

Major Depression, Alcohol and Drug Use Disorders Do Not Appear to Account for the Sexually Transmitted Disease and HIV Epidemics in the Southern United States

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Objective: Sexually transmitted disease (STD) and HIV infection are occurring at epidemic rates in the southern region of the United States. Depression and substance use disorders are associated with sexual risk behavior, so we investigated whether regionwide societal rates of major depression or substance use disorders could explain the higher southern rates.

Methods: Data came from two surveys, the National Longitudinal Alcohol Epidemiologic Survey (NLAES; 1991–1992, N = 42,862) and the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC; 2001–2002, N = 43,093). Outcome variables included Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) major depressive disorder and substance use disorders (abuse/dependence), binge drinking, and lifetime drinker versus abstainer. Southern region was contrasted to all others. Because the STD/HIV epidemics affect blacks, especially young black women (18–44 years) disproportionately, we examined the relationships among region, depression, and substances in these subpopulations separately.

Results: DSM-IV alcohol and cannabis abuse or dependence and being a lifetime drinker were significantly lower in the south than elsewhere in both the NLAES and NESARC with similar trends for DSM-IV cocaine abuse/dependence.

Conclusions: Counter to hypotheses, higher societal rates of depression or substance use disorders cannot account for the epidemic of STDs and HIV infection in the southern United States. Further studies are needed to determine if alcohol and drug disorders, being more deviant when they occur in the south, are more strongly associated with sexual risk behavior there than elsewhere.

FOR MANY YEARS, SEXUALLY TRANSMITTED diseases (STDs) have had a disparate impact across the country, disproportionately affecting the southern region of the United States. The south has consistently had higher reported rates of chlamydia, gonorrhea, and primary syphilis compared with other regions of the country.¹ Both in the south and elsewhere, blacks are disproportionately affected.¹

More recently, a growing HIV epidemic has been reported. At the end of 2001, the south had the greatest number of people estimated to be living with AIDS in the nation.² Although the south represents a little more than one third of the U.S. population (36%),³ it accounted for 46% of the estimated new AIDS cases and 40% of the people estimated to be living with AIDS in 2001.²

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Nationally, the number of new AIDS cases remained relatively stable between 2000 and 2001 (increasing by 1%), whereas the estimated incidence in the south increased by 9%.⁴ In 2003, fully 77.5% of HIV cases were in the south (Census regions 5, 6, and 7) (McDavid, et al.).⁵ Like with other STDs, HIV disproportionately affects blacks, and the epidemic is growing particularly fast among young women.²

It has long been argued that the interactions between HIV/AIDS and other STDs are likely bidirectional, with each altering the transmission and symptomology of the other.^{5a,6} Fleming and Wasserheit⁷ reviewed the role of STDs in the transmission of HIV infection, providing evidence that STDs facilitate HIV transmission through direct, biologic mechanisms. It is likely, therefore, that HIV transmission in the south has been greatly facilitated by the presence of other STDs. However, multiple psychosocial factors are likely influential as well. Accurate assessment of such psychosocial factors becomes increasingly important as we endeavor to design appropriate and effective behavioral interventions. In this article, using two large national probability samples, we explore the possible contributions of major depression and substance use disorders to the STD/HIV epidemics in the south. First, we review the evidence for associations between these disorders and HIV risk; then, we assess the degree to which these factors are elevated in the southern region of the United States. Evidence of higher rates of depression or substance use would lend credence to their contribution to the elevated STD/HIV epidemics in this region.

