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Neighborhood Condition and Geographic Locale in Assessing HIV/STI Risk among African American Adolescents

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Keywords

HIV; neighborhoods; adolescence; regional differences

Background

HIV/AIDS among African Americans is a priority health concern in the US. Although this group constitutes approximately 13% of the population, it accounts for 44% of new HIV cases [1]. The HIV rate among African American men (103.6 per 100,000) and women (38.1 per 100,000) vastly exceeds that of White men and women (15.8 per 100,000 and 1.9 per 100,000 respectively) [2]. Several mechanisms have been proposed to explain these racial disparities in HIV incidence/prevalence. One possible explanation is that disparities in HIV rates reflect differences in sexual risk behavior; however, support for this hypothesis is, at best, mixed. Whereas African American adolescents report earlier sexual debut [3], it also documents that African American adolescents demonstrate more consistent condom use than do white adolescents [4,5]. Among adults, African American women demonstrate increased sexually transmitted infection (STI) risk despite having fewer partners and more consistent

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condom use [6]. African American men who have sex with men (MSM) are at elevated HIV risk, despite equivalent or reduced frequency of risky sexual behaviors relative to White MSM [7]. Therefore, the racial disparities in HIV incidence/prevalence cannot be fully explained by racial differences in HIV-related behaviors.

Social determinants facilitate greater HIV risk among African Americans. Several structural factors have been implicated in accelerating HIV rates among this group including higher rates of poverty [1,8], less access to quality healthcare [1], mass incarceration of African American males [9] (which is, in large part, a by-product of inequitable criminal justice practices (i.e. selective targeting by police, disproportionately longer sentences for comparable infractions as other races/ethnicities [10])), and greater density of HIV in African American populations [1]. Researchers, policy-makers, and advocacy groups are increasingly developing interests in understanding how structural factors affect HIV disparities.

A structural factor that has increasingly received attention among HIV researchers is neighborhood quality. As African Americans are disproportionately impoverished [11] and persons living in impoverished communities are at greater risk for HIV [12], unfavorable residential conditions are increasingly implicated as possible explanations for racial disparities in HIV/AIDS [13,14]. In particular, spatial arrangement of African Americans and whites has attributed to differential HIV/STI risk [15,16]. Due in part to systematic institutional discrimination, a defining feature of U.S. neighborhoods is the high degree of racial segregation and the concentration of African Americans in neighborhoods that have been deprived of economic and social resources (well-functioning schools, access to parks, vibrant commercial activity and the like)[17]. Such deprivation limits access to resources (social, economic, medical) that militate against HIV risk. Moreover, the perception of high degrees of neighborhood disorder may translate into greater HIV/STI risk behaviors through psychological pathways (e.g. greater neighborhood disorder facilitates psychological distress, which in turn promotes drug use and sexual risks) [18]. Ultimately, under-resourced neighborhoods and the characteristics of such have been associated with HIV risk behaviors, concentrated sexual networks (which are more risky when HIV or STIs are introduced), and greater HIV/STI risk [3,18,19].

Research has also examined whether regional differences could help to explain racial disparities in HIV risk. AIDS incidence and prevalence rates are higher in the South than any other region in the country [20]. In the South, most AIDS cases are concentrated in African American populations [20]. From a behavioral perspective, condom use may be greater in the Northeast than the South [21]. Though understudied, it is possible that a combination of high HIV/STI prevalence and regional differences in risk factors contribute to sexual health disparities in Southern African American communities.

Although HIV/STI risk has been studied separately by region and neighborhood, there is little research examining whether there is a relationship between these factors. For example, there is a paucity of research that examines whether the effects of resource-rich neighborhoods on HIV/STI risk are the same in the North and the South. Also, are neighborhoods that are perceived to be resource-poor equally detrimental in both regions?

This study addresses this gap by investigating HIV/STI risk regionally, within neighborhoods, and within region-neighborhood dyads. Additionally, few studies examine neighborhood characteristics in relation to STI risk using laboratory confirmed STI results. This study contributes uniquely to the extant literature by utilizing a sample of African American adolescents and biospecimen STI testing to identify environmental differences in sexual health risk.

