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Suicidal ideation and suicide attempts in the United States: 1991-1992 and 2001-2002

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Abstract

The aim of the study is to compare the prevalence of suicidal ideation and attempts in the US in 1991-1992 and 2001-2002, and identify sociodemographic groups at increased risk for suicidal ideation and attempts. Data were drawn from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) 1991-1992 National Longitudinal Alcohol Epidemiologic Survey (NLAES, n=42,862) and the 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC, n=43,093), two nationally representative household surveys of non-institutionalized civilians aged 18 years and older, residing in the US. The lifetime prevalence of suicide attempts remained unchanged in the US between 1991-1992 and 2001-2002. Specific groups, namely 18- to 24-year-old White and Black women, 25- to 44-year-old White women, and 45-64-year-old Native American men were identified as being at increased risk for suicide attempts. Despite prevention and treatment efforts, the lifetime prevalence of suicide attempts remains unchanged. Given the morbidity and mortality associated with suicide attempts, urgent action is needed to decrease the prevalence of suicide attempts in the US.

Keywords

Attempted Suicide; Epidemiology; Prevalence; Health Surveys; Ethnic Groups; Age Groups

Location of work and address for reprints The work was conducted at the Department of Psychiatry at Columbia University, New York, NY, USA. Corresponding author: Bridget F. Grant, Ph.D., Ph.D. Laboratory of Epidemiology and Biometry, Room 3077 Division of Intramural Clinical and Biological Research National Institute on Alcohol Abuse and Alcoholism National Institutes of Health, M.S. 9304 5635 Fishers Lane Bethesda, MD 20892-9304 Phone: 301-443-7370 Fax: 301-443-1400 Email: bgrant@willco.niaaa.nih.gov. Dr. Blanco takes responsibility for the integrity of the data and the accuracy of the data analysis, and that all authors had full access to all the data in the study.

INTRODUCTION

Suicide is one of the leading causes of death¹ and one of the first causes of years of potential life lost worldwide.² In 2002, 877,000 lives were lost worldwide through suicide, representing over 20 million disability-adjusted life-years. Suicide prevention strategies are one of the highest public health priorities, but are hampered by the scarcity of data on suicidal ideation and suicide attempts.³ An important first step in a public health approach to suicide prevention is to identify groups that may be at increased risk for suicide attempts.

In the US, several sociodemographic groups have been identified that have high risk of attempting suicide. Studies have consistently documented that women⁴⁻⁷ and young adults^{4, 7-9} are at increased risk for non-fatal suicidal behavior. By contrast, much less is known about the relationship between ethnicity and suicidal ideation and attempts. Some studies have suggested that non-Hispanic Whites have significantly higher risk for suicide attempts than other ethnic groups,⁶ such as Blacks⁴ and Hispanics.¹⁰ However, two studies using national data failed to find any significant relationship between race/ethnicity and suicidal ideation and attempts.^{4,8} Another study, a nationally representative survey of the Black population,¹¹ suggested that rates of suicide attempts might be rising significantly among Blacks, particularly among the young.

The previous findings suggest that the relationship between age, sex and ethnicity and suicidal ideation and attempts is complex and may be changing over time. However, to date, it has not been possible to examine these relationships in detail due to limited sample sizes, focus on a single racial/ethnic group or differences in the age range of individuals of previous studies.^{4, 8-11} The goal of the present study was to fill this gap in knowledge. We used data from the 1991-1992 National Longitudinal Alcohol Epidemiologic Survey ([NLAES] n=42,862) and the 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions ([NESARC] n=43,093),^{12,13} the two largest epidemiological studies conducted to date in the US. Specifically we sought to: 1) Compare the prevalence of suicidal ideation and attempts in the US in 1991-1992 and 2001-2002; 2) Identify sociodemographic groups at increased risk for suicidal ideation and attempts.

MATERIALS AND METHODS

Samples

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) NLAES (n=42,862), conducted in 1991-1992, and its successor the NESARC (n=43,093), conducted in 2001-2002, are nationally representative samples of the adult population of the United States, as described previously.¹²⁻¹⁶ The purpose of both surveys was to provide nationally representative data on the distribution and correlates of alcohol use disorders and associated conditions. The sample design and field methods were nearly identical, as has been described previously.¹⁷ The target population for each survey was the U.S. general population, 18 years and older at the time of the survey. The NESARC and NLAES overall response rates were 81% and 90%, respectively. Fieldwork, including structured training and supervision for the in-person interviews for both surveys was carried out by the United States Bureau of the Census under NIAAA staff supervision. To assure interview quality, regional supervisors verified a random 10% of all respondents by telephone.

NLAES and NESARC respondents were informed in writing about the nature of the survey, the statistical uses of the survey data, the voluntary aspect of participation, and the federal laws that rigorously provided for the strict confidentiality of the identifiable survey information. Those respondents consenting to participate after receiving this information were interviewed. The research protocols, including informed consent procedures, received full ethical review

and approval from the US Census Bureau and US Office of Management and Budget. As noted previously,¹⁷ there were minor differences in the mode of administration of the surveys e.g., whether interviewers recorded the information on paper or directly into a computer. In both surveys, data were adjusted to account for oversampling and respondent and household response and to be representative of the US population on a range of sociodemographic characteristics at the time of the study.

