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## Perceived risk of regular cannabis use in the United States from 2002 to 2012: differences by sex, age, and race/ethnicity\*

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### Abstract

**Introduction**—Cannabis is one of the most widely used psychoactive substances in the United States (U.S.). Perceived risk of use is associated with substance use; the recent debate surrounding medicalization and legalization of cannabis in the U.S. has the potential to impact perceived risk of use. Recent estimates are needed to assess temporal changes in, and identify correlates of, perceived risk of cannabis use.

**Methods**—Utilizing data from the 2002–2012 survey years of the National Survey on Drug Use and Health, chi-squared statistics and logistic regression were used to describe temporal changes in perceived risk of regular cannabis use (i.e., once or twice a week), to explore correlates of perceived risk, and to report frequency of cannabis use.

**Results**—Between 2002–2012, perceived great risk of regular cannabis use varied significantly overall ( $p < 0.001$ ). The prevalence of past year non-daily ( $p < 0.001$ ) and daily use varied

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#### Contributors

Author Pacek conceptualized the research question and wrote the first draft of the manuscript. Authors Mauro and Martins contributed to statistical analyses and subsequent drafts of the manuscript. All authors contributed to and have approved of the final version of the manuscript.

#### Conflict of interest

Author Martins serves as a consultant to Purdue Pharma, L.P., unrelated to the present work. The authors have no other conflicts of interest to declare.

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#### Disclaimer

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significantly during this time ( $p < 0.001$ ). Controlling for survey year and other confounders, characteristics associated with increased odds of perceived great risk of regular cannabis use included: female sex; Non-White race/ethnicity; age 50+; and family income of \$20,000–49,999. Characteristics associated with decreased odds of perceived great risk included: ages 12–17 and 18–25; high school education or greater; total family income of \$75,000+; past year non-daily and daily cannabis use; and survey years 2008–2012.

**Conclusions**—Findings characterize trends of perceived risk of regular cannabis use, and past year non-daily and daily cannabis use. Longitudinal studies of the influence of legal status of cannabis at the state-level are needed.

## Keywords

cannabis; perceived risk; NSDUH

## 1. INTRODUCTION

Cannabis is one of the most commonly used psychoactive substance in the United States (U.S.), with 7.3% of the U.S. general population reporting use in the past month in 2012 (SAMHSA, 2013). The widespread use of cannabis is of public health importance; cannabis use is associated with a host of social, psychological, and physical impairments, including financial difficulties, low energy levels, dissatisfaction with productivity levels, sleep and memory issues, and relationship and family problems (Gruber et al., 2003; Stephens et al., 2002). Most individuals receiving cannabis use disorder (CUD) treatment report difficulty quitting, and experience a withdrawal syndrome after cessation (Budney et al., 2007a). In light of the negative effects of cannabis use, continued examination of characteristics that are associated with cannabis use, particularly regular cannabis use, is prudent.

Prior research has identified numerous factors associated with cannabis use. Factors associated with cannabis use can differ among sex and age subgroups (Copeland and Swift, 2009; Guxens et al., 2007), warranting the need for stratified analyses. Cannabis use is associated with lower education achievement (Lynskey and Hall, 2000; Fergusson et al., 2003), lower productivity at work, higher neighborhood disorder and disadvantage (Wilson et al., 2005; Furr-Holden et al., 2011; Tucker et al., 2013), and higher risk of other illicit drug use (Lynskey et al., 2003). Regular cannabis use can lead to CUDs, particularly among individuals who initiate cannabis use early and have other risk factors such as using other substances, having substance-using peers, and reporting anxiety and depressive symptoms (Hall and Degenhardt, 2007; Wittchen et al., 2007; Buckner et al., 2008), and are more prevalent among males and younger adults (Compton et al., 2004; Copeland and Swift, 2009). A longitudinal study indicated that the probability of CUD increased with the increasing presence of risk factors for CUD (Brook et al., 2011). Moreover, there is an inverse relationship between marijuana use and perceptions of its harmfulness (Compton et al., 2005).

According to the Health Belief Model (Janz and Becker, 1984), perceived risk is an important factor in deciding whether or not individuals will engage in health-related behaviors. Continually evolving regulations governing the medicalization and legalization of

cannabis use within the U.S. have the potential to impact perceived risk of cannabis use, which may influence individuals' decisions to use cannabis. Cerda and colleagues (2012) showed that adults in states with medical cannabis laws have higher odds of cannabis use than residents of states without such laws. Compared to those without medical marijuana laws, National Survey on Drug Use and Health (NSDUH) participants in states with medical marijuana laws also had lower perceptions of risk associated with use as well as adolescent marijuana use (Wall et al., 2011). In Colorado, marijuana commercialization was also associated with decreased perception of great risk of marijuana use for adolescents and adults alike (Schuermeyer et al., 2014). Conversely, in an analysis of the National Survey on Drug Use and Health 2002–2009 data, Harper and colleagues (2012) found limited evidence for a causal effect of the presence of medical marijuana laws—in 2002–2003 8 states had legalized the use of medical marijuana, whereas in 2007–2008, 13 total states had medical marijuana laws—on measures of reported cannabis use. However, despite extant studies investigating perceived risk surrounding cannabis use (Lopez-Quintero and Neumark, 2010; Kilmer et al., 2007), and annual publications put out by the Substance Abuse and Mental Health Services Administration (SAMHSA), to our knowledge, no current research describes temporal changes in perceived risk of cannabis use using the most recent decade of aggregated data of the U.S. population 12 years and older. In particular, this gap includes perceived risk of regular use, temporal changes in frequency of cannabis use, subgroup analyses for each of the aforementioned temporal trends, and characteristics associated with perceived risk of use using a U.S. nationally representative sample.

To address current gaps in the literature, the present study had the following aims: 1) to examine the change in prevalence of perceived great risk of regularly using cannabis (i.e., once or twice a week) over an 11-year period using the most recent currently available NSDUH survey data (i.e., during the years 2002–2012), stratified by sex; and 2) to explore characteristics associated with perceived great risk of cannabis use. To accomplish these aims, we used data from a nationally representative survey of non-institutionalized individuals ages 12 and older living in the U.S.

## 2. METHODS

### 2.1 Sample

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 ( $n=58,397$ ), and 2012 ( $n=55,268$ ) National Survey on Drug Use and Health (NSDUH) public use data files, a combined total sample size of 614,579 U.S. individuals. The NSDUH, sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA), was designed to provide estimates of the prevalence of extra-medical use of legal and illegal drugs in U.S. community-based individuals aged 12 and older (SAMHSA, 2003, 2013). The survey employed a 50-state design with an independent multistage area probability sample for each of the 50 states and the District of Columbia. 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 the legislation regarding the confidentiality of any information provided by participants, and assured that participation in the study was voluntary. Additional information on data confidentiality maintenance is available elsewhere (SAMHSA 2003, 2013). Surveys were administered by computer-assisted personal interviewing (CAPI) conducted by an interviewer and audio computer-assisted self-interviewing (ACASI). Use of ACASI was designed to provide respondents with a private and confidential means of responding to questions, and to increase honest reporting of illegal drug use and other sensitive behaviors (SAMHSA, 2003, 2013). Respondents were offered U.S. \$30 for participation. The analyses were based on de-identified publicly available data exempt from Institutional Review Board review.

Sampling weights for the NSDUH were computed to control for unit-level and individual-level non-response, and were adjusted to ensure consistency with population estimates obtained from the U.S. Census Bureau. In order to use data from the 11 years of combined data, a new weight was created upon aggregating the 11 datasets by dividing the original weight by the number of data sets combined. Further descriptions of the sampling methods and survey techniques for the NSDUH are found elsewhere (SAMHSA, 2003, 2013).

## 2.2 Measures

**2.2.1 Socio-demographic variables**—Socio-demographic variables for this study included sex, race/ethnicity, age, marital status, educational attainment, and survey year. Age (12–17; 18–25; 26–49; 50+) and race/ethnicity (White; Black; Hispanic; Other), and total family income (\$0–19,000; \$20,000–49,000; \$50,000–74,999; \$75,000+) were treated as categorical variables. Educational attainment (less than high school; high school graduate or greater) was dichotomized.

**2.2.2 Perceived risk of cannabis use and past year cannabis use**—Participants reported perceived risk of using cannabis on a regular basis (i.e., smoking cannabis once or twice a week): “How much do people risk harming themselves physically and in other ways when they smoke [cannabis] once or twice a week?” Response options included “no risk”, “slight risk”, “moderate risk”, and “great risk”. In the present analyses, perceived risk was dichotomized as “great perceived risk” versus “other perceived risk”.

Participants reported whether they ever used cannabis in their lifetime, and how long it had been since their last cannabis use. Participants who reported using cannabis “Within the past 30 days” or “More than 30 days ago but within the past 12 months” were categorized as past year users in a new dichotomous variable. Participants indicating past year use reported the number of days they used cannabis in the last 12 months. Participants who reported using cannabis on 300 days or greater were classified as “daily users” (Budney et al., 2003, 2007b; Moore and Budney 2003; Whitlow et al., 2004), while those reporting use on 299 days or less in the past year were classified as “non-daily users”. A three-level variable for cannabis use was created to categorize respondents by frequency of past year cannabis use: 0=no use, 1=non-daily use, 2=daily use.

## 2.3 Statistical analysis

Data were weighted to reflect the complex design of the NSDUH sample and were analyzed with STATA SE version 12.0 software (StataCorp, 2011). We used Taylor series estimation methods (STATA “svy” commands) to obtain proper standard error estimates for the cross-tabulations. Participants were stratified by survey year (2002–2012). For both perceived risk and past year use outcomes, cross-tabulations were performed separately for the total sample, as well separately for men and women; within sex, cross-tabs were calculated separately for each of the four race/ethnicities and age groups. Chi-square ( $\chi^2$ ) tests were used to identify differences between 2002–2012 in each one of the following strata: 1) perceived great risk of regular cannabis use; 2) perceived risk of regular cannabis use among past year non-users, past year non-daily users, and past year daily users; and 3) past year non-daily cannabis use and past year daily cannabis use. Multivariate logistic regression analyses were used to determine the association between socio-demographic and cannabis use characteristics with perceived great risk of regular cannabis use. Analyses were adjusted for sex, age, race/ethnicity, education, total family income, past year cannabis use status, and survey year. To mitigate concerns about multiple comparisons and possible inflation of Type-1 error, Bonferroni-corrected alpha levels of 0.002 were used for all analyses.

## 3. RESULTS

### 3.1 Perceived risk of regular cannabis use: 2002–2012

**3.1.1 Total sample**—Table 1 contains the distribution of perceived risk of regular cannabis use in each survey year, prior to dichotomization. After dichotomizing the perceived risk variable, the percentage of participants who perceived a great risk associated with regular cannabis use varied significantly between 2002 and 2012  $\chi^2(10, N = 607,324) = 109.81, p < 0.001$ . In 2002, 51.3% of NSDUH participants perceived a great risk associated with regular cannabis use, versus 40.3% of participants in 2012. This 11.0% decrease was statistically significant,  $\chi^2(df=1, N=108,026) = 341.40, p < 0.001$  (Table 2). Similar variation across the decade, and significant decreases in perceived great risk were observed for all other race/ethnicity and age categories in the full sample, with the following exceptions where significant variation between 2002–2012 was not observed: participants of Other race/ethnicity age 26–49  $\chi^2(10, N = 11,641) = 2.87, p = 0.004$  and age 50+  $\chi^2(10, N = 3,267) = 1.92, p = 0.051$ .

