Trends in Illicit Drug Use Among Smokers and Nonsmokers in the United States, 2002–2014

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ABSTRACT

Objective: Cigarette smoking has declined in the United States. Still, identifying prevalent and modifiable barriers to quitting can help inform the next steps for tobacco control. Illicit drug use, which may be increasingly common in the United States, could be one such factor. We investigated the relationship between past-month illicit drug use and cigarette smoking status and estimated trends in the prevalence of past-month illicit drug use by cigarette smoking status from 2002 to 2014 in the United States.

Methods: The 2002–2014 National Survey on Drug Use and Health was used to obtain nationally representative data on past-month illicit drug use.

Results: From 2002 to 2014, past-month illicit drug use (for all drugs considered) was nearly 5 times more common among current smokers than among never smokers (adjusted odds ratio = 4.79) and nearly twice as prevalent in former smokers as in never smokers (adjusted odds ratio = 1.99). Illicit drug use increased linearly over time from 2002 to 2014 in the entire general population (ie, across and within current smokers, former smokers, and never smokers). This increasing trend in drug use was most rapid among former smokers (relative to current smokers and never smokers) and was largely, but not entirely, driven by increases in cannabis use.

Conclusions: Illicit drug use is most prevalent among current cigarette smokers. Yet, the rate of increase in illicit drug use prevalence was most rapid among former smokers. Because former smokers outnumber current smokers in the general population, it may be important to monitor former smokers into the future for potential negative drug-related outcomes.

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- Illicit drug use is substantially more common among current smokers relative to former and never smokers. Addressing illicit drug use as a modifiable barrier to smoking cessation may be a next step toward reducing smoking prevalence, especially in remaining smokers, who are more likely than in prior years to use certain illicit drugs, such as cannabis and opioids.

- Use of illicit drugs, including cannabis, opioids, stimulants, and hallucinogens, has increased among current and former smokers, with the most rapid rate of increase observed among former smokers. Insofar as illicit drug use may present a barrier to sustained abstinence among former smokers, both community-based and clinical tobacco control efforts may consider increased screening for illicit drug use.

The current study investigated trends in the prevalence of illicit drug use among current, former, and never smokers in the United States from 2002 to 2014. Four overarching goals guided this work. First, the study investigated whether the overall prevalence of illicit drug use differs by smoking status (current smokers, former smokers, and never smokers) overall from 2002 to 2014. Second, the study examined whether the prevalence of illicit drug use changed (ie, linearly increased or decreased) in the general US population from 2002 to 2014. Third, the study investigated trends over time in the prevalence of illicit drug use by cigarette smoking status. Fourth, the study tested whether the prevalence of specific types of illicit drug use changed over time by smoking status from 2002 to 2014. An understanding of the degree to which drug use is common among cigarette smokers and potentially contributes to the persistence of smoking may be critical knowledge toward decreasing the overall prevalence of smoking in the United States. Beyond current smokers, additional knowledge of drug use trends in former smokers and never smokers could help identify new vulnerable populations that might benefit from outreach efforts to reduce illicit drug use in the United States.

METHODS

Data were analyzed from the National Survey on Drug Use and Health (NSDUH), an annual cross-sectional national survey on the use of tobacco, other substance use, and mental health in the United States.[39–46] A multistage area probability sample for each of the 50 states and the District of Columbia was conducted, which represents the male and female civilian noninstitutionalized population of the United States aged 12 years and older.

Data were obtained from the 2002 (n = 54,079), 2003 (n = 55,230), 2004 (n = 55,602), 2005 (n = 55,905), 2006 (n = 55,279), 2007 (n = 55,435), 2008 (n = 55,739), 2009 (n = 55,772), 2010 (n = 57,873), 2011 (n = 58,397), 2012 (n = 55,268), 2013 (n = 55,160), and 2014 (n = 55,271) NSDUH public use data files, for a combined total sample size of 725,010 individuals. To increase the precision of estimates, African-Americans, Hispanics, and young people were oversampled. Response rates for completed surveys ranged from 73%–79%.

Informed consent was obtained before the start of every interview. Participants were given a description of the study, read a statement describing confidentiality, and were assured that participation was voluntary. Survey questions on tobacco and other drug use were conducted by audio computer-assisted self-interviewing, to protect privacy and increase the probability of honest reporting. Respondents were offered US $30 for participation. Analyses for these deidentified, publicly available data were deemed "exempt" from institutional review board review.

Sampling weights for the NSDUH were computed to control for unit-level and individual-level nonresponse and were adjusted to ensure consistency with population estimates obtained from the US Census Bureau. Upon

The prevalence of smoking steeply declined from 42% of adults (52% of men and 34% of women) to 26% of adults (28% for men and 24% for women) in the US population 1950 to 1990,[1] largely attributed to the effectiveness of public health tobacco control efforts. Since 1990, the prevalence of smoking has continued to decline,[2] and the cessation rate has continued to increase.[3,4] Identifying remaining barriers to cessation to further reduce the prevalence would be fruitful in directing and allocating resources for next steps in tobacco control.

One potentially important factor in this regard could be illicit drug use. Illicit drug use is a global public health concern, contributing to substantial morbidity and mortality[5] and costing billions of dollars per year in crime, lost work productivity, and health care.[6] Illicit drug use is also strongly associated with cigarette smoking. Cigarette smokers, both adults and adolescents, are more likely than nonsmokers to use illicit drugs, including cannabis, alcohol, and cocaine, and to meet criteria for substance use disorders.[7–18] Illicit drug use is also associated with decreased likelihood of smoking cessation,[19,20] and illicit drug use disorders are associated with the persistence of nicotine dependence over time.[19] Cannabis use is further associated with increased risk of relapse to cigarette use among former smokers.[21]

The use of illicit drugs, most notably cannabis, has increased in the general population over the last several years.[22–27] Recent studies also suggest increases in mental health problems in the United States, including depression, which is strongly associated with smoking.[28] In addition, a growing number of studies have shown that the prevalence of smoking has declined less rapidly among those with mental health problems,[29,30] relationships between cigarette smoking and substance misuse or mental health problems have become stronger over time,[31,32] mental health problems have increased among cigarette smokers,[33–35] and quit rates are lower among persons with alcohol use problems[36] or mental disorders.[37,38] However, prior studies have not yet examined trends in the prevalence of illicit drug use, nor in the use of specific types of illicit drugs, by cigarette use status over time in recent years.

