Current Tobacco Use Among Adults in the United States: Findings From the National Adult Tobacco Survey

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Objectives. We assessed the prevalence and sociodemographic correlates of tobacco use among US adults.

Methods. We used data from the 2009–2010 National Adult Tobacco Survey, a national landline and cell phone survey of adults aged 18 years and older, to estimate current use of any tobacco; cigarettes; cigars, cigarillos, or small cigars; chewing tobacco, snuff, or dip; water pipes; snus; and pipes. We stratified estimates by gender, age, race/ethnicity, education, income, sexual orientation, and US state.

Results. National prevalence of current use was 25.2% for any tobacco; 19.5% for cigarettes; 6.6% for cigars, cigarillos, or small cigars; 3.4% for chewing tobacco, snuff, or dip; 1.5% for water pipes; 1.4% for snus; and 1.1% for pipes. Tobacco use was greatest among respondents who were male, younger, of non-Hispanic "other" race/ethnicity, less educated, less wealthy, and lesbian, gay, bisexual, or transgender. Prevalence ranged from 14.1% (Utah) to 37.4% (Kentucky).

Conclusions. Tobacco use varies by geography and sociodemographic factors, but remains prevalent among US adults. Evidence-based prevention strategies are needed to decrease tobacco use and the health and economic burden of tobacco-related diseases. (*Am J Public Health*. Published online ahead of print September 20, 2012: e1–e8. doi:10.2105/AJPH.2012.301002)

Tobacco use remains the single largest preventable cause of disease and premature death among both men and women in the United States.[1] Health effects associated with tobacco use include heart disease, many types of cancer, pulmonary disease, adverse reproductive outcomes, and the exacerbation of multiple chronic health conditions.[2] Cigarette smoking alone has been estimated to cause 443 000 deaths per year in the United States, including approximately 49 400 deaths attributed to secondhand smoke exposure.[3] In addition, cigarette smoking has been estimated to cost the United States $96 billion in direct medical expenses and $97 billion in lost productivity per year.[3] Despite significant progress over the past several decades,[4] declines in the prevalence of cigarette smoking and the use of other tobacco products among US adults have stalled in recent years.[5,6]

Monitoring the extent of the tobacco epidemic can assist in guiding decisions about tobacco control strategies for the overall population and high-risk subpopulations. The World Health Organization recognizes that monitoring tobacco use is an important and effective tobacco control approach in its MPOWER model and encourages the collection of data on tobacco use prevalence and consumption by demographic subdivisions, both nationally and regionally.[7] In the United States, the report *Key Outcome Indicators for Evaluating Comprehensive Tobacco Control Programs* (KOI report) identified valid and reliable measures for tobacco-related indicators and provided a guide for tobacco control surveillance at the national, state, and local levels.[8]

The National Adult Tobacco Survey (NATS) is the first adult tobacco use survey designed within the framework of the KOI report.[9] NATS establishes a comprehensive standard for assessing the prevalence of tobacco use and the factors promoting and impeding tobacco use at both the national and state levels. We analyzed NATS data to determine the national prevalence and sociodemographic correlates of tobacco use among US adults, both overall and for multiple tobacco products. We also calculated state-specific estimates for overall tobacco use and for cigarette smoking.

METHODS

Data came from the 2009–2010 NATS, a stratified, national telephone survey of noninstitutionalized US adults.[9] The 2009–2010 NATS questionnaire comprised 130 questions pertaining to general health, cigarette smoking, other tobacco use, cessation, secondhand smoke, chronic diseases, respondent demographics, and attitudes related to tobacco.

Sample

The NATS target population was noninstitutionalized adults aged 18 years or older residing in the 50 US states and the District of Columbia. The sample was designed to yield data representative at both national and state levels. Each state was divided into at least 3 strata: listed landline, unlisted landline, and cell phone; the listed stratum consisted of landline telephone numbers in residential directories or in other databases. For the landline component, each state was allocated an equal target sample size (n = 1863) to ensure adequate precision for state-level estimates. For the cell phone component, each state was allocated a sample size in proportion to its population (range = 255–24 100). States were offered an opportunity to increase their samples. Louisiana, New Jersey, and Oklahoma added to their landline and cell phone target sample size, and Delaware, Georgia, Iowa, North Dakota, Pennsylvania, South Carolina, and Virginia added to their landline target sample size.

Respondent selection varied by phone type. For landline numbers, one adult was randomly selected from each eligible household. By contrast, adults reached via cell phone were selected if a cell phone was the only method to reach them by telephone at home. In total, 118 581 interviews were completed (n = 110 634 by

landline; n = 7947 by cell phone) between October 2009 and February 2010. The Council of American Survey and Research Organizations response rate, which is defined as the number of completed interviews divided by the number of eligible respondents in the sample, was 37.6% (40.4% for the landline sample; 24.9% for cell phone users). The national cooperation rate, defined as the number of completed interviews divided by the number of eligible respondents who were successfully reached by an interviewer, was 62.3% (61.9% of landline participants; 68.7% of cell phone users). Response rates by state ranged from 28.2% in New Jersey to 49.3% in Vermont (median = 37.9%); state-specific cooperation rates ranged from 52.9% in Louisiana to 72.4% in Vermont (median = 62.9%).

The survey collected data on gender (male or female), age (18–24, 25–44, 45–64, or ≥ 65 years), race/ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, non-Hispanic other, or Hispanic), education (0–12 years [no diploma], general equivalency diploma [GED], high school diploma, some college, associate degree, bachelor's degree, or graduate degree), annual household income (< $20 000, $20 000–$49 999, $50 000–$99 999, ≥ $100 000, or unspecified), and sexual orientation (heterosexual–straight; lesbian, gay, bisexual, or transgender [LGBT]; or not specified). For race/ethnicity, respondents who were American Indian or Alaska Native, Native Hawaiian or Pacific Islander, multiracial, or some other race were classified as non-Hispanic other. Unspecified responses composed 11.9% and 5.5% of the total responses for annual household income and sexual orientation, respectively.