Diagnostic Assessment of Suicidal behaviors

The NLAES and NESARC included exactly the same questions to assess lifetime suicidal behaviors. NLAES and NESARC respondents were asked the following questions: During that time when your mood was at its lowest/you enjoyed or cared the least about things, did you: 1) think about committing suicide?; 2) attempt suicide? We used the first question to assess a lifetime history of suicidal ideation, while the second was used to assess a lifetime history of suicide attempt. A relevant difference between the NLAES and the NESARC is that the questions related to suicidal ideation and suicide attempt were asked only to those who screened into the major depressive episode section in the NESARC survey, while all respondents in the NLAES were assessed for suicidal ideation and suicide attempt. To screen into the major depressive episode section, subjects had to answer yes to one of these two questions: 1) "In your entire life, have you ever had a time when you felt sad, blue, depressed, or down most of the time for at least 2 weeks?"; or 2) "In your entire life, have you ever had a time, lasting at least 2 weeks, when you didn't care about the things that you usually cared about, or when you didn't enjoy the things you usually enjoyed?". To ensure equality of measurement across the NLAES and NESARC, the present study focused on suicide-related behaviors of individuals who screened into the depression section of the AUDADIS-IV interview in either survey. In the NLAES survey 33.8% of respondents screened into the depression section of the interview; in the NESARC survey, 31.7% of respondents screened in.

Statistical analysis

We compared the rates of lifetime suicide attempts and suicidal ideation without attempts in the NLAES and the NESARC across all ethnic groups stratified by age and gender. Because the combined standard error of two means (or percents) is always equal or less than the sum of the standard errors of those two means, we consider two confidence intervals (CIs) that share a boundary or do not overlap to be significantly different from one another.¹⁸

To identify groups with particularly high prevalence of suicide attempts, we defined as "high-risk groups for suicide attempt" those groups whose lower bound of the 95% CI for the prevalence of suicide attempts was higher than the higher bound of the 95% CI in the full NESARC sample, i.e., those groups with prevalence of suicide attempts higher than 2.56% (we note that that is a conservative definition of high-risk group since the full sample, by including the high-risk group, had a higher prevalence estimate of suicide attempt than it would have if the high-risk group had been excluded).

By analogy, we defined "high-risk groups for suicidal ideation without attempts" as those groups whose lower bound of the 95% CI for the prevalence of suicidal ideation without attempts was higher than the higher bound of the 95% CI for the prevalence of suicidal ideation without attempts in the full NESARC sample, i.e., higher than 6.58%.

Logistic regression models were used to examine whether the rates of lifetime suicide attempts and suicidal ideation without attempts changed between surveys among respondents with a lifetime diagnosis of major depressive disorder (MDD), after adjusting for changes in the sociodemographic characteristics of the respondents. Adjusted odds ratios (AORs), controlled

for sex, race, age, income, education, urbanicity, region, and MDD, were considered significant when their confidence interval did not include 1.

RESULTS

Lifetime prevalence of suicide attempts

Lifetime suicide attempts were reported by 2.4% (95% CI 2.26-2.59) of the respondents in the 1991-1992 NLAES and also by 2.4% (95% CI 2.16-2.56) of the respondents in the 2001-2002 NESARC (Table 1).

There were no significant within-group differences over these 10 years in lifetime prevalence of suicide attempts for any of the demographic groups examined (Tables 2, 3 and 4).

However, the prevalence of lifetime suicide attempts varied significantly across sociodemographic characteristics in both surveys. In both the NLAES and the NESARC, risk of suicide attempt was significantly higher in women than in men. In both surveys, the age group with the highest rates of suicide attempts was the 18-24 age group. In the NLAES, individuals aged 18-24 years had significantly higher rates of suicide attempts than any other age group, while in the NESARC, individuals in the 18-24 age group only had significantly higher rates of suicide attempts than individuals aged 45 years and older.

In the NLAES, but not the NESARC, risk of suicide attempt was significantly higher in Whites than in Blacks. Native Americans were the racial group with the highest prevalence of attempted suicide in both surveys, although the differences across all racial groups only reached statistical significance in the NLAES (Table 2).

High-risk groups for suicide attempt

Among female respondents in the NLAES, the high-risk groups were 18- to 24- year-old White and Black women, and 25- to 44- year-old White women. In the NESARC, the high-risk groups were 18- to 24- and 25- to 44-year-old White women (Table 4).

Among male respondents in the NLAES, there were no high-risk groups. In the NESARC, 45-64 year-old Native American men were the only high-risk group (Table 4).

Lifetime prevalence of suicidal ideation without attempts

Over the decade between the two surveys, there was a significant decrease in lifetime suicide ideation (from 9.7% to 8.4%) and in lifetime suicide ideation without attempts (from 7.6% to 6.1%) in the full sample (Table 1). There were significant decreases in lifetime suicide ideation without attempts in males and females, in Whites, and in the 18-24 and 25-44 age groups (particularly among Whites). In the 18-24 age group, significance was lost after gender stratification (Tables 2, 3 and 5).

Rates of lifetime suicide ideation without attempts varied significantly across subgroups in both surveys. In the NLAES and the NESARC, risk of suicide ideation without attempts was significantly higher in women than in men. Native Americans were the race with the highest risk of suicide ideation without attempts, although the differences only reached statistical significance across all races in the NESARC. In the NLAES, risk of suicide ideation without attempts in Native Americans was only significantly higher than in Blacks and Asians. In the NLAES, the 18-24 and 25-44 age groups had significantly higher rates of suicide ideation without attempts than any other group. In the NESARC, rates of suicide ideation without attempts were not significantly different in the 18-24, 25-44, and 45-64 years groups. In both

surveys, rates of suicide ideation without attempts were significantly lower in the group of individuals aged 65 years and older than in any other group (Table 2).