Table 1. The Association Between Illicit Drug Use Type and Cigarette Smoking, National Survey on Drug Use and Health 2002–2014 Pooled Data

Past-Month Illicit Drug Use	Unadjusted Prevalence of Illicit Drug Use			Current Smoker[a] vs Never Smoker[c], AOR[d] (95% CI)	Former Smoker[b] vs Never Smoker[c], AOR[d] (95% CI)	Current Smoker[a] vs Former Smoker[b], AOR[d] (95% CI)
	Current Smokers[a], % (SE)	Former Smokers[b], % (SE)	Never Smokers[c], % (SE)			
Any illicit drug use	20.8 (0.2)	5.6 (0.1)	5.3 (0.1)	4.79 (4.63–4.95)	1.99 (1.88–2.12)	2.38 (2.26–2.51)
Cannabis	17.1 (0.2)	4.3 (0.1)	3.7 (0.04)	5.58 (5.39–5.77)	2.51 (2.36–2.68)	2.36 (2.23–2.50)
Opioids	4.7 (0.1)	1.1 (0.1)	1.2 (0.03)	3.50 (3.31–3.70)	1.34 (1.19–1.52)	2.22 (2.00–2.46)
Cocaine	2.6 (0.1)	0.3 (0.02)	0.2 (0.01)	8.47 (7.57–9.47)	1.56 (1.23–2.00)	5.14 (4.15–6.37)
Hallucinogens	1.2 (0.03)	0.2 (0.02)	0.3 (0.01)	5.36 (4.81–5.97)	1.78 (1.34–2.37)	2.49 (1.99–3.11)
Stimulants	1.4 (0.04)	0.2 (0.02)	0.3 (0.01)	4.43 (3.96–4.95)	1.30 (1.03–1.64)	3.17 (2.57–3.90)

[a]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.
[b]Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking no cigarettes during the past 30 days.
[c]Never smokers were persons who reported smoking < 100 cigarettes during their lifetime.
[d]Adjusted for sociodemographics (age, sex, marital status, education, income, race/ethnicity) and calendar year (categorical).
Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, SE = standard error.

aggregation of the 13 datasets, a new weight was created by dividing the original weight by 13.

Measures

Sociodemographic variables. Sociodemographic variables for this study included sex, race/ethnicity (non-Hispanic White, non-Hispanic Black/African American, Hispanic, Other [ie, non-Hispanic Native American/Alaska Native, non-Hispanic Native Hawaiian/Other Pacific Islander, non-Hispanic Asian, non-Hispanic more than 1 race]), age (12–17 years, 18–25 years, 26–34 years, 35+ years), and annual income (< $20,000, $20,000–$74,999, $75,000+).

Cigarette smoking variables. Current cigarette smoking status was assessed using the following questions: (1) "Have you ever smoked part or all of a cigarette?" (2) "Have you smoked at least 100 cigarettes in your entire life?" and (3) "During the past 30 days, have you smoked part or all of a cigarette?" Individuals who reported smoking fewer than 100 cigarettes in their lifetime were classified as never smokers. Individuals who reported smoking at least 100 cigarettes in their lifetime *and* at least 1 cigarette within the past 30 days were classified as current smokers. Individuals who did not meet criteria for classification as never smokers or current smokers were classified as former smokers (ie, individuals who have smoked 100 lifetime cigarettes but 0 in the past 30 days).

Illicit drug use variables. Participants reported whether they have ever used illicit drugs in their lifetime, and the time since their last use, separately for cannabis, opioids (including heroin and prescription pain medications), cocaine, hallucinogens, and non-cocaine stimulants (eg, methamphetamine). Participants who reported using drugs "within the past 30 days" were classified as past-month users.

Statistical Analysis

Data were weighted to reflect the complex design of the NSDUH sample and were analyzed with SAS-callable SUDAAN (RTI International; Research Triangle Park, North Carolina) to obtain proper standard error estimates for the cross-tabulations. First, we examined the combined prevalence of past-month illicit drug use by smoking status (current smokers, former smokers, and never smokers) from 2002 to 2014. Second, we examined whether the prevalence of illicit drug use changed from 2002 to 2014. Third, we examined whether prevalence of past-month drug use changed differentially in current smokers, former smokers, and never smokers. Fourth, we examined differential time trends by smoking status separately for each illicit drug.

Linear time trends of past-month drug use were assessed using logistic regression models with continuous year as the predictor. Multivariable logistic regression was then used to adjust for demographics (sex, age, race/ethnicity, income). Additionally, we tested a 2-way interaction term between year and smoking status for each illicit drug use variable. A significant ($P < .05$) interaction indicates that illicit drug use trends differed by smoking status.

RESULTS

Pooled Prevalence of Illicit Drug Use Among Current, Former, and Never Smokers in the United States

Between 2002 and 2014, approximately 20.81% of current cigarette smokers used an illicit drug in the past month, compared with 5.56% of former smokers and 5.25% of never smokers (Table 1). After we adjusted for demographics, past-month illicit drug use remained more common among current smokers compared with former smokers (adjusted odds ratio [AOR] = 2.38) and more common among former smokers compared with never smokers (AOR = 1.99). The largest difference in illicit drug use prevalence was between current smokers and never smokers (AOR = 4.79). Similar patterns were observed when examining specific classes of illicit drugs including opioids, cocaine, hallucinogens, and stimulants (Table 1).

Prevalence of Illicit Drug Use in the United States: Trends Over Time, 2002–2014

From 2002 to 2014, the prevalence of any past-month illicit drug use increased from 8.31% to 10.30% (AOR = 1.03,

Table 2. Prevalence of and Linear Trend for Any Past-Month Illicit Drug Use and Tobacco Status Among Persons 12 Years and Older, National Survey on Drug Use and Health (NSDUH) 2002–2014[a]