Measures

Cigarettes. The survey asked 2 questions about current cigarette smoking: "Have you smoked at least 100 cigarettes in your entire life?" and "Do you now smoke cigarettes every day, some days, or not at all?" We classified respondents who reported smoking at least 100 cigarettes in their lifetime and who reported currently smoking every day or some days as current cigarette smokers.

Cigars, cigarillos, and small cigars. The questions about current cigar, cigarillo, and small cigar smoking were "Have you ever tried smoking cigars, cigarillos, or very small cigars that look like cigarettes in your entire life, even one or two puffs?" and "During the past 30 days, on how many days did you smoke cigars, cigarillos, or very small cigars that look like cigarettes?" We classified respondents who reported trying cigars, cigarillos, or very small cigars in their lifetime and who reported using these products on at least 1 day in the past 30 days as current cigar, cigarillo, or small cigar smokers.

Chewing tobacco, snuff, and dip. The items about current chewing tobacco, snuff, or dip use were "Have you ever tried chewing tobacco, snuff, or dip, such as Skoal, Copenhagen, Grizzly, Levi Garrett, Red Man, or Day's Work, even just one time in your entire life?" and "During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip?" We classified respondents who reported trying chewing tobacco, snuff, or dip in their lifetime and who reported using any of these products on at least 1 day in the past 30 days as current chewing tobacco, snuff, or dip users.

Water pipes. The items about current water pipe smoking were "The next question asks you about smoking tobacco in a water pipe. A water pipe is also called a hookah. Have you ever tried smoking tobacco in a water pipe in your entire life, even one or two puffs?" and "During the past 30 days, on how many days did you smoke tobacco in a water pipe?" We classified respondents who reported smoking tobacco in a water pipe in their lifetime and who reported smoking tobacco in a water pipe on at least 1 day within the past 30 days as current water pipe smokers.

Snus. Questions on current snus use were "Snus is a moist, smokeless tobacco, usually sold in individual or pre-packaged small pouches that are placed under the lip against the gum. Have you ever tried snus, even just one time in your entire life?" and "During the past 30 days, on how many days did you use snus?" We classified respondents who reported trying snus in their lifetime and who reported using snus on at least 1 day within the past 30 days as current snus users.

Pipe. Questions about current pipe smoking were "Have you ever smoked tobacco in a pipe other than a water pipe in your entire life, even one or two puffs?" and "During the past 30 days, on how many days did you smoke tobacco in a pipe other than a water pipe?" We classified respondents who reported smoking tobacco in a pipe other than a water pipe in their lifetime and who reported smoking tobacco in a pipe other than a water pipe on at least 1 day within the past 30 days as current pipe smokers.

Any tobacco. We determined current use of any tobacco by respondents' answers about current use of the 6 types of tobacco products we incorporated in our analysis. We classified respondents determined to be current users of at least 1 of these 6 types of tobacco products as current tobacco users.

Data Analysis

We analyzed data with SAS-callable SUDAAN version 9.2 (RTI International, Research Triangle Park, NC). We first weighted the landline data by the inverse of the probability of selection of the telephone number, a nonresponse adjustment, and adjustments for number of landlines and number of eligible participants in a household. We first weighted cell phone data by the inverse of the probability of selection of the telephone number and a nonresponse adjustment. Next, we poststratified all the data by state to the distributions of various demographic variables (gender, age, race/ethnicity, marital status, and educational attainment) and phone type (cell phone–only users and all others). For states with a small number of cell phone respondents, the use of both landline and cell phone data resulted in a large unequal weighting effect and therefore large estimated variances of survey estimates and small effective sample sizes. As a result, we calculated national and state estimates differently. For national estimates, we incorporated both the cell phone and the landline samples. For state estimates, we included cell phone users only for states with a cell phone sample of at least 200 (n = 12; California, Florida, Georgia, Illinois, Louisiana, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, and Texas).

Our primary outcomes were current use of cigarettes; cigars, cigarillos, or small cigars; chewing tobacco, snuff, or dip; water pipes; snus; pipes; and any tobacco. We determined national estimates for all outcomes overall and by gender, age, race/ethnicity, educational attainment, annual household income, and

sexual orientation. We also determined estimates of current cigarette smoking and any tobacco use overall and by gender for each US state and the District of Columbia; we did not present state-specific data for the remaining tobacco product types because of the large proportion of unstable estimates. We considered differences between estimates statistically significant if 95% confidence intervals (CIs) did not overlap. We did not report estimates with a relative standard error of 30% or higher.

RESULTS

The overall prevalence of any current tobacco use was 25.2% (95% CI = 24.6%, 25.7%; Table 1). Prevalence was significantly higher among men (32.2%; 95% CI = 31.3%, 33.2%) than women (18.5%; 95% CI = 17.9%, 19.1%) and decreased with increasing age. By race/ethnicity, prevalence ranged from 10.9% (95% CI = 8.3%, 14.1%) among non-Hispanic Asians to 37.2% (95% CI = 34.1%, 40.4%) among non-Hispanic others. Prevalence generally decreased with increasing education and was greatest among those with a GED (51.5%; 95% CI = 47.4%, 55.6%). By annual household income, prevalence ranged from 17.3% (95% CI = 16.1%, 18.5%) among those with $100 000 or more to 38.2% (95% CI = 36.3%, 40.1%) among those with under $20 000. By sexual orientation, prevalence was significantly higher among LGBT respondents (38.5%; 95% CI = 34.4%, 42.8%) than heterosexual–straight respondents (25.3%; 95% CI = 24.7%, 25.9%). By state, prevalence ranged from 14.1% (95% CI = 11.3%, 17.4%) in Utah to 37.4% (95% CI = 33.6%, 41.3%) in Kentucky (Table 2).

