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LGB-affirming school climates and sexual health outcomes among US high school students 2015–2017: Differences by sex and sexual identity

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Abstract

Purpose: Lesbian, gay, and bisexual (LGB) adolescents face disparities in sexual health outcomes compared to their heterosexual peers, which has implications for health outcomes and developmental trajectories. We examined whether adolescents living in jurisdictions with school climates that were more exclusionary towards LGB individuals engaged in higher risk sexual behaviors than those in jurisdictions with more inclusive school climates.

Methods: Data on sexual identity, age at first sex, condom use at last sex and number of lifetime partners came from the 2015 (20 jurisdictions) and 2017 (19 jurisdictions) Youth Risk Behavior Surveillance Surveys. Data on schools' LGB climates, aggregated to the state level, came from the Centers for Disease Control and Preventions' School Health Profile Survey. Multi-level multivariable regressions examined the association between LGB school climate and sexual behaviors, including effect modification.

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Conflict of interest: There are no conflicts of interest to declare.

Results: Overall, living in jurisdictions with more exclusionary LGB school climates was significantly associated with a lower age at first sex (β=−0.04[−0.07, −0.02]) and lower likelihood of condom use (OR=0.94[0.90, 0.98]), but not number of lifetime partners. Associations differed by sub-group: sexual identity modified the relationship between school climate and age at first sex (β=−0.09[−0.15, −0.03]) for bisexual adolescents, and school climate and condom use for bisexual (OR=0.86[0.76, 0.98]) and gay adolescents (OR=0.66[0.64, 0.68]).

Conclusions: Exclusionary LGB school climates are associated with a lower age at first sex and lower likelihood of condom use for all adolescents, and particularly bisexual individuals. Additional research and practice should address the school-level climates to support adolescents' healthy sexual development.

Implications and Contribution summary statement:

"Exclusionary LGB school climates were associated with lower age of first sex and lower likelihood of condom use for all youth and especially bisexual youth; research on social context and LGB health should expand to focus on school climates."

Keywords

Adolescents; school climates; LGB; sexual behaviors

Lesbian, gay, and bisexual (LGB) youth are more likely than their heterosexual peers to report a higher number of lifetime sexual partners, no condom use at last sexual encounter, and first sexual intercourse before age 13 [1]. These disparities are often most pronounced among bisexual women who, compared to heterosexual counterparts, report a younger age at first sex, higher rates of sex under the influence of alcohol/drugs, and more forced sexual contact [2]. These disparities have concrete implications for health and developmental trajectories. A younger age at first sex is associated with less condom use, forced sex, physical dating violence, and unintended pregnancy [3], as well as substance use and suicidality [4]. Adolescents who report inconsistent condom use have higher rates of STIs and pregnancy [5], and young women who did not use condoms during their first sexual intercourse report lower likelihood of condom use in their most recent intercourse and higher rates of subsequent pregnancy [6]. Among adolescent males, having four or more lifetime sexual partners is associated with higher pregnancy involvement [7]. In 2018, women ages 15–19 had higher rates of chlamydia (3306/100,000 vs. 959/100,000) and gonorrhea (548/100,000 versus 320/100,000) than young men. Rates of syphilis were lower among women (4.3/100,000 vs. 10.9/100,000) than men; [8] men who of sex with men (MSM) constitute 80% of male syphilis cases.[9]

Exploring potential drivers of these disparities in sexual health outcomes is therefore crucial, and the 2011 Institute of Medicine report on LGB health called for research on the relationship between social environments and LGB-related health disparities [10]. One such social environment salient to youth is the school climate. School climates are associated with adolescent health outcomes [11,12], and those inclusive toward LGB youth are associated with lower substance use and drinking [13,14]. These associations are often stronger for LGB youth. In addition, LGB adolescents in schools with supportive curricula, versus

exclusionary curricula, report experiencing less victimization and increased safety, which are associated with healthier sexual behaviors [15,16]. The impact of the school climate, including its association with victimization, is associated with short- and long-term health outcomes that can affect adolescents' health wellbeing into adulthood.