Depression has been identified as a psychologic condition that is associated with, and may directly influence, HIV risk behavior. Symptoms of depression have been associated with more frequent sexual intercourse, unprotected intercourse, multiple sexual partners, trading sex for money or drugs, and contracting STDs.^{8–11} Independent associations between depression and HIV risk behaviors have persisted even after controlling for the effects of gender¹² and substance use,^{12,13} although the association has not always been found, possibly as a result of methodological shortcomings.^{14–17} In a recent meta-analytic review, Crepaz and Marks¹⁸ proposed three mechanisms through which negative affective states (i.e., depression) might promote sexual behaviors that place individuals at risk for contracting or transmitting HIV or other STDs. First, self-regulatory processes, which include one's ability to monitor and alter one's thoughts and actions, may be disrupted during negative affective states.¹⁹ Second,

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the aversive nature of depression may motivate individuals to engage in behaviors that offer some promise of relief from those states,²⁰ and finally, maladaptive thoughts often associated with depression (e.g., hopelessness, poor self-image)²¹ may reduce an individual's motivation to care for themselves, placing them at risk for engaging in behaviors that might compromise personal welfare. When studying depression, a persistent and clinically meaningful level is important to establish. Major depressive disorder as defined by the Diagnostic and Statistical Manual²² provides a well-defined condition in this regard.

A number of studies have also examined substance use and sexual behavior as influential factors in the risk of HIV infection. Individuals who use methamphetamines,^{23,24} cocaine,²⁵ and marijuana,²⁶ for example, are more likely than persons who do not use these drugs to participate in high-risk sexual activity such as unprotected intercourse with multiple partners. The association between substance use and HIV risk has emerged in a variety of populations, including men who have sex with men, adolescents, heterosexual men and women, and psychiatric patients.^{27–31} Studies indicate that individuals who use alcohol also engage in such high-risk sexual behaviors as unprotected sexual intercourse or multiple sexual partners.^{32,33} Some studies have shown that binge drinking, in particular, is related to elevated risk.^{33,34} Other studies have demonstrated that alcohol intoxication is associated with more favorable attitudes and intentions toward sexual intercourse without a condom,³⁵ an increased willingness among females to rate a risky (promiscuous) male as having potential for a sexual relationship,³⁶ and a lower level of skill for negotiation of condom use.³⁷

Although methodological characteristics of these studies make causal inference difficult, recent experimental designs suggest numerous possible mechanisms linking alcohol and sexual risk behavior.³⁸ Earlier studies suggested that alcohol acts as a disinhibitor for a range of behaviors, including aggression, violence, and rape.^{39,40} Based on this postulated mechanism, drinking alcohol may cause disinhibition of unprotected sexual intercourse, which could result in an increased risk for HIV or other STD transmission. Alcohol use may also result in impaired cognitive processing, e.g., decision-making,^{32,40} and more importantly, an increased saliency of the immediate reinforcing benefits of risky sex and diminished appreciation for potential negative consequences of such behavior (alcohol myopia theory).^{41–43} Alcohol use may also be associated with an increased likelihood that the substance user may be in situations in which sexual victimization is more likely.⁴⁴ Although associations between drug use and sexual risk may also be the result of the operation of third-party variables such as personality factors, the fact that substance abuse treatment reduces sexual risk suggests a causal connection.⁴⁵ Again, like in the case of depression, studying alcohol and drug use with persistence and a meaningful level of clinical severity is warranted. Alcohol and drug abuse and dependence as defined by DSM-IV provide such variables, because the alcohol or drug use must be persistent and heavy enough to be accompanied by a variety of problems. However, binge drinking (even on a one-time basis) or any drinking on a lifetime basis may also be implicated in HIV risk behaviors, suggesting value in studying alcohol across a range of different characterizations.

If depression or substance use account, at least in part, for the elevated STD and HIV epidemics in the southern region of the United States, one would expect to find higher prevalence of these conditions in that region, particularly among blacks, who bear the brunt of these epidemics. To examine whether this might be the case, we analyzed data from two large population-based probability samples of U.S. residents. The first was the National Longitudinal Alcohol Epidemiologic Survey (NLAES),^{46–49} a national survey conducted in 1991 and 1992 with a sample of 42,862. The

second, the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC),^{49–52} was conducted in 2001 and 2002 with a sample of 43,093. These two large national surveys with similar methodologies offer a unique opportunity to examine the question of regional differences in risk factors for HIV transmission.