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends OR (95% CI) t Test (P Value) β (95% CL)	AOR[b] (95% CI) t Test (P Value) β (95% CL)
Illicit drug users in total sample (n)	7,037	7,241	6,965	7,006	6,712	6,800	6,866	7,413	7,719	7,637	7,301	7,274	7,054	1.02 (1.02–1.02) $t=11.6$ (<.001) 0.02 (0.01, 0.02)	1.03 (1.03–1.03) $t=16.9$ (<.001) 0.03 (0.03, 0.03)
% Total NSDUH	8.3	8.3	8.0	8.1	8.2	8.0	8.1	8.8	9.1	8.8	9.2	9.4	10.3		
SE	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
Current smokers[c] (n)	3,901	3,930	3,750	3,676	3,527	3,575	3,503	3,687	3,694	3,554	3,344	3,152	3,063	1.03 (1.02–1.03) $t=9.8$ (<.001) 0.03 (0.02, 0.03)	1.04 (1.03–1.05) $t=14.1$ (<.001) 0.04 (0.03, 0.05)
% Drug user	18.9	19.4	19.4	19.4	19.7	19.3	19.9	21.8	22.0	21.1	22.3	23.5	24.6		
SE	0.6	0.5	0.4	0.5	0.6	0.5	0.6	0.5	0.6	0.6	0.7	0.7	0.5		
Former smokers[d] (n)	460	478	463	460	446	428	446	484	558	514	563	571	785	1.06 (1.05–1.07) $t=10.0$ (<.001) 0.06 (0.05, 0.07)	1.07 (1.06–1.08) $t=10.6$ (<.001) 0.07 (0.05, 0.08)
% Drug user	4.8	4.1	4.4	4.3	5.1	4.5	4.7	5.2	6.2	6.0	7.1	6.6	8.7		
SE	0.4	0.23	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.4		
Never smokers[e] (n)	2,676	2,833	2,752	2,870	2,739	2,797	2,917	3,242	3,467	3,569	3,394	3,551	3,206	1.02 (1.02–1.03) $t=7.4$ (<.001) 0.02 (0.02, 0.03)	1.03 (1.02–1.03) $t=8.6$ (<.001) 0.03 (0.02, 0.03)
% Drug user	5.1	5.1	4.7	4.8	4.7	4.9	4.9	5.2	5.5	5.6	5.5	5.7	6.3		
SE	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
Differential time trend														F_{df} (P Value)	F_{df} (P Value)
Year as continuous × smoking status (in 3 categories)														$F_2=17.5$ (.0000)	$F_2=14.4$ (<.001)
Year as continuous × smoking (current vs never smokers)														$F_1=1.5$ (.22)	$F_1=3.9$ (.05)
Year as continuous × smoking (former vs never smokers)														$F_1=35.0$ (<.001)	$F_1=28.8$ (<.001)
Year as continuous × smoking (current vs former smokers)														$F_1=23.0$ (<.001)	$F_1=14.0$ (.0003)

[a]Percentages shown are weighted.
[b]Adjusted for sex, age, race, income, education.
[c]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.
[d]Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking no cigarettes during the past 30 days.
[e]Never smokers were persons who reported smoking < 100 cigarettes during their lifetime.
Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, CL = confidence limits, OR = odds ratio, SE = standard error.

$P<.001$) (Table 2). The use of cannabis increased over time (AOR = 1.04, $P<.001$) (Table 3), but the use of other drugs (ie, examined as a single, non-cannabis aggregate) did not show significant trends over time (AOR = 1.00, $P=.12$) (Table 4). When each drug was examined individually, there was a positive trend over time for use of hallucinogens (AOR = 1.01, $P=.02$), nonsignificant trends over time for use of opioids (AOR = 1.00, $P=.82$) and stimulants (AOR = 1.00, $P=.95$), and a negative trend over time for use of cocaine (AOR = 0.96, $P<.001$) (Figure 1C–F; Supplementary eTables 1–4).

Prevalence of Illicit Drug Use Among Current, Former, and Never Smokers in the United States: Trends Over Time, 2002–2014

Any illicit drugs. From 2002 to 2014, past-month use of any illicit drugs (ie, for all drugs considered including cannabis) significantly increased among current, former, and never smokers (Figure 1A; Table 2). The rate of increase was more rapid among former smokers than both current (adjusted $P=.0003$) and never (adjusted $P<.00001$) smokers. The comparison between the rate of increase in current versus never smokers did not reach significance (adjusted $P=.05$).

Cannabis. From 2002 to 2014, past-month cannabis use increased among current, former, and never smokers (Figure 1B; Table 3). Although the prevalence of cannabis use across years was 3–5 times higher among current versus former and never smokers (Table 1), the rate of increase over time was significantly faster among former smokers than never smokers (adjusted $P=.0001$) and current smokers (adjusted

$P=.0009$) (Table 3). The rate of increase between current smokers and never smokers did not differ (adjusted $P=.69$).

Illicit drugs except cannabis. After removing cannabis from the "illicit drugs" category, the prevalence of illicit drug use did not change among current (adjusted $P=.42$) and never smokers (adjusted $P=.17$) (Table 4). Although these 2 groups initially showed trends toward a decline in past-month drug use prior to adjusting for demographics, these declines were no longer evident after adjustment (Table 4). In contrast, illicit drug use significantly increased among former smokers, and this trend remained significant after adjustment for demographics (adjusted $P=.002$). This increasing trend significantly differed from trends among never (adjusted $P=.008$) and current (adjusted $P=.002$) smokers.

Opioids. In 2014, 4.12% of current smokers, 1.39% of former smokers, and 1.08% of nonsmokers used opioids in the past month (Supplementary eTable 1). From 2002 to 2014, the prevalence of past-month opioid use increased among current (adjusted $P=.0005$) and former (adjusted $P=.04$) smokers but did not change in never smokers (adjusted $P=.12$) (Figure 1C; Supplementary eTable 1). The change in prevalence of opioid use over time differed significantly between current smokers and never smokers (adjusted $P=.004$) and between former smokers and never smokers (adjusted $P=.02$).

