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Nonmedical Stimulant Use among Young Asian Americans, Native Hawaiians/Pacific Islanders, and Mixed-Race Individuals Aged 12–34 years In the United States

Li-Tzy Wu, ScD[a,*], **Marvin S. Swartz, MD**[a], **Kathleen T. Brady, MD, PhD**[b], **Dan G. Blazer, MD, PhD**[a], **Rick H. Hoyle, PhD**[c], and **NIDA AAPI Workgroup**[d]

[a]Department of Psychiatry and Behavioral Sciences, School of Medicine, Duke University Medical Center, Durham, NC, USA

[b]South Carolina Clinical and Translational Research Institute, Medical University of South Carolina, Charleston, SC, USA

[c]Department of Psychology and Neuroscience, Duke University, Durham, NC, USA

[d]National Institute on Drug Abuse Asian American and Pacific Islander Researchers and Scholars Workgroup, Bethesda, MD, USA

Abstract

There are concerns over nonmedical use of prescription stimulants among youths, but little is known about the extent of use among young Asian-Americans, Native Hawaiians/Pacific Islanders (NHs/PIs), and mixed-race individuals—the fastest growing segments of the U.S. population. We examined prevalences and correlates of nonmedical stimulant use (NMSU) and disorder (StiUD) for these underrecognized groups. Whites were included as a comparison. Data were from young individuals aged 12–34 years in the 2005–2012 National Surveys on Drug Use and Health. We used logistic regression to estimate odds of past-year NMSU status. Significant yearly increases in lifetime NMSU prevalence were noted in Whites only. NHs/PIs (lifetime 7.33%, past-year 2.72%) and mixed-race individuals (10.20%, 2.82%) did not differ from Whites in NMSU prevalence (11.68%, 3.15%). Asian-Americans (lifetime 3.83%, past-year 0.90%) had lower prevalences than Whites. In each racial/ethnic group, “Methamphetamine/Desoxyn/Methedrine or Ritalin” was more commonly used than other stimulant groups; “got them from a friend/relative for free” and “bought them from a friends/relative” were among the most common sources. Females had greater odds than males of NMSU (among White, NH/PI, mixed-race individuals) and StiUD (among

[*]Corresponding author: Li-Tzy Wu, ScD, Professor, Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, Duke University Medical Center, Box 3903, Durham, NC 27710, United States. Tel: +1 919 668 6067; Fax: +1 919 681 8400; litzy.wu@duke.edu.

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mixed-race individuals). Young adults (aged 18–25) had elevated odds of NMSU (White, NH/PI); adolescents had elevated odds of StiUD (White, mixed-race). Other substance use (especially marijuana, other prescription drugs) increased odds of NMSU and StiUD. NHs/PIs and mixed-race individuals were as likely as Whites to misuse stimulants. Research is needed to delineate health consequences of NMSU and inform prevention efforts for these understudied, rapidly-growing populations.

Keywords

Asian Americans; marijuana use; mixed race; multiple race; Native Hawaiians; nonmedical drug use; Pacific Islanders

1. Introduction

Asian-Americans, Native Hawaiians and other Pacific Islanders (NHs/PIs) in the United States are identified as vulnerable populations as they tend to underutilize behavioral healthcare (Ida et al., 2012). Due to an array of factors such as limited English proficiency, a lack of providers who have the language and cultural skills needed to meet their healthcare needs, no insurance coverage, or fears of immigration and deportation these populations either have difficulties using healthcare timely or experience a high level of dissatisfaction with the healthcare received (Ida et al., 2012; Masson et al., 2013; Yu et al., 2009). In the United States, an estimated 33% of adolescent Asian residents aged 12–17 years nationally were born aboard (non US-born), and 81% of adult Asian residents aged ≥18 years nationally were born aboard (Substance Abuse and Mental Health Services Administration [SAMHSA], 2010, 2011). Asian-Americans and NHs/PIs face unique barriers to seeking care related to substance use problems because of a lack of culturally or linguistically congruent interventions and providers as well as culture-related attitudes towards substance abuse and treatment (shame, wanting to keep the problems within the family to avoid disgrace), which may reduce treatment-seeking and interfere with treatment engagement (Edwards et al., 2010; Masson et al., 2013; Yu et al., 2009). Inadequate behavioral healthcare, however, has adverse effects on the healthcare, education, welfare, and justice systems and impacts the nation's economy (Institute of Medicine, 2006). Adolescents and young adults are vulnerable to substance-related adverse consequences; prevention interventions are critical to reducing substance use problems. However, Asian-Americans, NHs/PIs, and mixed-race individuals are vastly under-represented in substance use prevention and treatment studies (Korte et al., 2011; Rehuher et al., 2008); they are either excluded from comparisons or pooled with other racial/ethnic groups. The lack of epidemiological data on drug use impedes health policy and prevention efforts.

Asian-Americans, NHs/PIs, and mixed-race (>1 race) population are the fastest-growing segments of the U.S. population, growing in numbers at 3–4 times the rate of the overall U.S. population (U.S. Census Bureau, 2011). On average, these groups include higher proportions of youths than the White population (Wu et al., 2013a, 2013b). Because substance use often starts in adolescence and increases with age during the young adulthood (SAMHSA, 2013a), the increase in their population sizes warrants research to gauge the extent of drug use to inform national *Healthy People* initiatives, which also have the least

amounts of empirical data available for these groups (National Center for Health Statistics, 2012). Of note, there have been concerns over nonmedical use of prescription stimulants among youths (Arria and DuPont, 2010; Nagel and Graf, 2013). Depending on the survey samples, an estimated 5–35% of college-aged young adults reported past-year nonmedical stimulant use (NMSU) (Wilens et al., 2008). Studies of adolescents or young adults suggest a high lifetime prevalence (range: 11–62%) of diversion (selling, trading, giving away) of prescription stimulants (Kaye and Darke, 2012). In a study of college students, 50% of the sample perceived that "prescription stimulants are easy to get on campus" (Weyandt et al., 2009). Nonmedical stimulant users (NMSUs) were found to be more likely than non-users to have academic, conduct, or substance use problems (Arria and DuPont, 2010; Bavarian et al., 2013; Lakhan and Kirchgessner, 2012; Wilens et al., 2008). Repeated NMSU is associated with psychotic symptoms or cardiovascular problems (Lakhan and Kirchgessner, 2012; McKetin et al., 2013). Recent data also show an increase in prescription stimulant–related emergency department visits (SAMHSA et al., 2013b).