Methods

Study Design

This study utilized baseline data from, an adolescent HIV risk reduction intervention conducted in Macon, GA, Providence, RI, Syracuse, NY, and Columbia, SC (Project iMPPACS). Details can be found elsewhere, but briefly, this study used a repeated measures, randomized-control research design to compare the effects of media on HIV risk among African American adolescents [16,17]. Participants were 1,602 African American adolescents, ages 14–17. The four selected cities are in regions of the U.S. with high HIV/AIDS rates, similar population sizes, and high concentrations of African American youth living at or below poverty levels. Participants were recruited through direct outreach to partnering community-based organizations (21%), participant referral (29%), respondent driven sampling (15%), referral from adults in the community (14%), and street outreach (9%). Participants completed a baseline questionnaire between 2006 and 2007 using an Audio Computer-Assisted Self-Interview (ACASI) after acquiring parental consent and youth assent. Data were collected on demographics, geographic locale, neighborhood quality, and sexual risk behaviors. Baseline data were used for this study. Participants also submitted urine samples at baseline that were tested for three STIs - *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, and *Trichomonas vaginalis*. Biospecimen testing was conducted at Emory University Molecular Diagnostics Laboratory. Participants with a positive STI test were treated at no cost. All study protocols were approved by the Institutional Review Boards (IRBs) at the participating universities.

Measures

Demographics—Participants provided their age, sex, racial background (African American/Black, White/Caucasian, Asian or Pacific Islander, American Indian or Alaska Native, Mixed or Multiracial, Other), and eligibility for free or reduced price school lunch. Site of recruitment (Northeast and Southeast) was used to establish geographic region.

Neighborhood Quality—A measure of perceived neighborhood stress was used to determine neighborhood quality. Perceived neighborhood quality has often been assumed to reflect objective quality [24]. Empirically, independently rated neighborhood disorder predicts subjective perceptions of neighborhood quality [25] and neighborhood of residence has been associated with perceptions of neighborhood problems in an area [26]. Other studies have utilized subjective assessments of neighborhood quality as an indicator of neighborhood disorder in exploring sexual health risks [27] and perceived neighborhood quality impacts sexual risks behaviors through direct and indirect pathways [18]. Neighborhood quality was assessed using 10 items from the Neighborhood Stress Index

[28]. This validated scale assesses multiple dimensions of neighborhood quality, including experiences of crime, perpetuation of violence, and prevalence of vacant or abandoned buildings. Response options for crime and violence questions ranged from 1 (Never) to 4 (Often). Response options for prevalence of vacant or abandoned buildings ranged from 1 (None) to 4 (Most). Possible scores ranged from 10–40. This scale is internally consistent, as demonstrated by a Cronbach's alpha coefficient of .85.

Neighborhood quality was dichotomized into “high” and “low” categories. Participants with scores of 20 and below were considered to report relatively low neighborhood stress. Participants with scores greater than 20 were considered to report relatively high neighborhood stress. Four region-neighborhood quality dyads were created; Southeastern high, Southeastern low, Northeastern high, and Northeastern low.

STI Acquisition—Participants submitted biospecimen samples to test for three common STIs (chlamydia, gonorrhea, and trichomonas). Youth were promptly treated and underwent sexual health counseling by a physician at no cost if an STI was detected.

Sexual Risk Behavior—Risk behaviors include ever having vaginal intercourse (yes/no), ever receiving anal intercourse (yes/no), ever giving anal intercourse (males only) (yes/no), lifetime number of vaginal sex partners, lifetime number of anal partners as receptive partner, condom use at last vaginal intercourse (yes/no), condom use at last anal intercourse as receptive partner (yes/no), and condom use at last anal intercourse as insertive partner (males only) (yes/no).