Cocaine. In 2014, 1.91% of current smokers, 0.24% of former smokers, and 0.26% of nonsmokers used cocaine in the past month (Supplementary eTable 2). The prevalence of

Table 3. Prevalence of and Linear Trend for Any Past-Month Cannabis Use and Tobacco Status Among Persons 12 Years and Older, National Survey on Drug Use and Health (NSDUH) 2002–2014[a]

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends OR (95% CI) t Test (P Value) β (95% CL)	AOR[b] (95% CI) t Test (P Value) β (95% CL)
Illicit drug users in total sample (n)	5,612	5,733	5,473	5,387	5,191	5,272	5,432	5,972	6,253	6,366	6,073	6,128	5,973	1.03 (1.02–1.03) $t=14.9$ (<.001) 0.03 (0.02, 0.03)	1.04 (1.03–1.04) $t=19.2$ (<.001) 0.04 (0.03, 0.04)
% Total NSDUH	6.2	6.2	6.1	6.0	6.1	5.8	6.1	6.7	7.0	7.0	7.3	7.6	8.5		
SE	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1		
Current smokers[c] (n)	3,376	3,376	3,200	3,073	2,980	2,986	2,986	3,154	3,164	3,127	2,924	2,770	2,726	1.03 (1.03–1.04) $t=11.6$ (<.001) 0.03 (0.03, 0.04)	1.04 (1.04–1.05) $t=15.6$ (<.001) 0.05 (0.04, 0.05)
% Cannabis user	15.0	16.0	15.9	15.7	15.7	15.1	16.2	17.7	18.0	17.9	18.7	20.1	21.6		
SE	0.5	0.5	0.4	0.4	0.5	0.4	0.6	0.5	0.6	0.6	0.7	0.7	0.5		
Former smokers[d] (n)	373	386	373	354	348	331	348	395	464	422	462	477	677	1.07 (1.05–1.08) $t=10.1$ (<.001) 0.07 (0.05, 0.08)	1.08 (1.06–1.09) $t=10.6$ (<.001) 0.07 (0.06, 0.09)
% Cannabis user	3.7	3.3	3.5	3.2	3.6	3.4	3.5	4.2	4.8	4.8	5.7	5.3	7.3		
SE	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.4		
Never smokers[e] (n)	1,863	1,971	1,900	1,960	1,863	1,955	2,098	2,423	2,625	2,787	2,687	2,881	2,570	1.04 (1.03–1.05) $t=11.9$ (<.001) 0.04 (0.03, 0.04)	1.04 (1.04–1.05) $t=12.7$ (<.001) 0.04 (0.04, 0.05)
% Cannabis user	3.3	3.3	3.1	3.1	3.1	3.1	3.3	3.5	3.9	4.2	4.0	4.4	4.8		
SE	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1		
Differential time trend														F_{df} (P Value)	F_{df} (P Value)
Year as continuous × smoking status (in 3 categories)														$F_2=10.1$ (.0001)	$F_2=7.5$ (.0008)
Year as continuous × smoking (current vs never smokers)														$F_1=1.7$ (.1940)	$F_1=0.2$ (.6882)
Year as continuous × smoking (former vs never smokers)														$F_1=15.0$ (.0002)	$F_1=15.2$ (.0001)
Year as continuous × smoking (current vs former smokers)														$F_1=20.1$ (<.001)	$F_1=11.5$ (.0009)

[a]Percentages shown are weighted.
[b]Adjusted for sex, age, race, income, education.
[c]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.
[d]Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking no cigarettes during the past 30 days.
[e]Never smokers were persons who reported smoking < 100 cigarettes during their lifetime.
Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, CL = confidence limits, OR = odds ratio, SE = standard error.

Table 4. Prevalence of and Linear Trend for Any Past-Month Illicit Drug Use (Except Cannabis) and Tobacco Status Among Persons 12 Years and Older, National Survey on Drug Use and Health (NSDUH) 2002–2014[a]

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends OR (95% CI) t Test (P Value) β (95% CL)	AOR[b] (95% CI) t Test (P Value) β (95% CL)
Illicit drug use except cannabis in total sample (n)	2,990	3,108	3,040	3,146	3,033	2,977	2,910	3,030	2,999	2,766	2,574	2,388	2,201	0.99 (0.98–1.00) $t=-4.3$ (<.0001) −0.01 (−0.02, −0.007)	1.00 (0.99–1.00) $t=-1.6$ (.12) −0.005 (−0.01, 0.001)
% Total NSDUH	3.8	3.8	3.4	3.6	3.8	3.7	3.5	3.7	3.6	3.1	3.5	3.3	3.3		
SE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1		
Current smokers[c] (n)	1,663	1,679	1,641	1,684	1,590	1,608	1,528	1,598	1,564	1,398	1,267	1,157	990	0.99 (0.99–1.00) $t=-1.7$ (.09) −0.006 (−0.01, 0.001)	1.00 (1.00–1.01) $t=0.8$ (.42) 0.003 (−0.004, 0.01)
% Non–cannabis user	8.9	8.7	8.4	8.7	9.1	9.1	8.6	9.3	9.0	7.8	8.5	8.6	7.8		
SE	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.5	0.5	0.3		
Former smokers[d] (n)	157	178	166	179	159	167	172	150	183	161	176	160	206	1.03 (1.01–1.05) $t=2.6$ (.009) 0.03 (0.01, 0.05)	1.03 (1.01–1.06) $t=3.2$ (.002) 0.03 (0.01, 0.05)
% Non–cannabis user	1.8	1.6	1.4	1.6	1.9	1.9	1.9	1.5	2.1	1.8	2.3	2.0	2.3		
SE	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.4	0.2	0.2		
Never smokers[e] (n)	1,170	1,251	1,233	1,283	1,284	1,202	1,210	1,282	1,252	1,207	1,131	1,071	1,005	0.99 (0.98–1.00) $t=-2.8$ (.005) −0.01 (−0.02, −0.004)	0.99 (0.98–1.00) $t=-1.4$ (.17) −0.007 (−0.02, 0.003)
% Non–cannabis user	2.3	2.5	2.2	2.3	2.4	2.3	2.2	2.4	2.1	2.0	2.2	2.0	2.2		
SE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Differential time trend														F_{df} (P Value)	F_{df} (P Value)
Year as continuous × smoking status (in 3 categories)														$F_2=6.1$ (.003)	$F_2=5.1$ (.007)
Year as continuous × smoking (current vs never smokers)														$F_1=1.2$ (.27)	$F_1=1.0$ (.32)
Year as continuous × smoking (former vs never smokers)														$F_1=12.2$ (.0006)	$F_1=10.4$ (.002)
Year as continuous × smoking (current vs former smokers)														$F_1=9.2$ (.003)	$F_1=7.2$ (.008)

[a]Percentages shown are weighted.
[b]Adjusted for sex, age, race, income, education.
[c]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.
[d]Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking no cigarettes during the past 30 days.
[e]Never smokers were persons who reported smoking < 100 cigarettes during their lifetime.
Abbreviations: AOR = adjusted odds ratio, CI = confidence interval, CL = confidence limits, OR = odds ratio, SE = standard error.