**3.1.2 Men**—Perceived great risk of regular cannabis varied significantly between 2002–2012  $\chi^2(1, N = 292,106) = 46.61, p < 0.001$  and decreased from 43.2% in 2002 to 33.5% in 2012 among men  $\chi^2(1, N = 51,871) = 155.82, p < 0.001$  (Supplemental Table 1a<sup>1</sup>). Similar to the full sample, decreases in perceived great risk were observed for most race/ethnicity and age categories among men. Notable exceptions to this observation, where perceived great risk of regular use did not change significantly across time, included Black men ages 50+,  $\chi^2(1, N = 2,339) = 5509.60, p = 0.349$ , Hispanic men ages 50+,  $\chi^2(1, N = 1,903) = 2.73, p = 0.005$ , and men of Other race/ethnicity ages 26–49,  $\chi^2(1, N = 5,399) = 2.54, p = 0.007$ , as well as respondents ages 50+  $\chi^2(1, N = 1,487) = 1.81, p = 0.064$ .

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**3.1.3 Women**—Between 2002 and 2012, perceived great risk of regular cannabis use varied significantly  $\chi^2(10, N = 315,218) = 74.73, p < 0.001$ , and the prevalence of perceived great risk decreased from 58.8% in 2002 to 46.7% in 2012 among women  $\chi^2(1, N = 56,155) = 252.38, p < 0.001$  (Supplemental Table 1b<sup>2</sup>). Exceptions to the observed variation in perceived great risk among women came among Hispanic women age 50+  $\chi^2(10, N = 2,459) = 1.35, p = 0.215$ , as well as among women of Other race/ethnicity  $\chi^2(10, N = 25,569) = 2.90, p = 0.003$ , age 12–17  $\chi^2(10, N = 8,610) = 1.99, p = 0.043$ , age 26–49  $\chi^2(10, N = 6,242) = 1.83, p = 0.067$ , and age 50+  $\chi^2(10, N = 1,780) = 1.21, p = 0.288$ .

## 3.2 Perceived risk of cannabis use among past year cannabis non-users: 2002–2012

**3.2.1 All Past Year Cannabis Non-Users**—Among past year cannabis non-users overall, perceived great risk of regular cannabis use varied significantly between 2002 and 2012  $\chi^2(10, N = 499,457) = 95.35, p < 0.001$ , and decreased significantly from 2002 to 2012 (56.5% vs. 45.3%, respectively)  $\chi^2(1, N = 87,837) = 322.04, p < 0.001$  (Table 3a). Significant variations in perceived great risk were found for all race/age subgroups, with the exceptions being individuals of Other race/ethnicity between the ages of 26–49  $\chi^2(10, N = 10,329) = 2.35, p = 0.015$  and age 50+  $\chi^2(10, N = 3,135) = 1.83, p = 0.064$ .

**3.2.2 Men**—The prevalence of perceived great risk of regular cannabis use varied significantly between 2002–2012  $\chi^2(10, N = 231,909) = 38.41, p < 0.001$  among men overall, and the prevalence decreased significantly when comparing 2002 and 2012 (49.0% vs. 39.1%, respectively)  $\chi^2(1, N = 40,694) = 124.51, p < 0.001$  (Supplemental Table 2a<sup>3</sup>). The prevalence of perceived great risk of regular use varied between 2002–2012 among most race/ethnicity and age subgroups, with several exceptions: Black men age 50+  $\chi^2(10, N = 2,154) = 0.98, p = 0.447$ , Hispanic men age 50+  $\chi^2(10, N = 1,837) = 2.53, p = 0.009$ , and men of Other race/ethnicity ages 12–17  $\chi^2(10, N = 7,452) = 2.89, p = 0.003$ , ages 26–49  $\chi^2(10, N = 4,638) = 1.85, p = 0.058$ , and age 50+  $\chi^2(10, N = 1,406) = 1.70, p = 0.094$ , among whom perceived great risk of regular cannabis use did not vary significantly.

**3.2.3 Women**—Perceived great risk of regular cannabis use varied significantly between 2002–2012 among women overall in the NSDUH  $\chi^2(10, N = 267,548) = 68.14, p < 0.001$ , and when comparing the prevalence of perceived great risk in 2002 and 2012 directly, the prevalence decreased significantly (63.1% vs. 50.8%)  $\chi^2(1, N = 47,143) = 244.74, p < 0.001$  (Supplemental Table 2b<sup>4</sup>). Perceived great risk also varied significantly among women in most race/ethnicity age subgroups, with several exceptions: Hispanic women age 50+  $\chi^2(10, N = 2,475) = 1.27, p = 0.252$ , women of Other race/ethnicity overall  $\chi^2(10, N = 21,585) = 2.45, p = 0.011$ , women of Other race/ethnicity ages 12–17  $\chi^2(10, N = 7,308) = 1.93, p = 0.051$ , 26–49  $\chi^2(10, N = 5,691) = 1.83, p = 0.065$ , and 50+  $\chi^2(10, N = 1,729) = 0.94, p = 0.476$ .

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### 3.3 Perceived risk of cannabis use among past year non-daily cannabis users: 2002–2012

**3.3.1 All Past Year Non-Daily Cannabis Users**—Among the total sample of past year non-daily cannabis users, the perceived great risk of regular cannabis use varied significantly between the years 2002 and 2012  $\chi^2(10, N = 92,395) = 19.91, p < 0.001$ , and decreased significantly between 2002 and 2012 (10.8% vs. 5.3%, respectively)  $\chi^2(1, N = 17,217) = 71.00, p < 0.001$  (Table 3b). Perceived great risk decreased significantly among all age subgroups of the total sample, except individuals age 50+  $\chi^2(10, N = 1,748) = 0.53, p = 0.842$ , and among all race/ethnicity categories overall except those of Other race/ethnicity  $\chi^2(10, N = 7,620) = 2.28, p = 0.035$ .

**3.3.2 Men**—Among men who were past year non-daily users of cannabis, the perceived great risk of regular cannabis use varied significantly between 2002–2012  $\chi^2(10, N = 49,606) = 10.01, p < 0.001$ , and also decreased significantly when comparing 2002 to 2012 (8.7% vs. 3.9%, respectively)  $\chi^2(1, N = 9,168) = 27.45, p < 0.001$  (Supplemental Table 3a<sup>5</sup>). The prevalence of perceived great risk of regular use varied significantly between 2002–2012 among White men overall  $\chi^2(10, N = 32,441) = 7.40, p < 0.001$  and Black men overall  $\chi^2(10, N = 6,508) = 3.97, p = 0.001$ . There was notable variation in terms of significant change among the different race/ethnicity-age subgroups.

**3.3.3 Women**—Perceived great risk of regular cannabis use varied significantly among women who were past year non-daily cannabis users between 2002–2012  $\chi^2(10, N = 42,789) = 10.47, p < 0.001$ , and when comparing the prevalence of perceived great risk in the years 2002 and 2012 directly, the prevalence decreased significantly (13.8% vs. 7.3%)  $\chi^2(1, N = 8,049) = 34.65, p < 0.001$  (Supplemental Table 3b<sup>6</sup>). Significant variations in perceived great risk were also observed among women of White, Black, and Hispanic race/ethnicities, with variation being observed among various race/ethnicity-age subgroups.

### 3.4 Perceived risk of cannabis use among past year daily cannabis users: 2002–2012

**3.4.1 All Past Year Daily Cannabis Users**—The perceived great risk of regular cannabis use varied significantly between 2002 and 2012 among the total sample of past year daily cannabis users  $\chi^2(10, N = 15,472) = 3.19, p = 0.001$  (Table 3c). Though the perceived risk of regular cannabis use did not vary significantly for most race/ethnicity-age subgroups between 2002 and 2012, notable exceptions included individuals between the ages of 18–25  $\chi^2(10, N = 10,060) = 4.01, p < 0.001$  and Whites age 18–25  $\chi^2(10, N = 6,790) = 4.29, p < 0.001$ , where perceived risk varied over the course of the decade.

**3.4.2 Men**—Between 2002–2012, the perceived risk of regular cannabis use varied among men who were daily cannabis users  $\chi^2(10, N = 10,591) = 4.37, p < 0.001$  (Supplemental Table 4a<sup>7</sup>). Perceived risk did not vary significantly among the majority of race/ethnicity-age subgroups among men who were daily cannabis users.

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**3.4.3 Women**—Perceived risk of regular cannabis use remained stable among women overall between 2002 and 2012  $\chi^2(10, N = 4,881) = 0.97, p=0.456$  (Supplemental Table 4b<sup>8</sup>).

### 3.5 Past year any cannabis use: 2002–2012

When comparing the prevalence of any past year cannabis use in 2002 to 2012 directly, the prevalence of use was found to remain stable (11.0% vs. 12.3%, respectively)  $\chi^2(1, N = 109,347) = 12.57, p=0.006$ . The distribution of overall cannabis use for each year can be found in Supplemental Table 5<sup>9</sup>.

### 3.6 Past year non-daily cannabis use: 2002–2012

**3.6.1 Total Sample**—Among the total sample, past year non-daily cannabis use varied significantly between 2002 and 2012  $\chi^2(10, N = 614,579) = 6.25, p<0.001$ , but did not change significantly when comparing the years 2002 and 2012 directly (9.7% vs. 10.2%, respectively)  $\chi^2(1, N = 109,347) = 2.59, p=0.110$  (Table 4a). Non-daily cannabis use varied for Whites overall  $\chi^2(10, N = 391,745) = 4.10, p<0.001$ , all age subgroups among Whites, as well as among Hispanics overall  $\chi^2(10, N = 94,578) = 4.14, p<0.001$ .

**3.6.2 Men**—Among men, past year non-daily cannabis use varied significantly between 2002–2012  $\chi^2(10, N = 295,595) = 5.60, p<0.001$ , but did not differ significantly when comparing 2002 and 2012 directly (11.8% vs. 12.5%, respectively)  $\chi^2(1, N = 52,499) = 2.21, p=0.139$  (Supplemental Table 6a<sup>10</sup>). Non-daily use also varied significantly among all age subgroups of men overall between 2002–2012.

**3.6.3 Women**—Past year non-daily use remained stable among women overall  $\chi^2(10, N = 318,984) = 2.42, p=0.012$  (Supplemental Table 6b<sup>11</sup>). Women age 12–17  $\chi^2(1, N = 97,850) = 5.98, p<0.001$ , age 50+  $\chi^2(10, N = 33,367) = 4.32, p<0.001$ , White women age 12–17  $\chi^2(10, N = 58,914) = 7.26, p<0.001$ , White women age 50+  $\chi^2(10, N = 25,523) = 3.63, p<0.001$ , and Other women age 50+  $\chi^2(10, N = 6,413) = 0.34, p<0.001$  reported significant variations in past year non-daily cannabis use between 2002 and 2012.