Methods

Samples

Both the 1991–1992 NLAES and the 2001–2002 NESARC are nationally representative samples of the adult populations of the United States as described in detail elsewhere.^{46–52} Both surveys were sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). The target population for both surveys was the civilian, noninstitutionalized population, 18 years and older, residing in the 50 states and the District of Columbia. The fieldwork for both studies was conducted by the U.S. Census Bureau under the direction of NIAAA staff. For the NLAES, the overall survey response rate was 90%, and for the NESARC, it was 81%.

The NLAES sample consisted of 198 primary sampling units (PSUs). The NESARC's sample consisted of 655 PSUs; however, in the final NESARC datafile, only 435 PSUs are shown because smaller PSUs were collapsed to minimize disclosure risks. For both studies, respondents were selected within each of the selected PSUs developed by the Census. In the NESARC, group quarter dwelling units were converted into housing unit equivalents and sampled together with other housing units.

Oversampling of blacks and Hispanics in the NESARC and of blacks in the NLAES, completed at the design phase, increased the proportion of each of these groups in the total samples. In the final selection phase, one individual was selected from each housing unit randomly from a list of persons living in the household. At this stage of the survey, young adults (ages 18–24 in the NESARC and ages 18–29 in the NLAES) were oversampled at a rate of 2.25:1.00.

The complex sampling design necessitated weighting the data from both surveys to reflect the probability of: selection of a PSU within a stratum, selection of housing units within the sample PSU, oversampling of young adults, and nonresponse at the household and person levels. The NESARC data were also adjusted to reduce the variance arising from selecting two PSUs to represent an entire stratum. The weighted data for both groups were then adjusted to be representative of the population of the United States for a variety of socioeconomic variables, including region, age, sex, and race/ethnicity using the Decennial Census of Population and Housing (1990 for the NLAES and 2000 for the NESARC).

Interviewers and Training

All interviewers were conducted by professional interviewers from the U.S. Census Bureau. On average, the 1,000 NLAES interviewers and 1,800 NESARC interviewers had 5 years of survey administration experience. All completed a 5-day self-study course followed by a 5-day in-person training session at one of the U.S. Census Bureau's 12 regional offices. Quality of interviewing was ensured by regional supervisors who recontacted at random 10% of all respondents by telephone and reasked a set of 30 questions from different parts of the interview to verify answers. The NLAES used a paper-and-pencil version of the interview, whereas the NESARC used a computerized version; interviewers read the questions to respondents in both surveys.

Measures

Major depressive disorder and substance use, abuse, and dependence in both surveys were assessed by the Alcohol Use Disorder

TABLE 1. Demographic Characteristics of NLAES and NESARC Respondents

Variables	NLAES (N = 42,862) Weighted Percentage	NESARC (N = 43,093) Weighted Percentage
Age		
18–24	14.0	13.0
25–44	44.3	39.7
45–64	25.5	31.1
65+	16.2	16.2
	Mean age (SD) = 40.5 y (18.6)	Mean age (SD) = 46.4 y (18.2)
Sex		
Male	48.0	47.9
Female	52.0	52.1
Race		
White	82.8	70.9
Black	11.4	11.1
American Indian, Eskimo, or Aleut	0.8	2.1
Asian or Pacific Islander	3.0	4.4
Other	1.1	11.6
Unknown	0.9	
Black women 18–44 y old	4.1	3.6
Marital status		
Married	59.7	58.2
Living with someone as if married	2.8	3.4
Widowed	6.9	6.5
Divorced	7.7	8.8
Separated	2.5	2.1
Never married	19.5	20.9
Unknown	1.0	
Occupation		
Executive/administrative	11.1	12.2
Professional specialty	12.4	14.5
Technicians	3.3	7.1
Sales	11.2	8.2
Administrative support (e.g., clerical)	16.0	7.5
Private household	1.0	0.9
Protective service	1.7	1.2
Service, except protective and household	11.8	11.9
Farming, forestry, and fishing	2.6	1.8
Craft and repair	10.3	3.4
Operators, fabricators, and laborers	7.5	6.9
Transportation and material moving	3.8	2.4
Handlers, equipment cleaners	3.5	2.9
Military	0.5	0.7
Classified	0.0	
Unemployed	3.3	4.5
Missing/unknown		14.0
Education	Mean = 9.28 (9 = high school, 10 = some college), SD = 2.51	Mean = 9.45 (9 = high school, 10 = some college), SD = 2.52
Income	Mean = \$22,974.14, SD = \$24,389.84	Mean = \$28,184.59, SD = \$44,420.29