High-risk groups for suicide ideation without attempts

Among female respondents in both surveys, the high-risk groups were 18- to 24-, 25- to 44-, and 45- to 64-year-old White women. In the NESARC, 25- to 44- and 45- to 64-year-old Native American women were also high-risk groups. Among men, the high risk groups in the NLAES were 18- to 24- and 25- to 44-year-old White men. In the NESARC, we did not find any high-risk groups (Table 5).

Logistic Regression Analyses (Tables 1-5)

The results of the regression analyses were generally consistent with those of the bivariate analyses; a few differences emerged that remained significant after age and gender stratification. In most cases, discrepancies stemmed from differences that did not reach statistical significance in the bivariate, but did in the adjusted analyses, e.g., a decrease in the prevalence of suicide attempts among 25-44-year-old White males (Table 4), and a decrease in the prevalence of suicidal ideation without attempts among 25- to 64-year-old Hispanic females and among 25-44-year-old Asian males (Table 5).

In very few cases, the adjusted analyses led to changes in the direction of the findings, which became significant, specifically, an increase in the prevalence of suicide attempts among 25-44-year-old Hispanic and Native American males, and among ≥ 65 -year-old White males (Table 4); and a decrease of the risk for suicidal ideation without attempts among ≥ 45 year-old White females (Table 5).

DISCUSSION

This is the largest epidemiological study, to date, of suicidal ideation and suicide attempts. There are two major findings: 1) The overall lifetime prevalence of suicide attempts remained unchanged in the US between 1991-1992 and 2001-2002, although there were changes in a few selected groups; 2) Specific groups, namely 18- to 24- year-old White and Black women, 25- to 44- year-old White women, and 45-64-year-old Native American men were identified as being at high risk for suicide attempts.

The findings of no overall changes in the lifetime prevalence of suicide attempts in the US between 1991-1992 to 2001-2002 are in accord with those of Kessler et al.⁸ comparing data on the 12-month prevalence of suicide attempts from the 1990-1992 National Comorbidity Survey and the 2001-2003 National Comorbidity Survey Replication, as well as with the findings of the Epidemiologic Catchment Area study conducted one decade earlier.⁶ Taken together, these findings document the difficulty of reducing rates of suicide attempt in the US over the last two decades, and are in stark contrast with the substantial progress in the treatment of depression. Several reasons may help explain this apparent discrepancy. First, although the rate of depression treatment has consistently increased over the last decade,^{8,19-21} only about half (51.6%) of individuals with a diagnosis of major depressive disorder (MDD) in the prior twelve months receive treatment within that year.²² In the NESARC survey, only 60% of those with MDD reported treatment specifically for the disorder.²³ Thus, many individuals with MDD remain untreated. Second, even when depressed individuals receive treatment, the quality of care received is often suboptimal.^{22,24,25} In particular, individuals with a history of suicide attempt often receive treatment that does not adhere to published guidelines.^{26,27} Third, even if individuals received adequate treatment in the prior year, they may not have received adequate treatment around the time of their suicide attempt. Prior research has repeatedly documented the failure of clinicians to institute appropriate treatments for

individuals who have attempted suicide.²⁷ Although on the positive side we note that the prevalence of suicidal ideation decreased significantly between 1991-1992 and 2001-2002, this decrease seems to have been offset by the increased prevalence of suicide attempt among those with suicidal ideation. Overall, the finding of identical overall prevalence of suicide attempts in 1991-1992 and 2001-2002 underscores the relevance of suicide attempts as a major public health problem, and stresses the need to develop more comprehensive policies and strategies to decrease the prevalence of suicide attempts.³

Furthermore, although we observed a significant decrease of the risk for suicide attempts among 25-44-year-old white males, there were significant increases in the prevalence of suicide attempts among 25-44-year-old Native American and Latino males, and ≥ 65 -year-old White males. Increases in risk for suicide attempts among 25-44-year-old Hispanic males may be related to difficulties with acculturation and loss of cultural-specific protective factors, as previously hypothesized,^{28,29,30} while the increase among 25-44-year-old Native American males provides additional support for the growing concerns regarding suicidal behaviors in this ethnic group.^{30,31,32} Both findings stress the importance of examining the needs of ethnic minority populations and of developing culturally-congruent interventions. The increased risk among ≥ 65 -year-old White males is consistent with prior reports of increased rates of suicide attempts and deliberate self harm in the older age groups, particularly among males, during the past two decades.^{33,34,35} This is a source of concern due to the high lethality of attempts in this age group.³⁶ On the other hand, the decrease in the risk for suicide attempts among 25-44-year-old White males is a surprising positive finding that warrants further investigation. Future studies should examine whether this decrease, at least in part, is the result of preventive strategies that could be applied to other groups with elevated suicide risk. Overall, our findings highlight the value of conducting stratified analyses that can identify changes over time in specific segments of the population.

Our stratified analyses also identified specific groups with high-risk for suicide attempts, suggesting some priorities for action. White women 18 to 44 years old had high rates of suicide attempt in both surveys, and Black women 18- to 24- years old (in the NLAES) were also high-risk groups for suicide attempts. Our results confirm previous reports of higher prevalence of suicide attempts among young women,^{4,7} but refine them by better delineating the ethno-racial groups at highest risk. It is possible that young women may have a general predisposition towards suicide attempts, but that this predisposition may be attenuated in Asians and Hispanics by their cultural norms and religious beliefs,³¹⁻³⁷ as well as by their overall lower rates of psychiatric disorders.^{15-32,37} Alternatively, it is possible that the biological (e.g., genetic), psychological (e.g., impulsivity) and environmental (e.g., stressors) characteristics that predispose to suicide attempts are more prevalent among White and Black women than among women of other ethno-racial groups.³⁷ Twin studies, which allow for a decomposition of the group variance between genetic and environmental factors, may help test these competing hypotheses.