Analysis—Descriptive statistics for demographics were ascertained for this sample. Mean scores for neighborhood stress, number of vaginal partners, number of anal partners (receptive) and number of anal partners (insertive) were generated for the total sample and by region. Frequencies and percentages were generated for STI acquisition, ever having vaginal intercourse, ever receiving anal intercourse, ever giving anal intercourse, condom use at last vaginal intercourse, condom use at last anal intercourse as receptive partner, and condom use at last anal intercourse as the insertive partner.

Multinomial logistic regression was performed to determine differences in STI acquisition, ever engaging in sexual intercourse (vaginal, anal receptive, and anal insertive), condom use at last intercourse (vaginal, anal receptive, and anal insertive) by geographic region, neighborhood stress, and stress-geographic region dyads. Analysis of Variance was performed to determine differences in neighborhood stress by geographic region. To address zero-truncated data, the number of sexual partners (vaginal, anal receptive, anal insertive) was reduced by one to create a negative binomial distribution. Negative binomial regression was used to determine differences in number of sexual partners by region, neighborhood quality, and stress-geographic region dyads. There were outliers for number of anal sex insertive/receptive partners that were deleted to improve model fit (2 deleted for insertive and 1 deleted for receptive). Analysis controlled for sex, age, and eligibility for free or reduced price lunch since these are differentially associated with sexual risk behavior.

Results

The sample (N=1602) included both males (41%) and females (59%); mean age of the sample was 15.1 (standard deviation = 1.1). The sample was primarily low-income, with 76% qualifying for free or reduced price lunch (Table 1). Approximately 8% of the total sample, 9% of the Southeastern sample, and 6% of Northeastern sample, was diagnosed with an STI (Table 2). Approximately 53% of the total sample, 55% of the Southeasterns, and 50% of Northeasterns engaged in vaginal sex (Table 2). About 8% of the sample, 9% of Southeastern participants and 7% of Northeastern participants engaged in anal sex (receptive) (Table 2). Of male participants, approximately 24% (Northeast and Southeast) engaged in anal sex (insertive). About 28% of the total number of sexually active participants (vaginal intercourse), 28% of sexually active participants in the Southeast, and 27% in the Northeast did not use a condom during last vaginal intercourse (Table 2). Approximately 42% of Northeastern, 38% of Southeastern, and 39% of total anal sex (receptive) engagers did not use a condom at last intercourse (Table 2). Approximately 26% of Southeastern, 25% of Northeastern, and 26% of total anal sex participants (insertive) did not use a condom at last intercourse (*****Table 2).

Northeastern participants had lower odds of having an STI (aOR:0.59; 95%CI: 0.40–0.86) and ever engaging in vaginal sex (aOR:0.75; 95%CI:0.60–0.92) than Southeastern participants. Participants reporting greater neighborhood stress had greater odds of having an STI (aOR:1.04; 95%CI: 1.01–1.07) and ever engaging in vaginal intercourse (aOR:1.05; 95%CI: 1.03–1.06).

Participants living in low-stress neighborhoods in the Southeast (aOR: 0.56;95%CI:0.42–0.77) and Northeast (aOR: 0.58; 95%CI: 0.43–0.76) had lower odds of ever engaging in vaginal intercourse than participants living in the Southeastern high stress neighborhoods and Northeastern high stress neighborhoods, respectively (Table 4). Participants living in low stress neighborhoods in the Northeast had lower odds of ever engaging in vaginal intercourse than participants in low stress neighborhoods in the Southeast (aOR: 0.76; 95%CI: 0.58–0.98). Individuals living in low stress neighborhoods in the Northeast had lower odds of ever having anal intercourse (insertive) than participants in high stress neighborhoods in the Northeast (aOR: 0.43;95%CI: 0.25–0.72). Participants living in low stress neighborhoods in the Northeast had greater odds of using a condom when participating in anal sex (receptive) than participants living in high stress neighborhoods in the Northeast (aOR: 4.14; 95%CI: 1.28–13.37).