SD indicates standard deviation.

and Associated Disabilities Interview Schedule (AUDADIS),⁵³ a fully structured diagnostic interview designed to be administered by trained nonclinician interviewers. We used the current time-frame, meaning the 12 months before the interview, for all conditions unless otherwise noted.

Major Depression

As described in detail elsewhere,^{48,51,54} the AUDADIS includes an extensive list of questions operationalizing the symptoms and criteria defining major depressive disorder according to DSM-IV.²² Consistent with DSM-IV, AUDADIS diagnosis of major depression require the presence of at least five depressive symp-

toms (one of which must have been depressed mood or anhedonia) nearly everyday most of the day for at least a 2-week period. Social and/or occupational dysfunction must also have been present during the disturbance. Episodes of DSM-IV major depression resulting from bereavement or physical illness were ruled out as were substance-induced episodes. In an independent test-retest study conducted in the general population, AUDADIS diagnoses of major depression were shown to be reliable as indicated by κ values of 0.60 and 0.65.⁵⁵ Furthermore, a validity study of the AUDADIS in Puerto Rico showed excellent correspondence of the AUDADIS diagnoses of major depression with psychiatrist evaluations.⁵⁶ The distribution and correlates of major depression in

TABLE 2. Demographic Variables for Black Respondents in the NLAES and NESARC

Variables	NLAES (N = 6,107) Weighted Percentage	NESARC (N = 8,600) Weighted Percentage
Age		
18–24	17.5	16.2
25–44	48.4	43.6
45–64	22.6	28.7
65+	11.5	11.5
	Mean age (SD) = 40.6 y (18.1)	Mean age (SD) = 45.5 y (17.5)
Sex		
Male	44.6	44.2
Female	55.4	55.8
Black women, 18–44 y old	35.8	31.4
Marital status		
Married	39.9	39.1
Living with someone as if married	3.1	3.5
Widowed	7.5	6.8
Divorced	9.9	10.3
Separated	6.2	5.1
Never married	32.5	35.2
Unknown	0.9	
Occupation		
Executive/administrative	6.7	8.7
Professional specialty	7.5	11.9
Technicians	3.5	6.7
Sales	8.3	7.9
Administrative support (e.g., clerical)	15.1	7.3
Private household	3.1	1.6
Protective service	2.9	2.1
Service, except protective and household	19.1	15.9
Farming, forestry, and fishing	2.4	0.9
Craft and repair	8.0	2.2
Operators, fabricators, and laborers	9.6	8.1
Transportation and material moving	4.3	3.4
Handlers, equipment cleaners	5.4	4.1
Military	0.7	1.4
Classified	0.0	
Unemployed	3.4	7.8
Missing/unknown		10.0
Education	Mean = 8.49 (8 = completed high school, 9 = high school/GED), SD = 2.44	Mean = 9.12 (9 = high school, 10 = some college), SD = 2.33
Income	Mean = \$17,362.53, SD = \$15,260.25	Mean = \$22,630.65, SD = \$21,244.78

SD indicates standard deviation.

the NLAES⁵⁵ and NESARC^{51,54} samples have been reported in detail elsewhere.