Researchers have increasingly called for work that explores whether the social climate, including at the school level, differentially impacts youth sub-populations [13,17,18]. Given the documented disparities in sexual health outcomes by youths' LGB status, research should explore both overall associations between school climate and health behaviors, and specifically among LGB youth, who report higher levels of sexual risk behaviors than their heterosexual peers. This study builds on previous research [13] with the Centers for Disease Control and Prevention (CDC) School Health Profiles (CDC SHP) and school climate and LGB health [17] to explore the relationship between school climate and youth health outcomes.

Research has demonstrated associations between sexual education curricula and students' sexual health outcomes[19], and the school LGB climate and substance use and mental health outcomes[13,17], but no work has explored the impact of the LGB school climate on sexual health outcomes. This paper uses state-level representative data from the 2015 and 2017 Youth Risk Behavior Survey (YRBS) [20] to examine the independent associations of LGB school climate and sexual identity on three sexual health outcomes: age at first sex, condom use at last sex, and number of lifetime sexual partners. The paper tested whether sexual identity modified the association between LGB school climate on sexual health outcomes, and then estimated these associations for each sexual identity subgroup (i.e., lesbian, gay, bisexual, heterosexual, and not sure). Based on the minority stress theory [21], and previous school-climate research [13], we hypothesized that living in more exclusionary school climates would be associated with younger age at first sex, less condom use, and more sexual partners for all adolescents, but with stronger associations for youth who self-identify as LGB; we therefore focused on sexual identity (versus sexual behavior).

Methods

Data Source:

In order to capture recent shifts in state- and federal-level laws pertaining to LGB rights [22]. this study used the 2015 and 2017 YRBS. The YRBS is a CDC-funded survey that has been conducted biennially since 1991 among students in grades 9–12 [23]. This school-based, cross-sectional survey uses an independent multi-stage cluster design to obtain a state-level representative sample of students in public and private schools; it is both anonymous and voluntary. Overall response rates (incorporating both school and student) ranged from 60%−88% (2015) [24] and 60%−89% (2017)[25]. These data are weighted to account for school and student non-response and also oversample of Hispanic and Black students. The survey monitors health-related behaviors including sexual health, substance use, and mental health. Some state-level surveys include sexual identity [23], allowing for the analysis of sexual health outcomes among heterosexuals, LGB and 'not sure' youth.

Analytic Sample—In 2015 a total of 56 jurisdictions (states and large urban school districts) participated in the YRBS, of whom 35 provided weighted data; in 2017 there were 60 jurisdictions of whom 46 provided weighted data [26]. The majority of jurisdictions (35 in 2015 and 45 in 2017) asked about sexual identity [26]. Students were excluded from the analyses if they had never had sex; a total of 25,492 students (2015) and 25,743 students (2017) reported ever having sexual intercourse. Students were also excluded if they lacked demographic variables (in 2017 age (n=691), sex (n=1,783) and race (n=5776) and in 2015 age (n=334), sex (n=979) and race (n=4104); and the sexual identity variable (n=4,685; 3.8% in 2015; n=8,636; 5.29% in 2017). The final sample included 24,664 youth across 20 jurisdictions (2015) and 23,144 youth in 19 jurisdictions (2017).

Measures

Sexual health outcomes:

Age at first sex: Participants were asked, “How old were you when you had sexual intercourse for the first time?” with options including: ‘I have never had sexual intercourse’ and responses ranging from 11 years old or younger to 17 years old or older. This outcome was treated as continuous.

Condom use at last sex: Participants were asked, “The last time you had sexual intercourse, did you or your partner use a condom (yes/no)?”

Number of lifetime partners: Participants were asked “During your lifetime, with how many people have you had sexual intercourse?” with response options including “I have never had sexual intercourse” and a range from 1 person to 6 or more people. Responses were categorized as 1–2 partners vs. 3+ partners based on the distribution of the variable.