Analysis of variance indicates that neighborhood stress scores for Northeastern participants were significantly higher than Southeastern participants ($p<0.0001$) (not tabled). Mean neighborhood stress scores for Northeastern and Southeastern participants were 20.5 and 18.9 respectively (Table 3). Northeastern participants reported more vaginal sexual partners than participants in the Southeast (5.3 and 4.7 respectively) (Table 3). Southeastern participants (2.7) had higher mean scores for number of anal partners (receptive) than Northeastern participants (1.5) (Table 3). Mean scores for number of anal partners (insertive) were higher in the Northeast (4.4) than the Southeast (4.3) (Table 3).

Negative binomial regression indicates that participants living in the Northeast had fewer anal partners (receptive) than Southeastern participants (IRR: 0.34; 95%CI: 0.16–0.72) (Table 4). Participants living higher stress environments had more vaginal (IRR: 1.57; 95%CI: 1.30–1.89) and anal (receptive) (IRR: 3.22; 95%CI: 1.62–6.41) partners than participants in lower stress environments. Low stress participants in the Southeast (IRR: 0.76; 95%CI: 0.58–0.98) and Northeast (IRR: 53; 95%CI: 0.41–0.70) had significantly fewer vaginal sex partners than participants living in the high stress neighborhoods in the Southeast and Northeast respectively. Southeastern low stress participants (IRR: 0.28; 95%CI: 0.13–0.64) had significantly fewer anal sex partners (receptive) than high stress residents in the Southeast. Individuals in low stress neighborhoods in the northeast had fewer anal partners (insertive) than persons living in the high stress neighborhoods in this region (IRR:0.50;95%CI:0.26–0.96). Participants in high stress neighborhood in the Northeast had fewer anal sex (receptive) partners than high stress residents in the Southeast (IRR:0.30;95%CI:0.12–0.76).

Discussion

This study examines the separate and interactive effects of perceived neighborhood quality and region on HIV/STI risk among a sample of African American youth. The purpose of the study is to identify these differences though there should be additional research to explain why these differences exist. This study is important because research examining the existence of a relationship between geographic and neighborhood context on HIV/STI risk is lacking.

In line with other studies, participants in the South were at greater HIV risk. Particularly, participants in the Southeast had greater prevalence of STIs and higher risk of ever having vaginal sex. HIV/STIs are more prominent among African Americans in the South, due in part, to a greater prevalence of STIs within these sexual networks [19,20]. With more STIs in an environment, there are more opportunities to interact with a person who is infected [15]; thus, the greater prevalence of STIs in the South likely increases HIV risk compared to other regions. Other studies examining the region/sexual health nexus suggests similar behavioral Southern HIV/STI vulnerabilities [20,29]. For example, 2011 Youth Risk Behavioral Survey data indicate that African Americans in these Southeastern locales engaged in more sexual activity than Northeast residents [29]. African American adolescents in South Carolina were also more likely to: 1) be sexually experienced and 2) have had sex in the past three months compared to African American Rhode Island residents [29].

Other studies indicate that these regional differences in HIV rates may be influenced by a constellation of other structural factors. Although both regions are similar in important aspects (e.g., economic bases, governing institutions) there remain notable differences that likely influence regional HIV/AIDS disparities. For example, HIV-related stigma and stigma against sexual minorities, two factors associated with riskier sexual health behaviors, are more prevalent in the South [30–32]. Other factors that may facilitate regional HIV risk differences include sexual education policy and practice (differences in statewide implementation of abstinence/contraception approaches, discussion of sexual orientation) and per capita healthcare expenditure [33–35]. For example, Rhode Island mandates

medically accurate instruction on sex and HIV when sex education is provided within schools. In contrast, medically accurate information is not required at the state level in Georgia and South Carolina [33]. Also, per capita healthcare expenditure in the Southeastern locales is lower than the Northeastern locales [35]. These data suggest the need for large-scale health promotion and policy interventions to reduce HIV/STI risk in most affected areas. Additional research is needed to identify other factors associated with differential HIV risk by region.