Alcohol and Drug Use Disorders

The AUDADIS includes an extensive list of alcohol-related experiences that are categorized into symptoms of DSM-IV dependence or abuse. Current DSM-IV dependence is diagnosed when at least three of the following seven symptoms have been met within the past year: tolerance, withdrawal, drinking more or longer than intended, persistent desire or unsuccessful attempts to quit or cut down, giving up important activities to drink, continued alcohol use despite related health problems, and spending a great deal of time acquiring, using, or recovering from alcohol use. Current abuse is diagnosed among those without dependence when at least one of the following four symptoms have been met within the past year: failure to fulfill major role obligations as a result of

drinking, drinking in hazardous situations, alcohol-related legal problems, or continued drinking despite recurrent social or interpersonal problems. We included two additional alcohol variables. The first was binge drinking, defined as having five or more drinks in a single day at least once during the past year. The other was the only lifetime variable analyzed in the study, being a lifetime drinker (that is, ever having drunk alcoholic beverages) versus abstainer. DSM-IV diagnoses of dependence and abuse for substances other than alcohol were defined as described for alcohol use disorders. The alcohol and drug modules of the AUDADIS have been shown to have very good to excellent reliability and validity in numerous U.S. and international studies.^{53,56–64}

Region

Regional variables were created from each survey to represent the southern geographic area of highest STD morbidity. The vari-

TABLE 3. Association of Southern States* With Psychopathology, NLAES (N = 42,862)

Outcomes	Odds Ratios	95% Confidence Intervals	P
Past year major depression	0.84	0.67–1.05	0.13
Past year alcohol disorder	0.60	0.49–0.73	0.001
Past year cannabis disorder	0.63	0.46–0.87	0.01
Past year cocaine disorder	0.79	0.37–1.66	0.52
Past year stimulant disorder	0.53	0.11–2.51	0.42
Drank 5 or more drinks at least one time past year	0.90	0.81–1.01	0.08
Lifetime drinking (ever)	0.64	0.58–0.71	0.001

*States: Georgia, Mississippi, Louisiana, South Carolina, North Carolina, Alabama, or Florida compared with all other states; odds ratio <1.0 indicates lower risk in southern states.

ables were created differently for each survey based on the information available in the datasets. The NLAES contained the U.S. state in which each respondent resided, so this information was used to create a binary variable for the NLAES analyses. One level of this variable was defined as the seven states with the highest rates of STDs (syphilis, gonorrhea, chlamydia, and trichomonas): Georgia, Mississippi, Louisiana, South Carolina, North Carolina, Alabama, and Florida. The other category, which served as the reference group, included all other states.

State-level information is not yet available for the NESARC, so the regional variable for analyses of NESARC data was based on U.S. Census region. The U.S. Census divides the United States into nine geographic regions. For the binary geographic variable representing the south for NESARC analyses, we combined Census Region 5, the South Atlantic region (Maryland, Delaware, District of Columbia, Virginia, West Virginia, Kentucky, North Carolina, South Carolina, Georgia, Florida); Region 6, the East South Central region (Kentucky, Tennessee, Mississippi, Alabama); and Region 7, West Central (Texas, Oklahoma, Arkansas, Louisiana). These three regions combined are considered to be the "south" both by the census and by the Centers for Disease Control and Prevention. All other geographic regions of the United States were combined into the second category, which served as the reference group.

Data Analysis

Descriptive statistics were produced for the samples using SAS and SUDAAN, a program that adjusts variance estimation for the complex sample design. The binary variables indicating region served as the

TABLE 4. Association of Southern States* With Psychopathology, Black NLAES Participants (N = 6,107)

Outcomes	Odds Ratios	95% Confidence Intervals	P
Past year major depression	0.87	0.51–1.49	0.60
Past year alcohol disorder	0.73	0.49–1.10	0.13
Past year cannabis disorder	0.20	0.05–0.75	0.02
Past year cocaine disorder	0.32	0.11–0.95	0.04
Past year stimulant disorder	N/A	N/A	
Drank 5 or more drinks at least one time past year	1.12	0.83–1.49	0.45
Lifetime drinking (ever)	0.64	0.55–0.75	0.001

*States: Georgia, Mississippi, Louisiana, South Carolina, North Carolina, Alabama, and Florida compared with all other states.