Combustible Tobacco Products

The overall prevalence of current cigarette smoking was 19.5% (95% CI = 19.0%, 20.0%; Table 1). Prevalence was significantly higher among men (22.3%; 95% CI = 21.5%, 23.2%) than women (16.9%; 95% CI = 16.3%, 17.5%) and decreased with increasing age. By race/ethnicity, prevalence ranged from 6.8% (95% CI = 4.9%, 9.2%) among non-Hispanic Asians to 27.8% (95% CI = 25.0%, 30.7%) among non-Hispanic others. Prevalence decreased with increasing education and annual household income. By sexual orientation, prevalence was significantly higher among LGBT respondents (32.8%; 95% CI = 28.8%, 37.1%) than heterosexual–straight respondents (19.5%; 95% CI = 19.0%, 20.1%). By state, prevalence ranged from 10.0% (95% CI = 7.6%, 13.0%) in Utah to 29.0% (95% CI = 25.5%, 32.9%) in Kentucky (Table 2).

The overall prevalence of current cigar, cigarillo, or small cigar smoking was 6.6% (95% CI = 6.3%, 7.0%; Table 1). Prevalence was significantly higher among men (10.4%; 95% CI = 9.7%, 11.0%) than women (3.1%; 95% CI = 2.8%, 3.4%) and decreased with increasing age. By race/ethnicity, prevalence ranged from 1.8% (95% CI = 1.1%, 2.8%) among non-Hispanic Asians to 12.0% (95% CI = 9.7%, 14.8%) among non-Hispanic others. Prevalence generally decreased with increasing education and was greatest among those with a GED (16.2%; 95% CI = 13.2%, 19.8%). By annual household income, prevalence ranged from 5.5% (95% CI = 5.0%, 6.1%) among those with $50 000 to $99 999 to 10.3% (95% CI = 9.1%, 11.8%) among those with under $20 000. By sexual orientation, prevalence was significantly higher among LGBT respondents (12.2%; 95% CI = 9.3%, 15.9%) than heterosexual–straight respondents (6.5%; 95% CI = 6.2%, 6.9%).

The overall prevalence of current water pipe smoking was 1.5% (95% CI = 1.4%, 1.7%; Table 1). Prevalence was significantly higher in men (2.3%; 95% CI = 1.9%, 2.6%) than women (0.9%; 95% CI = 0.7%, 1.0%). By age, prevalence was greatest among respondents aged 18 to 24 years (7.8%; 95% CI = 6.7%, 9.0%). By race/ethnicity, prevalence ranged from 0.7% (95% CI = 0.4%, 1.2%) among non-Hispanic Blacks to 4.0% (95% CI = 2.8%, 5.8%) among non-Hispanic others. By education, prevalence ranged from 0.5% (95% CI = 0.3%, 0.9%) among those with a graduate degree to 3.1% (95% CI = 1.7%, 5.5%) among those with a GED. We observed no variation in water pipe smoking across annual household income categories. By sexual orientation, prevalence was significantly higher among LGBT respondents (6.1%; 95% CI = 4.1%, 8.9%) than heterosexual–straight respondents (1.5%; 95% CI = 1.3%, 1.7%).

The overall prevalence of current pipe smoking was 1.1% (95% CI = 1.0%, 1.3%; Table 1). Prevalence was significantly higher among men (1.8%; 95% CI = 1.6%, 2.1%) than women (0.4%; 95% CI = 0.3%, 0.5%). By age, prevalence was greatest among respondents aged 18 to 24 years (3.6%; 95% CI = 2.8%, 4.6%). By race/ethnicity, prevalence was greatest among non-Hispanic others (2.6%; 95% CI = 1.6%, 4.2%). Prevalence generally decreased with increasing education and was greatest among respondents with a GED (3.0%; 95% CI = 1.9%, 4.5%). By annual household income, prevalence ranged from 0.6% (95% CI = 0.4%, 0.9%) among those with incomes of $100 000 or more to 2.3% (95% CI = 1.6%, 3.1%) among those with incomes under $20 000. We observed no variation in pipe smoking by sexual orientation.

Noncombustible Tobacco Products

The overall prevalence of current chewing tobacco, snuff, or dip use was 3.4% (95% CI = 3.2%, 3.6%; Table 1). Prevalence was significantly higher among men (6.5%; 95% CI = 6.1%, 7.0%) than women (0.4%; 95% CI = 0.3%, 0.5%) and decreased with increasing age. By race/ethnicity, prevalence ranged from 1.6% (95% CI = 1.1%, 2.2%) among Hispanics to 4.9% (95% CI = 3.7%, 6.5%) among non-Hispanic others. Prevalence generally decreased with increasing education. We found no variation in chewing tobacco, snuff, or dip use across annual household income categories.

The overall prevalence of current snus use was 1.4% (95% CI = 1.2%, 1.6%; Table 1). Prevalence was significantly higher among men (2.5%; 95% CI = 2.2%, 2.8%) than women (0.4%; 95% CI = 0.2%, 0.5%) and decreased with increasing age. By race/ethnicity, prevalence was highest among non-Hispanic others (1.8%; 95% CI = 1.2%, 2.6%). Prevalence generally decreased with increasing education. By annual household income, prevalence ranged from 0.7% (95% CI = 0.5%, 0.9%) among those with incomes of $100 000 or more to 2.0% (95% CI = 1.7%, 2.4%) among those with incomes of $20 000 to $49 999.