Figure 1. Time Trends for Prevalence of Illicit Drug Use From 2002 to 2014 in the United States General Population as a Function of Smoking Status (Current Smokers, Former Smokers, Never Smokers)[a]
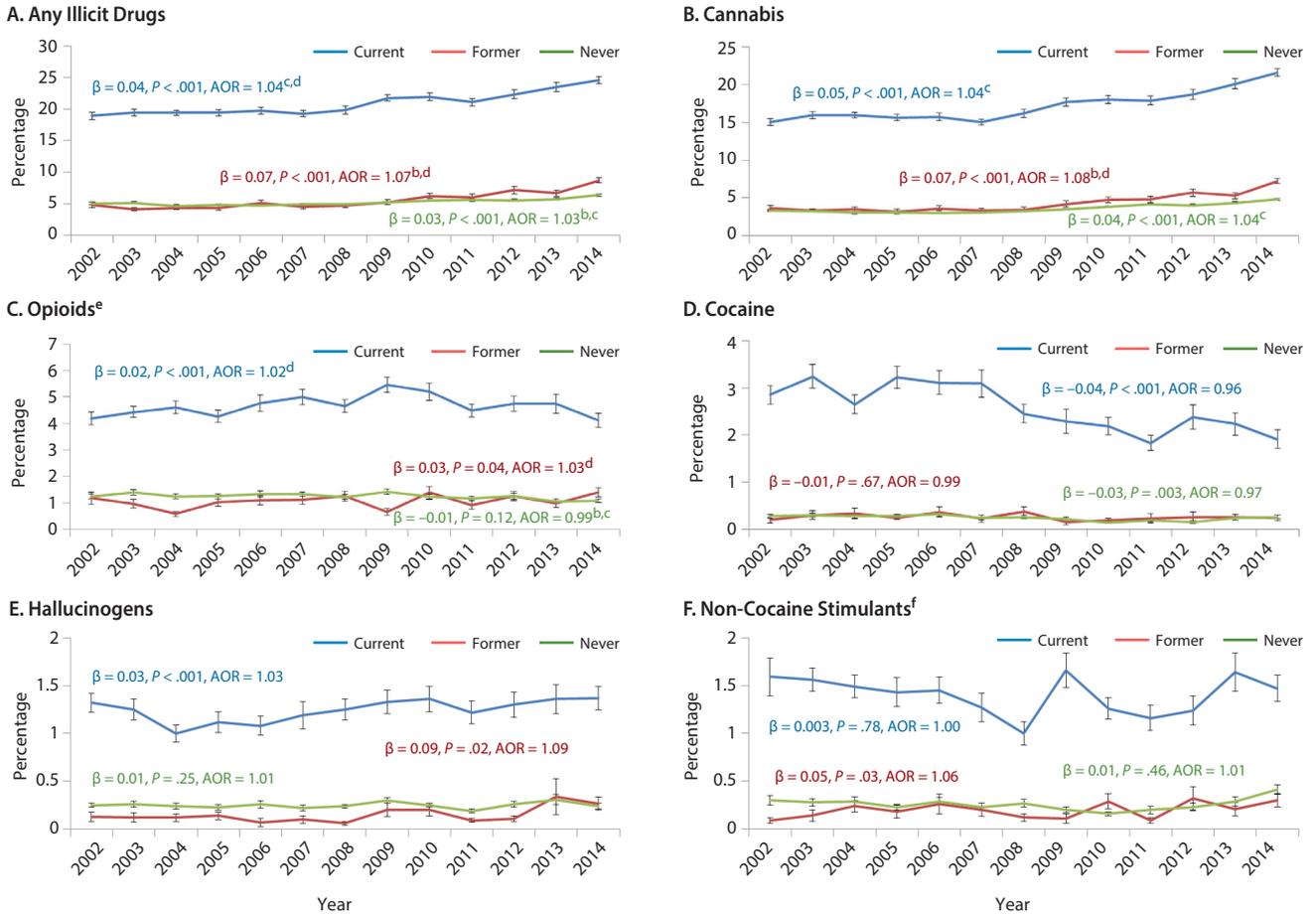
[a]Please note that, to ensure readability of each figure part, the y-axes have different values. For detailed statistics on panels A and B, see Tables 2–4. For detailed statistics on panels C–F, see supplementary tables.
[b]Denotes a difference from current smokers ($P<.05$).
[c]Denotes a difference from former smokers ($P<.05$).
[d]Denotes a difference from never smokers ($P<.05$).
[e]Includes heroin and illegally used prescription pain medicine.
[f]Includes amphetamine, methamphetamine, and illegally used prescription stimulants.
Abbreviation: AOR=adjusted odds ratio (adjusted for sociodemographics).

cocaine use declined significantly over time among current (adjusted $P<.0001$) and never (adjusted $P=.003$) smokers. There was no change among former smokers (adjusted $P=.67$) (Figure 1D; Supplementary eTable 2). No significant differences emerged among any of the 3 smoking groups in the rate change of cocaine use (all interaction-adjusted P values $>.23$).

Hallucinogens. In 2014, 1.37% of current smokers, 0.27% of former smokers, and 0.24% of nonsmokers used hallucinogens in the past month (Supplementary eTable 3). The prevalence of hallucinogen use increased over time among current (adjusted $P<.001$) and former (adjusted $P=.02$) smokers, but not among never smokers (adjusted $P=.25$) (Figure 1E; Supplementary eTable 3). The rates of changes in hallucinogen use did not significantly differ over time among the 3 smoking groups (all interaction-adjusted P values $>.07$).

Non-cocaine stimulants. In 2014, 1.47% of current smokers, 0.30% of former smokers, and 0.41% of nonsmokers used non-cocaine stimulants in the past month (Supplementary eTable 4). Former smokers showed a decline in non-cocaine stimulant use after adjusting for demographics ($P=.03$), but this decline was not evident prior to adjustment ($P=.09$). There were no trends over time in either current (adjusted $P=.78$) or never (adjusted $P=.46$) smokers (Figure 1F; Supplementary eTable 4). No differences emerged in rates of change over time among the 3 smoking groups (all interaction-adjusted P values $>.07$).

DISCUSSION

This study has 4 main findings. First, illicit drug use was more common among current cigarette smokers than among former or never smokers. The prevalence of drug use for all

classes of drugs (ie, cannabis, opioids, cocaine, hallucinogens, and non-cocaine stimulants) was higher among current smokers relative to former and never smokers. These results are consistent with prior work showing strong linkages between cigarette smoking and illicit drug use/substance use disorders.[10–17] Clinical interventions that target the use of cigarettes and illicit drugs could be helpful in reducing use of both substances, as shown in some[47,48] but not all[49] studies.