To date, little is known about the extent and correlates of NMSU and stimulant use disorder (StiUD) among Asian-Americans, NHs/PIs, and mixed-race individuals (Kaye and Darke, 2012). Existing studies generally have not included an adequate number of Asian-Americans, NHs/PIs, and mixed-race individuals to permit comparisons for each group. The national Monitoring the Future (MTF) study found racial/ethnic differences in NMSU for three major racial/ethnic groups (e.g., lifetime use prevalence among 12th graders: 10.1% of Whites, 3.3% of Blacks, and 6.3% of Hispanics) (Johnston et al., 2014). Greater access to stimulants for managing attention deficit hyperactivity disorder (ADHD) symptoms among Whites than Blacks and Hispanics may contribute partly to greater NMSU prevalences among Whites (Pastor et al., 2005; Stevens et al., 2005). However, MTF reports have not routinely included drug use estimates for Asian-American, NH/PI, and mixed-race students because of their small sample sizes in MTF studies (Johnston et al., 2014). Smaller-scale studies of young individuals (convenience, regional samples) are constrained by even smaller sample sizes, excluding them from analyses of NMSU, StiUD, and sources of stimulants.

Stimulants are sometimes called "study" or "smart" drugs as they are reported to be used as "cognitive enhancers" by students to stay awake to study for exams or to improve academic performance (Arria and DuPont, 2010; Bavarian et al., 2013). Reasons for NMSU may include enhancing school performance, achieving euphoria, or coping with stressors, suggesting that NMSU may affect youth of various racial/ethnic backgrounds (Lakhan and Kirchgessner, 2012; Rabiner et al., 2009). Compared with other racial/ethnic groups, Asian-Americans generally report a higher level of personal and/or (perceived) parental educational expectations for academic performance, which, however, may be associated with parent-child conflict, psychological stress, or emotional problems among Asian-American youths (Castro and Rice, 2003; Qin et al., 2012a, 2012b; Saw et al., 2013). Given that prescription stimulants also are perceived as safer than other illicit drugs (legal, information about their effects available in package inserts), it is important to determine the extent to which Asian-American youths are NMSUs or manifest StiUD and their correlates (Arria and DuPont, 2010; Quintero et al., 2006).

Moreover, treatment-seeking data suggest that Asian-Americans and NHs/PIs may be more likely to misuse stimulants than other drug classes. The Treatment Episode Data Set (TEDS) reports, which track substance-related treatment admissions, consider Asian-Americans and NHs/PIs as a single group (SAMHSA, 2012). In the TEDS, amphetamines and marijuana were the most commonly identified classes of abused drugs for female Asian-Americans/NHs/PIs (23%, 19% respectively) and male Asian-Americans/NHs/PIs (17%, 21% respectively) (SAMHSA, 2012). While research tends to show a low prevalence of substance use in the pooled sample, analyses that specifically examine NHs/PIs find a higher prevalence of substance use and delinquency among NHs/PIs than among Asian-Americans (Andrade et al., 2006; Lowry et al. 2011; Wu et al. 2013c). Thus, it is important to examine Asian-Americans and NHs/PIs separately for NMSU.

The TEDS reports omit mixed-race individuals because of limited data. Mixed-race individuals also are under-represented in the drug use prevention research (Rehuher et al., 2008). During the past decade, mixed-race groups grew in number at least 3 times faster than single-race groups; mixed-race individuals are on average younger and financially poorer than Whites (U.S. Census Bureau, 2011; Wu et al., 2013a, 2013b). Moreover, mixed-race individuals are similar to Whites in tobacco use prevalence but higher than Whites in any drug use prevalence (Wu et al., 2013a, 2013b). The growing populations of young Asian-American, NH/PI, and mixed-race individuals, along with increased availability of stimulants and stimulant-related emergency department admissions, warrant research to characterize factors associated with NMSU and StiUD and sources of stimulants to inform research (Setlik et al., 2009; SAMHSA et al., 2013b).

Here, we examined not only the prevalence and correlates of past-year NMSU but also past-year StiUD and the types and sources of stimulants used to address the lack of such data. To mitigate constraints of the sample size, we analyzed datasets from national samples of Asian-Americans, NHs/PIs, and mixed-race individuals using the National Surveys on Drug Use and Health (NSDUH). The independent, cross-sectional 2005–2012 NSDUH used similar designs, allowing analysis of the same variables from the pooled sample to determine correlates of NMSU and StiUD. While prior research has focused exclusively on either adolescents (12–17 years) or college-aged individuals (18–25 years), we examined data from adolescents and adults aged 12–34 years to evaluate age-related differences in NMSU and StiUD. Given age-related increase in academic work demand and the likelihood of affiliating with substance-using peers, we examined whether NMSU prevalence increased with age groups and declined after the college years in these understudied, nonwhite groups (Lakhan and Kirchgessner, 2012). White race is considered risk correlate for NMSU (Kaye & Darke, 2012); we included whites to inform racial/ethnic disparity analyses.

2. Methods

2.1. Data source

We analyzed public-use datasets from the 2005–2012 NSDUH to characterize NMSU and StiUD, with a focus on individuals aged 12–34 who showed greater past-year NMSU prevalences than older adults (SAMHSA, 2013b). NSDUH is the national survey designed to provide ongoing estimates of drug use in the United States (SAMHSA, 2006, 2013b). The

2005–2012 surveys used multistage area probability sampling methods to select a representative sample of the civilian, noninstitutionalized population aged ≥12 years. Residents of households from the 50 states (including shelters, rooming houses, and group homes) and civilians residing on military bases were included. The design oversampled individuals aged 12–25 years. Due to a large sample size, there was no need to oversample racial/ethnic groups, as was done before 1999.

After carefully explaining all study procedures and protections, respondents were interviewed in their homes for about an hour. Respondents were assured that their names would not be recorded and their responses would be kept strictly confidential. Demographic data were assessed by computer-assisted personal interviews. Substance use questions were assessed using a computer-assisted self-interview method. The latter was designed to increase honest reporting of substance use by allowing respondents to either read the questions on a computer screen or listen to the questions read aloud by the computer through headphones, and then enter their responses directly into the computer (Turner et al., 1998).

NSDUH's annual sample was considered representative of the U.S. general population aged ≥12 years. To include adequate numbers of Asian-Americans, NHs/PIs, and mixed-race individuals to detect meaningful racial/ethnic differences in drug use, we pooled the public-use datasets from 2005–2012 (n=55,279 to 58,379/year); weighted response rates of household screening and interviewing were 86–91% and 73–76%, respectively (SAMHSA, 2006, 2013b). The pooled analysis sample included 12,335 Asian-Americans, 1,729 NHs/PIs, 11,882 mixed-race individuals as well as 203,759 Whites aged 12–34 years (N=229,705).

2.2. Study variables

Self-reported race/ethnicity, age, sex, annual household income, government assistance, and county type were included in logistic regression analyses to account for race/ethnicity-related differences in sociodemographics (Duncan et al., 2002; Wilson and Donnermeyer, 2006). Based on respondents' self-reported responses to race and ethnicity questions, NSDUH defined mutually exclusive groups: non-Hispanic Whites, non-Hispanic Asian-Americans (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese), non-Hispanic NHs/PIs, and mixed-race individuals (>1 race). The public-use datasets do not distinguish between specific racial groups of mixed-race individuals. In the United States, the majority of mixed-race individuals (82%) were White in combination with another race (Black, Asian-American, Native American, other race). NHs/PIs (55.9%), Asian-Americans (15.3%), and Native Americans (43.8%) included high proportions of mixed-race individuals (U.S. Census Bureau, 2011).