### 3.7 Past year daily cannabis use: 2002–2012

**3.7.1 Total Sample**—Past year daily cannabis use varied significantly between 2002 and 2012  $\chi^2(10, N = 614,579) = 13.42, p<0.001$ , and when comparing 2002 and 2012 directly, the prevalence of daily use increased significantly between 2002 and 2012 among the population overall (1.3% vs. 2.1%)  $\chi^2(1, N = 109,347) = 37.55, p<0.001$  (Table 4b). Significant variations in the prevalence daily use were observed among individuals age 18–25  $\chi^2(10, N = 204,570) = 9.22, p<0.001$ , age 26–49  $\chi^2(10, N = 149,457) = 6.74, p<0.001$ , age 50+  $\chi^2(10, N = 60,802) = 3.64, p<0.001$ . Whites overall  $\chi^2(10, N = 391,745) = 9.15, p<0.001$ , as well as the same age subgroups as the overall sample reported significant variation in the prevalence of past year daily cannabis use. Additionally, the prevalence of

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daily cannabis use varied significantly between 2002 and 2012 among Blacks age 18–25  $\chi^2(10, N = 27,045) = 4.36, p < 0.001$ , Hispanics overall  $\chi^2(10, N = 94,578) = 4.10, p < 0.001$ , and Hispanics age 18–25  $\chi^2(10, N = 34,452) = 3.57, p < 0.001$ .

**3.7.2 Men**—Past year daily cannabis use varied significantly among men in the NSDUH overall  $\chi^2(10, N = 295,595) = 8.74, p < 0.001$ , and when comparing the prevalence in 2002 to 2012 directly, the prevalence increased significantly (1.9% vs. 3.0%)  $\chi^2(1, N = 52,499) = 34.94, p < 0.001$  (Supplemental Table 7a<sup>12</sup>).

**3.7.3 Women**—Among women overall, past year daily cannabis use varied significantly between 2002 and 2012  $\chi^2(10, N = 318,984) = 6.43, p < 0.001$ , and when comparing 2002 to 2012 directly, increased (0.8% vs. 1.2%)  $\chi^2(1, N = 56,848) = 11.78, p = 0.001$  (Supplemental Table 7b<sup>13</sup>).

### 3.8 Characteristics associated with perceived great risk of regular cannabis use

In the final adjusted model, several sociodemographic and substance use characteristics remained statistically significantly associated with perceived risk of regular cannabis use (Table 5). For instance, females had 1.74 times the odds (95% Confidence Interval (CI)=1.71–1.77) of reporting perceived great risk of regular cannabis use compared to men. The same pattern was observed for participants who reported Black (aOR=1.08, 95% CI=1.05–1.12), Hispanic (aOR=1.75, 95% CI=1.69–1.81) and Other race/ethnicities (aOR=1.54, 95% CI=1.47–1.61). Compared to individuals ages 12–17, participants ages 18–25 (aOR=0.66, 95% CI=0.64–0.69) and ages 26–49 (aOR=0.93, 95% CI=0.90–0.96) had lower odds of perceiving great risk of regular cannabis use, while participants age 50 and older had higher odds (aOR=1.37, 95% CI=1.31–1.42) of perceiving great risk of regular marijuana use. Participants with a high school education or greater had lower odds of reporting perceived great risk of regular use (aOR=0.75, 95% CI=0.72–0.77) compared to those without a high school diploma. Compared to those with a total family income of \$0–\$19,999, participants with an income of \$20,000–\$49,999 had an increased odds of great perceived risk (aOR=1.06, 95% CI=1.03–1.09), while participants with an income of \$75,000 or greater had lower odds of perceiving great risk of regular use (aOR=0.90, 95% CI=0.847–0.94) than those with incomes lower than \$20,000. Additionally, past year non-daily cannabis use (aOR=0.11, 95% CI=0.10–0.12) and past year daily cannabis use (aOR=0.04, 95% CI=0.03–0.05) were negatively associated with perceived great risk of regular cannabis use. Additionally, survey years 2008 (aOR=0.88, 95% CI=0.83–0.92), 2009 (aOR=0.77, 95% CI=0.73–0.81), 2010 (aOR=0.69, 95% CI=0.66–0.73), 2011 (aOR=0.65, 95% CI=0.62–0.68), and 2012 (aOR=0.59, 95% CI=0.57–0.62) were associated with a reduction of the odds of perceived great risk of regular cannabis use.

## 4. DISCUSSION

Findings from this paper add to the current understanding of the temporal changes in perceived risk of cannabis use, and the correlates of perceived risk, in a U.S. nationally

<sup>12</sup>Supplementary material can be found by accessing the online version of this paper at <http://dx.doi.org> and by entering doi:...

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representative sample. Perceived great risk of regular cannabis use varied significantly between 2002–2012 in the U.S. among the population ages 12 and older as a whole, among both men and women, as well as among most race/ethnicities and most age subgroups. The prevalence of perceived great risk was noticeably higher among past year non-users than past year cannabis users, consistent with previous examinations of perceived risk (Kilmer et al., 2007; Lopez-Quintero and Neumark, 2010). Nonetheless, perceived great risk of regular use varied between 2002–2012 among both past year non-users and past year non-daily users of cannabis. Perceived risk varied significantly among past year daily users overall, though this finding seems to be carried by significant findings only for individuals ages 18–25. When examining past year cannabis use, non-daily and daily cannabis use increased modestly (i.e., <1% for the sample overall), but significantly between the two time points. In terms of sex differences, the increase in non-daily use appears to be due to variation in the prevalence of use among men only, whereas the prevalence of daily use varied significantly among both men and women.

In adjusted analyses, females were more likely to perceive a great risk associated with regular cannabis use than males, which is congruent with previous findings assessing higher risk perceptions for cannabis and tobacco use (Thornton et al., 2013). Additionally, participants of non-White race/ethnicities were more likely than Whites to perceive great risk of regular cannabis use. Participants between the ages of 18 and 25 were less likely than the youngest group (ages 12–17) to perceive great risk of regular cannabis use, and as has been found in previous research (Thornton et al., 2013), older individuals were more likely than the youngest participants to perceive great risk of use.

Interestingly, individuals with a high school education or greater were significantly less likely to perceive great risk of regular cannabis use than those with less than a high school education. Though additional research is warranted to more fully elucidate this observed relationship, findings are partially corroborated by results from Gallup polls indicating that adults with a college education compared to those without are more likely to support legalization of cannabis (Carroll, 2005). In addition, we found that individuals with total family incomes over \$75,000 had significantly lower perceptions of great risk compared to those earning below \$20,000. This parallels findings from the 2008–2009 wave of the National Longitudinal Study of Adolescent Health (Add Health) study, indicating that those in the highest income bracket had the highest odds of meeting lifetime CUD criteria (Haberstick et al, 2014).

In adjusted analyses, past year cannabis users were less likely to perceive great risk associated with regular cannabis use. A dose response relationship between frequency of use and perceived risk was observed: non-daily users were 89% less likely than past year non-users and daily users were 96% less likely than non-users to perceive great risk associated with regular cannabis use. Additionally, participants surveyed in the years 2008 through 2012, compared to those surveyed in the year 2002, were significantly less likely to perceive great risk associated with regular cannabis use after adjusting for sociodemographic characteristics and past year cannabis use frequency. This finding further highlights the overall changes in perception even after accounting for cannabis use, as might be expected given the observed trend toward decreasing great perceived risk in the substrata assessed.

This observation may at least partially be explained by the increasing number of states that legalized medical marijuana during 2008 and after: prior to 2008, 11 states had legalized medical marijuana, while starting in 2008, an additional 12 states and Washington D.C. passed legislation regarding medical marijuana (ProCon.org, 2014).

The present study has several limitations. All data were obtained via self-report, which may be biased due to stigma surrounding substance use. However, the NSDUH utilizes ACASI, which has been shown to increase the likelihood of honest responding for sensitive information (Macalino et al., 2002). The NSDUH cross-sectional design prevented causal inferences regarding the temporal ordering of perceived great risk and correlates. Additionally, the NSDUH did not collect information regarding intention or desire to use cannabis, limiting possible analyses. Nonetheless, a major strength of the present study is the use of a nationally representative sample, allowing for generalization of findings to the U.S. non-institutionalized population ages 12 and older. Additionally, findings provide current estimates of temporal changes in perceived risk of regular cannabis use, as well as correlates of perceived great risk of regular cannabis use.

Perceived great risk of regular cannabis use has declined significantly over a 10-year period in the U.S., accompanied by a modest, but significant, increase in past year non-daily and daily cannabis use. Various sociodemographic and substance use variables, such as sex, race/ethnicity, age, income, educational attainment, and past year cannabis use frequency, were also associated with perceived risk of regular cannabis use. Findings regarding the prevalence of perceived great risk of regular cannabis use help characterize public opinions regarding cannabis, which are particularly relevant given the ongoing debate concerning the medicalization and legalization of cannabis in the U.S. The identified correlates of perceived risk of cannabis use may be helpful when determining which groups should be targeted for prevention interventions. Longitudinal studies are needed to assess whether the observed decline in perceived risk of cannabis use is related to future cannabis initiation and use. Additionally, studies assessing state-level cannabis laws and their impact on perceived risk of use and actual use are needed.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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### Highlights

- Perceived great risk of regular cannabis use decreased between 2002 and 2012.
- Non-daily cannabis use increased between 2002 and 2012.
- Daily cannabis use increased between 2002 and 2012.

**Table 1**

Distribution of perceived risk of regular cannabis use, NSDUH<sup>a</sup> 2002–2012

Perceived Risk	2002 wt% <sup>b</sup> (SE) <sup>c</sup>	2003 wt% (SE)	2004 wt% (SE)	2005 wt% (SE)	2006 wt% (SE)	2007 wt% (SE)	2008 wt% (SE)	2009 wt% (SE)	2010 wt% (SE)	2011 wt% (SE)	2012 wt% (SE)
<b>None</b>	5.7 (0.2)	5.2 (0.2)	5.0 (0.1)	5.3 (0.2)	5.5 (0.2)	6.0 (0.2)	6.9 (0.2)	8.3 (0.2)	9.5 (0.2)	10.3 (0.2)	11.7 (0.2)
<b>Slight</b>	16.4 (0.3)	15.8 (0.3)	16.0 (0.3)	16.1 (0.3)	16.9 (0.3)	16.9 (0.3)	17.4 (0.4)	19.2 (0.3)	20.8 (0.3)	21.0 (0.3)	21.4 (0.3)
<b>Moderate</b>	26.6 (0.4)	26.3 (0.4)	26.5 (0.3)	27.2 (0.3)	26.1 (0.3)	26.0 (0.3)	26.7 (0.4)	26.9 (0.4)	26.4 (0.3)	26.4 (0.3)	26.6 (0.3)
<b>Great</b>	51.3 (0.4)	52.7 (0.5)	52.5 (0.4)	51.6 (0.4)	51.5 (0.4)	51.1 (0.5)	49.0 (0.4)	45.6 (0.5)	43.3 (0.4)	42.3 (0.4)	40.3 (0.4)