Second, the prevalence of any illicit drug use increased in the US population from 2002 to 2014. This trend was largely driven by cannabis use, consistent with recent findings.[22–25] When cannabis was removed from the analyses (a novel contribution of our study), there was no significant change in prevalence of any illicit drug use from 2002 to 2014 in the overall population. When each drug was subsequently inspected individually, however, hallucinogen and cannabis use increased, cocaine use declined, and no changes were observed in the prevalence of opioid or stimulant use over this period. Thus, an increase in illicit drug use was observed overall from 2002 to 2014, yet the direction and strength of these trends differed by drug type.

Third, trends in illicit drug use differed by cigarette use status. While the prevalence of illicit drug use is consistently highest among cigarette smokers, the most rapid increases in drug use were observed among former smokers. For cannabis, one potential explanation of the more rapid escalation in former smokers is that cannabis may partially serve as a substitute for cigarettes.[50,51] Recent data also suggest, however, that cannabis use among former smokers is associated with increased risk of relapse to cigarette smoking.[21] Thus, further work incorporating longitudinal data is needed to understand potential drivers of these increases in former smokers—not just for cannabis, but also for opioids, stimulants, and hallucinogens. It will also be important to determine in former smokers whether and to what degree these increases in illicit drug use may affect physical health or cigarette use status.

Fourth, although former smokers showed the fastest escalation of illicit drug use, an escalating prevalence in the use of cannabis, opioids, and hallucinogens was also observed among current smokers. The escalation in opioid use among current smokers may be especially important, considering the current opioid epidemic in the United States,[52,53] and especially in light of data that suggest certain smoking cessation medications (eg, varenicline) may be less efficacious in the presence of opioid use.[54]

Although the "hardening hypothesis" has received mixed support, especially in terms of observed increases in nicotine dependence among smokers over time,[55–59] our findings are not incongruous with the basic premise of this hypothesis, which is to suggest that today's remaining smokers may have more trouble quitting because of an increasing preponderance of potential barriers to smoking. Specifically, we found that use of some illicit drugs is increasing among smokers, adding to other recent findings of increases in depression,[33] severe psychological distress,[34] and anxiety[35] among cigarette smokers. Yet, we also found that the rate of

increase in drug use is most rapid among former smokers. If the hardening hypothesis was fully supported, the most rapid increase theoretically would have occurred among current smokers. In sum, the weight of the evidence increasingly suggests that mental health and substance use problems are increasing among smokers, whereas the evidence for increases in nicotine dependence per se is less consistent.

Study limitations include the following. First, analyses used a dichotomous assessment of past-month illicit drug use (yes/no), a decision that was based on the distributions of the data (preponderance of zeros, especially for non-cannabis illicit drugs). The study cannot speak to how the frequency or quantity of illicit drug use may have changed over time. Second, retrospective recall or social desirability biases may have influenced the observed effects. Yet, underreporting is unlikely to be differentially problematic among smokers relative to former and never smokers, and, even so, underreporting would likely strengthen these findings. Third, sample sizes for individual illicit drugs were small in certain cells, especially for former smokers, potentially limiting our ability to significantly detect subtle trends. Cell sizes were also insufficient for examining individual drug use trends stratified by both smoking status and relevant demographic characteristics (eg, age) and were insufficient for performing analyses that corrected for, or parsed out, the effects of using multiple illicit drugs.

In summary, to our knowledge, this is the first study to investigate trends in the prevalence of illicit drug use by smoking status over time in the general US population. Past-month illicit drug use was highest in current smokers overall, and rates of illicit drug use increased in this group over time. Thus, illicit drug use remains more prevalent, and increasingly so in the case of cannabis and opioids, among persons who use cigarettes relative to former and never smokers. Yet, the most rapid increase in illicit drug use was observed among former smokers. This finding is potentially consequential both because this group outnumbers current smokers in the general population and because cannabis use has been shown to be associated with increased risk of relapse to cigarette use.[21] Future research is needed to uncover the reasons for this increase in drug use among former smokers, which segments of this population—especially as former smokers tend to be older relative to the overall age distribution[27]—are most affected, and whether and to what degree illicit drug use may be consequential for tobacco use over time. More broadly, next steps in both research and clinical intervention need to address the increasingly intertwined problems of illicit drug use and cigarette use, especially if these trends continue in the years ahead.

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Supplementary material follows this article.

POSTTEST

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1. **This study examined use of an illicit drug in the past month between 2002 and 2014 among current cigarette smokers, former smokers, and never smokers. According to the findings, which of the following statements is false?**

   a. About 5% of current cigarette smokers used an illicit drug in the past month

   b. With adjustment for demographics, past-month illicit drug use was more than twice as common among current smokers as among former smokers

   c. With adjustment for demographics, past-month illicit drug use was twice as common among former smokers as among never smokers

   d. With adjustment for demographics, past-month illicit drug use was more than 4 times higher among current smokers than never smokers

2. **When cannabis was removed from the "illicit drugs" category, after adjustment for demographics, what changed?**

   a. The prevalence of past-month illicit drug use was lower in current smokers

   b. The prevalence of past-month illicit drug use was lower in never smokers

   c. The prevalence of past-month illicit drug use was higher in former smokers

   d. No prevalence rates changed

3. **Ms A recently began treatment for anxiety and depression, and at a follow-up appointment, you notice the smell of smoke on her clothes. When asked about cigarette use, she says that she has been trying to cut down on her smoking but often smokes when she's nervous or sad. In fact, Ms A had quit smoking for a few years but relapsed. The findings of this study suggest greater potential benefit from which strategy?**

   a. Suggest she continue her efforts to quit smoking

   b. Inquire about illicit drug use (including cannabis), since it could be a barrier to Ms A's smoking cessation, and provide or refer her for tobacco dependence treatment

Supplementary Material

List of Supplementary Material for the article

Disclaimer

This Supplementary Material has been provided by the author(s) as an enhancement to the published article. It has been approved by peer review; however, it has undergone neither editing nor formatting by in-house editorial staff. The material is presented in the manner supplied by the author.