Drug use was assessed using separate questions to assess respondents' nonmedical use (i.e., not prescribed for the respondent or taken only for the experience or feeling it caused) of each drug class, including a detailed description of each drug group and lists of qualifying drugs. NMSU included the following categories: (1) methamphetamine, Desoxyn®, or Methedrine; (2) amphetamines, Benzedrine®, Biphetamine, Fastin®, or phentermine; (3) Ritalin® or methylphenidate; (4) Cylert®; (5) Dexedrine®; (6) dextroamphetamine; (7) Didrex®; (8) Eskatrol®; (9) Ionamin®; (10) Mazanor®; (11) Obedrin-LA®; (12) Plegine®;

(13) Preludin®; (14) Sanorex®; and (15) Tenuate®. Methamphetamine use may be underestimated when its use questions are included within questions about prescription drugs; beginning in 2005, NSDUH has added additional descriptions to capture methamphetamine use. Past-year DSM-IV StiUD included abuse of or dependence on stimulants (American Psychiatric Association, 2000).

Behavioral health problems are associated with NMSU (Arria and DuPont, 2010; Wilens et al., 2008). We examined whether such indicators were associated with NMSU among Asian-Americans, NHs/PIs, and mixed-race individuals. Past-year alcohol use, past-year tobacco use (cigarettes, cigars, smokeless tobacco, pipe tobacco), past-year marijuana use, past-year nonmedical use of other prescription drugs (pain relievers, sedatives, tranquilizers), past-year DSM-IV major depressive episode (MDE) (Kessler et al., 2005), and past-year arrest status (i.e., arrested and booked for breaking the law) were included as covariates (Bennett et al., 2008; Wu et al., 2008, 2013b). We used updated public-use data released in 2013 because they permitted pooled analyses of MDE variables from 2005–2012.

2.3. Data analysis

We examined racial/ethnic differences in sociodemographics, substance use status, MDE, and arrest status. We determined types and sources of stimulants used. We conducted logistic regression analyses of the pooled sample to determine racial/ethnic differences in odds of NMSU and StiUD when adjusting for age, sex, household income, government assistance, county type, MDE, arrest status, past-year substance use (alcohol, tobacco, marijuana use, nonmedical use of other prescription drugs), and survey year to lessen for their confounding effects. Finally, we examined correlates of NMSU and StiUD for each racial/ethnic group. All analyses took into account NSDUH's complex designs, such as weighting and clustering (RTI International, 2008). All results are weighted except for sample sizes (unweighted). Because of using population-based data, we focused on prevalence estimates; 95% confidence intervals (CI) are reported to ease interpretation.

3. Results

3.1. Sociodemographics and behavioral health (Table 1)

There were more NHs/PIs and mixed-race individuals than Whites in the lowest-income and receiving government assistance groups. Mixed-race individuals had the highest prevalence (annual average) of past-year MDE (11.50%), arrest (5.96%), and marijuana use (25.94%). Whites had the highest prevalence of past-year tobacco (46.82%) and alcohol (70.85%) use. Asian-Americans had the lowest prevalence of MDE (5.22%), arrest (1.31%), tobacco use (23.37%), alcohol use (53.61%), marijuana use (9.14%), and other nonmedical prescription drug use (3.99%). Mixed-race individuals (10.92%) and Whites (11.72%) had higher prevalences of other nonmedical prescription drug use than NHs/PIs (6.62%).

3.2. Prevalence of stimulant use and disorder (Table 1)

NHs/PIs (7.33%), mixed-race (10.20%), and Whites (11.68%) had higher lifetime NMSU prevalences than Asian-Americans (3.83%). NHs/PIs (2.72%), mixed-race (2.82%), and Whites (3.15%) had higher past-year NMSU prevalences than Asian-Americans (0.90%).

Mixed-race individuals (0.30%) and Whites (0.40%) had higher past-year StiUD prevalences than Asian-Americans (0.12%); the latter prevalence was similar to NHs/PIs (0.19%). NHs/PIs and mixed-race individuals did not differ from Whites in NMSU and StiUD prevalences. In each group (data not shown in a table), past-year NMSU was more prevalent in the 18–25 age group than 12–17 and 26–34 age groups ($p<0.01$ for each comparison: White 1.93% [12–17 years], 4.96% [18–25 years], 2.27% [26–34 years], respectively; Asian-American 0.66%, 1.67%, 0.44%, respectively; NH/PI 0.37%, 4.10%, 2.73%, respectively; mixed-race 1.77%, 3.87%, 2.87%, respectively).

Among past-year stimulant users, there were no significant differences in past-year StiUD prevalence (12.69% with StiUD in White users, 13.27% in Asian-American users, 7.6% in NH/PI users, 10.71% in mixed-race users; $p>0.05$) and the mean number of days of using nonmedical stimulants (White 46.55 days/year, Asian-American 57.64 days/year, NH/PI 72.38 days/year, mixed-race 45.73 days/year; $p>0.05$).

3.3. Types of stimulants used (Table 2)

Among lifetime NMSU, we examined types of stimulants. There were no racial/ethnic differences in use of “methamphetamine/Desoxyn/Methedrine” (White 39.15%, Asian-American 44.79%, NH/PI 60.64%, mixed-race 41.07%). Compared with Whites (45.49%), fewer Asian-Americans (34.23%) and NHs/PIs (14.87%) used “Ritalin/methylphenidate”; mixed-race individuals (39.23%) resembled Whites. Fewer Asian-Americans (13.74%) than Whites (20.51%) used “amphetamines/benzedrine/Biphetamine/Fastin/phentermine”; NHs/PIs (12.27%) and mixed-race individuals (24.90%) resembled Whites. More Whites than NHs/PIs used Dexedrine (5.11% vs. 0.54%) and dextroamphetamine (3.36% vs. 0.16%). Across racial/ethnic groups, few (<7%) used other groups of stimulants.

3.4. Sources of stimulants used among NMSUs (on-line only Table 1)

Commonly endorsed sources of prescription stimulants included: “got it from a friend/relative for free” (White 54.17%, Asian-American 55.02%, NH/PI 10.44%, mixed-race 48.74%) and “bought it from a friend/relative” (White 21.68%, Asian-American 18.26%, NH/PI 63.58%, mixed-race 17.76%). The next sources were “got it from one doctor” (7.43–11.08%), “bought it from a drug dealer/stranger” (6.69–10.45%), “took it from a friend/relative without asking” (2.97–5.52%), and “bought it on the Internet” (0–4.52%). Very few (0–2.19%) reported “got it from 2 or more doctors,” “wrote fake prescription,” or “stole from doctor’s office/clinic/hospital/pharmacy.”