<sup>a</sup>NSDUH = National Survey on Drug Use and Health

<sup>b</sup>wt% = weighted percentage

<sup>c</sup>SE = standard error

**Table 2**

Perceived great risk of regular cannabis use, NSDUH<sup>a</sup> 2002–2012

Characteristic	n	2002 wt <sup>b</sup> % (SE <sup>c</sup> )	2003 wt <sup>b</sup> % (SE <sup>c</sup> )	2004 wt <sup>b</sup> % (SE <sup>c</sup> )	2005 wt <sup>b</sup> % (SE <sup>c</sup> )	2006 wt <sup>b</sup> % (SE <sup>c</sup> )	2007 wt <sup>b</sup> % (SE <sup>c</sup> )	2008 wt <sup>b</sup> % (SE <sup>c</sup> )	2009 wt <sup>b</sup> % (SE <sup>c</sup> )	2010 wt <sup>b</sup> % (SE <sup>c</sup> )	2011 wt <sup>b</sup> % (SE <sup>c</sup> )	2012 wt <sup>b</sup> % (SE <sup>c</sup> )
<b>Total</b>	607,324	<b>51.3 (0.4)</b>	<b>52.7 (0.5)</b>	<b>52.5 (0.4)</b>	<b>51.3 (0.4)</b>	<b>51.5 (0.4)</b>	<b>51.0 (0.5)</b>	<b>49.0 (0.4)</b>	<b>45.6 (0.5)</b>	<b>43.3 (0.4)</b>	<b>42.3 (0.4)</b>	<b>40.3 (0.4)</b>
<b>12–17</b>	197,154	<b>51.4 (0.5)</b>	<b>53.9 (0.5)</b>	<b>54.8 (0.4)</b>	<b>54.9 (0.5)</b>	<b>54.4 (0.5)</b>	<b>54.7 (0.5)</b>	<b>53.1 (0.5)</b>	<b>49.2 (0.6)</b>	<b>47.1 (0.5)</b>	<b>45.0 (0.5)</b>	<b>44.1 (0.5)</b>
<b>18–25</b>	203,115	<b>35.6 (0.6)</b>	<b>36.8 (0.5)</b>	<b>38.3 (0.6)</b>	<b>37.2 (0.6)</b>	<b>35.7 (0.5)</b>	<b>35.5 (0.5)</b>	<b>33.2 (0.5)</b>	<b>28.7 (0.4)</b>	<b>27.3 (0.5)</b>	<b>25.5 (0.5)</b>	<b>23.8 (0.4)</b>
<b>26–49</b>	147,943	<b>48.0 (0.5)</b>	<b>49.1 (0.6)</b>	<b>48.7 (0.7)</b>	<b>47.7 (0.6)</b>	<b>48.7 (0.6)</b>	<b>48.0 (0.6)</b>	<b>46.2 (0.6)</b>	<b>43.9 (0.6)</b>	<b>41.0 (0.5)</b>	<b>40.0 (0.6)</b>	<b>37.1 (0.5)</b>
<b>50+</b>	59,112	<b>61.8 (0.9)</b>	<b>63.3 (1.0)</b>	<b>62.1 (0.8)</b>	<b>60.2 (0.7)</b>	<b>59.8 (0.9)</b>	<b>59.4 (1.0)</b>	<b>56.9 (0.9)</b>	<b>52.9 (0.8)</b>	<b>50.7 (0.9)</b>	<b>50.0 (0.9)</b>	<b>48.0 (0.9)</b>
<b>White</b>	388,080	<b>49.0 (0.5)</b>	<b>50.4 (0.6)</b>	<b>49.8 (0.4)</b>	<b>49.0 (0.6)</b>	<b>48.5 (0.6)</b>	<b>48.6 (0.6)</b>	<b>47.0 (0.6)</b>	<b>42.5 (0.6)</b>	<b>41.2 (0.5)</b>	<b>39.4 (0.4)</b>	<b>37.2 (0.5)</b>
<b>12–17</b>	120,025	<b>53.0 (0.5)</b>	<b>56.6 (0.6)</b>	<b>57.5 (0.6)</b>	<b>57.8 (0.5)</b>	<b>56.8 (0.6)</b>	<b>57.5 (0.5)</b>	<b>55.9 (0.7)</b>	<b>51.7 (0.6)</b>	<b>50.1 (0.7)</b>	<b>47.7 (0.6)</b>	<b>47.7 (0.5)</b>
<b>18–25</b>	125,000	<b>31.6 (0.6)</b>	<b>32.7 (0.6)</b>	<b>34.3 (0.6)</b>	<b>33.1 (0.6)</b>	<b>30.8 (0.6)</b>	<b>31.6 (0.7)</b>	<b>30.3 (0.6)</b>	<b>25.0 (0.5)</b>	<b>24.2 (0.5)</b>	<b>21.8 (0.7)</b>	<b>20.5 (0.6)</b>
<b>26–49</b>	97,228	<b>42.5 (0.6)</b>	<b>43.2 (0.8)</b>	<b>43.1 (0.7)</b>	<b>42.5 (0.7)</b>	<b>42.6 (0.6)</b>	<b>42.7 (0.7)</b>	<b>40.6 (0.8)</b>	<b>37.3 (0.7)</b>	<b>35.2 (0.7)</b>	<b>35.2 (0.7)</b>	<b>30.4 (0.5)</b>
<b>50+</b>	45,827	<b>60.7 (1.1)</b>	<b>61.9 (1.1)</b>	<b>59.8 (0.9)</b>	<b>58.5 (1.0)</b>	<b>57.7 (1.0)</b>	<b>57.5 (1.0)</b>	<b>55.8 (1.1)</b>	<b>50.5 (1.0)</b>	<b>49.5 (1.1)</b>	<b>47.6 (0.9)</b>	<b>45.0 (1.0)</b>
<b>Black</b>	76,624	<b>51.0 (1.0)</b>	<b>52.0 (1.1)</b>	<b>52.0 (1.1)</b>	<b>49.7 (1.1)</b>	<b>51.7 (1.1)</b>	<b>51.3 (1.1)</b>	<b>46.1 (1.0)</b>	<b>45.2 (1.2)</b>	<b>41.2 (1.1)</b>	<b>40.5 (1.2)</b>	<b>39.5 (1.1)</b>
<b>12–17</b>	27,006	<b>44.8 (1.3)</b>	<b>45.7 (1.1)</b>	<b>47.6 (1.4)</b>	<b>43.9 (1.2)</b>	<b>46.7 (1.5)</b>	<b>46.8 (1.3)</b>	<b>45.4 (1.2)</b>	<b>42.2 (1.4)</b>	<b>37.4 (1.4)</b>	<b>35.4 (1.1)</b>	<b>36.5 (1.4)</b>
<b>18–25</b>	26,808	<b>35.0 (1.2)</b>	<b>36.5 (1.2)</b>	<b>35.3 (1.2)</b>	<b>36.1 (1.3)</b>	<b>39.5 (1.3)</b>	<b>35.2 (1.1)</b>	<b>32.7 (1.3)</b>	<b>28.5 (1.2)</b>	<b>28.7 (1.3)</b>	<b>25.0 (1.1)</b>	<b>22.1 (1.0)</b>
<b>26–49</b>	17,208	<b>52.2 (1.7)</b>	<b>53.1 (1.7)</b>	<b>52.5 (1.7)</b>	<b>52.7 (1.8)</b>	<b>49.6 (1.5)</b>	<b>51.1 (1.6)</b>	<b>46.0 (1.6)</b>	<b>45.9 (1.8)</b>	<b>42.2 (1.5)</b>	<b>42.6 (1.7)</b>	<b>39.0 (1.8)</b>
<b>50+</b>	5,620	<b>61.3 (2.8)</b>	<b>62.1 (2.9)</b>	<b>63.0 (3.0)</b>	<b>55.7 (3.9)</b>	<b>63.6 (3.0)</b>	<b>62.6 (2.9)</b>	<b>53.9 (2.8)</b>	<b>54.5 (3.4)</b>	<b>48.1 (3.2)</b>	<b>47.2 (2.5)</b>	<b>49.5 (2.2)</b>
<b>Hispanic</b>	93,063	<b>62.0 (1.1)</b>	<b>63.7 (1.1)</b>	<b>64.1 (1.1)</b>	<b>62.3 (1.1)</b>	<b>62.3 (0.9)</b>	<b>60.5 (1.0)</b>	<b>58.0 (0.9)</b>	<b>56.7 (0.8)</b>	<b>52.1 (1.1)</b>	<b>52.8 (1.1)</b>	<b>50.2 (0.9)</b>
<b>12–17</b>	32,752	<b>50.8 (1.2)</b>	<b>50.2 (1.1)</b>	<b>51.4 (1.6)</b>	<b>53.4 (1.5)</b>	<b>53.3 (1.2)</b>	<b>50.0 (1.2)</b>	<b>49.4 (1.4)</b>	<b>45.4 (1.5)</b>	<b>43.4 (1.1)</b>	<b>43.1 (1.3)</b>	<b>38.4 (1.3)</b>
<b>18–25</b>	34,047	<b>49.6 (1.3)</b>	<b>48.4 (1.3)</b>	<b>51.1 (1.4)</b>	<b>49.3 (1.3)</b>	<b>49.0 (1.4)</b>	<b>45.5 (1.1)</b>	<b>41.7 (1.3)</b>	<b>38.4 (1.4)</b>	<b>34.7 (1.1)</b>	<b>32.8 (1.2)</b>	<b>30.8 (1.3)</b>
<b>26–49</b>	21,866	<b>66.0 (1.5)</b>	<b>68.6 (1.3)</b>	<b>66.3 (1.4)</b>	<b>62.7 (1.7)</b>	<b>66.6 (1.3)</b>	<b>63.4 (1.4)</b>	<b>62.4 (1.4)</b>	<b>61.6 (1.8)</b>	<b>57.6 (1.6)</b>	<b>55.3 (1.7)</b>	<b>52.2 (1.4)</b>
<b>50+</b>	4,398	<b>72.2 (3.7)</b>	<b>72.2 (3.4)</b>	<b>76.4 (3.7)</b>	<b>79.5 (2.8)</b>	<b>70.1 (2.5)</b>	<b>73.5 (3.1)</b>	<b>66.3 (2.7)</b>	<b>67.6 (2.2)</b>	<b>59.8 (3.1)</b>	<b>69.9 (2.5)</b>	<b>68.6 (2.2)</b>
<b>Other</b>	49,539	<b>56.6 (1.6)</b>	<b>58.9 (1.4)</b>	<b>60.1 (1.9)</b>	<b>57.2 (1.6)</b>	<b>60.0 (2.0)</b>	<b>55.9 (2.0)</b>	<b>57.1 (1.8)</b>	<b>54.6 (1.8)</b>	<b>50.0 (1.8)</b>	<b>49.5 (1.7)</b>	<b>47.5 (1.6)</b>
<b>12–17</b>	17,371	<b>51.9 (2.3)</b>	<b>56.0 (2.1)</b>	<b>55.4 (2.1)</b>	<b>56.4 (2.5)</b>	<b>52.9 (2.2)</b>	<b>60.3 (2.1)</b>	<b>56.0 (2.1)</b>	<b>53.7 (2.1)</b>	<b>53.3 (1.8)</b>	<b>47.3 (2.0)</b>	<b>48.0 (1.8)</b>
<b>18–25</b>	17,260	<b>37.2 (2.2)</b>	<b>44.2 (2.3)</b>	<b>47.9 (2.4)</b>	<b>46.2 (2.2)</b>	<b>37.3 (1.9)</b>	<b>46.0 (2.0)</b>	<b>39.0 (1.8)</b>	<b>36.4 (2.1)</b>	<b>31.2 (1.6)</b>	<b>32.9 (2.3)</b>	<b>31.5 (1.8)</b>
<b>26–49</b>	11,641	<b>60.1 (2.3)</b>	<b>58.2 (2.7)</b>	<b>59.6 (3.1)</b>	<b>56.0 (2.0)</b>	<b>63.3 (3.0)</b>	<b>54.8 (2.6)</b>	<b>58.4 (2.5)</b>	<b>56.3 (2.0)</b>	<b>49.7 (2.3)</b>	<b>53.1 (2.2)</b>	<b>49.1 (3.0)</b>
<b>50+</b>	3,267	<b>64.7 (4.9)</b>	<b>70.8 (3.4)</b>	<b>70.2 (4.6)</b>	<b>65.9 (3.9)</b>	<b>69.6 (4.0)</b>	<b>61.1 (5.4)</b>	<b>64.0 (5.0)</b>	<b>61.2 (5.0)</b>	<b>58.0 (4.6)</b>	<b>54.4 (3.4)</b>	<b>53.3 (4.0)</b>

Note: Bolded text indicates statistically significant differences across 11 years at the Bonferroni-corrected p<0.002 level.