Supplementary eTable 1. Prevalence of and linear trend for any past month opioids and tobacco status National Survey on Drug Use and Health among persons 12 years and older (NSDUH), 2002-2014

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends	
	wt% (SE)													OR (95% CI); t-test (p-value); Beta (95% CL)	AOR* (95% CI); t-test (p-value); Beta (95% CL)
Past-month opioid use	1566	1724	1684	1734	1710	1681	1703	1841	1689	1586	1496	1287	1119	0.99 (0.98 - 1.00) t=-2.0 (0.04) -0.008 (-0.02, -0.002)	1.00 (0.99 - 1.01) t=0.2 (0.82) 0.0009 (-0.007, 0.01)
% total NSDUH	1.9	2.0	1.9	1.9	2.1	2.1	2.0	2.1	2.1	1.8	2.0	1.8	1.7		
SE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Current smokers[1] (n)	826	902	915	909	915	910	915	1001	895	812	745	626	513	1.01 (1.00 - 1.01) t=1.1 (0.28) 0.005 (-0.004, 0.01)	1.02 (1.01 - 1.03) t=3.5 (0.0005) 0.02 (0.007, 0.03)
% opioid user	4.2	4.4	4.6	4.3	4.8	5.0	4.7	5.5	5.2	4.5	4.7	4.7	4.1		
SE	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3		
Former smokers[2] (n)	96	99	84	112	87	98	112	88	108	88	99	87	110	1.02 (1.00 - 1.05) t=1.6 (0.11) 0.02 (-0.005, 0.05)	1.03 (1.00 - 1.05) t=2.1 (0.04) 0.03 (0.002, 0.05)
% opioid user	1.2	1.0	0.6	1.0	1.1	1.1	1.3	0.7	1.4	0.9	1.3	1.0	1.4		
SE	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2		
Never-Smokers[3] (n)	644	723	685	713	708	673	676	752	686	686	652	574	496	0.99 (0.98 - 1.00) t=-2.6 (0.01) -0.01 (-0.03, -0.003)	0.99 (0.98 - 1.00) t=-1.5 (0.12) -0.009 (-0.02, 0.003)
% opioid user	1.2	1.4	1.2	1.3	1.3	1.3	1.2	1.4	1.2	1.2	1.3	1.1	1.1		
SE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Differential time trend: year as continuous x smoking status (in 3 categories)														$F_{(2)}=5.3$ (0.006)	$F_{(2)}=5.5$ (0.005)
Differential time trend: year as continuous x smoking (current vs. never smokers)														$F_{(1)}=8.4$ (0.004)	$F_{(1)}=8.5$ (0.004)
Differential time trend: year as continuous x smoking (former vs. never smokers)														$F_{(1)}=6.3$ (0.01)	$F_{(1)}=5.6$ (0.02)
Differential time trend: year as continuous x smoking (current vs. former smokers)														$F_{(1)}=1.5$ (0.23)	$F_{(1)}=0.8$ (0.37)

AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; SE, standard error; wt, weighted

*Adjusted for sex, age, race, income, education

[1]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.

[2] Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported not smoking any cigarettes during the past 30 days.

[3] Never smokers were persons who reported never smoking ≥ 100 cigarettes during their lifetime.

Supplementary eTable 2. Prevalence of and linear trend for any past month cocaine and tobacco status National Survey on Drug Use and Health among persons 12 years and older (NSDUH), 2002-2014

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends	
														OR (95% CI); t-test (p-value); Beta (95% CL)	AOR* (95% CI); t-test (p-value); Beta (95% CL)
						wt% (SE)									
Past-month cocaine use	648	685	659	717	652	592	512	429	430	414	363	368	363	0.95 (0.94 - 0.96) t=-9.4 (<0.001) -0.05 (-0.06, -0.04)	0.96 (0.95 - 0.97) t=-8.2 (<0.001) -0.04 (-0.05, -0.03)
% total NSDUH	0.9	1.0	0.8	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.6	0.6	0.6		
SE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.04	0.04	0.1	0.1	0.1		
Current smokers[1] (n)	509	516	523	558	474	455	384	316	309	301	267	265	231	0.96 (0.95 - 0.97) t=-6.3 (<0.001) -0.04 (-0.05, -0.03)	0.96 (0.95 - 0.98) t=-5.6 (<0.001) -0.04 (-0.05, -0.02)
% cocaine user	2.9	3.2	2.7	3.2	3.1	3.1	2.5	2.3	2.2	1.8	2.4	2.2	1.9		
SE	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.2		
Former smokers[2] (n)	28	37	30	29	32	20	26	16	29	17	17	18	25	0.98 (0.94 - 1.02) t=-0.8 (0.42) -0.02 (-0.06, 0.02)	0.99 (0.95 - 1.03) t=-0.4 (0.67) -0.01 (-0.05, 0.03)
% cocaine user	0.2	0.3	0.3	0.3	0.4	0.2	0.4	0.2	0.2	0.2	0.3	0.3	0.2		
SE	0.1	0.1	0.1	0.04	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Never-Smokers[3] (n)	111	132	106	130	146	117	102	97	92	96	79	85	107	0.96 (0.94 - 0.99) t=-3.3 (0.001) -0.04 (-0.06, -0.01)	0.97 (0.95 - 0.99) t=-3.0 (0.003) -0.03 (-0.05, -0.01)
% cocaine user	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.3		
SE	0.04	0.04	0.04	0.03	0.04	0.1	0.04	0.1	0.02	0.03	0.03	0.04	0.04		
Differential time trend: year as continuous x smoking status (in 3 categories)														$F_{(2)}=0.6$ (0.56)	$F_{(2)}=0.5$ (0.61)
Differential time trend: year as continuous x smoking (current vs. never smokers)														$F_{(1)}=0.2$ (0.69)	$F_{(1)}=0.2$ (0.69)
Differential time trend: year as continuous x smoking (former vs. never smokers)														$F_{(1)}=0.7$ (0.41)	$F_{(1)}=0.7$ (0.41)
Differential time trend: year as continuous x smoking (current vs. former smokers)														$F_{(1)}=1.3$ (0.29)	$F_{(1)}=1.0$ (0.23)

AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; SE, standard error; wt, weighted

*Adjusted for sex, age, race, income, education

[1]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.

[2] Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported not smoking any cigarettes during the past 30 days.

[3] Never smokers were persons who reported never smoking ≥ 100 cigarettes during their lifetime.