DISCUSSION

Findings from NATS indicate that approximately 1 in 4 US adults was a current tobacco user during 2009–2010. Ours was the first study to assess the prevalence and sociodemographic

TABLE 1—Estimates of Current Tobacco Use Among US Adults Aged 18 Years and Older, by Selected Characteristics: National Adult Tobacco Survey, 2009–2010.

Characteristic	No.	Cigarettes, % (95% CI)	Cigars/Cigarillos/Small Cigars, % (95% CI)	Chew/Snuff/Dip, % (95% CI)	Water Pipes, % (95% CI)	Snus, % (95% CI)	Pipes, % (95% CI)	Any Tobacco,[a] % (95% CI)
Gender								
Men	46 449	22.3 (21.5, 23.2)	10.4 (9.7, 11.0)	6.5 (6.1, 7.0)	2.3 (1.9, 2.6)	2.5 (2.2, 2.8)	1.8 (1.6, 2.1)	32.2 (31.3, 33.2)
Women	71 959	16.9 (16.3, 17.5)	3.1 (2.8, 3.4)	0.4 (0.3, 0.5)	0.9 (0.7, 1.0)	0.4 (0.2, 0.5)	0.4 (0.3, 0.5)	18.5 (17.9, 19.1)
Age, y								
18–24	5117	23.9 (22.1, 25.8)	15.9 (14.4, 17.7)	6.1 (5.2, 7.1)	7.8 (6.7, 9.0)	3.7 (2.9, 4.6)	3.6 (2.8, 4.6)	35.6 (33.6, 37.7)
25–44	28 956	23.2 (22.2, 24.3)	7.2 (6.6, 7.9)	4.2 (3.8, 4.7)	1.2 (0.9, 1.5)	1.8 (1.5, 2.1)	0.7 (0.5, 1.0)	29.3 (28.2, 30.3)
45–64	49 347	19.7 (19.0, 20.5)	4.9 (4.5, 5.4)	2.4 (2.1, 2.7)	0.3 (0.2, 0.4)	0.7 (0.5, 0.8)	0.8 (0.6, 0.9)	24.0 (23.2, 24.8)
≥ 65	32 321	8.6 (7.9, 9.4)	1.8 (1.6, 2.1)	1.7 (1.4, 2.0)	. . .	0.4 (0.3, 0.5)	0.7 (0.6, 0.9)	11.8 (11.0, 12.7)
Race/ethnicity								
White, non-Hispanic	97 255	19.7 (19.2, 20.3)	6.1 (5.7, 6.4)	3.9 (3.7, 4.2)	1.3 (1.1, 1.5)	1.5 (1.4, 1.7)	1.1 (1.0, 1.3)	25.6 (25.0, 26.2)
Black, non-Hispanic	8664	20.9 (19.3, 22.6)	9.2 (8.1, 10.5)	2.2 (1.6, 2.9)	0.7 (0.4, 1.2)	0.5 (0.3, 0.8)	0.5 (0.2, 0.9)	26.5 (24.7, 28.3)
Asian, non-Hispanic	2135	6.8 (4.9, 9.2)	1.8 (1.1, 2.8)	. . .	2.7 (1.5, 4.8)	. . .	. . .	10.9 (8.3, 14.1)
Other, non-Hispanic	4320	27.8 (25.0, 30.7)	12.0 (9.7, 14.8)	4.9 (3.7, 6.5)	4.0 (2.8, 5.8)	1.8 (1.2, 2.6)	2.6 (1.6, 4.2)	37.2 (34.1, 40.4)
Hispanic	4543	17.8 (15.8, 20.0)	6.8 (5.5, 8.4)	1.6 (1.1, 2.2)	2.7 (2.0, 3.7)	1.5 (0.9, 2.3)	1.4 (0.8, 2.3)	22.0 (19.8, 24.3)
Education								
0–12 y (no diploma)	8234	30.6 (28.6, 32.8)	9.2 (8.0, 10.6)	4.6 (3.9, 5.5)	1.6 (1.1, 2.3)	1.9 (1.4, 2.6)	1.9 (1.3, 2.7)	35.5 (33.3, 37.7)
GED	1926	46.5 (42.4, 50.7)	16.2 (13.2, 19.8)	5.2 (3.8, 7.3)	3.1 (1.7, 5.5)	4.7 (2.9, 7.4)	3.0 (1.9, 4.5)	51.5 (47.4, 55.6)
High school graduate	24 842	22.2 (21.2, 23.2)	7.9 (7.2, 8.7)	4.3 (3.8, 4.9)	2.0 (1.7, 2.5)	1.7 (1.4, 2.0)	1.0 (0.8, 1.3)	29.1 (28.0, 30.2)
Some college (no degree)	18 483	19.4 (18.4, 20.6)	6.1 (5.4, 6.8)	2.9 (2.5, 3.4)	1.7 (1.4, 2.2)	1.1 (0.8, 1.4)	1.2 (0.9, 1.5)	25.1 (23.9, 26.3)
Associate degree	16 511	19.4 (18.2, 20.7)	5.5 (4.9, 6.3)	3.3 (2.9, 3.9)	1.2 (0.9, 1.8)	1.2 (0.9, 1.5)	1.1 (0.7, 1.5)	25.0 (23.7, 26.3)
Undergraduate degree	26 611	8.7 (8.1, 9.3)	4.0 (3.6, 4.5)	2.1 (1.8, 2.5)	1.1 (0.8, 1.5)	0.9 (0.7, 1.3)	0.4 (0.3, 0.6)	14.2 (13.4, 15.1)
Graduate degree	21 177	5.6 (5.0, 6.2)	3.3 (2.8, 3.8)	1.3 (1.0, 1.6)	0.5 (0.3, 0.9)	0.4 (0.3, 0.7)	0.5 (0.4, 0.8)	9.6 (8.9, 10.4)
Annual household income, $								
< 20 000	12 282	33.0 (31.1, 34.8)	10.3 (9.1, 11.8)	3.5 (2.8, 4.3)	1.6 (1.2, 2.1)	1.6 (1.2, 2.3)	2.3 (1.6, 3.1)	38.2 (36.3, 40.1)
20 000–49 999	34 001	24.4 (23.4, 25.4)	6.9 (6.3, 7.5)	3.6 (3.2, 4.1)	1.3 (1.1, 1.6)	2.0 (1.7, 2.4)	1.0 (0.8, 1.3)	29.6 (28.5, 30.7)
50 000–99 999	36 037	15.4 (14.6, 16.3)	5.5 (5.0, 6.1)	3.6 (3.2, 4.1)	1.6 (1.3, 2.0)	1.3 (1.0, 1.6)	0.9 (0.7, 1.2)	21.5 (20.6, 22.5)
≥100 000	20 934	10.0 (9.1, 11.0)	6.0 (5.2, 6.8)	3.2 (2.7, 3.8)	1.6 (1.2, 2.2)	0.7 (0.5, 0.9)	0.6 (0.4, 0.9)	17.3 (16.1, 18.5)
Unspecified	14 013	14.7 (13.4, 16.2)	5.0 (4.2, 6.0)	2.2 (1.7, 2.7)	1.9 (1.3, 2.8)	0.8 (0.6, 1.2)	1.0 (0.6, 1.6)	18.7 (17.2, 20.3)
Sexual orientation								
Heterosexual/straight	108 410	19.5 (19.0, 20.1)	6.5 (6.2, 6.9)	3.5 (3.3, 3.8)	1.5 (1.3, 1.7)	1.4 (1.2, 1.5)	1.1 (0.9, 1.3)	25.3 (24.7, 25.9)
LGBT	2431	32.8 (28.8, 37.1)	12.2 (9.3, 15.9)	. . .	6.1 (4.1, 8.9)	. . .	2.0 (1.1, 3.5)	38.5 (34.4, 42.8)
Unspecified	6414	12.9 (11.1, 14.9)	3.9 (2.9, 5.2)	1.6 (1.1, 2.3)	. . .	. . .	. . .	16.6 (14.6, 18.8)
Total	118 581	19.5 (19.0, 20.0)	6.6 (6.3, 7.0)	3.4 (3.2, 3.6)	1.5 (1.4, 1.7)	1.4 (1.2, 1.6)	1.1 (1.0, 1.3)	25.2 (24.6, 25.7)