Our results of high rates of suicide attempts among Native American men 45 to 64 years old (in the NESARC) are also consistent with the high prevalence of psychiatric disorders³⁸ and suicide attempts previously reported among Native Americans.²⁸ Although the reasons for the high rates of suicide attempts among Native American are unknown, they are likely related to the high prevalence of depression, substance use disorders, including alcohol, and posttraumatic stress disorder in this population.^{29-30,38} They underscore the importance of implementing prevention and treatment interventions to decrease the burden of mental disorders in this underserved population.

To date, most interventions have been aimed at decreasing the effects of suicide risk factors. Our findings, by identifying high-risk groups, confirm the importance to continue to do so, but

also highlight the need to identify protective factors. Examples of those factors include culture-based strengths like spiritually based-coping, extended social support networks, flexible family roles, strong family ties, and positive ethnic group identity, which have been cited as protective factors against suicide risk,^{39,40} as well as survival and coping beliefs, responsibility to family, and moral objections to suicide among specific ethno-racial groups.³¹ Interventions that take into account the local culture and particular needs of specific populations are likely to lead to significant decrease in suicide rates.⁴¹ The recently completed second wave of the NESARC, which includes extensive information on social support and cultural identification variables may be able to provide additional information to inform the development of ethnic-specific preventive interventions.

This study has the limitations common to most large-scale surveys. First, the assessment of suicidal ideation and attempts was based on self-report, and not confirmed by the use of medical records. Second, because NLAES and NESARC sampled only civilian households and group quarters populations 18 years and older, information was unavailable on groups such as adolescents or individuals in prison. Third, the questions related to suicidal ideation and suicide attempts were asked to all respondents in the NLAES, but only to those who screened into the depression section of the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (AUDADIS-IV).⁴² To adjust for this, we limited our NLAES analysis to those individuals who screened into the depression section of the AUDADIS. Furthermore, the number of individuals who did not screen into the depression section in the NLAES and reported a suicide attempt was very low (less than 0.1% of the NLAES sample), suggesting that restriction is unlikely to have changed our pattern of results. Finally, the lethality of the suicide attempt was not assessed, limiting our ability to assess its severity.

Despite these limitations, the NLAES and the NESARC constitute the two largest epidemiological surveys to date to provide information about suicidal ideation and suicide attempts. Our findings indicate that the prevalence of suicide attempts remained unchanged from 1991-1992 to 2001-2002, and identify specific high-risk groups and groups for which the prevalence may be increasing. Given the morbidity and mortality associated with them, urgent action is needed to decrease the prevalence of suicide attempts in the US.

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Table 1Lifetime rates of suicide attempts and suicidal ideation in the full NLAES^a and NESARC^b samples

	NLAES ^a (n=42,862)	NESARC ^b (n=43,093)	
	% (95% CI ^c)	% (95% CI ^c)	OR (95% CI ^d)
Total suicidal ideation	9.7 (9.32-10.01)	8.4 (7.82-8.93)	0.78 (0.72-0.85)
Suicidal ideation without suicide attempts	7.6 (7.26-7.87)	6.1 (5.73-6.58)	0.69 (0.63-0.75)
Suicide attempt among those with suicidal ideation	21.7 (20.31-23.23)	26.6 (24.91-28.27)	1.50 (1.32-1.71)
Suicide attempt	2.4 (2.26-2.59)	2.4 (2.16-2.56)	1.02 (0.90-1.15)

^a In the National Longitudinal Alcohol Epidemiologic Survey (NLAES): Among those that reported a suicide attempt (N=1,086), 150 individuals (13.8%) reported no suicidal ideation.

^b In the National Epidemiological Survey on Alcohol and Related Conditions (NESARC): Among those that reported a suicide attempt (N=1,074), 62 individuals (5.8%) reported no suicidal ideation.

^c CI = Confidence interval.

^d Odds Ratio controlled for sex, race, age, income, education, urbanicity, region, and major depression

Table 2
Life time rates of suicide attempt and suicidal ideation without attempts in the NLAES^a and NESARC^b by sex, age and race