3.5. Racial/ethnic differences in NMSU and StiUD (Table 3)

We conducted logistic regression analyses to adjust for potentially confounding influences (age, sex, household income, county type, government assistance, MDE, arrest, alcohol use, tobacco use, marijuana use, other nonmedical drug use, survey year) on the estimates of racial/ethnic differences in past-year NMSU and past-year StiUD.

NMSU—Compared with Whites, Asian-Americans had lower odds of NMSU (adjusted odds ratio [AOR] 0.73, 95% CI=0.55–0.97); NHs/PIs and mixed-race individuals resembled Whites in odds of NMSU.

StiUD—Compared with Whites, mixed-race individuals had lower odds of StiUD (AOR 0.68, 95% CI=0.46–0.99); Asian-Americans and NHs/PIs resembled Whites in odds of StiUD.

StiUD among past-year NMSU—There were no racial/ethnic differences in StiUD among NMSUs.

3.6. Correlates of past-year NMSU (Table 4)

Asian-Americans—Substance use (tobacco, alcohol, marijuana, other prescription drugs) increased odds of NMSU.

NHs/PIs—Age ≥18 years (vs. 12–17), female sex, other nonmedical prescription drug use increased odds of NMSU.

Mixed-race individuals—Female sex and substance use (tobacco, marijuana, other prescription drugs) increased odds of NMSU.

3.7. Correlates of past-year StiUD (Table 5)

Asian-Americans—Substance use (tobacco, marijuana, other prescription-drugs) increased odds of StiUD.

NHs/PIs—Age ≥18 years and marijuana use increased odds of StiUD.

Mixed-race individuals—Ages 12–17 (vs. 26–34), female sex, small metropolitan residence, and substance use (tobacco, marijuana, other prescription drugs) increased odds of StiUD.

3.8. Correlates of past-year StiUD among NMSUs

We conducted adjusted logistic regression to identify correlates of StiUD among past-year NMSU (on-line only Table 2). Among White NMSU, being aged 12–17 (vs. aged 18–25), arrest, MDE, and nonmedical use of other prescription drugs increased odds of having a StiUD. Among Asian-American NMSUs, marijuana use increased odds of having a StiUD. Among mixed-race NMSUs, females had greater odds than males of having a StiUD. Analyses were not included for NHs/PIs due to a small sample of past-year NMSUs.

4. Discussion

NMSU has been understudied in Asian-American, NH/PI, and mixed-race populations. These results have timely implications for research and prevention efforts. First, on average, mixed-race individuals exhibited the highest prevalence of past-year MDE, arrest, and marijuana use; Whites had the highest prevalence of past-year tobacco and alcohol use. Second, NHs/PIs and mixed-race individuals had similar prevalences of NMSU and StiUD as Whites, while Asian-Americans had lower prevalences. Third, in each racial/ethnic group, “methamphetamine/Desoxyn/Methedrine” and “Ritalin” were commonly used; “got it from a friend/relative for free” and “bought it from a friend/relative” were primary sources of stimulants. Fourth, females had greater odds than males of NMSU (White, NH/PI, mixed-

race) and StiUD (mixed-race). Young adults aged 18–25 years (vs. 12–17) had elevated odds of NMSU (White, NH/PI); adolescents (vs. 26–34 years) had elevated odds of NMSU (White, NH/PI) and StiUD (White, mixed-race). Past-year substance use (marijuana, other prescription drugs) increased odds of NMSU and StiUD.

4.1. What this study adds to our knowledge

Research on NMSU focuses mainly on college students and frequently does not include sufficient numbers of Asian-Americans, NHs/PIs, and mixed-race individuals for comparison; Whites generally show greater odds of NMSU than nonwhites (Arria and DuPont, 2010). This analysis of a large national sample allowed a more careful examination of non-white groups and revealed that NHs/PIs and mixed-race individuals are as likely as Whites to use stimulants nonmedically. Moreover, individuals who self-identify as mixed-race and Whites have the highest prevalences of past-year nonmedical use of other prescription drugs. The proportion of individuals living in lower-income households or receiving government assistance is much higher in young mixed-race individuals as compared to Whites. Because lower socioeconomic status, associated stress, and poor behavioral and mental health may interact to intensify behavioral health problems (DuRant et al., 1999; O'Neil et al., 2011), the findings suggest that the growing mixed-race population may be vulnerable to experiencing drug use-related problems. Prior results from the National Survey of Children's Health (10–17 years) showed mixed-race children experiencing a higher prevalence of "difficulty with emotions, behavior, or interpersonal relations," and "not receiving the needed medical care" than White children (Lau et al., 2012). Data from treatment-seeking populations also demonstrate mixed-race individuals presenting a more severe pattern of substance use and mental disorders than Asian-Americans (Wu et al., 2013c).

Since 2000, the US census has provided an option to allow individuals to self-identify with more than one race. Between 2000 and 2010, the mixed-race population is growing at least three times faster than single-race population and that white-Black, white-Asian, and white-native American constitute the largest mixed-race subgroups (US census, 2011). NSDUH follows federal standards to collect the mixed-race status. While it is unclear about the reliability of mixed-race classification in the national surveys, the growing numbers of mixed-race individuals and their key demographics (younger, poorer than Whites) are generally consistent across reports (Lau et al., 2012; Macartney 2011; Wang, 2012). The Healthy People 2010 Final Review reports reveal that mixed-race as well as Asian-American and NH/PI individuals have the least reliable data available to evaluate their health indicators (National Center for Health Statistics, 2012). The NIH (2013 2014) requires collection and reporting of the mixed-race status in the enrollment of individuals involved in clinical research. Collectively, research efforts are needed to better gauge the magnitude of differences in behavioral health across mixed-race subgroups, assess the role of enculturation (endorsing a given minority group) and acculturation (adopting the predominant white culture) in behavioral (conduct, substance use) and mental health, and investigate the role of socioeconomic factors and parenting practices in protecting mixed-race youth from psychopathology (Blanco et al. 2013; Burnett-Zeigler et al. 2013; DeVore and Ginsburg, 2005; Hawkins et al., 1992; Watkins and Ford, 2011).

This study also includes new data on types of stimulants used and sources of stimulants (diversion) for Asian-Americans, NHs/PIs and mixed-race individuals. Similar to white NMSUs, the majority (62–75%) of Asian-American, NH/PI, or mixed-race NMSUs used one group of stimulants from either "Ritalin/methylphenidate," "methamphetamine/desoxyn/methedrine," or "amphetamines/benzedrine/biphetamine/fastin/phentermine." Hence, the stimulant of the choice appears to be stable, and commonly used stimulants should be the focus for prevention and surveillance efforts. Regardless of race/ethnicity, common sources of prescription stimulants were "getting it from a friend/relative for free" and "buying it from a friend/relative." Fewer reports of NMSU (0–11%) endorsed other sources (doctor, fake prescription, stealing, drug dealer, Internet). Surveys of college students found peers as the primary source (Bavarian et al., 2013; McCabe and Boyd, 2005; McNiel et al., 2011). The data from adolescents suggest that either medical or nonmedical stimulant users were approached to give away, loan, trade, or sell their stimulants (McCabe et al., 2011). Collectively, sharing or selling stimulants may be common among NMSUs. Future research should determine whether sharing or selling stimulants reinforces drug use behaviors, shapes perceived norms of nonmedical use, or promotes drug-using social networks (McCabe, 2008; Neighbors et al., 2006; Perkins et al., 2005).