Note. CI = confidence interval; GED = general equivalency degree; LGBT = lesbian, gay, bisexual, or transgender. Ellipses indicate data not shown because relative standard error was 30% or higher. All estimates were calculated among both landline and cell phone respondents.
[a]Current use of ≥ 1 of the individual products shown.

TABLE 2—Estimates of Current Cigarette Smoking and Any Tobacco Use Among US Adults Aged 18 Years and Older, by State and Gender: National Adult Tobacco Survey, 2009–2010.

		Cigarettes			Any Tobacco[a]		
Characteristic	No.	Total, % (95% CI)	Men, % (95% CI)	Women, % (95% CI)	Total, % (95% CI)	Men, % (95% CI)	Women, % (95% CI)
Alabama	1970	24.3 (21.1, 27.9)	26.3 (21.0, 32.4)	22.5 (18.8, 26.7)	30.2 (26.8, 33.8)	36.8 (31.2, 42.8)	24.2 (20.4, 28.4)
Alaska	1849	21.7 (18.8, 25.0)	24.3 (19.8, 29.4)	18.9 (15.4, 22.9)	30.5 (27.1, 34.0)	38.5 (33.3, 43.9)	21.7 (18.0, 25.9)
Arizona	1910	16.3 (13.2, 20.0)	17.8 (12.8, 24.3)	14.9 (11.6, 18.9)	20.0 (16.5, 23.9)	23.9 (18.1, 30.8)	16.2 (12.8, 20.4)
Arkansas	2868	24.7 (22.0, 27.7)	25.4 (21.2, 30.2)	24.0 (20.7, 27.7)	32.7 (29.8, 35.8)	40.2 (35.4, 45.2)	25.8 (22.4, 29.4)
California[b]	2572	14.4 (12.5, 16.7)	17.1 (14.0, 20.6)	11.8 (9.4, 14.6)	19.1 (17.0, 21.5)	24.4 (20.9, 28.3)	13.9 (11.4, 16.8)
Colorado	1961	17.3 (14.4, 20.7)	18.9 (14.4, 24.4)	15.8 (12.4, 19.9)	24.4 (20.6, 28.7)	30.7 (24.4, 37.8)	18.1 (14.6, 22.3)
Connecticut	1895	16.7 (13.5, 20.4)	20.8 (15.5, 27.4)	12.9 (9.9, 16.5)	20.0 (16.7, 23.7)	26.6 (21.1, 32.9)	13.9 (10.9, 17.6)
Delaware	1984	21.0 (18.0, 24.3)	24.5 (19.5, 30.4)	17.8 (14.7, 21.5)	25.4 (22.2, 28.9)	32.6 (27.2, 38.6)	18.8 (15.6, 22.6)
District of Columbia	1896	18.3 (15.1, 21.9)	23.0 (17.4, 29.8)	14.2 (11.2, 17.9)	22.9 (18.5, 27.9)	31.7 (23.7, 40.8)	15.3 (12.2, 19.0)
Florida[b]	2271	18.2 (15.8, 20.9)	21.4 (17.4, 26.0)	15.4 (12.8, 18.3)	23.9 (21.3, 26.7)	32.0 (27.6, 36.7)	16.5 (13.9, 19.4)
Georgia[b]	4914	18.6 (16.6, 20.8)	21.1 (17.7, 25.0)	16.1 (14.0, 18.5)	25.5 (23.3, 27.9)	33.5 (29.6, 37.6)	18.0 (15.8, 20.5)
Hawaii	1821	19.7 (16.5, 23.3)	23.2 (18.2, 29.1)	16.1 (12.6, 20.4)	23.2 (19.8, 26.9)	29.8 (24.4, 35.9)	16.5 (12.9, 20.8)
Idaho	1827	14.8 (12.2, 17.9)	15.7 (11.7, 20.8)	14.0 (10.8, 17.9)	20.9 (17.7, 24.4)	26.6 (21.4, 32.6)	15.2 (11.9, 19.2)
Illinois[b]	2050	18.8 (16.3, 21.5)	19.4 (15.7, 23.6)	18.3 (15.1, 22.0)	24.6 (22.0, 27.5)	29.0 (24.8, 33.7)	20.6 (17.3, 24.4)
Indiana	2025	24.5 (21.3, 27.9)	30.8 (25.8, 36.4)	18.5 (15.1, 22.4)	29.2 (25.9, 32.7)	40.1 (34.9, 45.6)	18.8 (15.4, 22.8)
Iowa	2127	16.9 (14.2, 19.9)	17.0 (13.0, 21.8)	16.6 (13.2, 20.7)	22.2 (19.2, 25.5)	26.3 (21.7, 31.4)	18.2 (14.5, 22.5)
Kansas	1920	17.0 (14.3, 20.0)	16.7 (13.0, 21.2)	17.2 (13.6, 21.6)	24.0 (21.0, 27.4)	29.0 (24.5, 34.1)	19.2 (15.3, 23.8)
Kentucky	1850	29.0 (25.5, 32.9)	29.7 (24.0, 36.2)	28.4 (24.3, 32.9)	37.4 (33.6, 41.3)	45.2 (39.0, 51.6)	30.1 (25.9, 34.6)
Louisiana[b]	6351	25.0 (23.1, 27.1)	30.6 (27.3, 34.1)	20.1 (17.9, 22.4)	32.1 (30.0, 34.2)	42.5 (39.0, 46.0)	22.6 (20.4, 25.0)
Maine	2031	19.1 (16.5, 22.1)	20.5 (16.4, 25.3)	17.9 (14.8, 21.6)	24.1 (21.2, 27.3)	30.2 (25.4, 35.5)	18.4 (15.3, 22.0)