Sex	Suicide attempt			Suicidal ideation without attempts		
	NLAES ^a (n=42,862) % (95% CI) ^c	NESARC ^b (n=43,093) % (95% CI) ^c	OR (95% CI) ^d	NLAES ^a (n=42,862) % (95% CI) ^c	NESARC ^b (n=43,093) % (95% CI) ^c	OR (95% CI) ^d
Male	1.9 (1.70-2.10)	1.6 (1.40-1.80)	0.96 (0.78-1.19)	6.9 (6.51-7.29)	5.1 (4.71-5.49)	0.73 (0.64-0.82)
Female	2.9 (2.70-3.10)	3.0 (2.80-3.20)	0.99 (0.86-1.14)	8.2 (7.81-8.59)	7.1 (6.51-7.69)	0.66 (0.59-0.73)
Age						
18-24 years	3.9 (3.31-4.49)	3.6 (3.01-4.19)	0.90 (0.70-1.16)	9.5 (8.72-10.28)	7.2 (6.22-8.18)	0.80 (0.67-0.97)
25-44 years	2.8 (2.60-3.00)	2.7 (2.31-3.09)	0.94 (0.79-1.11)	9.3 (8.91-9.69)	6.2 (5.61-6.79)	0.59 (0.52-0.66)
45-64 years	2.1 (1.71-2.49)	2.3 (1.91-2.69)	1.11 (0.88-1.40)	6.5 (5.91-7.09)	7.3 (6.71-7.89)	0.79 (0.68-0.92)
≥65 years	0.5 (0.30-0.70)	0.7 (0.50-0.90)	1.30 (0.78-2.18)	2.8 (2.41-3.19)	3.1 (2.71-3.49)	0.58 (0.44-0.77)
Race/Ethnicity						
White	2.4 (2.20-2.60)	2.4 (2.20-2.60)	0.92 (0.80-1.05)	8.4 (8.01-8.79)	6.9 (6.51-7.29)	0.67 (0.61-0.73)
Black	1.8 (1.41-2.19)	2.1 (1.71-2.49)	0.76 (0.56-1.03)	4.4 (3.81-4.99)	4.6 (3.82-5.38)	0.97 (0.76-1.25)
Hispanic or Latino	2.9 (2.12-3.68)	2.1 (1.51-2.69)	1.41 (0.98-2.03)	4.9 (3.92-5.88)	3.6 (3.01-4.19)	0.62 (0.46-0.84)
Native Americans ^e	7.9 (4.96-10.84)	4.1 (2.53-5.67)	2.02 (1.03-3.98)	9.0 (5.86-12.14)	10.5 (8.15-12.85)	0.92 (0.49-1.73)
Asian ^f	2.3 (1.12-3.48)	2.0 (1.22-2.78)	1.53 (0.80-2.93)	4.1 (2.73-5.47)	2.9 (1.92-3.88)	0.58 (0.33-1.03)

^aNLAES = National Longitudinal Alcohol Epidemiologic Survey

^bNESARC = National Epidemiological Survey on Alcohol and Related Conditions

^cCI = Confidence interval.

^dOdds Ratio controlled for sex, race, age, income, education, urbanicity, region, and major depression

^eIncludes American Indians and Alaska Natives.

^fIncludes Native Hawaiians and other Pacific Islanders.

Table 3
Lifetime rates of suicide attempts and suicidal ideation without attempts by age and race in the NLAES^a and NESARC^b

Age	Race / Ethnicity	Suicide attempts			Suicidal ideation without attempts		
		NLAES ^a (n=42,862) % (95% CI) ^c	NESARC ^b (n=43,093) % (95% CI) ^c	OR (95% CI) ^f	NLAES ^a (n=42,862) % (95% CI) ^c	NESARC ^b (n=43,093) % (95% CI) ^c	OR (95% CI) ^f
18-24 years	White	4.1 (3.32-4.88)	3.9 (3.12-4.68)	0.87 (0.64-1.18)	10.8 (9.82-11.78)	8.1 (6.92-9.28)	0.76 (0.61-0.94)
	Black	2.9 (1.92-3.88)	2.8 (1.62-3.98)	0.92 (0.50-1.70)	5.4 (3.83-6.97)	7.0 (4.84-9.16)	1.47 (0.88-2.48)