TABLE 5. Association of Southern States* With Psychopathology, Black NLAES Women age 18–44 (N = 1,048)

Outcomes	Odds Ratios	95% Confidence Intervals	P
Past year major depression	1.05	0.51–2.17	0.90
Past year alcohol disorder	0.41	0.13–1.24	0.11
Past year cannabis disorder	0.10	0.01–0.82	0.03
Past year cocaine disorder	N/A	N/A	N/A
Past year stimulant disorder	N/A	N/A	N/A
Drank 5 or more drinks at least one time past year	1.18	0.64–2.21	0.58
Lifetime drinking (ever)	0.66	0.47–0.93	0.02

*States: Georgia, Mississippi, Louisiana, South Carolina, North Carolina, Alabama, and Florida compared with all other states.

independent variables in the analyses, which were conducted using logistic regression. Major depression and the alcohol or drug variables served as the dependent variables. All analyses were weighted to adjust for the complex sample design using SUDAAN. Through these procedures, we derived odds ratios indicating whether residents of the southeastern U.S. regions differed from other U.S. household residents on risk for major depression, alcohol and drug disorders, binge drinking, and/or lifetime drinker versus abstainer. All analyses were conducted separately for the total sample, for black subjects, and for black women aged 18–44.

Results

Participant characteristics for the NLAES and NESARC total samples and black subsamples are shown in Tables 1 and 2. The weighted frequencies are representative of the U.S. general population residing in households and (for the NESARC) group quarters.

1991–1992 NLAES Results

Tables 3, 4, and 5 show the results for the NLAES full sample, black respondents, and black female respondents aged 18–44, respectively. In the full sample, regional differences were found for the alcohol variables, reaching statistical significance for DSM-IV alcohol use disorders and being a lifetime drinker (vs. abstainer; $P < 0.001$ for both). A trend toward significance was found for binge drinking. However, counter to our hypotheses, in all cases, the southern region had significantly lower risk for these alcohol conditions compared with the rest of the United States. Regional differences were not found for alcohol variables in the smaller subset of black respondents or black female respondents except for lifetime drinker versus abstainer, which was significantly lower in the south.

TABLE 6. Association of Southern Regions* With Psychopathology, NESARC (N = 43,093)

Outcomes	Odds Ratios	95% Confidence Intervals	P
Past year major depression	0.99	0.88–1.11	0.81
Past year alcohol disorder	0.78	0.69–0.89	0.001
Past year cannabis disorder	0.56	0.44–0.72	0.001
Past year cocaine disorder	0.80	0.45–1.42	0.45
Past year stimulant disorder	0.71	0.37–1.34	0.28
Drank 5 or more drinks at least one time past year	0.97	0.84–1.12	0.65
Lifetime drinking (ever)	0.63*	0.53–0.74	0.001

*Regions: South Atlantic, East South Central, and West South Central compared with all others.

TABLE 7. Association of Southern Regions* With Psychopathology, Black NESARC Participants (N = 8,600)

Outcomes	Odds Ratios	95% Confidence Intervals	P
Past year major depression	0.92	0.70–1.19	0.51
Past year alcohol disorder	0.81	0.62–1.06	0.13
Past year cannabis disorder	0.49*	0.30–0.79	0.001
Past year cocaine disorder	0.41	0.15–1.11	0.08
Past year stimulant disorder	0.17	0.02–1.28	0.09
Drank 5 or more drinks at least one time past year	0.90	0.63–1.31	0.59
Lifetime drinking (ever)	0.67*	0.56–0.81	0.001

*Regions: South Atlantic, East South Central, and West South Central compared with all others.

In the NLAES survey, DSM-IV cannabis disorder (abuse or dependence) was significantly less frequent among southern participants than those in the rest of the country. This was true for the full sample as well as in the subsets of black respondents and black female respondents aged 18–44. A similar finding emerged for cocaine disorder (abuse or dependence), although only among the black subset. Too few cases of other drug disorders arose in the black female subset to analyze with stable results.