Maryland	1975	16.3 (12.9, 20.3)	21.7 (15.6, 29.2)	11.4 (8.8, 14.7)	19.9 (16.4, 24.1)	27.2 (20.9, 34.6)	13.4 (10.4, 17.1)
Massachusetts	1952	17.8 (14.3, 21.9)	22.8 (16.6, 30.5)	13.1 (10.4, 16.5)	21.4 (17.8, 25.5)	29.5 (23.1, 36.9)	13.9 (11.1, 17.3)
Michigan	2004	21.4 (18.1, 25.0)	27.8 (22.4, 33.9)	15.3 (12.0, 19.4)	26.1 (22.7, 29.8)	35.3 (29.8, 41.3)	17.4 (13.8, 21.7)
Minnesota	1904	14.7 (12.2, 17.5)	17.8 (13.7, 22.7)	11.6 (9.3, 14.5)	19.6 (16.8, 22.9)	26.0 (21.2, 31.5)	13.4 (10.6, 16.8)
Mississippi	1811	22.3 (18.8, 26.4)	25.6 (19.6, 32.7)	19.4 (15.7, 23.7)	32.6 (28.7, 36.9)	44.5 (37.8, 51.4)	22.0 (18.1, 26.4)
Missouri	1999	20.7 (17.6, 24.1)	22.8 (17.6, 29.0)	18.8 (15.7, 22.2)	28.4 (25.0, 32.0)	37.0 (31.2, 43.2)	20.4 (17.2, 24.0)
Montana	1862	17.2 (14.2, 20.6)	18.4 (13.7, 24.4)	16.0 (12.8, 19.9)	26.8 (23.3, 30.6)	35.4 (29.8, 41.4)	18.6 (14.9, 23.0)
Nebraska	1876	18.0 (15.2, 21.2)	21.6 (16.9, 27.1)	14.7 (11.8, 18.2)	22.8 (19.7, 26.2)	30.2 (25.0, 35.9)	15.7 (12.7, 19.4)
Nevada	1854	24.3 (21.2, 27.7)	26.5 (21.5, 32.2)	21.9 (18.5, 25.9)	29.9 (26.4, 33.6)	36.4 (30.6, 42.5)	23.2 (19.6, 27.1)
New Hampshire	1961	15.0 (12.7, 17.7)	12.9 (9.8, 16.7)	17.0 (13.6, 21.0)	21.4 (18.6, 24.5)	24.7 (20.3, 29.7)	18.3 (14.9, 22.3)
New Jersey[b]	4095	15.4 (13.8, 17.2)	17.7 (15.0, 20.7)	13.2 (11.4, 15.2)	19.4 (17.6, 21.3)	25.4 (22.4, 28.6)	13.8 (12.0, 15.9)
New Mexico	1853	17.9 (14.7, 21.7)	23.3 (17.8, 30.0)	12.7 (10.0, 16.1)	23.6 (19.9, 27.7)	33.4 (27.2, 40.3)	14.2 (11.2, 17.9)
New York[b]	2239	17.1 (14.9, 19.6)	20.3 (16.7, 24.4)	14.1 (11.6, 17.0)	21.1 (18.7, 23.7)	27.4 (23.5, 31.7)	15.3 (12.8, 18.3)
North Carolina[b]	2019	22.3 (19.6, 25.3)	24.6 (20.2, 29.5)	20.4 (17.2, 24.1)	28.8 (25.9, 31.9)	34.5 (29.8, 39.5)	23.6 (20.2, 27.4)
North Dakota	2221	16.6 (14.1, 19.4)	20.3 (16.2, 25.2)	12.9 (10.3, 15.9)	22.9 (19.9, 26.2)	32.4 (27.3, 37.9)	13.5 (10.9, 16.6)
Ohio[b]	2145	23.5 (21.1, 26.0)	24.8 (21.2, 28.8)	22.3 (19.3, 25.6)	29.0 (26.6, 31.6)	34.9 (31.0, 39.0)	23.7 (20.7, 27.0)
Oklahoma[b]	3649	27.2 (25.3, 29.2)	29.4 (26.4, 32.6)	25.0 (22.7, 27.4)	34.6 (32.6, 36.6)	42.6 (39.4, 45.8)	26.8 (24.5, 29.3)
Oregon	2027	17.2 (14.1, 20.7)	21.1 (16.1, 27.2)	13.2 (10.3, 16.8)	23.0 (19.6, 26.7)	31.1 (25.6, 37.1)	15.1 (11.7, 19.3)
Pennsylvania[b]	3433	21.0 (19.1, 23.0)	22.7 (19.6, 26.1)	19.4 (17.1, 21.9)	24.9 (22.9, 27.0)	30.2 (27.0, 33.7)	20.0 (17.7, 22.5)
Rhode Island	1932	19.3 (16.4, 22.5)	22.4 (17.7, 27.9)	16.5 (13.2, 20.3)	25.6 (22.3, 29.3)	34.9 (29.2, 41.1)	17.2 (13.9, 21.1)
South Carolina	5166	20.8 (18.8, 23.0)	21.2 (18.1, 24.7)	20.5 (18.1, 23.1)	26.2 (23.9, 28.5)	31.1 (27.3, 35.1)	21.7 (19.2, 24.4)
South Dakota	2025	17.8 (15.1, 20.9)	17.3 (13.3, 22.1)	18.1 (14.6, 22.2)	22.8 (19.9, 26.1)	26.8 (22.2, 32.1)	18.7 (15.2, 22.8)
Tennessee	1959	22.9 (19.6, 26.6)	24.1 (19.0, 30.2)	21.9 (17.9, 26.4)	28.6 (25.2, 32.4)	35.5 (29.8, 41.5)	22.4 (18.4, 26.8)
Texas[b]	2358	19.4 (17.1, 21.9)	25.5 (21.6, 29.9)	13.5 (11.3, 16.0)	24.9 (22.4, 27.5)	34.9 (30.8, 39.3)	15.1 (12.8, 17.7)
Utah	2108	10.0 (7.6, 13.0)	11.8 (8.0, 17.0)	8.3 (5.7, 11.9)	14.1 (11.3, 17.4)	19.2 (14.6, 24.8)	9.2 (6.5, 12.8)