NSDUH = National Survey on Drug Use and Health

$p_{wt\%}$  = weighted percentage

$SE$  = standard error

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Table 3a

Perceived great risk of regular cannabis use among past year cannabis non-users, NSDUH<sup>a</sup> 2002–2012

	n	2002 wt% (SE) <sup>c</sup>	2003 wt% (SE)	2004 wt% (SE)	2005 wt% (SE)	2006 wt% (SE)	2007 wt% (SE)	2008 wt% (SE)	2009 wt% (SE)	2010 wt% (SE)	2011 wt% (SE)	2012 wt% (SE)
<b>Total</b>	499,457	56.5 (0.5)	57.9 (0.5)	57.5 (0.5)	56.2 (0.4)	56.3 (0.5)	55.8 (0.5)	53.8 (0.5)	50.7 (0.5)	48.3 (0.4)	47.2 (0.4)	45.3 (0.4)
12–17	168,183	58.1 (0.5)	60.7 (0.5)	61.4 (0.5)	60.9 (0.6)	60.1 (0.5)	60.2 (0.5)	59.0 (0.6)	55.3 (0.6)	53.0 (0.6)	51.3 (0.6)	49.7 (0.5)
18–25	143,978	46.8 (0.6)	47.4 (0.6)	49.2 (0.7)	47.6 (0.7)	45.8 (0.7)	45.9 (0.6)	43.3 (0.6)	38.8 (0.6)	37.0 (0.6)	34.7 (0.7)	32.9 (0.6)
26–49	130,196	53.0 (0.5)	54.2 (0.6)	53.4 (0.7)	52.4 (0.7)	53.4 (0.6)	52.4 (0.7)	50.7 (0.7)	48.5 (0.6)	45.8 (0.6)	44.5 (0.7)	42.1 (0.6)
50+	57,100	63.0 (1.0)	64.5 (1.0)	63.4 (0.9)	61.6 (0.7)	61.2 (0.9)	61.1 (1.0)	58.5 (0.9)	54.9 (0.8)	52.6 (1.0)	51.9 (0.9)	50.2 (0.8)
<b>White</b>	316,798	54.3 (0.6)	55.7 (0.6)	54.9 (0.5)	54.0 (0.6)	53.4 (0.6)	53.5 (0.6)	51.6 (0.6)	47.7 (0.6)	46.1 (0.5)	44.2 (0.5)	42.1 (0.6)
12–17	102,052	61.3 (0.5)	64.9 (0.7)	65.2 (0.6)	64.9 (0.5)	63.9 (0.6)	64.4 (0.5)	62.9 (0.7)	58.6 (0.6)	56.5 (0.7)	54.9 (0.6)	54.3 (0.6)
18–25	85,597	43.5 (0.8)	43.8 (0.7)	45.9 (0.7)	44.3 (0.8)	41.4 (0.8)	42.7 (0.9)	41.0 (0.7)	35.8 (0.7)	34.2 (0.6)	30.9 (0.9)	29.6 (0.8)
26–49	84,838	47.4 (0.6)	48.5 (0.8)	48.0 (0.7)	47.4 (0.8)	47.3 (0.6)	47.2 (0.7)	45.1 (0.8)	42.1 (0.7)	39.9 (0.7)	37.5 (0.7)	35.2 (0.6)
50+	44,311	62.0 (1.2)	63.1 (1.1)	61.2 (1.0)	59.9 (1.0)	59.2 (1.0)	59.2 (1.0)	57.1 (1.1)	52.6 (0.9)	51.4 (1.1)	49.6 (1.0)	47.2 (1.0)
<b>Black</b>	62,649	56.4 (1.1)	57.3 (1.2)	56.7 (1.2)	54.5 (1.3)	57.1 (1.2)	56.3 (1.2)	51.7 (1.1)	49.9 (1.3)	46.7 (1.3)	45.5 (1.3)	44.9 (1.1)
12–17	23,356	49.1 (1.4)	49.5 (1.3)	52.2 (1.5)	48.3 (1.3)	50.1 (1.6)	50.3 (1.4)	49.2 (1.3)	45.8 (1.6)	41.4 (1.7)	40.0 (1.1)	39.4 (1.5)
18–25	19,174	43.8 (1.6)	45.8 (1.5)	43.8 (1.4)	43.0 (1.6)	47.7 (1.5)	42.8 (1.4)	41.3 (1.4)	36.2 (1.5)	36.9 (1.7)	33.5 (1.4)	29.7 (1.3)
26–49	14,777	58.4 (1.7)	58.8 (1.8)	56.4 (1.8)	57.7 (1.9)	56.1 (1.7)	56.1 (1.9)	51.9 (1.9)	50.0 (1.9)	48.4 (1.6)	47.5 (1.8)	43.8 (1.8)
50+	5,342	62.4 (2.8)	63.5 (3.1)	64.7 (3.0)	57.8 (4.0)	65.2 (3.0)	64.7 (2.8)	57.0 (2.9)	56.7 (3.2)	50.6 (3.2)	49.1 (2.6)	52.7 (2.1)
<b>Hispanic</b>	79,293	66.6 (1.1)	68.4 (1.0)	68.7 (1.1)	67.0 (1.1)	66.2 (1.0)	64.7 (1.1)	62.6 (1.0)	61.9 (0.9)	57.2 (1.1)	58.0 (1.1)	56.0 (1.0)
12–17	28,015	56.2 (1.3)	55.5 (1.2)	56.1 (1.7)	58.6 (1.5)	57.6 (1.2)	53.6 (1.3)	54.4 (1.5)	51.8 (1.5)	49.1 (1.3)	48.7 (1.5)	43.6 (1.5)
18–25	26,714	58.7 (1.3)	57.5 (1.4)	60.0 (1.5)	58.0 (1.4)	56.9 (1.5)	53.7 (1.3)	51.2 (1.4)	47.2 (1.6)	44.0 (1.3)	42.4 (1.4)	40.0 (1.6)
26–49	20,252	69.5 (1.4)	72.0 (1.3)	69.7 (1.4)	66.2 (1.8)	69.2 (1.3)	66.7 (1.5)	65.8 (1.5)	65.4 (1.9)	61.2 (1.5)	58.6 (1.6)	57.2 (1.6)
50+	4,312	72.3 (3.7)	76.6 (3.7)	81.1 (3.1)	80.5 (2.80)	71.2 (2.6)	74.6 (3.1)	66.9 (2.7)	69.3 (2.2)	62.0 (3.2)	71.3 (2.6)	68.9 (2.2)
<b>Other</b>	40,717	60.7 (1.8)	62.7 (1.4)	64.0 (2.0)	60.7 (1.7)	64.1 (2.0)	59.6 (2.0)	61.1 (1.9)	58.4 (1.9)	54.2 (1.9)	54.3 (1.8)	51.9 (1.7)
12–17	14,760	54.6 (2.5)	60.5 (2.3)	60.9 (2.3)	60.1 (2.6)	56.6 (2.4)	65.1 (2.1)	60.3 (2.4)	58.2 (2.2)	58.1 (1.9)	52.4 (2.1)	52.4 (2.0)
18–25	12,493	46.7 (2.5)	52.3 (2.5)	55.6 (2.6)	54.7 (2.2)	45.8 (2.8)	56.0 (2.1)	46.1 (2.1)	43.6 (2.6)	38.6 (2.1)	40.8 (2.6)	40.2 (2.1)
26–49	10,329	62.6 (2.4)	60.8 (2.8)	63.2 (3.1)	58.7 (2.1)	66.8 (2.8)	57.7 (2.6)	61.0 (2.6)	59.6 (2.2)	53.7 (2.4)	57.6 (2.3)	53.3 (3.1)
50+	3,135	66.6 (4.9)	72.1 (3.4)	70.6 (4.6)	67.0 (4.0)	70.2 (4.0)	62.0 (5.5)	67.3 (4.9)	62.2 (4.9)	59.6 (4.7)	56.2 (3.5)	54.4 (4.1)

Table 3b

Perceived great risk of regular cannabis use among past year non-daily cannabis users, NSDUH<sup>a</sup> 2002–2012