The prevalence of major depressive disorder did not differ significantly between the risk and reference regions. This was true for the full sample and the subgroups.

2001–2002 NESARC Results

Tables 6, 7, and 8 show the results of the analyses from the NESARC data. Although the odds of alcohol use disorders were lower in the south, this difference reached significance only for the full sample with a trend to significance for black females aged 18–44. Binge drinking did not differ significantly between regions, but being a lifetime drinker (vs. abstainer) was again significantly less likely in the risk region (i.e., regions 5–7) ($P < 0.01$).

For drug use disorders, the full sample again showed significantly lower risk for cannabis use disorders, as did the black subset and the subset of black females aged 18–44. Cocaine and stimulant disorders showed a trend toward lower risk in the black subset of the sample.

Similar to findings from the NLAES, no regional differences were found in major depressive disorder. This was the case for the full sample as well as in the subgroups.

Discussion

The present results from two large, nationally representative surveys conducted 10 years apart provide no support for the

TABLE 8. Association of Southern Regions* With Psychopathology, Black NESARC Women age 18–44 (N = 1,096)

Outcomes	Odds Ratios	95% Confidence Intervals	P
Past year major depression	0.99	0.57–1.71	0.97
Past year alcohol disorder	0.58	0.31–1.09	0.09
Past year cannabis disorder	0.26*	0.11–0.62	0.001
Past year cocaine disorder	N/A	N/A	N/A
Past year stimulant disorder	0.29	0.02–4.00	0.34
Drank 5 or more drinks at least one time past year	0.74	0.35–1.55	0.41
Lifetime drinking (ever)	0.61*	0.41–0.87	0.01

*Regions: South Atlantic, East South Central, and West South Central compared with all others.

contribution of substance use disorders, less stable indicators of alcohol use, or major depressive disorder to the elevated rates of STDs and HIV infection in the southern region of the United States. Finding elevated levels of these risk factors (depression, alcohol, drugs), particularly among the disproportionately affected black and younger black female subpopulations, would have supported the possibility that these factors contributed on a regional basis to the increased morbidity. On the contrary, when differences were found (for the alcohol and drug variables), the results indicated significantly *lower* prevalences of alcohol abuse and dependence (total samples) and of lifetime drinking and cannabis disorder among the total samples, black participants, and black female participants aged 18–44.

The findings are considered in terms of the strengths and weaknesses of the design. The study was designed to address depression, alcohol and drug disorders as large-scale social factors. We showed that alcohol and drug disorders were lower in the south. It is possible that alcohol and drug use disorders, being even less normative in the south than elsewhere, are more strongly associated with HIV risk behaviors among the smaller proportion of southern individuals with the disorders. However, a different design would be necessary to test this hypothesis, including data on the sexual risk behaviors themselves in conjunction with the variables we examined in this report. Such variables will be available in wave 2 of the NESARC, a 3-year follow up now in the field. In the meantime, our findings decisively refute the argument that larger social forces consisting of widespread binge drinking or substance abuse or dependence serve as an explanation of elevated HIV rates in the southern United States.

Use of state-level data from the NESARC would have provided more precise information on the states with highest risk than the regional variable used in the NESARC analysis based on Census regions. However, the similarity of NESARC and NLAES results (which did use specific states to create the regional variable) suggests that the NESARC findings were equally applicable to the research question.

The NLAES and NESARC datasets are large, nationally representative, and based on measures with excellent psychometric properties (reliability and validity). They thus provided an excellent opportunity to test the hypothesis that increased southern rates of alcohol, drug, or depressive disorders contributed to the high rates of HIV in the southern states. Although depression, alcohol and drug use and disorders have all been found to be associated with HIV risk behavior, higher rates of their occurrence in the general population do not account for the southeastern U.S. epidemics of HIV or STDs.

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