This study expands prior research by covering a wider age range to delineate aged-related differences in NMSU. Adolescents were more likely than adults aged 26–34 to engage in NMSU (mainly Whites) or have StiUD (mainly Whites and mixed-race individuals). Among past-year NMSU, adolescents were more likely than young adults aged 18–25 to have StiUD. Given that most NMSU studies examine college students, there is a need for in-depth research on adolescents' use patterns and motives (e.g., lose weight, self-medicate negative affect, get high), including reasons that lead to StiUD (Kaye and Darke, 2012; McCabe et al., 2012). For example, use of stimulants as "study drugs" by some college students may not be applicable to adolescents. Additionally, race/ethnicity-specific analyses indicated that NMSU was more likely to be in adults aged 18–34 than in adolescents among NHs/PIs only, which may be related to the sources of stimulants. Of the four racial/ethnic groups, NHs/PIs reported the highest proportion of "buying stimulants from a friend/relative" and the lowest proportion of "getting stimulants from a friend/relative for free." Future research could examine whether prescription stimulants are less accessible to NH/PI adolescents than for other racial/ethnic groups (e.g., whether NHs/PIs are less likely to get stimulants prescribed and whites and mixed race are more likely) (Pastor et al., 2005; Stevens et al., 2005).

Finally, results reveal female excess in past-year NMSU (Whites, NHs/PIs, mixed-race individuals) and StiUD (mixed-race). Sex differences in reasons for NMSU may contribute to this finding. Females may be more likely than males to use prescription stimulants to lose weight, study, or increase alertness, while males may be more likely to use them to experiment with drug effects or counteract effects of other drugs (Gritz and Crane, 1991; Teter et al., 2006). The elevated prevalence in females also may be related to a greater tendency to share or loan the drug (Daniel et al., 2003; Petersen et al., 2008).

4.2. Limitations

NSDUH uses a cross-sectional design to provide national estimates of drug use for the noninstitutionalized population. Results reflect estimates and correlates of NMSU and StiUD, not causality. The definition of NMSU includes heterogeneous groups of users, ranging from sporadic to frequent use. For example, Asian-Americans showed a low NMSU prevalence, but one in 8 (13%) past-year Asian-American NMSUs met criteria for an NSDUH-defined StiUD. The problematic users can be the target for focused intervention. The national NSDUH data cannot describe causes of NMSU and StiUD. Nonetheless, results of Asian-Americans are consistent with those of Whites, indicating that friends/relatives are primary sources of stimulants and that NMSU is associated with other substance use, supporting the need to extend drug use prevention research (e.g., peer influence, perception of stimulant effects) to include Asian-Americans (Looby et al., 2013). These findings are conservative estimates given the potential of underreporting or undercoverage of subsets of drug users. Like other national studies, NSDUH relies on respondents' self-reports, which are influenced by memory errors and underreporting. The survey does not assess ADHD and medical stimulant use, which may influence NMSU (Rabiner et al., 2009; Setlik et al., 2009). Although we analyzed a large national sample, the population size of NHs/PIs is small (0.4%) and represents a challenge for research on this understudied population (U.S. Census Bureau, 2011). The moderate sample (N=1,729) of NHs/PIs constrains analysis of NMSU and StiUD. Nonetheless, results present much needed data for NHs/PIs.

NSDUH has strengths. It is the largest U.S. study of drug use and includes comprehensive assessments of NMSU status. NSDUH uses detailed probes to augment substance use assessments, color pictures of prescription drugs to aid identification of drugs used, and computer-assisted self-interviewing to ensure respondents' privacy; additionally, it implements rigorous procedures (consistency checks, statistical computation, analysis weights to minimize response inconsistency and adjust for nonresponse bias) to enhance the data quality (Gfroerer et al., 2002; Harrison et al., 2007; SAMHSA, 2013b).

4.3. Conclusion and clinical implications

As suggested by the finding that 13% of either White or Asian-American NMSUs had an NSDUH-defined StiUD, prescription stimulants are considered to have an abuse potential and may lead to dependence, and they are placed on scheduled II of Controlled Substances by the U.S. Drug Enforcement Administration (DEA). Stimulant use has side effects (e.g., trouble sleeping, mood swings) and is associated with occurrences of circulation, heart-related (stroke, increased blood pressure, sudden death), or psychiatric events (behavioral, psychotic symptoms); individuals with such a condition (including substance abuse) are not recommended for taking stimulants (U.S. Food and Drug Administration, 2013). Adolescents or young adults who use nonprescribed or diverted stimulants place themselves at unnecessary risk for adverse effects (Kaye and Darke, 2012; U.S. Food and Drug Administration, 2013). The association between NMSU and other drug use suggests an increased likelihood of adverse effects among substance-using stimulant users (e.g., drug-related toxicity, escalation of behavioral or psychiatric symptoms, healthcare visits) (Kaye and Darke, 2012; U.S. Food and Drug Administration, 2013). Regardless of patients' racial/

ethnic status, physicians who prescribe stimulants should educate patients (adolescents, young adults) and/or their parents about potential adverse effects of inappropriate stimulant use and proper disposal of unneeded medications (U.S. Food and Drug Administration, 2014). The patients should be monitored for signs of inappropriate stimulant use, misuse, or diversion (Greydanus, 2006). The prevalence of past-year NMSU (<4%) suggests that screening and intervention for stimulant-related problems or StiUD in medical setting can target potential risk subgroups individuals manifesting conduct problems, depression, or drug use to increase efficiency. Given the high prevalence of drug use, healthcare providers should be aware of increased numbers of youth with mixed cultural heritage and provide screening for behavioral/mental problems and interventions as needed. Finally, each Asian-American, NH/PI, or mixed-race population is diverse in languages, cultural traditions, and socioeconomic status, all of which can influence drug use (Macartney et al., 2013; Wong et al., 2004). In-depth research is needed to further disaggregate their drug use behaviors and consequences while considering culture-specific contextual factors.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Abbreviations

MTF	Monitoring the Future Study
NSDUH	National Surveys on Drug Use and Health
NHs/PIs	Native Hawaiians and other Pacific Islanders
NMSU	Nonmedical Stimulant Use
StiUD	Stimulant Use Disorder
TEDS	Treatment Episode Data Set

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Highlights

- New data on nonmedical stimulant use are presented for Asian-American, Native Hawaiian/Pacific Islander, and mixed-race individuals.
- The most common sources of stimulants for nonmedical use are friends and relatives.
- Native Hawaiians/Pacific Islanders are as likely as Whites to use stimulants nonmedically.
- Among stimulant users, Asian-Americans resemble Whites in prevalence of stimulant use disorder.