	n	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
		wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)
<b>Total</b>	92,395	10.8 (0.5)	11.3 (0.5)	12.1 (0.5)	11.3 (0.5)	11.1 (0.6)	10.5 (0.6)	9.0 (0.6)	7.8 (0.5)	7.0 (0.6)	6.3 (0.5)	5.3 (0.4)
<b>12–17</b>	26,370	16.6 (0.9)	17.3 (1.0)	18.0 (0.9)	16.4 (0.9)	18.0 (1.2)	16.9 (1.0)	14.8 (1.0)	11.0 (0.8)	13.2 (1.2)	8.2 (0.9)	9.3 (0.9)
<b>18–25</b>	49,077	10.4 (0.5)	11.5 (0.7)	12.6 (0.6)	12.8 (0.7)	10.8 (0.7)	10.3 (0.6)	7.9 (0.5)	7.6 (0.6)	5.9 (0.5)	5.3 (0.5)	4.9 (0.5)
<b>26–49</b>	15,200	9.4 (1.0)	9.9 (0.7)	10.7 (1.0)	9.3 (1.0)	9.9 (0.9)	9.8 (1.1)	8.8 (1.3)	8.3 (1.2)	7.0 (1.0)	6.3 (1.0)	4.8 (0.7)
<b>50+</b>	1,748	7.9 (4.1)	4.5 (2.9)	5.7 (2.2)	7.0 (2.9)	8.1 (2.8)	6.1 (2.7)	5.9 (2.4)	3.6 (0.9)	4.1 (1.5)	7.1 (2.2)	4.4 (1.4)
<b>White</b>	60,840	8.6 (0.6)	9.9 (0.6)	10.5 (0.5)	8.9 (0.6)	8.9 (0.5)	8.0 (0.5)	8.0 (0.7)	4.9 (0.4)	5.8 (0.5)	5.1 (0.6)	4.2 (0.4)
<b>12–17</b>	16,282	15.4 (1.0)	16.6 (1.3)	17.9 (1.0)	17.0 (1.3)	14.9 (1.0)	14.8 (1.4)	13.8 (1.1)	8.9 (1.1)	12.8 (1.3)	6.3 (0.8)	8.1 (0.9)
<b>18–25</b>	32,613	9.2 (0.6)	10.1 (0.8)	11.1 (0.7)	10.2 (0.7)	9.6 (0.7)	8.1 (0.6)	6.2 (0.5)	5.7 (0.5)	5.1 (0.5)	4.2 (0.5)	3.5 (0.5)
<b>26–49</b>	10,638	6.3 (1.0)	8.5 (1.0)	8.8 (1.0)	6.6 (1.0)	7.2 (1.1)	7.3 (1.2)	7.7 (1.5)	4.5 (0.9)	5.2 (0.9)	5.0 (1.1)	3.8 (0.7)
<b>50+</b>	1,307	6.3 (4.4)	3.3 (3.3)	4.5 (2.2)	3.9 (2.2)	6.4 (2.7)	3.3 (1.8)	8.0 (3.2)	1.5 (0.8)	4.0 (1.9)	6.2 (2.2)	4.3 (1.5)
<b>Black</b>	11,925	16.8 (2.4)	14.1 (1.3)	17.1 (2.1)	18.9 (1.9)	15.1 (1.8)	18.9 (2.2)	11.7 (1.4)	14.0 (1.8)	8.8 (1.0)	7.2 (1.4)	8.9 (1.3)
<b>12–17</b>	3,358	14.5 (2.8)	18.8 (3.0)	15.7 (2.4)	15.2 (2.6)	21.9 (3.0)	20.6 (3.5)	18.7 (3.4)	16.7 (2.8)	14.2 (2.3)	8.3 (1.6)	18.7 (3.8)
<b>18–25</b>	6,275	12.3 (1.3)	13.7 (1.8)	14.3 (1.6)	19.9 (2.1)	15.7 (1.9)	17.5 (2.5)	10.5 (1.7)	11.9 (1.7)	8.5 (1.6)	7.1 (1.3)	8.2 (1.5)
<b>26–49</b>	2,039	19.4 (4.0)	14.0 (2.8)	21.4 (4.3)	19.3 (3.6)	13.3 (2.6)	18.3 (3.2)	12.5 (2.7)	16.7 (3.6)	7.6 (2.0)	7.6 (3.2)	9.4 (2.7)
<b>50+</b>	253	21.5 (13.3)	5.0 (4.9)	8.7 (6.3)	20.1 (10.6)	11.8 (9.3)	22.2 (12.2)	0.5 (0.5)	9.7 (7.7)	7.6 (4.5)	4.6 (3.3)	2.1 (1.5)
<b>Hispanic</b>	12,010	17.0 (1.9)	16.5 (1.8)	14.4 (1.8)	16.7 (1.8)	21.7 (2.6)	14.5 (2.0)	10.0 (1.1)	13.6 (2.5)	10.9 (2.0)	10.6 (1.7)	7.1 (1.3)
<b>12–17</b>	4,356	20.3 (2.8)	18.2 (3.0)	21.1 (3.6)	14.6 (2.2)	23.6 (3.8)	21.8 (3.1)	14.5 (2.3)	12.1 (2.1)	14.2 (2.5)	10.5 (2.3)	7.3 (1.6)
<b>18–25</b>	6,179	15.7 (2.1)	14.7 (2.2)	15.8 (2.3)	20.1 (2.8)	14.1 (2.1)	12.9 (1.9)	11.8 (1.8)	10.8 (1.8)	6.7 (1.3)	6.8 (1.6)	6.0 (1.0)
<b>26–49</b>	1,404	16.7 (5.7)	16.4 (4.0)	9.0 (3.5)	15.1 (3.7)	27.1 (5.1)	13.8 (3.9)	5.4 (1.9)	18.5 (5.8)	15.7 (4.9)	12.7 (4.6)	6.7 (2.7)
<b>50+</b>	71	0 (0)	48.2 (26.8)	11.7 (12.1)	0 (0)	27.0 (22.9)	2.0 (2.2)	0 (0)	8.9 (9.3)	0 (0)	32.5 (17.0)	21.9 (19.6)
<b>Other</b>	7,620	11.7 (2.3)	15.7 (2.7)	17.2 (3.2)	13.9 (1.9)	9.5 (1.9)	12.6 (3.3)	13.0 (5.3)	16.1 (3.0)	8.0 (2.4)	8.1 (1.6)	4.5 (1.4)
<b>12–17</b>	2,374	28.1 (5.3)	21.9 (3.6)	16.8 (5.4)	18.1 (3.8)	26.4 (5.9)	16.7 (4.2)	17.6 (4.3)	15.9 (5.2)	10.7 (3.9)	15.4 (4.6)	6.2 (1.6)
<b>18–25</b>	4,010	9.9 (2.6)	17.7 (3.0)	21.0 (3.5)	11.4 (2.9)	9.5 (2.6)	14.9 (3.8)	12.0 (2.6)	12.6 (3.3)	6.5 (1.7)	7.5 (1.7)	6.8 (2.8)
<b>26–49</b>	1,119	10.0 (6.2)	11.5 (6.6)	14.9 (5.0)	14.7 (3.1)	1.7 (0.8)	10.3 (6.7)	20.9 (14.2)	18.2 (6.1)	10.4 (5.1)	7.6 (4.1)	2.2 (1.4)
<b>50+</b>	117	0 (0)	0 (0)	0 (0)	14.2 (13.5)	0 (0)	0 (0)	0 (0)	22.7 (19.6)	0 (0)	0.4 (0.4)	0 (0)

**Table 3c**

Perceived great risk of regular cannabis use among past year daily cannabis users, NSDUH<sup>a</sup> 2002–2012

	n	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
		wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)
<b>Total</b>	15,472	<b>3.7 (0.8)</b>	<b>4.7 (1.1)</b>	<b>5.5 (1.4)</b>	<b>3.6 (0.6)</b>	<b>3.6 (0.8)</b>	<b>3.5 (0.8)</b>	<b>4.0 (0.8)</b>	<b>2.8 (0.8)</b>	<b>1.3 (0.4)</b>	<b>1.7 (0.5)</b>	<b>1.7 (0.5)</b>
<b>12–17</b>	2,601	5.9 (1.6)	6.3 (2.0)	5.4 (2.3)	6.5 (2.6)	5.2 (1.7)	7.8 (2.4)	7.2 (1.7)	5.2 (1.7)	2.7 (1.2)	2.7 (0.8)	5.1 (2.0)
<b>18–25</b>	10,060	<b>2.4 (0.7)</b>	<b>4.2 (1.0)</b>	<b>4.0 (0.9)</b>	<b>3.9 (0.9)</b>	<b>3.5 (0.8)</b>	<b>2.5 (0.6)</b>	<b>4.2 (1.0)</b>	<b>1.8 (0.6)</b>	<b>1.1 (0.5)</b>	<b>1.2 (0.3)</b>	<b>1.1 (0.3)</b>
<b>26–49</b>	2,547	3.7 (1.7)	5.4 (2.1)	8.3 (3.3)	3.5 (1.4)	3.6 (1.7)	4.4 (1.8)	3.5 (1.5)	3.9 (1.8)	1.6 (0.8)	1.9 (1.0)	2.5 (1.1)
<b>50+</b>	264	8.4 (6.5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2.7 (2.7)	0 (0)	0 (0)	2.0 (1.6)	0.4 (0.4)
<b>White</b>	10,442	2.5 (0.9)	4.2 (1.2)	3.7 (1.3)	3.1 (0.8)	2.1 (0.7)	2.3 (0.4)	3.0 (0.7)	1.8 (0.9)	0.7 (0.4)	1.5 (0.6)	0.7 (0.3)
<b>12–17</b>	1,691	2.7 (1.2)	6.3 (2.5)	4.7 (2.8)	4.9 (2.3)	1.5 (1.0)	6.4 (2.9)	5.4 (2.3)	5.5 (2.4)	2.3 (1.5)	2.4 (0.7)	4.9 (2.5)
<b>18–25</b>	6,790	<b>1.2 (0.5)</b>	<b>3.7 (1.1)</b>	<b>3.0 (0.8)</b>	<b>3.0 (0.9)</b>	<b>2.3 (0.8)</b>	<b>2.3 (0.7)</b>	<b>4.1 (1.2)</b>	<b>0.6 (0.3)</b>	<b>0.8 (0.6)</b>	<b>0.7 (0.3)</b>	<b>0 (0)</b>
<b>26–49</b>	1,752	2.8 (1.8)	4.8 (2.5)	5.4 (2.9)	3.6 (1.7)	2.2 (1.6)	2.0 (0.6)	2.0 (1.0)	3.0 (2.2)	0.5 (0.3)	1.6 (1.1)	1.3 (0.8)
<b>50+</b>	209	8.4 (6.5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
<b>Black</b>	2,068	5.4 (2.6)	7.6 (3.0)	17.8 (7.9)	4.6 (1.1)	9.0 (3.4)	9.8 (4.2)	4.1 (1.5)	4.6 (2.0)	1.0 (0.6)	2.0 (1.0)	6.3 (2.8)
<b>12–17</b>	292	10.0 (7.3)	2.6 (2.5)	5.8 (3.9)	0.5 (0.5)	22.9 (9.7)	21.9 (10.0)	23.0 (9.7)	8.6 (6.0)	0.7 (0.7)	1.2 (1.3)	12.8 (9.6)
<b>18–25</b>	1,359	4.2 (2.1)	7.8 (3.3)	8.8 (3.9)	6.4 (4.1)	8.6 (2.9)	4.8 (2.2)	5.6 (2.1)	6.2 (3.2)	1.7 (0.9)	2.3 (0.9)	4.6 (1.6)
<b>26–49</b>	392	5.6 (4.5)	8.5 (5.1)	32.2 (16.8)	5.1 (4.2)	7.2 (5.8)	15.5 (8.9)	3.7 (3.2)	2.9 (2.9)	0.8 (0.8)	2.4 (2.4)	8.2 (5.8)
<b>50+</b>	25	--	0 (0)	--	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
<b>Hispanic</b>	1,760	9.8 (4.5)	2.9 (1.6)	5.0 (2.2)	4.5 (2.1)	6.2 (2.7)	2.5 (1.9)	9.2 (5.2)	6.4 (4.1)	4.9 (2.5)	2.9 (1.7)	0.8 (0.5)
<b>12–17</b>	381	6.3 (5.0)	1.6 (1.7)	0.7 (0.7)	19.9 (12.4)	5.0 (4.4)	6.6 (6.6)	6.9 (3.8)	1.9 (1.8)	3.8 (3.0)	5.8 (3.5)	1.0 (1.0)
<b>18–25</b>	1,154	9.5 (5.2)	4.5 (2.6)	6.5 (3.3)	4.5 (2.9)	6.9 (4.0)	0.2 (0.2)	4.2 (2.6)	1.5 (1.2)	1.6 (1.1)	2.2 (1.5)	1.4 (3.5)
<b>26–49</b>	210	12.7 (12.2)	0 (0)	4.5 (4.6)	0 (0)	7.1 (6.0)	4.2 (4.4)	17.8 (13.9)	11.0 (8.4)	13.7 (9.1)	4.3 (4.2)	0 (0)
<b>50+</b>	15	--	0 (0)	--	0 (0)	0 (0)	--	--	--	0 (0)	0 (0)	0 (0)
<b>Other</b>	1,202	7.2 (3.9)	6.8 (3.9)	4.7 (2.7)	5.0 (2.2)	4.1 (2.6)	0.5 (0.4)	8.4 (5.8)	3.2 (2.3)	1.5 (0.8)	0 (0)	4.0 (2.5)
<b>12–17</b>	237	32.9 (17.5)	25.5 (12.0)	30.3 (17.6)	0 (0)	7.8 (6.0)	1.3 (1.4)	6.7 (5.5)	5.4 (5.4)	15.6 (11.9)	0 (0)	5.2 (5.6)
<b>18–25</b>	757	0 (0)	2.8 (3.1)	0 (0)	8.5 (3.5)	0.6 (0.4)	0.7 (0.7)	1.6 (1.2)	6.3 (4.5)	1.1 (0.9)	0 (0)	1.2 (1.2)
<b>26–49</b>	193	0 (0)	9.8 (10.4)	2.9 (2.2)	0 (0)	8.5 (8.5)	0.3 (0.4)	2.0 (1.4)	0 (0)	0.8 (0.8)	0 (0)	4.5 (4.6)
<b>50+</b>	15	--	0 (0)	--	0 (0)	--	0 (0)	--	0 (0)	0 (0)	0 (0)	13.3 (15.3)

Note: Bolded text indicates statistically significant differences across 11 years at the Bonferroni-corrected p<0.002 level.