25-44 years	Hispanic or Latino	3.4 (1.83-4.97)	3.4 (1.83-4.97)	0.71 (0.35-1.44)	7.6 (5.05-10.15)	4.6 (3.03-6.17)	0.70 (0.39-1.28)
	Native Americans ^d	13.3 (3.89-22.71)	6.1 (1.00-11.20)	3.36 (0.89-12.65)	11.7 (4.06-19.34)	9.7 (2.06-17.34)	0.62 (0.17-2.26)
45-64 years	Asian ^e	1.4 (0.00-3.16)	1.9 (0.14-3.66)	0.51 (0.09-2.76)	4.8 (1.08-8.52)	5.3 (1.77-8.83)	1.15 (0.31-4.32)
	White	2.9 (2.51-3.29)	3.1 (2.71-3.49)	0.81 (0.67-0.97)	10.7 (10.11-11.29)	7.2 (6.42-7.98)	0.56 (0.49-0.64)
≥65 years	Black	2.0 (1.41-2.59)	2.1 (1.51-2.69)	0.85 (0.55-1.33)	5.6 (4.42-6.78)	4.5 (3.52-5.48)	0.70 (0.50-0.98)
	Hispanic or Latino	2.9 (1.92-3.88)	1.6 (1.01-2.19)	1.99 (1.23-3.22)	4.6 (3.42-5.78)	3.4 (2.62-4.18)	0.64 (0.43-0.96)
Total	Native Americans ^d	8.0 (2.90-13.10)	3.1 (1.14-5.06)	3.53 (1.03-12.07)	8.0 (2.90-13.10)	11.8 (7.68-15.92)	1.16 (0.46-2.95)
	Asian ^e	3.2 (1.24-5.16)	1.5 (0.72-2.28)	2.17 (0.97-4.85)	4.9 (2.94-6.86)	2.7 (1.13-4.27)	0.38 (0.18-0.78)
18-24 years	White	2.1 (1.71-2.49)	2.1 (1.71-2.49)	1.18 (0.91-1.55)	7.3 (6.71-7.89)	8.2 (7.42-8.98)	0.80 (0.68-0.95)
	Black	1.3 (0.52-2.08)	2.2 (1.42-2.98)	0.53 (0.29-0.97)	3.1 (1.92-4.28)	4.5 (3.32-5.68)	1.18 (0.71-1.97)
25-44 years	Hispanic or Latino	2.9 (1.14-4.66)	2.5 (1.52-3.48)	1.52 (0.70-3.30)	4.2 (2.63-5.77)	3.7 (2.72-4.68)	0.45 (0.26-0.80)
	Native Americans ^d	3.4 (0.00-7.71)	5.7 (2.37-9.03)	0.47 (0.09-2.55)	9.4 (0.38-18.42)	11.3 (7.38-15.22)	0.54 (0.13-2.23)
45-64 years	Asian ^e	1.7 (0.13-3.27)	3.0 (0.84-5.16)	1.73 (0.48-6.27)	2.7 (0.00-5.84)	2.1 (0.53-3.67)	0.51 (0.13-2.03)
	White	0.5 (0.30-0.70)	0.6 (0.40-0.80)	1.32 (0.74-2.36)	3.1 (2.51-3.69)	3.3 (2.71-3.89)	0.55 (0.41-0.74)
≥65 years	Black	0.2 (0.00-0.40)	0.4 (0.20-0.60)	0.63 (0.16-2.46)	0.5 (0.11-0.89)	1.8 (0.82-2.78)	1.02 (0.37-2.85)
	Hispanic or Latino	1.0 (0.00-2.18)	1.1 (0.51-1.69)	1.11 (0.24-5.07)	0.9 (0.00-1.88)	2.5 (0.93-4.07)	1.34 (0.29-6.18)
Total	Native Americans ^d	0.0 (0.00-0.00)	1.2 (0.00-2.96)	--	4.5 (0.00-11.36)	4.9 (0.98-8.82)	1.05 (0.13-8.66)
	Asian ^e	0.0 (0.00-0.00)	1.9 (0.00-4.64)	--	0.0 (0.00-0.00)	1.9 (0.00-4.25)	--
18-24 years	White	2.4 (2.20-2.60)	2.4 (2.20-2.60)	0.92 (0.80-1.05)	8.4 (8.01-8.79)	6.9 (6.51-7.29)	0.67 (0.61-0.73)
	Black	1.8 (1.41-2.19)	2.1 (1.71-2.49)	0.76 (0.56-1.03)	4.4 (3.81-4.99)	4.6 (3.82-5.38)	0.97 (0.76-1.25)
25-44 years	Hispanic or Latino	2.9 (2.12-3.68)	2.1 (1.51-2.69)	1.41 (0.98-2.03)	4.9 (3.92-5.88)	3.6 (3.01-4.19)	0.62 (0.46-0.84)
	Native Americans ^d	7.9 (4.96-10.84)	4.0 (2.43-5.57)	2.02 (1.03-3.98)	9.0 (5.86-12.14)	10.5 (8.15-12.85)	0.92 (0.49-1.73)