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Table 1

Selected characteristics of non-Hispanic Whites, non-Hispanic Asian-Americans, non-Hispanic Native Hawaiians/Pacific Islanders, and non-Hispanic mixed-race individuals aged 12–34: 2005–2012 (Unweighted N=229,705).

Weighted proportion, % 95% CI	**White N=203,759**		**Asian American N=12,335**		**Native Hawaiian/Pacific Islander N=1,729**		**Mixed-Race N=11,882**	
Age in years	%	95% CI	%	95% CI	%	95% CI	%	95% CI
12–17	**26.07**	**25.77–26.38**	**22.52**	**21.22–23.88**	22.68	19.79–25.86	**35.70**	**34.02–37.42**
18–25	**35.96**	**35.52–36.41**	**32.99**	**31.55–34.46**	38.37	34.57–42.32	34.52	32.79–36.28
26–34	**37.96**	**37.48–38.45**	**44.49**	**42.81–46.18**	38.95	34.77–43.31	**29.78**	**27.27–32.43**
Sex								
Male	**50.27**	**49.89–50.65**	49.13	47.80–50.46	50.40	45.33–55.47	**47.74**	**45.67–49.82**
Female	49.73	49.35–50.11	50.87	49.54–52.20	49.60	44.53–54.67	52.26	50.18–54.33
Household income								
<$50,000	**48.84**	**48.30–49.38**	48.61	46.28–50.94	**59.16**	**54.18–63.96**	**58.78**	**56.85–60.69**
$50,000–$74,999	**19.05**	**18.76–19.35**	17.62	16.37–18.94	19.02	15.73–22.82	17.22	15.59–18.98
$75,000+	**32.11**	**31.66–32.56**	33.77	31.66–35.96	**21.82**	**18.06–26.11**	**24.00**	**22.20–25.89**
Government assistance								
Yes	**14.90**	**14.58–15.21**	**9.93**	**8.93–11.03**	**22.14**	**18.61–26.11**	**26.65**	**24.70–28.69**
County type								
Large metro	**45.07**	**44.35–45.78**	**76.05**	**74.42–77.60**	**57.70**	**52.92–62.34**	**47.98**	**46.17–49.79**
Small metro	**47.58**	**46.78–48.37**	**23.30**	**21.75–24.92**	**41.28**	**36.77–45.95**	48.29	46.51–50.08
Nonmetro	**7.36**	**6.98–7.75**	**0.65**	**0.48–0.89**	**1.01**	**0.47–2.18**	**3.73**	**3.18–4.37**
Being arrested/booked								
Past-year	**4.49**	**4.34–4.64**	**1.31**	**1.09–1.57**	4.69	3.34–6.56	**5.96**	**5.05–7.03**
Major depressive episode								
Past-year	**8.85**	**8.65–9.05**	**5.22**	**4.62–5.88**	7.43	5.89–9.33	**11.50**	**10.12–13.03**
Tobacco use								
Past-year	**46.82**	**46.38–47.27**	**23.37**	**22.05–24.74**	**36.77**	**32.99–40.73**	**42.77**	**41.17–44.39**

Weighted proportion, % 95% CI	White N=203,759		Asian American N=12,335		Native Hawaiian/Pacific Islander N=1,729		Mixed-Race N=11,882	
Alcohol use								
Past-year	**70.85**	**70.51–71.18**	**53.61**	**51.84–55.38**	**62.42**	**57.43–67.16**	**64.72**	**62.91–66.49**
Marijuana use								
Past-year	**22.15**	**21.81–22.49**	**9.14**	**8.34–10.00**	18.20	15.43–21.34	**25.94**	**24.07–27.90**
Nonmedical use of pain relievers, sedatives, or tranquilizers								
Past-year	**11.72**	**11.48–11.97**	**3.99**	**3.47–4.59**	**6.62**	**5.06–8.61**	10.92	9.77–12.18
Stimulant use								
Past-year	**3.15**	**3.05–3.25**	**0.90**	**0.68–1.18**	2.72	1.19–6.09	2.82	2.26– 3.51
Lifetime	**11.68**	**11.41–11.97**	**3.83**	**3.26–4.49**	7.33	4.58–11.52	10.20	9.02–11.50
Stimulant use disorder								
Past-year	**0.40**	**0.36–0.45**	**0.12**	**0.07–0.21**	0.19	0.07–0.54	0.30	0.22–0.42

Note: CI: confidence interval. Boldface: The estimate differed from the estimate among Whites. Due to the sample size, results for Native Hawaiians/Pacific Islanders are considered preliminary.

Table 2

Stimulants used by lifetime nonmedical prescription stimulant users aged 12–34 years, stratified by race/ethnicity

Stimulants used	**Lifetime nonmedical prescription stimulant users aged 12–34 years**							
Unweighted N	**White N=19,231**		**Asian American N=443**		**Native Hawaiian/Pacific Islander N=103**		**Mixed-Race N=1,026**	
Weighted proportion, column %	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**
Methamphetamine, Desoxyn, or Methedrine	39.15	37.76–40.55	44.79	36.91–52.94	60.64	39.36–78.52	41.07	34.71–47.75
Amphetamines, Benzedrine®, Biphetamine®, Fastin®, or phentermine	**20.51**	**19.69–21.35**	**13.74**	**9.69–19.13**	12.27	6.78–21.20	24.90	19.29–31.50
Ritalin® or methylphenidate	**45.49**	**44.21–46.78**	**34.23**	**27.46–41.70**	**14.87**	**7.69–29.86**	39.23	33.24–45.55
Cylert®	0.75	0.60–0.94	0.38	0.09–1.56	0.65	0.15–2.81	1.16	0.45–2.96
Dexedrine®	**5.11**	**4.66–5.61**	3.17	1.68–5.92	**0.54**	**0.10–2.92**	6.87	3.25–13.95
Dextroamphetamine	**3.36**	**3.04–3.71**	2.70	1.37–5.26	**0.16**	**0.02–1.16**	4.02	2.36–6.76
Didrex®	0.56	0.40–0.77	0.31	0.08–1.10	1.19	0.20–6.81	0.68	0.19–2.42
Eskatrol®	0.31	0.22–0.43	0.44	0.11–1.77	0.16	0.02–1.16	0.18	0.04–0.72
Ionamin®	0.37	0.26–0.54	0.71	0.24–2.13	0.16	0.02–1.16	0.31	0.11–0.92
Mazanor®	0.17	0.13–0.24	0.43	0.08–2.31	0.16	0.02–1.16	0.72	0.17–2.90
Obedrin-LA®	0.14	0.08–0.23	0		0.16	0.02–1.16	0.01	0.00–0.08
Plegine®	0.22	0.14–0.35	0		0.16	0.02–1.16	0.70	0.16–2.89
Preludin®	0.46	0.35–0.60	0.09	0.02–0.40	0.16	0.02–1.16	0.14	0.05–0.38
Sanorex®	0.43	0.34–0.54	0.10	0.01–0.74	0.16	0.02–1.16	0.94	0.42–2.10
Tenuate®	0.33	0.21–0.52	0		0.16	0.02–1.16	0.22	0.04–1.16
Other stimulants	24.32	23.45–25.21	20.68	15.81–26.57	12.42	5.18–26.93	25.00	19.70–31.18
Number of prescription stimulant drug classes used, lifetime								
One	67.08	65.94–68.20	75.08	67.37–81.47	74.40	54.11–87.75	61.98	54.10–69.28
Two or more stimulant classes	32.92	31.80–34.06	24.92	18.53–32.63	25.60	12.25–45.89	38.02	30.72–45.90