<sup>b</sup> wt% = weighted percentage

$c_{SE}$  = standard error

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Table 4a

Past year non-daily cannabis use, NSDUH<sup>a</sup> 2002–2012

	n	2002 wt% <sup>b</sup> (SE) <sup>c</sup>	2003 wt% (SE)	2004 wt% (SE)	2005 wt% (SE)	2006 wt% (SE)	2007 wt% (SE)	2008 wt% (SE)	2009 wt% (SE)	2010 wt% (SE)	2011 wt% (SE)	2012 wt% (SE)
<b>Total</b>	614,579	9.7 (0.2)	9.5 (0.2)	9.2 (0.2)	9.1 (0.2)	9.0 (0.20)	8.7 (0.2)	8.7 (0.2)	9.8 (0.2)	9.8 (0.2)	9.6 (0.2)	10.2 (0.2)
<b>12–17</b>	199,750	14.4 (0.3)	14.2 (0.3)	13.2 (0.3)	12.2 (0.3)	11.9 (0.3)	11.5 (0.3)	11.9 (0.3)	12.4 (0.3)	12.7 (0.4)	13.1 (0.3)	12.4 (0.3)
<b>18–25</b>	204,570	23.3 (0.4)	24.4 (0.6)	24.0 (0.4)	23.7 (0.5)	23.3 (0.5)	23.5 (0.5)	22.7 (0.6)	26.2 (0.4)	24.5 (0.5)	25.1 (0.4)	25.0 (0.5)
<b>26–49</b>	149,457	9.8 (0.4)	10.0 (0.3)	9.5 (0.3)	9.6 (0.3)	9.3 (0.3)	8.6 (0.3)	8.9 (0.3)	9.6 (0.3)	10.1 (0.4)	9.5 (0.3)	11.0 (0.3)
<b>50+</b>	60,802	1.9 (0.4)	1.6 (0.2)	2.0 (0.3)	2.1 (0.3)	2.5 (0.3)	2.7 (0.3)	2.4 (0.3)	3.4 (0.3)	3.4 (0.3)	3.5 (0.3)	3.8 (0.4)
<b>White</b>	391,745	9.9 (0.2)	9.8 (0.2)	9.6 (0.2)	9.4 (0.3)	9.3 (0.2)	9.0 (0.3)	8.6 (0.3)	10.0 (0.2)	9.8 (0.2)	9.8 (0.2)	10.3 (0.3)
<b>12–17</b>	121,265	16.0 (0.4)	15.5 (0.4)	14.5 (0.4)	13.1 (0.5)	12.7 (0.4)	12.3 (0.3)	12.5 (0.5)	12.3 (0.3)	12.6 (0.4)	13.2 (0.4)	12.8 (0.4)
<b>18–25</b>	125,549	28.3 (0.5)	26.9 (0.7)	27.3 (0.6)	26.3 (0.6)	26.6 (0.6)	26.3 (0.6)	24.4 (0.7)	29.1 (0.6)	27.3 (0.7)	27.1 (0.6)	26.6 (0.6)
<b>26–49</b>	97,860	10.5 (0.4)	11.4 (0.4)	10.7 (0.3)	10.7 (0.4)	10.1 (0.4)	9.5 (0.4)	9.7 (0.4)	10.8 (0.5)	11.1 (0.5)	11.1 (0.5)	12.5 (0.5)
<b>50+</b>	47,071	1.9 (0.4)	1.6 (0.2)	1.9 (0.3)	2.0 (0.3)	2.7 (0.3)	2.7 (0.4)	2.3 (0.3)	3.4 (0.3)	3.2 (0.3)	3.8 (0.3)	4.0 (0.4)
<b>Black</b>	77,737	11.6 (0.6)	10.3 (0.5)	10.4 (0.6)	10.5 (0.5)	10.8 (0.6)	10.5 (0.6)	11.3 (0.5)	10.3 (0.5)	11.6 (0.6)	10.5 (0.5)	11.9 (0.5)
<b>12–17</b>	27,474	11.1 (0.7)	11.4 (0.8)	11.1 (0.7)	11.7 (0.7)	10.8 (0.7)	11.0 (0.9)	11.8 (0.9)	11.2 (0.8)	12.8 (0.9)	13.1 (0.9)	12.6 (0.9)
<b>18–25</b>	27,045	22.9 (1.0)	23.9 (1.2)	23.3 (1.0)	21.7 (1.1)	21.2 (1.0)	21.1 (1.3)	22.3 (1.1)	24.4 (1.1)	22.5 (0.9)	25.0 (0.9)	26.5 (1.3)
<b>26–49</b>	17,434	13.3 (1.3)	10.4 (1.1)	10.2 (1.1)	10.4 (0.9)	12.6 (1.1)	10.8 (1.1)	12.8 (0.8)	9.2 (0.8)	11.3 (1.0)	10.0 (0.9)	10.8 (0.8)
<b>50+</b>	5,784	2.7 (0.9)	2.1 (0.5)	2.9 (0.8)	3.9 (1.0)	2.7 (0.9)	4.3 (1.4)	3.2 (0.7)	4.2 (1.1)	5.8 (1.3)	3.4 (0.7)	6.0 (1.2)
<b>Hispanic</b>	94,578	8.1 (0.6)	7.8 (0.4)	7.4 (0.6)	7.8 (0.5)	7.1 (0.5)	7.1 (0.3)	7.4 (0.5)	9.3 (0.5)	9.3 (0.5)	8.6 (0.4)	9.6 (0.4)
<b>12–17</b>	33,335	13.1 (0.8)	12.9 (0.8)	11.2 (1.0)	10.8 (1.0)	11.0 (0.7)	10.2 (0.8)	11.6 (0.8)	14.6 (1.0)	14.0 (1.0)	13.3 (0.8)	13.0 (0.7)
<b>18–25</b>	34,452	17.9 (1.1)	17.5 (1.1)	15.9 (1.1)	18.6 (0.9)	14.5 (0.9)	16.8 (1.2)	19.5 (1.3)	20.9 (1.1)	19.5 (1.1)	21.7 (1.0)	21.4 (0.9)
<b>26–49</b>	22,248	6.0 (0.9)	5.5 (0.7)	5.1 (0.7)	5.7 (0.7)	5.6 (0.6)	5.2 (0.6)	4.9 (0.5)	6.7 (0.7)	6.8 (0.8)	5.4 (0.6)	8.2 (0.7)
<b>50+</b>	4,543	0.1 (0.1)	0.5 (0.2)	2.3 (1.2)	1.1 (0.9)	1.9 (0.9)	1.5 (0.7)	0.9 (0.7)	2.8 (1.4)	3.4 (1.2)	2.0 (0.8)	1.4 (0.7)
<b>Other</b>	50,519	7.2 (0.6)	6.7 (0.6)	6.9 (0.6)	6.6 (0.5)	6.7 (0.8)	6.6 (0.5)	6.9 (0.8)	7.2 (0.6)	7.7 (0.5)	8.4 (0.5)	7.6 (0.5)
<b>12–17</b>	17,676	8.9 (1.1)	11.0 (1.3)	11.6 (1.2)	8.3 (0.8)	10.3 (1.2)	9.7 (1.4)	8.6 (1.0)	9.9 (0.9)	9.9 (1.2)	12.2 (1.2)	8.5 (0.8)
<b>18–25</b>	17,524	22.2 (1.5)	19.5 (2.0)	16.9 (1.6)	16.7 (1.6)	20.5 (2.5)	20.0 (1.6)	16.7 (1.1)	18.7 (1.4)	18.1 (1.2)	20.5 (1.5)	21.2 (1.6)
<b>26–49</b>	11,915	4.2 (0.7)	4.7 (0.9)	6.2 (1.0)	5.4 (0.7)	5.0 (1.1)	4.9 (0.9)	5.0 (1.2)	6.5 (0.8)	7.7 (1.0)	6.7 (0.9)	6.6 (1.0)
<b>50+</b>	3,404	2.7 (2.0)	1.1 (0.5)	0.5 (0.2)	2.1 (0.9)	0.8 (0.4)	1.5 (0.8)	4.7 (2.2)	1.8 (0.8)	2.3 (0.6)	2.9 (0.9)	1.6 (0.5)