Continued

TABLE 2—*Continued*

Vermont	2064	17.2 (14.7, 19.9)	18.7 (14.9, 23.1)	15.8 (12.7, 19.4)	24.1 (21.1, 27.3)	30.9 (26.2, 36.1)	17.7 (14.3, 21.7)
Virginia	2448	17.1 (14.6, 19.8)	15.9 (12.6, 19.8)	18.2 (14.8, 22.2)	24.2 (21.3, 27.3)	28.4 (24.1, 33.2)	20.2 (16.6, 24.3)
Washington	2046	19.4 (16.2, 23.0)	22.3 (16.9, 28.8)	16.5 (13.5, 20.1)	23.6 (20.3, 27.3)	29.8 (24.2, 36.1)	17.6 (14.5, 21.2)
West Virginia	1815	24.0 (20.9, 27.4)	26.0 (20.8, 31.9)	22.1 (18.8, 25.9)	32.9 (29.5, 36.5)	42.8 (37.1, 48.7)	23.7 (20.2, 27.5)
Wisconsin	1937	15.4 (12.7, 18.5)	19.3 (14.8, 24.8)	11.7 (9.2, 14.9)	22.0 (18.9, 25.4)	31.3 (26.1, 37.0)	13.1 (10.4, 16.4)
Wyoming	1752	19.8 (16.6, 23.4)	20.4 (15.8, 26.1)	19.1 (15.0, 23.9)	29.5 (25.9, 33.5)	37.6 (31.9, 43.8)	21.2 (17.1, 26.1)

Note. CI = confidence interval.
[a]Current use of ≥ 1 of the following tobacco products: cigarettes, chewing tobacco/snuff/dip, snus, cigars/cigarillos/small cigars, water pipes, or pipes.
[b]Estimates calculated among both landline and cell phone respondents. Estimates for all other states and Washington, DC, calculated among landline respondents only.

correlates of tobacco use from NATS. We observed variations in the prevalence of tobacco use across states and sociodemographic subpopulations. Accordingly, sustained, evidence-based strategies are needed to reduce all forms of tobacco use in the United States, particularly among subpopulations with the greatest prevalence.