Note: The analysis is based on lifetime stimulant users who reported the types of stimulants ever used.

Because of a small number, results for Native Hawaiians/Pacific Islanders are considered preliminary.

CI: confidence interval. Bold face: The estimate differed from the estimate among Whites. Due to the sample size, results for Native Hawaiians/Pacific Islanders are considered preliminary.

Table 3

Racial/ethnic differences in past-year nonmedical stimulant use and stimulant use disorder in the sample and past-year stimulant use disorder among past-year stimulant users (Unweighted N=229,705)

Adjusted logistic regression	**Nonmedical stimulant use[1]**		**Stimulant use disorder[1]**		**Stimulant use disorder among stimulant users[1]**	
Adjusted odds ratios	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Race/ethnicity (vs. White)						
Asian American	**0.73**	**0.55–0.97**	1.03	0.57–1.85	1.48	0.76–2.89
Native Hawaiian/Pacific Islander	1.33	0.53–3.35	0.81	0.28–2.37	0.73	0.22–2.45
Mixed-Race	0.85	0.65–1.12	**0.68**	**0.46–0.99**	0.83	0.50–1.38
Age (vs. 12–17 years)						
18–25	**1.14**	**1.05–1.23**	0.81	0.65–1.01	**0.74**	**0.57–0.94**
26–34	**0.81**	**0.71–0.92**	**0.68**	**0.50–0.93**	0.80	0.56–1.13
Sex (vs. female)						
Male	**0.78**	**0.72–0.84**	0.81	0.64–1.04	0.96	0.76–1.22
Household Income (vs. $75,000+)						
<$50,000	1.05	0.95–1.16	0.82	0.63–1.05	0.82	0.62–1.09
$50,000–$74,999	0.88	0.77–1.00	0.75	0.53–1.07	0.85	0.56–1.29
Government assistance (vs. no)						
Yes	1.01	0.91–1.12	1.15	0.91–1.45	1.17	0.90–1.51
County type (vs. large metro)						
Small metro	0.99	0.91–1.08	1.02	0.81–1.29	1.07	0.83–1.38
Nonmetro	1.02	0.87–1.19	0.95	0.67–1.34	0.97	0.69–1.38
Being arrested/booked (vs. no)						
Past-year	**1.63**	**1.43–1.85**	**2.31**	**1.83–2.92**	**1.65**	**1.31–2.08**
Major depressive episode (vs. no)						
Past-year	**1.59**	**1.46–1.73**	**3.30**	**2.57–4.25**	**2.53**	**1.93–3.32**
Tobacco use (vs. no)						

Adjusted logistic regression	Nonmedical stimulant use[1]		Stimulant use disorder[1]		Stimulant use disorder among stimulant users[1]	
Adjusted odds ratios	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Past-year use	**2.08**	**1.81–2.39**	**2.11**	**1.33–3.35**	1.14	0.71–1.83
Alcohol use (vs. no)						
Past-year use	**2.88**	**2.41–3.43**	**2.89**	**1.82–4.58**	1.06	0.66–1.70
Marijuana use (vs. no)						
Past-year use	**3.78**	**3.34–4.27**	**2.36**	**1.77–3.14**	0.82	0.61–1.10
Nonmedical use of pain relievers, sedatives, or tranquilizers (vs. no)						
Past-year use	**5.42**	**5.02–5.86**	**10.53**	**8.02–13.81**	**2.27**	**1.75–2.94**
Survey year (vs. 2005)						
2006	**1.21**	**1.04–1.41**	0.96	0.62–1.48	0.86	0.54–1.38
2007	0.97	0.82–1.14	0.85	0.57–1.29	0.94	0.59–1.51
2008	1.02	0.85–1.21	0.92	0.60–1.43	0.97	0.61–1.55
2009	0.90	0.77–1.05	0.88	0.58–1.32	1.04	0.65–1.65
2010	0.95	0.83–1.08	0.88	0.55–1.38	0.98	0.60–1.59
2011	0.88	0.75–1.04	0.85	0.58–1.25	1.00	0.65–1.54
2012	**1.17**	**1.01–1.35**	**1.46**	**1.08–1.96**	1.38	0.96–2.00

Note: AOR: adjusted odds ratio; CI: confidence interval.

[1]Each adjusted logistic regression included all variables listed in the first column. Due to the sample size, results for Native Hawaiians/Pacific Islanders are considered preliminary.

Table 4

Adjusted odds ratios of past-year nonmedical prescription stimulant use, stratified by race/ethnicity (Unweighted N=229,705)

Adjusted logistic regression[1]	**White N=203,759**		**Asian American N=12,335**		**Native Hawaiian/Pacific Islander N=1,729**		**Mixed-Race N=11,882**	
AOR 95% confidence interval	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Age (vs. 12–17 years)								
18–25	**1.13**	**1.04–1.22**	1.06	0.52–2.15	**11.47**	**2.33–56.32**	1.35	0.86–2.10
26–34	**0.80**	**0.71–0.91**	0.54	0.25–1.18	**13.58**	**2.45–75.39**	1.45	0.76–2.77
Sex (vs. female)								
Male	**0.80**	**0.73–0.86**	0.79	0.44–1.42	**0.18**	**0.04–0.86**	**0.44**	**0.30–0.65**
Household Income (vs. $75K+)								
<$50,000	1.03	0.94–1.14	1.67	0.81–3.46	3.84	0.35–42.20	1.11	0.69–1.79
$50,000–$74,999	**0.87**	**0.76–0.99**	0.76	0.37–1.55		------*2*	1.39	0.58–3.36
Government assistance (vs. no)								
Yes	1.02	0.92–1.14	0.91	0.42–1.95	0.46	0.12–1.71	1.09	0.56–2.14
County type (vs. large metro)								
Small metro	0.98	0.89–1.07	1.45	0.86–2.47	0.53	0.15–1.87	1.69	0.91–3.14
Nonmetro	1.01	0.86–1.19	2.30	0.60–8.78		------*3*	1.09	0.46–2.60
Being arrested/booked (vs. no)								
Past-year	**1.64**	**1.43–1.87**	1.72	0.61–4.86	0.66	0.10–4.42	1.57	0.94–2.62
Major depressive episode (vs. no)								
Past-year	**1.62**	**1.48–1.76**	1.70	0.84–3.43	1.16	0.27–4.93	1.02	0.63–1.67
Tobacco use (vs. no)								
Past-year use	**1.98**	**1.72–2.28**	**3.54**	**1.84–6.80**		------*4*	**2.98**	**1.43–6.20**
Alcohol use (vs. no)								
Past-year use	**3.20**	**2.65–3.85**	**1.78**	**1.03–3.08**	1.18	0.07–19.43	1.16	0.38–3.55