These HIV risk regional differentials are concerning not only because the South has the highest age-standardized mortality rates of persons living with HIV/AIDS (PHA) [36], but also the survival prospects for African American PHA in the South are marginally lower than African American PHA in other regions [37]. The poorer health infrastructure in some areas of the South [38], coupled with the comparatively high rates of being uninsured [39] (as well as the unwillingness of some Southern legislators to expand insurance provisions associated with the Affordable Care Act) [40], has troubling implications for the survival prospects of Southern PHA. Given medical, political, and infrastructure barriers, public health practitioners should maintain an emphasis on prevention and highlight the necessity for proven-effective initiatives in these locales. Moreover, the results of this study highlight the greater need for more targeted efforts to reduce HIV risk at structural and behavioral levels in the US in general and South in particular.

Similar to other studies, HIV/STI risk was generally greater among participants living in poorer quality neighborhoods [18,27,41–43]. Adolescents who reported greater neighborhood stress also had greater odds of having an STI. Although the mechanisms for this are yet to be fully elucidated, people who report living in a physically deteriorated neighborhood demonstrate greater risks for acquiring an STI/engaging in sexual risk behavior [18,27,41]. This may be due, in part, to a greater concentration of higher risk partners within these environments [27]. Participants residing in more stressed locales also reported more vaginal sexual activity (i.e., earlier debut, more partners) more anal sexual activity (i.e., earlier debut (insertive)), and more partners (receptive). Other studies have found that living in highly-disordered neighborhoods increased the likelihood of casual sexual partnerships [27], earlier sexual debut [42], exchanging money for sex [18], and being in a non-monogamous sexual relationship [43]. These findings are concerning because HIV prevalence is disproportionately high in impoverished urban areas [44] and people who live in high HIV-prevalence areas are more likely to sexually network with people in the same area [45]. Moreover, challenged communities such as these often lack resources and services that remediate HIV-risk [46]. This warrants geographically targeted behavioral and structural interventions to 1) reduce sexual risk, 2) increase testing to identify PHA, and 3) link and maintain PHA into treatment to reduce community-level viral load (an aggregate measure of viral load within a given geographic location).

Another proposed pathway examines racial differences in sexual networks and suggests that increased HIV (and STI) risk among African Americans is, in part, a function of within group sexual networking; African Americans maintain smaller, more segregated networks, which lead to higher risk when an STI is introduced into a community [47]. Moreover, sexually, African Americans are more likely to dissortively (higher risk partners are more

likely to engage with lower risk partners) mix than whites [3,47]. These sexually networking patterns are largely controlled by environment, particularly the physical proximity in which people reside – a factor that is largely controlled by neighborhood [48].

Though neighborhood perception and region were independently associated with HIV/STI risk, the interaction of these two factors suggests that HIV risk may be differentially affected by them. In particular, there is more support for a neighborhood hypothesis (i.e., neighborhoods have greater effect on HIV/STI risk than region) and less support for a regional hypothesis (i.e., region only moderately influences the relationship between region and HIV-risk). Overall, there were few differences in HIV/STI risk between neighborhoods of similar reported quality in differing regions. However, for some measures, the effect of residing in resource-poor neighborhoods on HIV risk differed between the Northeast and the Southeast. Northeastern residents from low stress neighborhoods had fewer vaginal sex debuts than Southeastern residents from low stress neighborhoods. Similarly, participants in high stress neighborhoods in Northeast had fewer anal sex (receptive) partners than participants in high stress neighborhoods in the Southeast. From a risk perspective, it appears somewhat less risky to live in the Northeast even when neighborhood conditions are similar to those in the Southeast. The reasons for this warrant further investigation, but nonetheless, researchers should consider regional context when examining neighborhoods and HIV risk.

Alternatively, the relationship between neighborhood quality and sexual risks is not necessarily similar between the Northeast and the Southeast. While adolescents in poorer neighborhoods are more likely to have vaginal sex and more vaginal partners regardless of region, the relationship between perceived neighborhood condition and anal sex behavior only exists in the Northeast. More specifically, people in low risk neighborhoods in the Northeast were less likely to have anal sex than people in high risk neighborhoods in the Northeast. However, there was no significant difference in this behavior by neighborhood condition in the Southeast. More research should be performed to understand why these risk associations exists in one region but not another.