	Suicide attempts		Suicidal ideation without attempts	
	NLAES ^a (n=42,862)	NESARC ^b (n=43,093)	NLAES ^a (n=42,862)	NESARC ^b (n=43,093)
Asian ^e	2.3 (1.12-3.48)	2.0 (1.22-2.78)	4.1 (2.73-5.47)	2.9 (1.92-3.88)
		1.53 (0.80-2.93)		0.58 (0.33-1.03)

^aNLAES = National Longitudinal Alcohol Epidemiologic Survey

^bNESARC = National Epidemiological Survey on Alcohol and Related Conditions

^cCI = Confidence interval.

^dIncludes American Indians and Alaska Natives.

^eIncludes Native Hawaiians and other Pacific Islanders.

^fOdds Ratio controlled for sex, race, age, income, education, urbanicity, region, and major depression

Table 4
Lifetime rates of suicide attempts by age and race in the NLAES^a and NESARC^b stratified by gender

Age	Race/Ethnicity	Females			Males		
		NLAES ^a (n=17,690) % (95% CI) ^c	NESARC ^b (n=24,575) % (95% CI) ^c	OR (95% CI) ^f	NLAES ^a (n=24,831) % (95% CI) ^c	NESARC ^b (n=18,518) % (95% CI) ^c	OR (95% CI) ^f
18-24 years	White	5.1 (3.73-6.47)	5.1 (3.73-6.47)	0.87 (0.57-1.31)	3.2 (2.42-3.98)	2.7 (1.72-3.68)	0.87 (0.53-1.43)
	Black	4.3 (2.73-5.87)	3.7 (1.94-5.46)	1.06 (0.52-2.19)	1.3 (0.00-2.67)	1.7 (0.13-3.27)	0.79 (0.20-3.03)
25-44 years	Hispanic or Latino	3.6 (1.44-5.76)	4.6 (2.44-6.76)	0.68 (0.30-1.54)	3.2 (0.65-5.75)	2.4 (0.44-4.36)	0.54 (0.14-2.08)
	Native Americans ^d	12.1 (0.00-25.62)	4.5 (0.00-9.79)	4.21 (0.86-20.59)	14.4 (0.48-28.32)	7.9 (0.00-16.52)	2.79 (0.10-79.97)
45-64 years	Asian ^e	2.6 (0.00-6.52)	3.2 (0.00-6.53)	0.11 (0.00-4.26)	0.4 (0.00-1.18)	0.5 (0.00-1.48)	7.32 (0.04-1364.83)
	White	3.6 (3.21-3.99)	4.0 (3.41-4.59)	0.87 (0.69-1.09)	2.3 (1.91-2.69)	2.3 (1.71-2.89)	0.70 (0.50-0.99)
≥65 years	Black	2.4 (1.62-3.18)	2.5 (1.72-3.28)	0.91 (0.54-1.52)	1.5 (0.72-2.28)	1.6 (0.82-2.38)	0.81 (0.33-1.96)
	Hispanic or Latino	3.4 (2.03-4.77)	2.5 (1.52-3.48)	1.73 (0.96-3.07)	2.4 (0.83-3.97)	0.8 (0.21-1.39)	2.60 (1.02-6.66)
Total	Native Americans ^d	6.6 (0.00-13.26)	3.9 (0.96-6.84)	1.73 (0.40-7.52)	9.4 (1.56-17.24)	2.1 (0.00-4.26)	13.11 (2.13-80.81)
	Asian ^e	3.7 (1.35-6.05)	2.1 (0.92-3.28)	2.07 (0.77-5.57)	2.7 (0.00-5.44)	0.9 (0.12-1.68)	1.77 (0.40-7.90)
18-24 years	White	2.5 (1.91-3.09)	2.8 (2.21-3.39)	1.21 (0.88-1.66)	1.7 (1.31-2.09)	1.5 (1.11-1.89)	1.25 (0.78-1.98)
	Black	2.0 (0.82-3.18)	3.1 (1.92-4.28)	0.58 (0.30-1.16)	0.5 (0.00-1.09)	1.0 (0.41-1.59)	0.40 (0.09-1.69)
25-44 years	Hispanic or Latino	3.7 (0.76-6.64)	2.9 (1.53-4.27)	1.76 (0.67-4.61)	2.1 (0.14-4.06)	2.0 (1.02-2.98)	1.10 (0.36-3.33)
	Native Americans ^d	2.1 (0.00-6.02)	3.4 (0.00-7.71)	0.15 (0.01-2.38)	5.4 (0.00-14.61)	8.3 (3.40-13.20)	2.79 (0.20-39.54)
45-64 years	Asian ^e	1.9 (0.00-4.06)	1.9 (0.14-3.66)	1.23 (0.20-7.75)	1.5 (0.00-3.46)	3.9 (0.37-7.43)	2.86 (0.34-24.27)
	White	0.6 (0.40-0.80)	0.9 (0.51-1.29)	1.02 (0.55-1.90)	0.3 (0.00-0.69)	0.2 (0.00-0.40)	4.08 (1.04-15.94)
≥65 years	Black	0.3 (0.10-0.50)	0.5 (0.11-0.89)	1.05 (0.27-4.13)	0.0 (0.00-0.00)	0.3 (0.00-0.69)	--
	Hispanic or Latino	0.7 (0.00-1.68)	1.5 (0.52-2.48)	0.64 (0.11-3.73)	1.4 (0.00-4.14)	0.5 (0.00-1.09)	3.08 (0.31-30.40)
Total	Native Americans ^d	0.0 (0.00-0.00)	2.0 (0.00-4.74)	--	0.0 (0.00-0.00)	0.0 (0.00-0.00)	--
	Asian ^e	0.0 (0.00-0.00)	3.5 (0.00-8.20)	--	0.0 (0.00-0.00)	0.0 (0.00-0.00)	--
18-24 years	White	2.9 (2.51-3.29)	3.1 (2.71-3.49)	0.95 (0.80-1.12)	1.9 (1.70-2.10)	1.7 (1.50-1.90)	0.87 (0.69-1.11)
	Black	2.3 (1.71-2.89)	2.6 (2.01-3.19)	0.82 (0.58-1.17)	1.1 (0.51-1.69)	1.3 (0.91-1.69)	0.64 (0.33-1.24)
25-44 years	Hispanic or Latino	3.3 (2.32-4.28)	2.9 (2.12-3.68)	1.32 (0.86-2.02)	2.4 (1.22-3.58)	1.4 (0.81-1.99)	1.55 (0.79-3.03)
	Native Americans ^d	7.1 (2.40-11.80)	5.0 (3.04-6.96)	1.21 (0.52-2.77)	8.9 (3.61-14.19)	3.0 (0.84-5.16)	4.31 (1.31-14.16)

	Females		Males	
	NLAES ^a (n=17,690)	NESARC ^b (n=24,575)	NLAES ^a (n=24,831)	NESARC ^b (n=18,518)
Asian ^e	2.4 (1.03-3.77)	3.0 (1.43-4.57)	1.27 (0.58-2.76)	1.0 (0.41-1.59)
			2.2 (0.63-3.77)	2.16 (0.76-6.18)

^aNLAES = National Longitudinal Alcohol Epidemiologic Survey.

^bNESARC = National Epidemiological Survey on Alcohol and Related Conditions.

^cCI = Confidence interval.

^dIncludes American Indians and Alaska Natives.

^eIncludes Native Hawaiians and other Pacific Islanders.

^fOdds Ratio controlled for sex, race, age, income, education, urbanicity, region, and major depression

Table 5
Lifetime rates of suicidal ideation without attempts by age and race in the NLAES^a and NESARC^b stratified by gender

