2	16.0–18.5	8.2	7.2–9.2	2.9	2.3–3.6	12.1	9.2–15.0	1.04	0.96–1.12
Farming, fishing, and forestry	1,181	14.8	10.2–19.5	4.2	1.7–6.6	11.0	6.8–15.1	22.9	17.1–28.7	0.96	0.69–1.32
Management	13,967	13.2	12.1–14.4	8.6	7.5–9.6	3.4	2.7–4.0	21.2	19.7–22.7	0.95	0.86–1.04
Health care support	3,320	19.7	16.9–22.5	2.6	1.6–3.5	—	—	22.0	19.1–24.9	0.90	0.76–1.07
Personal care and service	5,087	17.4	14.4–20.4	5.6	4.3–6.9	0.9	0.5–1.3	21.3	18.4–24.3	0.87	0.74–1.03
Office and administrative support	17,803	16.9	15.7–18.0	4.9	4.2–5.5	1.6	1.3–2.0	20.8	19.4–22.1	0.86 ^{¶¶}	0.79–0.94
Architecture and engineering	3,049	8.8	6.9–10.7	10.2	8.0–12.4	3.1	1.8–4.3	19.1	16.3–21.8	0.79 ^{¶¶}	0.65–0.95
Arts, design, entertainment, sports, and media	3,094	11.1	8.9–13.3	8.9	6.9–10.9	2.2	1.2–3.3	18.5	15.6–21.4	0.74 ^{¶¶}	0.61–0.90
Business and financial operations	6,944	11.2	9.8–12.5	6.6	5.5–7.8	2.2	1.5–2.8	17.1	15.5–18.7	0.69 ^{¶¶}	0.61–0.78
Community and social services	2,660	12.4	9.7–15.1	5.2	3.5–6.9	—	—	16.3	13.3–19.4	0.66 ^{¶¶}	0.53–0.83
Computer and mathematical	4,418	8.5	7.0–10.0	8.5	7.1–10.0	1.6	0.8–2.4	15.4	13.4–17.5	0.59 ^{¶¶}	0.51–0.69
Health care practitioners and technical	8,031	9.4	8.1–10.6	3.8	3.0–4.5	1.2	0.7–1.7	13.1	11.8–14.5	0.50 ^{¶¶}	0.44–0.56
Life, physical, and social science	1,611	7.5	5.3–9.7	6.6	4.3–8.9	—	—	16.3	13.3–19.4	0.49 ^{¶¶}	0.38–0.63
Legal	1,577	7.7	5.4–10.0	4.6	2.7–6.6	—	—	12.1	9.2–15.0	0.48 ^{¶¶}	0.78–0.64
Education, training, and library	8,900	7.4	6.1–8.6	4.0	3.2–4.8	1.4	0.9–1.9	11.3	9.9–12.6	0.41 ^{¶¶}	0.36–0.47
All others ^{††}	2,845	12.2	9.7–14.7	4.6	2.7–6.4	1.7	0.8–2.7	16.5	13.5–19.5	—	—

CI, confidence interval; P, Prevalence; POR, prevalence odds ratio.

“—” Estimates suppressed because relative standard error for the estimate was >30%.

*Smoked ≥100 cigarettes during their lifetime and currently smoke every day or some days.

†Reported smoking tobacco products other than cigarettes (including cigars, pipes, water pipes or hookahs, very small cigars that look like cigarettes, bidis, or cigarillos) and currently smoke every day, some days, rarely.

§Reported using smokeless tobacco products that are placed in the mouth or nose (including chewing tobacco, snuff, dip, snus, or dissolvable tobacco, snuff, or chewed tobacco) during their lifetime, and are currently using every day, some days, rarely.

¶Current cigarette smokers or other combustible tobacco users or smokeless tobacco users.

**PORs were adjusted for age; PORs represent the odds of a worker in a specific industry/occupation group using any tobacco compared with the odds of workers in all other occupation groups combined.