Control variables

Student-level independent variables—Youth were asked “What is your sex” (male/female) and “How old are you” with options categorized as 14 or younger, 15, 16, 17, or 18 and older. Race/ethnicity was determined by asking if youth identified as Hispanic or Latino (yes/no), and the subsequently option to select all relevant races including: American Indian or Alaska Native; Asian; Black or African American; Native Hawaiian or Other Pacific Islander; and White. These variables were combined into 4 racial/ethnic groups: (1) Black or African American; (2) Hispanic/Latino (regardless of reported race); (3) White; or (4) Other.

State-level independent variables

CDC School Health Profile Data: The CDC SHP survey occurs in even years, and we created the LGB school climate variable from the 2014 and 2016 CDC SHP surveys. For each school, the principal and lead health education teachers completed a self-administered questionnaire. In order to produce a representative sample of schools, the CDC SHP uses random, systematic, equal-probability sampling strategies [27]. The LGB school climate was measured with the following items after the initial stem “does your school…”: have a gay-straight alliance or similar club?; identify “safe spaces” for LGBTQ adolescents?; prohibit harassment based on real or perceived sexual orientation?; encourage staff to

attend professional development on safe and supportive school environments for all students; provide LGBTQ-inclusive sexual health curricula; and facilitate access to LGBTQ-competent health services outside school? All items had yes/no response options. These items were aggregated at the state level based on the percentage of schools with LGB-affirmative policies.

We reviewed the policies and coding scheme with policy experts at sexual-health and youth-focused organizations who provided independent validation regarding the accuracy of our theoretical rationale for combing these six LGB school climate variables into one variable and our approach to coding the restrictiveness of these climates. Based on the percent of schools in each state that the CDC SHP reported having inclusive LGB-related practices, the states were then ranked into quintiles from least to most exclusionary (i.e., states with highest percentages of schools with supportive policies received a 1, and states with the lowest percentage received a 5).

We then used this ranking of states' level of exclusionary LGB-related practices to conduct a factor analysis. In both 2015 and 2017, all items loaded onto one single factor, which we then standardized. Factor analysis provided support for a single underlying factor for both years: factor loadings in 2015 ranged from 0.90–0.96 (Cronbach's α was 0.97); factor loadings in 2017 ranged from 0.85–0.95 (Cronbach's α of 0.95).

Moderator

Sexual Identity: Participants were asked: "Which of the following best describes you?" with options including: 1) heterosexual (straight); 2) gay or lesbian; 3) bisexual; and 4) not sure. We included students identifying as "not sure" since prior research has identified unique patterns of sexual behaviors among this sub-group [28].

Statistical Analyses

We first described survey-weighted sample characteristics by sexual identity and sex. We used multi-level weighted multivariable regressions to examine the association between the LGB school climate and age at first sex, and multivariable logistic regressions to examine the association between the LGB school climate and condom use at last sex and number of lifetime sexual partners. We engaged in a three-step model building process for each sexual health outcome variable. Model 1 included the LGB school climate and student-level characteristics, Model 2 then controlled for each state's GINI co-efficient —which gauges income inequality—as existing research shows a relationship between poverty level and sexual health outcomes [29], and Model 3 added interaction terms between sexual identity and the LGB school climate. In order to probe the interactions that were significant, we stratified Model 2 by sexual identity and sex. Data cleaning and recoding were conducted in SAS Version 9.4 (SAS Institute, Cary, NC) and analyses were conducted using SAS-Callable SUDAAN Version 11.0.1 (RTI International, Research Triangle Park, NC) to account for the complex sample design. YRBS sampling weights accounted for selection probability, non-response, and population distribution. All statistical tests were two-sided and p-values <0.05 were considered statistically significant. The IRB at Northwestern University granted this study exempted status.

Results

Table 1 shows the demographics of high school students in the 2015 and 2017 YRBS by sex and sexual identity.