Age	Race/Ethnicity	Females			Males		
		NLAES ^a (n=17,690) % (95% CI) ^c	NESARC ^b (n=24,575) % (95% CI) ^c	OR (95% CI) ^f	NLAES ^a (n=24,831) % (95% CI) ^c	NESARC ^b (n=18,518) % (95% CI) ^c	OR (95% CI) ^f
18-24 years	White	11.2 (9.83-12.57)	8.9 (7.14-10.66)	0.76 (0.57-1.01)	10.4 (8.83-11.97)	7.3 (5.73-8.87)	0.78 (0.56-1.07)
	Black	6.4 (4.05-8.75)	7.8 (4.66-10.94)	1.26 (0.66-2.43)	4.2 (2.04-6.36)	6.0 (3.06-8.94)	2.02 (0.80-5.10)
25-44 years	Hispanic or Latino	6.4 (3.46-9.34)	5.8 (3.45-8.15)	1.15 (0.58-2.29)	8.8 (4.29-13.31)	3.6 (1.44-5.76)	0.45 (0.17-1.16)
	Native Americans ^d	19.4 (5.09-33.71)	10.2 (0.20-20.20)	0.30 (0.04-2.21)	3.1 (0.00-9.18)	9.1 (0.00-21.06)	6.14 (0.39-96.13)
45-64 years	Asian ^e	4.9 (0.00-10.39)	4.0 (0.00-8.12)	0.36 (0.03-3.94)	4.7 (0.19-9.21)	6.6 (0.92-12.28)	1.54 (0.22-11.09)
	White	11.4 (10.62-12.18)	8.7 (7.72-9.68)	0.57 (0.49-0.67)	10.0 (9.22-10.78)	5.6 (4.82-6.38)	0.54 (0.44-0.67)
≥65 years	Black	6.2 (4.83-7.57)	5.1 (3.53-6.67)	0.73 (0.47-1.13)	5.0 (3.43-6.57)	3.7 (2.52-4.88)	0.66 (0.39-1.12)
	Hispanic or Latino	6.2 (4.44-7.96)	3.8 (2.62-4.98)	0.47 (0.30-0.76)	3.2 (1.63-4.77)	3.0 (2.02-3.98)	1.04 (0.50-2.17)
Total	Native Americans ^d	12.6 (5.74-19.46)	14.1 (7.44-20.76)	1.05 (0.31-3.51)	2.7 (0.00-6.03)	9.1 (3.61-14.59)	3.99 (0.31-51.24)
	Asian ^e	5.0 (2.45-7.55)	3.4 (0.66-6.14)	0.44 (0.17-1.17)	4.9 (1.96-7.84)	2.1 (0.53-3.67)	0.28 (0.09-0.87)
Total	White	8.8 (7.82-9.78)	9.6 (8.42-10.78)	0.69 (0.56-0.85)	5.6 (4.82-6.38)	6.7 (5.72-7.68)	0.98 (0.76-1.25)
	Black	3.8 (2.04-5.56)	6.0 (4.43-7.57)	1.30 (0.73-2.32)	2.4 (1.03-3.77)	2.5 (1.32-3.68)	1.32 (0.47-3.74)
Total	Hispanic or Latino	4.5 (2.54-6.46)	4.4 (3.03-5.77)	0.43 (0.20-0.89)	4.0 (1.26-6.74)	2.9 (1.72-4.08)	0.47 (0.20-1.07)
	Native Americans ^d	15.4 (1.29-29.51)	13.0 (6.92-19.08)	0.38 (0.08-1.87)	0.0 (0.00-0.00)	9.8 (4.70-14.90)	--
Total	Asian ^e	1.9 (0.00-3.86)	1.6 (0.03-3.17)	0.91 (0.17-4.69)	3.5 (0.00-8.99)	2.7 (0.35-5.05)	0.31 (0.03-3.79)
	White	3.4 (2.81-3.99)	3.7 (2.92-4.48)	0.52 (0.37-0.74)	2.8 (2.02-3.58)	2.7 (1.92-3.48)	0.63 (0.37-1.06)
Total	Black	0.5 (0.11-0.89)	1.9 (0.72-3.08)	1.12 (0.29-4.36)	0.6 (0.01-1.19)	1.6 (0.23-2.97)	0.52 (0.11-2.48)
	Hispanic or Latino	1.6 (0.03-3.17)	3.4 (1.05-5.75)	0.80 (0.14-4.44)	0.0 (0.00-0.00)	1.2 (0.00-2.77)	--
Total	Native Americans ^d	7.3 (0.00-18.28)	7.1 (1.02-13.18)	0.78 (0.11-5.62)	0.0 (0.00-0.00)	1.6 (0.00-4.74)	--
	Asian ^e	0.0 (0.00-0.00)	3.5 (0.00-7.81)	--	0.0 (0.00-0.00)	0.0 (0.00-0.00)	--
Total	White	9.0 (8.61-9.39)	8.0 (7.41-8.59)	0.64 (0.57-0.72)	7.8 (7.21-8.39)	5.7 (5.11-6.29)	0.71 (0.62-0.81)
	Black	5.0 (4.02-5.98)	5.4 (4.42-6.38)	0.97 (0.71-1.34)	3.8 (2.82-4.78)	3.5 (2.72-4.28)	0.99 (0.65-1.50)
Total	Hispanic or Latino	5.4 (4.22-6.58)	4.3 (3.32-5.28)	0.58 (0.41-0.81)	4.4 (3.03-5.77)	3.0 (2.22-3.78)	0.68 (0.40-1.14)
	Native Americans ^d	14.6 (8.92-20.28)	12.2 (8.67-15.73)	0.61 (0.30-1.27)	2.2 (0.00-4.55)	8.5 (5.36-11.64)	5.15 (1.00-26.43)

	Females		Males	
	NLAES ^a (n=17,690)	NESARC ^b (n=24,575)	NLAES ^a (n=24,831)	NESARC ^b (n=18,518)
Asian ^e	4.1 (2.34-5.86)	3.0 (1.63-4.37)	4.1 (1.94-6.26)	2.8 (1.23-4.37)
		0.51 (0.25-1.04)		0.59 (0.24-1.43)

^aNLAES = National Longitudinal Alcohol Epidemiologic Survey

^bNESARC = National Epidemiological Survey on Alcohol and Related Conditions

^cCI = Confidence interval.

^dIncludes American Indians and Alaska Natives.

^eIncludes Native Hawaiians and other Pacific Islanders.

^fOdds Ratio controlled for sex, race, age, income, education, urbanicity, region, and major depression