Reducing racial/ethnic HIV disparities necessitates a shift from strategies that emphasize intervention on merely individual levels to approaches that addresses the environmental, social, economic, and political factors that facilitate higher HIV rates in marginalized communities. Neighborhood and region are two structural factors that warrant attention both individually and collectively. As social drivers of HIV disparities often act interactively [49], addressing neighborhood and region may require multipronged strategies that are locally informed [49], target poverty [49], and promote policies that increase proven-effective HIV reduction strategies (i.e. testing, access to care, treatment, medically accurate sex education). These approaches can be nuanced by region and neighborhood as the results of this study suggests that some risks contextually differ based on region, neighborhood, and the interaction of these two factors.

This study should be considered in light of its limitations. The results focus on a distinct racial/ethnic group of adolescents residing in four mid-size cities in two regions of the US. These findings may not generalize to other locales and population sub-groups. Future studies

should include a wider age range, more racially/ethnically diverse samples, rural and urban locales, and more regions of the US. Second, all survey data are self-report, however the use of ACASI and identification numbers increases confidentiality and produces more valid results [50,51]. The purpose of this study is to identify a phenomenon of HIV-risk differences in region and neighborhood but there is not sufficient data in this study to explain these differences. Moreover, results must be taken in light of the non-use of a probability sample procedure which allows for greater generalizability of findings. However, results of this study reflect previous findings that utilize probability sampling procedures to determine regional differences [20,21]. Future studies to further examine and build upon these findings will require probability samples and qualitative research methods.

Conclusions

Neighborhood and region both impact HIV risk among African American youth. In concert, these two factors differentially affect the likelihood that youth will engage in high risk behavior. Moreover, the synchronistic effects of neighborhood quality and region vary depending on the particular risk behavior under examination. More research should examine these factors in greater detail, explore the nature of the interplay of these contextual factors, and develop and implement intervention strategies to reduce structural HIV risk.

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Table 1
Demographics for African American Adolescents Residing in Four Mid-sized Cities in the US.

	Northeast (n=811)		Southeast (n=791)		Total (N=1602)	
	n	%	n	%	N	%
Sex						
Male	330	40.7	312	39.4	642	40.1
Female	481	59.3	479	60.6	960	59.9
Age						
14	296	36.5	275	34.8	571	35.6
15	232	28.6	233	29.5	465	29.0
16	172	21.2	175	22.1	347	21.7
17	111	13.7	108	13.7	219	13.7
Free/Reduced Price Lunch						
Yes	620	76.5	560	70.8	1180	73.7
No	107	13.2	142	18.0	249	15.5
Don't know	80	9.9	83	10.5	163	10.2
Missing	4	0.5	6	0.8	10	0.6

Table II
Frequencies and Percentages of Sexually Transmitted Infections and Sexual Risk Behaviors by Region.

Sex Risk Behavior	Northeast		Southeast		Total	
	n	%	n	%	N	%
Positive STD Test						
Yes	48	5.9	74	9.4	122	7.6
No	762	94.1	717	90.6	1479	92.8
Ever Had Vaginal Sex						
Yes	405	49.9	437	55.3	843	52.6
No	406	50.1	354	44.8	759	47.8
Ever Had Anal Sex (Receptive)						
Yes	58	7.2	74	9.4	132	8.2
No	753	92.9	717	90.6	1470	91.8
Ever Had Anal Sex (Insertive) (Males only)						
Yes	81	24.1	80	24.4	161	24.3
No	255	75.9	248	75.6	503	75.8
Condom Use (Vaginal)						
Yes	297	73.2	314	71.9	611	72.5
No	109	26.9	123	28.2	232	27.5
Condom Use (Anal Receptive)						
Yes	35	58.3	51	62.2	86	60.6
No	25	41.7	31	37.8	56	39.44
Condom Use (Anal Insertive)						
Yes	62	74.7	60	74.1	122	74.4
No	21	25.3	21	25.9	42	25.6

Table III

Mean Scores and Standard Deviation for Neighborhood Stress and Number of Vaginal and Anal Sex Partners.