The World Health Organization has identified specific evidence-based tobacco control strategies as best buys—cost-effective population-based interventions that have been shown to immediately enhance public health.[10] These strategies include increasing the price of tobacco products, implementing smoke-free laws in workplaces and public places, warning about the dangers of tobacco use, and enforcing restrictions on tobacco advertising, promotion, and sponsorship.[10,11] Sustained implementation of these strategies, in addition to universal access to affordable and effective cessation interventions, would help reduce the prevalence of tobacco use in the United States.[11,12] These strategies are best implemented through sustained, adequately funded, comprehensive state tobacco control programs.[11] States that invest more in comprehensive tobacco control programs typically experience larger declines in cigarette sales than does the United States as a whole, and smoking prevalence among both adults and youths has declined faster as spending for comprehensive tobacco control programs has increased.[11] However, most states are not funded at or near levels recommended by the Centers for Disease Control and Prevention. In 2011, only 2 states (North Dakota and Alaska) funded their tobacco control program at the recommended level; 27 states provided less than 25% of the recommended amounts.[13]

National tobacco use estimates from NATS were comparable to those of other population-based surveys conducted during the same period.[5,6,14–17] For example, our national estimate of current cigarette smoking (19.5%) was comparable to that of the 2010 National Health Interview Survey (19.3%).[5] Similarly, national estimates of current use of cigars (6.6%), smokeless tobacco (3.4%), and pipes (1.1%) were comparable to those from the 2010 National Survey on Drug Use and Health (5.2%, 3.5%, and 0.8%, respectively).[6] State-specific NATS estimates of current cigarette smoking (state range = 10.0%–29.0%) were largely comparable to those from the 2010 Behavioral Risk Factor Surveillance System (BRFSS; state range = 9.1%–26.8%)[5]; some state cigarette smoking estimates were slightly higher in NATS than in BRFSS, which is likely attributable to the NATS inclusion of cell phone respondents, who are more likely to smoke cigarettes than the rest of the US population.[18] In our study, cigarette smoking was significantly higher among cell phone–only users (28.7%) than among the full sample (16.3%; data not shown). Variations in prevalence may also be a reflection of our adjustment for undercoverage by marital status, education, and telephone type in addition to gender, age, and race/ethnicity. Nonetheless, both our findings and those from comparable studies suggest that the use of tobacco products other than cigarettes is prevalent among US adults.[6,15–17] Accordingly, continued surveillance of all forms of tobacco use is needed to help inform evidence-based tobacco control strategies that prevent initiation and encourage cessation.

The sociodemographic differences we observed are consistent with the findings of other surveys.[5,6,14–17] The underlying causes for these differences are complex and multifactorial. Differences among certain racial/ethnic groups could be related to cultural factors, such as social disapproval of smoking among Asian women[19]; however, variations in smoking prevalence exist within specific Asian and Hispanic subpopulations, suggesting that overall prevalence does not accurately represent the wide variability across subpopulations.[20] Variations in tobacco use by education level are likely related to differences in receptivity toward tobacco-related health messages and understanding the health hazards of tobacco, whereas variations by income may be related to differences in access to cessation services and treatments.[21,22] The higher prevalence among LGBT respondents may be related to stresses of social stigma, peer pressure, or targeting by the tobacco industry.[23,24] We also observed variations in tobacco use across states, which might be attributable to several factors, including differences in population demographics, differing levels of tobacco control programs and policies, and variations in tobacco industry marketing and promotion.[25] Utah and California had the lowest prevalence of any tobacco use, and studies suggest that California's long-standing comprehensive tobacco control program has led to declines in cigarette consumption, heart disease deaths, and lung cancer incidence in the state.[26,27]

Limitations

Tobacco use was self-reported and not validated by biochemical tests. Studies of self-reported cigarette smoking typically yield lower prevalence estimates than do studies of

serum cotinine, a byproduct and biomarker of nicotine exposure.[28] We excluded cell phone respondents from state-specific analyses for states with fewer than 200 cell phone respondents, which limited generalizability of our results to this subpopulation. The NATS sampling frame also excluded institutionalized populations and military personnel. However, we included cell phone respondents in all national estimates, as well as state-specific estimates for the 12 states with sufficient sample size.

Small sample sizes for certain subpopulations resulted in less precise estimates that could not be reported. Finally, the national (37.6%) and state (28.2%–49.3%) response rates for NATS were lower than those from comparable surveys, such as the 2010 National Health Interview Survey (60.8%) and the 2010 BRFSS (39.1%–68.8%).[5] This variation may be attributable to the household-based sampling procedures used in the National Health Interview Survey and the lack of a cell phone–only sample in BRFSS.[18] Nonetheless, estimates from NATS, such as the prevalence of current smoking, were comparable to those reported by these surveys.[5]

Conclusions

Findings from the 2009–2010 NATS provide further evidence that tobacco use is prevalent among US adults and that tobacco use patterns differ across states and subpopulations. These findings underscore the need for fuller implementation of proven strategies to reduce tobacco use in the United States, particularly among subpopulations with the greatest prevalence.[11,29] Evidence-based prevention strategies, such as tobacco price increases, media campaigns, and smoke-free policies, in concert with full access to clinical cessation interventions, have been shown to decrease tobacco use and reduce the health burden and economic impact of tobacco-related diseases in the United States.[11,12,29] ■

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Contributors

B. A. King and S. R. Dube originated the study. B. A. King conducted the analysis. All authors wrote the article.

Human Participant Protection

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