Supplementary eTable 3. Prevalence of and linear trend for any past month hallucinogens and tobacco status National Survey on Drug Use and Health among persons 12 years and older (NSDUH), 2002-2014

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends	
						wt% (SE)								OR (95% CI); t-test (p-value); Beta (95% CL)	AOR* (95% CI); t-test (p-value); Beta (95% CL)
Hallucinogens[1]	575	524	482	503	440	480	532	534	593	506	484	451	357	1.01 (0.99 - 1.02)	1.01 (1.00 - 1.03)
% total NSDUH	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5	t=1.1 (0.29)	t=2.3 (0.02)
SE	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.1	0.04	0.001 (-0.001, 0.02)	0.01 (0.001, 0.03)
Current smokers[2] (n)	373	341	288	313	264	302	327	317	353	306	259	253	197	1.01 (1.00 - 1.03)	1.03 (1.02 - 1.05)
% hallucinogen user	1.3	1.3	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.2	1.3	1.4	1.4	t=2.0 (0.05)	t=4.4 (<0.001)
SE	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.01 (-0.0001, 0.03)	0.03 (0.02, 0.05)
Former smokers[3] (n)	22	24	22	20	14	16	17	18	30	26	28	22	30	1.08 (1.01 - 1.17)	1.09 (1.02 - 1.18)
% hallucinogen user	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.3	t=2.2 (0.03)	t=2.4 (0.02)
SE	0.1	0.1	0.04	0.04	0.04	0.04	0.02	0.1	0.1	0.02	0.03	0.2	0.1	0.08 (0.01, 0.15)	0.09 (0.02, 0.17)
Never-Smokers[4] (n)	180	159	172	170	162	162	188	199	210	174	197	176	130	1.01 (0.99 - 1.03)	1.01 (0.99 - 1.03)
% hallucinogen user	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.3	0.3	0.2	t=0.6 (0.58)	t=1.2 (0.25)
SE	0.02	0.03	0.03	0.03	0.04	0.03	0.02	0.03	0.02	0.02	0.03	0.05	0.03	0.006 (-0.01, 0.03)	0.01 (-0.009, 0.03)
Differential time trend: year as continuous x smoking status (in 3 categories)														F(2)=1.8 (0.17)	F(2)=1.9 (0.16)
Differential time trend: year as continuous x smoking (current vs. never smokers)														F(1)=0.4 (0.51)	F(1)=1.2 (0.27)
Differential time trend: year as continuous x smoking (former vs. never smokers)														F(1)=3.6 (0.06)	F(1)=3.4 (0.07)
Differential time trend: year as continuous x smoking (current vs. former smokers)														F(1)=3.3 (0.07)	F(1)=2.5 (0.12)

AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; SE, standard error; wt, weighted

*Adjusted for sex, age, race, income, education

[1]Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.

[2] Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported not smoking any cigarettes during the past 30 days.

[3] Never smokers were persons who reported never smoking ≥ 100 cigarettes during their lifetime.

Supplementary eTable 4. Prevalence of and linear trend for any past month stimulants and tobacco status National Survey on Drug Use and Health among persons 12 years and older (NSDUH), 2002-2014.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Trends	
						wt% (SE)								OR (95% CI); t-test (p-value); Beta (95% CL)	AOR* (95% CI); t-test (p-value); Beta (95% CL)
Stimulants[1] (n)	480	485	525	489	451	384	355	426	389	366	386	412	405	0.99 (0.98 - 1.00)	1.00 (0.99 - 1.01)
% total NSDUH	0.6	0.6	0.6	0.5	0.6	0.5	0.4	0.5	0.4	0.4	0.5	0.5	0.6	t=-1.4 (0.16)	t=-0.1 (0.95)
SE	0.1	0.04	0.04	0.04	0.1	0.04	0.03	0.04	0.03	0.03	0.04	0.05	0.04	-0.01 (-0.02, 0.004)	-0.0005 (-0.01, 0.01)
Current smokers[2] (n)	311	312	349	315	265	245	202	276	239	232	231	233	204	0.99 (0.97 - 1.01)	1.00 (0.99 - 1.02)
% stimulant user	1.6	1.6	1.5	1.4	1.5	1.3	1.0	1.7	1.3	1.2	1.2	1.6	1.5	t=-1.0 (0.30)	t=0.3 (0.78)
SE	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.1	-0.009 (-0.03 0.01)	0.003 (-0.01, 0.02)
Former smokers[3] (n)	19	24	29	22	20	19	15	15	27	16	22	23	31	1.04 (0.99 - 1.10)	1.06 (1.00 - 1.11)
% stimulant user	0.1	0.1	0.2	0.2	0.3	0.2	0.1	0.1	0.3	0.1	0.3	0.2	0.3	t=1.7 (0.09)	t=2.2 (0.03)
SE	0.03	0.1	0.1	0.1	0.1	0.1	0.04	0.1	0.1	0.03	0.1	0.1	0.1	0.04 (-0.006, 0.09)	0.05 (0.005, 0.10)
Never-Smokers[4] (n)	150	149	147	152	166	120	138	135	123	118	133	156	170	1.01 (0.98 - 1.03)	1.01 (0.98 - 1.03)
% stimulant user	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.4	t=0.5 (0.65)	t=0.7 (0.46)
SE	0.1	0.04	0.1	0.03	0.04	0.04	0.04	0.03	0.02	0.04	0.04	0.1	0.1	0.005 (-0.02, 0.03)	0.009 (-0.02, 0.03)
Differential time trend: year as continuous x smoking status (in 3 categories)														F(2)=2.1 (0.13)	F(2)=1.7 (0.19)
Differential time trend: year as continuous x smoking (current vs. never smokers)														F(1)=1.0 (0.32)	F(1)=0.6 (0.45)
Differential time trend: year as continuous x smoking (former vs. never smokers)														F(1)=1.9 (0.18)	F(1)=2.0 (0.16)
Differential time trend: year as continuous x smoking (current vs. former smokers)														F(1)=3.8 (0.05)	F(1)=3.3 (0.07)

AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio; SE, standard error; wt, weighted
*Adjusted for sex, age, race, income, education
[1] Stimulants and methamphetamines (CPNSTMMN)
[2] Current smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported smoking every day or some days in the past 30 days.
[3] Former smokers were persons who reported smoking ≥ 100 cigarettes during their lifetime and who, at the time of interview, reported not smoking any cigarettes during the past 30 days.
[4] Never smokers were persons who reported never smoking ≥ 100 cigarettes during their lifetime.