§§Industries with unreliable sample sizes: Armed forces ($n = 216$), Management of companies and enterprises ($n = 123$), and the refused, not ascertained, do not know group ($n = 2,550$).††Occupations with unreliable sample sizes: Military ($n = 220$), and the refused, not ascertained, do not know group ($n = 2,626$).¶¶ $P < 0.05$.

previous studies, with highest prevalences among workers in construction and mining industries and among construction and extraction occupations.^{10,22} Although workplace policies or exposures to secondhand smoke were not assessed in this study, national surveys have shown that the proportion of tobacco-free worksites was lower in mining, construction, and agriculture, forestry, fishing industries, and higher in professional and related services.²³ Taken together, these findings underscore the importance of continued surveillance of all forms of tobacco use among workers to help inform the implementation of evidence-based tobacco control strategies in the workplace,²¹ particularly for industries and occupations with higher tobacco use prevalences. These interventions can include providing employee health insurance coverage for proven cessation treatments, offering easily accessible help for those who want to quit, and establishing and enforcing tobacco-free workplace policies.²³

The findings of this study are subjected to at least three limitations. First, the use of all tobacco products are based on self-report and may be subject to reporting bias; however, previous studies have indicated a high validity of self-reported estimates for certain types of tobacco such as cigarettes, smokeless tobacco, and snus.^{24,25} Second, the employment information collected applied only to the week before the interview. Some workers might have changed their current job, and therefore, their current job might not have been their longest held job. However, additional analyses examining longest held job showed similar results. Finally, no detailed data about specific type of tobacco product used (eg, snuff, snus, cigars, cigarillos) were available; therefore, their use could not be assessed.

In conclusion, this study documents prevalence of varied forms of tobacco use among U.S. working adults. The findings underscore the need for continued implementation of proven strategies to address all forms of tobacco product use²⁵ such as high-impact anti-tobacco messages, comprehensive tobacco-free laws covering public places and worksites, providing comprehensive coverage for tobacco cessation treatments for employees, increase in price for all tobacco products, and tailored interventions that help in preventing initiation and encourage cessation among workers, in particular among subpopulations with highest prevalence of use.^{17,18,23}