**Table 4b**

Past year daily cannabis use, NSDUH<sup>a</sup> 2002–2012

	n	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
		wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)	wt% (SE)
<b>Total</b>	614,579	<b>1.3 (0.1)</b>	<b>1.3 (0.1)</b>	<b>1.4 (0.1)</b>	<b>1.3 (0.1)</b>	<b>1.3 (0.1)</b>	<b>1.4 (0.1)</b>	<b>1.6 (0.1)</b>	<b>1.6 (0.1)</b>	<b>1.8 (0.1)</b>	<b>1.9 (0.1)</b>	<b>2.1 (0.1)</b>
<b>12–17</b>	199,750	1.4 (0.1)	1.0 (0.1)	1.3 (0.1)	1.0 (0.1)	1.2 (0.1)	1.0 (0.1)	1.1 (0.1)	1.2 (0.1)	1.4 (0.1)	1.2 (0.1)	1.1 (0.1)
<b>18–25</b>	204,570	<b>4.4 (0.2)</b>	<b>4.3 (0.2)</b>	<b>4.5 (0.2)</b>	<b>4.7 (0.2)</b>	<b>4.5 (0.2)</b>	<b>4.4 (0.2)</b>	<b>5.1 (0.2)</b>	<b>5.0 (0.2)</b>	<b>5.6 (0.2)</b>	<b>5.4 (0.2)</b>	<b>6.3 (0.2)</b>
<b>26–49</b>	149,457	<b>1.2 (0.1)</b>	<b>1.3 (0.1)</b>	<b>1.3 (0.1)</b>	<b>1.1 (0.1)</b>	<b>1.2 (0.1)</b>	<b>1.5 (0.1)</b>	<b>1.7 (0.1)</b>	<b>1.7 (0.2)</b>	<b>1.9 (0.2)</b>	<b>2.1 (0.1)</b>	<b>2.2 (0.2)</b>
<b>50+</b>	60,802	<b>0.2 (0.1)</b>	<b>0.2 (0.1)</b>	<b>0.4 (0.1)</b>	<b>0.3 (0.1)</b>	<b>0.1 (0.1)</b>	<b>0.3 (0.1)</b>	<b>0.4 (0.1)</b>	<b>0.4 (0.1)</b>	<b>0.5 (0.1)</b>	<b>0.7 (0.1)</b>	<b>0.8 (0.1)</b>
<b>White</b>	391,745	<b>1.4 (0.08)</b>	<b>1.4 (0.08)</b>	<b>1.5 (0.08)</b>	<b>1.3 (0.07)</b>	<b>1.3 (0.07)</b>	<b>1.5 (0.09)</b>	<b>1.7 (0.07)</b>	<b>1.7 (0.1)</b>	<b>1.8 (0.1)</b>	<b>2.0 (0.1)</b>	<b>2.1 (0.1)</b>
<b>12–17</b>	121,265	1.6 (0.1)	1.2 (0.1)	1.4 (0.1)	1.1 (0.1)	1.3 (0.1)	1.3 (0.2)	1.4 (0.1)	1.3 (0.1)	1.5 (0.1)	1.3 (0.2)	1.3 (0.1)
<b>18–25</b>	125,549	<b>5.1 (0.3)</b>	<b>5.0 (0.3)</b>	<b>5.0 (0.3)</b>	<b>5.3 (0.3)</b>	<b>5.3 (0.3)</b>	<b>4.8 (0.2)</b>	<b>5.8 (0.3)</b>	<b>5.8 (0.3)</b>	<b>6.2 (0.3)</b>	<b>6.0 (0.3)</b>	<b>6.9 (0.2)</b>
<b>26–49</b>	97,860	<b>1.4 (0.1)</b>	<b>1.4 (0.2)</b>	<b>1.6 (0.1)</b>	<b>1.1 (0.1)</b>	<b>1.4 (0.2)</b>	<b>1.6 (0.2)</b>	<b>1.9 (0.2)</b>	<b>1.9 (0.2)</b>	<b>2.1 (0.2)</b>	<b>2.3 (0.2)</b>	<b>2.4 (0.2)</b>
<b>50+</b>	47,071	<b>0.3 (0.1)</b>	<b>0.2 (0.08)</b>	<b>0.5 (0.1)</b>	<b>0.3 (0.1)</b>	<b>0.1 (0.05)</b>	<b>0.4 (0.08)</b>	<b>0.3 (0.08)</b>	<b>0.4 (0.1)</b>	<b>0.6 (0.2)</b>	<b>0.8 (0.1)</b>	<b>0.9 (0.2)</b>
<b>Black</b>	77,737	1.5 (0.2)	1.7 (0.2)	1.4 (0.2)	2.1 (0.3)	1.5 (0.2)	2.0 (0.2)	2.2 (0.3)	2.0 (0.2)	2.4 (0.4)	2.1 (0.2)	2.5 (0.3)
<b>12–17</b>	27,474	0.9 (0.2)	0.7 (1.2)	1.2 (0.3)	1.0 (0.3)	1.0 (0.2)	0.6 (0.2)	0.6 (0.2)	1.0 (0.3)	1.2 (0.3)	1.0 (0.3)	0.8 (0.2)
<b>18–25</b>	27,045	<b>3.8 (0.3)</b>	<b>3.9 (0.5)</b>	<b>4.2 (0.6)</b>	<b>5.2 (0.7)</b>	<b>3.7 (0.5)</b>	<b>6.1 (0.7)</b>	<b>4.8 (0.5)</b>	<b>5.9 (0.6)</b>	<b>5.1 (0.5)</b>	<b>5.8 (0.5)</b>	<b>7.4 (0.7)</b>
<b>26–49</b>	17,434	1.8 (0.4)	2.0 (0.5)	1.3 (0.4)	2.1 (0.5)	1.9 (1.4)	2.0 (0.4)	1.8 (0.3)	2.2 (0.4)	3.4 (0.8)	2.0 (0.4)	3.0 (0.6)
<b>50+</b>	5,784	0 (0)	0.3 (0.30)	0 (0)	1.0 (0.8)	0.1 (0.01)	0.3 (0.3)	1.9 (1.1)	0.3 (0.3)	0.2 (0.1)	0.7 (0.3)	0.3 (0.2)
<b>Hispanic</b>	94,578	<b>0.9 (0.1)</b>	<b>0.9 (0.1)</b>	<b>1.0 (0.1)</b>	<b>1.1 (0.1)</b>	<b>1.0 (0.1)</b>	<b>0.9 (0.2)</b>	<b>1.1 (0.2)</b>	<b>1.2 (0.1)</b>	<b>1.6 (0.2)</b>	<b>1.8 (0.2)</b>	<b>1.7 (0.2)</b>
<b>12–17</b>	33,335	1.2 (0.3)	0.8 (0.2)	1.2 (0.3)	1.0 (0.3)	1.0 (0.2)	0.5 (0.1)	0.8 (0.2)	1.1 (0.2)	1.7 (0.3)	1.0 (0.2)	0.8 (0.2)
<b>18–25</b>	34,452	<b>2.7 (0.3)</b>	<b>2.8 (0.4)</b>	<b>3.3 (0.5)</b>	<b>2.8 (0.4)</b>	<b>3.1 (0.5)</b>	<b>2.4 (0.4)</b>	<b>3.7 (0.6)</b>	<b>2.5 (0.3)</b>	<b>4.8 (0.7)</b>	<b>4.6 (0.6)</b>	<b>4.9 (0.6)</b>
<b>26–49</b>	22,248	0.5 (0.20)	0.4 (0.2)	0.4 (0.2)	0.8 (0.3)	0.4 (0.1)	0.8 (0.3)	0.8 (0.3)	1.2 (0.3)	0.9 (0.2)	1.4 (0.3)	1.2 (0.3)
<b>50+</b>	4,543	0 (0)	0.1 (0.03)	0 (0)	0.4 (0.4)	0.3 (0.2)	0 (0)	0 (0)	0 (0)	0.5 (0.4)	0.9 (0.7)	0.6 (0.4)
<b>Other</b>	50,519	0.8 (0.2)	0.9 (0.2)	0.9 (0.1)	0.6 (0.1)	0.6 (0.1)	0.9 (0.2)	1.0 (0.1)	1.1 (0.1)	1.0 (0.2)	1.3 (0.2)	1.5 (0.2)
<b>12–17</b>	17,676	1.4 (0.5)	0.8 (0.2)	0.9 (0.3)	0.4 (0.1)	1.1 (0.4)	0.3 (0.1)	1.0 (0.3)	0.5 (0.2)	0.4 (0.09)	1.0 (0.3)	0.8 (0.2)
<b>18–25</b>	17,524	2.6 (0.6)	2.7 (0.5)	3.0 (0.7)	2.5 (0.4)	2.4 (0.6)	3.2 (0.6)	2.9 (0.2)	3.4 (0.5)	2.5 (0.5)	3.9 (0.9)	3.0 (0.2)
<b>26–49</b>	11,915	0.4 (0.2)	0.6 (0.3)	0.7 (0.2)	0.4 (0.2)	0.4 (0.1)	0.8 (0.3)	1.0 (0.2)	0.9 (0.3)	0.8 (0.3)	1.8 (0.5)	1.6 (0.3)
<b>50+</b>	3,404	0 (0)	0.5 (0.5)	0 (0)	0.1 (0.09)	0 (0)	0.1 (0.02)	0.2 (0.2)	0.4 (0.3)	0.1 (0.1)	0.1 (0.03)	0.4 (0.3)

Note: Bolded text indicates statistically significant differences across 11 years at the Bonferroni-corrected p<0.002 level.

<sup>a</sup>NSDUH = National Survey on Drug Use and Health

$w_i = \frac{\text{weighted percentage}}{q}$   
standard error = SE<sub>q</sub>

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**Table 5**

Adjusted odds of perceived great risk of regular cannabis use by sociodemographic characteristics and cannabis use

Covariate	OR <sup>a</sup> (95% CI <sup>b</sup> )	aOR <sup>c</sup> (95% CI)
<b>Sex</b>		
Male	1.0	1.0
Female	<b>1.80 (1.77–1.83)</b>	<b>1.74 (1.71–1.77)</b>
<b>Race/Ethnicity</b>		
White	1.0	1.0
Black	<b>1.06 (1.03–1.09)</b>	<b>1.08 (1.05–1.12)</b>
Hispanic	<b>1.65 (1.61–1.70)</b>	<b>1.75 (1.69–1.81)</b>
Other	<b>1.44 (1.38–1.51)</b>	<b>1.54 (1.47–1.61)</b>
<b>Age</b>		
12–17	1.0	1.0
18–25	<b>0.46 (0.45–0.47)</b>	<b>0.66 (0.64–0.69)</b>
26–49	<b>0.79 (0.78–0.80)</b>	<b>0.93 (0.90–0.96)</b>
50+	<b>1.23 (1.20–1.26)</b>	<b>1.37 (1.31–1.42)</b>
<b>Education</b>		
<HS	1.0	1.0
HS+	<b>0.74 (0.72–0.75)</b>	<b>0.75 (0.72–0.77)</b>
<b>Income</b>		
\$0–19,999	1.0	1.0
\$20,000–49,999	<b>1.06 (1.03–1.09)</b>	<b>1.06 (1.03–1.09)</b>
\$50,000–74,999	<b>0.95 (0.93–0.98)</b>	0.98 (0.95–1.02)
\$75,000+	<b>0.85 (0.82–0.88)</b>	<b>0.90 (0.87–0.94)</b>
<b>Cannabis Use</b>		
No use	1.0	1.0
Non-daily use	<b>0.09 (0.08–0.10)</b>	<b>0.11 (0.10–0.12)</b>
Daily use	<b>0.03 (0.02–0.04)</b>	<b>0.04 (0.03–0.05)</b>
<b>NSDUH<sup>d</sup> Year</b>		
2002	1.0	1.0
2003	1.06 (1.01–1.11)	1.06 (1.00–1.12)
2004	1.05 (1.00–1.10)	1.05 (0.99–1.11)
2005	1.00 (0.95–1.05)	0.99 (0.94–1.05)
2006	1.00 (0.96–1.06)	0.99 (0.94–1.04)
2007	0.99 (0.94–1.04)	0.97 (0.92–1.02)
2008	<b>0.91 (0.87–0.96)</b>	<b>0.89 (0.84–0.94)</b>
2009	<b>0.80 (0.76–0.84)</b>	<b>0.78 (0.74–0.82)</b>
2010	<b>0.73 (0.69–0.76)</b>	<b>0.70 (0.66–0.73)</b>
2011	<b>0.70 (0.66–0.73)</b>	<b>0.66 (0.63–0.69)</b>
2012	<b>0.64 (0.61–0.68)</b>	<b>0.60 (0.57–0.63)</b>

Note: Bolded text indicates statistically significant differences at the Bonferroni-corrected  $p < 0.002$  level.

<sup>a</sup>OR = odds ratio

<sup>b</sup>CI = confidence interval

<sup>c</sup>aOR = adjusted odds ratio

<sup>d</sup>NSDUH = National Survey of Drug Use and Health

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