	Northeast Mean(SD)	Southeast Mean(SD)	Total Mean(SD)
Neighborhood Stress	20.5 (6.8)	18.9(6.4)	19.7 (6.7)
Number of Vaginal Sex Partners	5.3 (9.0)	4.7 (8.3)	5.0 (8.6)
Number of Anal Sex Partners (Receive)	1.4 (2.0)	2.7 (4.7)	2.2 (3.8)
Number of Anal Sex Partners (Give)	4.4 (6.7)	4.3 (4.2)	4.3 (5.6)

Predictors of Sexually Transmitted Infections and Sexual Risk Behaviors among African American Adolescents by Neighborhood-Region Groups in Four Mid-sized Cities in the US.

Table IV

	Region (Ref=Northeast)	Neighborhood Stress	Neighborhood Stress (Low vs. High)		Region (Northeast vs. Southeast)	
			Southeast (South vs. High)	Northeast (Northeast Low vs. High)	High Stress (Northeast High vs. Southeast High)	Low Stress (Northeast Low vs. Southeast Low)
^a Positive STD9 Test	0.59** (0.40-0.86)	1.04** (1.01-1.07)	0.65 (0.40-1.07)	0.66 (0.37-1.20)	0.59 (0.34-1.03)	0.60 (0.35-1.03)
^a Ever Had Vaginal Sex	0.75** (0.60-0.92)	1.05*** (1.03-1.06)	0.56** (0.42-0.77)	0.58** (0.43-0.76)	0.74 (0.54-1.03)	0.76* (0.58-0.98)
^a Ever had Anal Sex (Receptive)	1.33 (0.92-1.92)	1.00 (0.97-1.03)	0.86 (0.51-1.44)	1.00 (0.58-1.74)	0.67 (0.38-1.20)	0.79 (0.49-1.27)
^a Ever Had Anal Sex (Insertive)	0.87 (0.60-1.25)	1.06*** (1.03-1.09)	0.78 (0.47-1.30)	0.43** (0.25-0.72)	1.19 (0.71-1.97)	0.65 (0.38-1.11)
^a No Condom Use (Vaginal Sex)	1.11 (0.81-1.52)	0.98 (0.96-1.01)	1.23 (0.80-1.89)	1.44 (0.92-2.27)	1.00 (0.65-1.56)	1.17 (0.75-1.82)
^a No Condom Use (Anal Sex Receptive)	1.07 (0.53-2.19)	1.03 (0.98-1.09)	1.25 (0.46-3.43)	4.14* (1.28-13.37)	0.58 (0.19-1.79)	1.92 (0.67-5.52)
^a No Condom Use (Anal Sex Insertive)	0.85 (0.41-1.78)	1.04 (0.99-1.09)	0.92 (0.34-2.53)	1.85 (0.60-5.75)	0.82 (0.32-2.14)	1.65 (0.51-5.35)
^b Number of Vaginal Sex Partners	0.98 (0.81-1.19)	1.57*** (1.30-1.89)	0.76* (0.58-0.98)	0.53*** (0.41-0.70)	1.17 (0.90-1.52)	0.82 (0.63-1.07)
^b Number of Anal Sex Partners (Receptive)	0.34 (0.16-0.72)**	3.22* (1.62-6.41)	0.28** (0.13-0.64)	0.40 (0.11-1.44)	0.30** (0.12-0.76)	0.43 (0.13-1.43)
^b Number of Anal Sex Partners (Insertive)	0.86 (0.54-1.37)	1.33 (0.85-2.10)	1.05 (0.58-1.90)	0.50* (0.26-0.96)	1.19 (0.66-2.15)	0.56 (0.29-1.11)

* p 0.05

** p 0.01

*** p 0.0001 Models control for age, sex, and eligibility for free/reduced price lunch

^a Multinomial logistic regression

^b Negative binomial regression