Adjusted logistic regression[1]	White N=203,759		Asian American N=12,335		Native Hawaiian/Pacific Islander N=1,729		Mixed-Race N=11,882	
AOR 95% confidence interval	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Marijuana use (vs. no)								
Past-year use	**3.84**	**3.39–4.35**	**2.78**	**1.52–5.07**	2.57	0.80–8.25	**4.07**	**2.28–7.28**
Nonmedical use of pain relievers, sedatives, or tranquilizers (vs. no)								
Past-year use	**5.43**	**5.03–5.87**	**6.82**	**3.51–13.27**	**7.24**	**2.17–24.09**	**4.43**	**2.80–7.01**
Survey year (vs. 2005)								
2006	1.17	1.00–1.37	2.29	0.84–6.22		------[4]	1.82	0.56–5.98
2007	0.94	0.79–1.12	1.70	0.52–5.57		-------	0.77	0.33–1.80
2008	1.02	0.85–1.22	1.14	0.36–3.59		-------	1.22	0.72–2.05
2009	0.89	0.76–1.04	1.44	0.47–4.38		-------	1.05	0.57–1.93
2010	0.96	0.83–1.11	0.98	0.39–2.45		-------	**0.44**	**0.24–0.82**
2011	0.89	0.75–1.05	0.56	0.19–1.67		-------	0.89	0.47–1.66
2012	**1.19**	**1.03–1.38**	1.34	0.47–3.77		-------	0.68	0.36–1.28

Note: AOR: adjusted odds ratio; CI: confidence interval. Because of a small number, results for Native Hawaiians/Pacific Islanders are considered preliminary.

[1] Each adjusted logistic regression included all variables listed in the first column.

[2] The two groups (family income <$75,000) were combined due to a small cell size.

[3] The two groups (small metro, nonmetro) were combined due to a small cell size.

[4] The variable was not included in the model due to a small cell size. Due to the sample size, results for Native Hawaiians/Pacific Islanders are considered preliminary.

Table 5

Adjusted odds ratios of past-year stimulant use disorder, stratified by race/ethnicity (Unweighted N=229,705)

Adjusted logistic regression[1]	**White N=203,759**		**Asian American N=12,335**		**Native Hawaiian/Pacific Islander N=1,729**		**Mixed-Race N=11,882**	
AOR and 95% confidence intervals	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Age (vs. 12–17 years)								
18–25	0.81	0.64–1.02	0.58	0.12–2.85	**1.30**	**1.19–1.43**	0.87	0.40–1.91
26–34	**0.70**	**0.51–0.95**	------[2]		------[2]		**0.22**	**0.05–0.95**
Sex (vs. female)								
Male	0.85	0.66–1.10	0.43	0.10–1.82	0.57	0.11–2.88	**0.22**	**0.11–0.44**
Household Income (vs. $75,000+)								
<$50,000	0.83	0.64–1.07	0.54	0.11–2.66		------[4]	0.53	0.16–1.74
$50,000–$74,999	0.73	0.51–1.05	1.82	0.43–7.62		------[4]	0.45	0.12–1.73
Government assistance (vs. no)								
Yes	1.14	0.91–1.44	1.80	0.46–7.09	5.71	0.32–101.69	0.74	0.25–2.26
County type (vs. large metro)								
Small metro	1.00	0.79–1.27	1.03	0.28–3.75	0.80	0.05–12.66	**3.46**	**1.05–11.44**
Nonmetro	0.96	0.67–1.36	------[3]		------[3]		0.78	0.14–4.41
Being arrested/booked (vs. no)								
Past-year	**2.24**	**1.76–2.86**	------[4]		------[4]		1.42	0.51–3.98
Major depressive episode (vs. no)								
Past-year	**3.39**	**2.62–4.39**	1.69	0.32–9.03	1.87	0.36–9.74	1.89	0.43–8.19
Tobacco use (vs. no)								
Past-year use	**1.99**	**1.23–3.19**	**14.01**	**2.04–96.16**	0.73	0.11–4.92	**4.95**	**2.00–12.23**
Alcohol use (vs. no)								
Past-year use	**3.44**	**2.20–5.37**	0.34	0.04–3.07		------[4]	2.70	0.81–8.99

Adjusted logistic regression[1]	White N=203,759		Asian American N=12,335		Native Hawaiian/Pacific Islander N=1,729		Mixed-Race N=11,882	
AOR and 95% confidence intervals	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**	**AOR**	**95% CI**
Marijuana use (vs. no)								
Past-year use	**2.26**	**1.68–3.05**	**6.68**	**2.51–17.78**	**9.27**	**3.07–27.98**	**8.14**	**2.66–24.95**
Nonmedical use of pain relievers, sedatives, tranquilizers (vs. no)								
Past-year use	**10.81**	**8.13–14.37**	**6.21**	**1.44–26.78**		-------	**6.82**	**1.39–33.57**
Survey year (vs. 2005)								
2006	0.91	0.58–1.43		------[4]		------[4]		------[4]
2007	0.81	0.54–1.22		-------		-------		-------
2008	0.93	0.59–1.45		-------		-------		-------
2009	0.84	0.56–1.27		-------		-------		-------
2010	0.87	0.54–1.40		-------		-------		-------
2011	0.88	0.59–1.30		-------		-------		-------
2012	**1.47**	**1.09–1.99**		-------		-------		-------

Note: AOR: adjusted odds ratio; CI: confidence interval. Because of a small number, results for Native Hawaiians/Pacific Islanders are considered preliminary.

[1] Each adjusted logistic regression included all variables listed in the first column.

[2] Two older age groups (18–25, 26–34) were combined for Asian-Americans due to a small cell size; age was included as a continuous variable for native Hawaiians/Pacific Islanders due to a small cell size.

[3] The two groups (small metro, nonmetro) were combined due to a small cell size.

[4] The variables were not included in the model due to a small cell size. Due to the sample size, results for Native Hawaiians/Pacific Islanders are considered preliminary.