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REFERENCES

1. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014.
2. Schober W, Szendrei K, Matzen W, et al. Use of electronic cigarettes (e-cigarettes) impairs indoor air quality and increases FeNO levels of e-cigarette consumers. *Int J Hyg Environ Health*. 2014;217:628–637.
3. Callahan-Lyon P. Electronic cigarettes: human health effects. *Tob Control*. 2014;23:36–40.
4. Critchley JA, Unal B. Health effects associated with smokeless tobacco: a systematic review. *Thorax*. 2003;58:435–443.
5. Cancer Care. Health Risks of E-cigarettes, Smokeless Tobacco, and Water Pipes. Available at: <http://www.cancer.net/navigating-cancer-care/prevention-and-healthy-living/tobacco-use/health-risks-e-cigarettes-smokeless-tobacco-and-waterpipes>. Accessed September 29 2016.
6. “International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Personal Habits and Indoor Combustions. Vol. 100E. Lyon, France: International Agency for Research on Cancer, World Health Organization; 2012. Available at: <http://monographs.iarc.fr/ENG/Monographs/vol100E/index.phpExternal> Web Site Icon.” Accessed September 29 2016.
7. Castellan RM, Chosewood LC, Trout D, et al. Current Intelligence Bulletin 67: Promoting health and preventing disease and injury through workplace tobacco policies. Morgantown, WV: U.S. Department of Health and Human Services, CDC, NIOSH, DHHS (NIOSH) Publication No. 2015-113. April 2015. Additional information is available at: <http://www.cdc.gov/niosh/docs/2015-113>.
8. Markowitz SB, Levin SM, Miller A, Morabia A. Asbestos, asbestosis, smoking, and lung cancer. New findings from the North American Insulator Cohort. *Am J Respir Crit Care Med*. 2013;188:90–96.
9. Blanc PD, Iribarren C, Trupin L, et al. Occupational exposures and the risk of COPD: dusty trades revisited. *Thorax*. 2009;64:6–12.
10. Mazurek JM, Syamlal G, Brian AK, Castellan RM. Smokeless tobacco use among working adults—United States, 2005 and 2010. *MMWR Morb Mortal Wkly Rep*. 2014;63:477–482.
11. US Department of Health and Human Services. Tobacco Use Objectives. Healthy People 2020. Washington, DC: US Department of Health and Human Services. Available at: <https://www.healthypeople.gov/2020/topics-objectives/topic/tobacco-use/objectives>. Accessed September 29 2016.
12. O'Connor RJ. Non-cigarette tobacco products: what have we learned and where are we headed? *Tob Control*. 2012;21:181–190.
13. Carpenter CM, Connolly GN, Ayo-Yusuf OA, Wayne GF. Developing smokeless tobacco products for smokers: an examination of tobacco industry documents. *Tob Control*. 2009;18:54–59.
14. Federal Trade Commission. Federal Trade Commission Smokeless Tobacco Report for 2012. Washington: Federal Trade Commission; 2015. Available at: <https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-smokeless-tobacco-report-2011/130521smokelesstobaccoreport.pdf>. Accessed September 29 2016.
15. Tynan MA, McAfee T, Promoff G, Pechacek T. Consumption of cigarettes and combustible tobacco—United States, 2000–2011. *MMWR Morb Mortal Wkly Rep*. 2012;61:565–569.
16. National Cancer Institute. Smokeless Tobacco and Public Health: a Global Perspective. Bethesda, MD: US Department of Health and Human Services, CDC and National Institutes of Health, National Cancer Institute; 2014. NIH Publication No. 14-7983. Available at: <http://cancercontrol.cancer.gov/brp/tcrb/global-perspective/SmokelessTobaccoAndPublicHealth.pdf>. Accessed September 29 2016.
17. McClave-Regan AK, Berkowitz J. Smokers who are also using smokeless tobacco products in the US: a national assessment of characteristics, behaviours and beliefs of 'dual users'. *Tob Control*. 2011;20:239–242.
18. Delnevo CD, Wackowski OA, Giovenco DP, Manderski MT, Hrywna M, Ling PM. Examining market trends in the United States smokeless tobacco use: 2005–2011. *Tob Control*. 2014;23:107–112.
19. Syamlal G, Jamal A, Mazurek JM. Current cigarette smoking among workers in accommodation and food services—United States, 2011–2013. *MMWR Morb Mortal Wkly Rep*. 2015;64:797–801.
20. King BA, Dube SR, Tynan MA. Current tobacco use among adults in the United States: findings from the National Adult Tobacco Survey. *Am J Public Health*. 2012;102:e93–e100.
21. CDC. 2014 National Health Interview Survey (NHIS) Public Use Data Release: NHIS Survey Description. Hyattsville, MD: US Department of Health and Human Services, CDC; 2014. Available at: ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2011/srvydesc.pdf. Accessed September 29 2016.
22. Syamlal G, Mazurek JM, Malarcher AM. Current cigarette smoking prevalence among working adults—United States, 2004–2010. *MMWR Morb Mortal Wkly Rep*. 2011;60:1305–1309.
23. CDC. Best Practices for Comprehensive Tobacco Control Programs—2014. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014. Available at: http://www.cdc.gov/tobacco/stateandcommunity/best_practices/index.htm. Accessed September 29 2016.
24. Caraballo RS, Giovino GA, Pechacek TF. Self-reported cigarette smoking vs. serum cotinine among U.S. adolescents. *Nicotine Tob Res*. 2004;6:19–25.
25. Post A, Gilljam H, Rosendahl I, Meurling L, Bremberg S, Galanti MR. Validity of self-reports in a cohort of Swedish adolescent smokers and smokeless tobacco (snus) users. *Tob Control*. 2005;14:114–117.