Age at first sex:

In Model 1, which controlled for student-level demographics, LGB adolescents in 2017 (Table 2) and 2015 (Supplemental Table 1) and were more likely than heterosexuals to have an earlier age at first sex, as were women versus men. Youth living in states with more exclusionary school climates were significantly more likely to report a lower age at first sex (2015: β=−0.03, 95% CI=−0.05,−0.02; 2017: β=−0.04, 95% CI=−0.07,−0.02) than youth in less exclusionary climates. In Model 2, which controlled for state-level GINI index, school climate remained significantly associated with youths' age at first sex (2015: β=−0.04, 95% CI= −0.05, −0.02; 2017: β=−0.04, 95% CI= −0.07, −0.02). In Model 3, which included cross-level interactions, sexual identity modified the relationship between LGB school climate and age at first sex for bisexuals in 2015 (β=−0.09, 95% CI=−0.15, −0.03) but was not significant in 2017 (p=0.10). The difference in age at first sex among bisexuals compared to heterosexuals was greater in exclusionary school climates than in inclusionary school climates. The school climate also modified the relationship for 'not sure' individuals in 2017 (β=0.28, 95% CI=0.12, 0.0.44) but not 2015.

We explored the associations between LGB school climate and age at first sex for each sexual identity subgroup by sex (Supplemental Table 4). Heterosexual men (2015: β=−0.04, 95% CI=−0.06, −0.01; 2017: β=−0.06, 95% CI=−0.09, −0.02) and bisexual women (2015: β=−0.12, 95% CI=−0.17, −0.06; 2017: β=−0.09, 95% CI=−0.16, −0.02) living in states with more exclusionary LGB school climates had a significantly earlier age at first sex compared to those with more inclusionary LGB climates; the association was also significant for 'not sure' men in 2017 (β=−0.12, 95% CI=−0.17, −0.06).

Condom use at last sex:

Identifying as any sexual minority sub-group compared to heterosexuals was significantly associated with lack of condom use at last sex, as was being female compared to male (2017-Table 3; 2015-Supplemental Table 2). Youth living in states with more exclusionary school climates were less likely to report condom use at last sex across all step-wise models, including Model 2 which includes student and state-level controls and the interaction term (2015: OR=0.95, 95% CI=0.93, 0.98; 2017: OR=0.94, 95% CI=0.90, 0.98). When adding the cross-level interactions, sexual identity modified the relationship between LGB school climate and condom use: the odds of condom use among bisexuals compared to heterosexuals was lower in exclusionary school climates than in inclusionary school climates (2015: OR=0.89, 95% CI=0.82, 0.97; 2017: OR=0.86, 95% CI=0.76, 0.98) as were the odds of condom use among gay individuals compared to heterosexuals in 2017 (OR=0.66, 95% CI=0.64, 0.68) but not 2015.

In our supplemental analyses stratified by sex and sexual identity, heterosexual men living in states with more exclusionary LGB school climates reported a significantly lower

likelihood of condom use at last sex (2015: OR=0.94, 95% CI=0.91, 0.97; 2017: OR=0.94, 95% CI=0.89, 0.99) as did bisexual women (2015: OR=0.87, 95% CI=0.81, 0.94; 2017: OR=0.82, 95% CI=0.74, 0.90).

Lifetime Sexual Partners 1–2 versus 3+:

In Models 1 and 2, individuals who identified as bisexual or 'not sure' were more likely to report having 3+ partners than 1–2 partners (2017-Table 4; 2015-Supplemental Table 3). Females were less likely than males to report having 3+ partners (versus 1–2). In 2015, students living in states with an exclusionary LGB school climate were less likely to report having 1–2 partners versus 3+ partners in Models 1 and 2; this relationship was not significant in 2017. In the stratified analyses, bisexual men in 2015 who lived in states with more exclusionary school climates were more likely to report 1–2 partners versus 3+ partners (OR=1.33, CI 95%=1.08, 1.63) but this was not significant in 2017. There were no other associations between the LGB school climate and number of lifetime sexual partners by sexual identity or sex sub-group.

Discussion

Research has explored the relationships between state-level policies and sexual health outcomes among LGB individuals and has highlighted the need to examine the role of more proximal social climates, such as schools [11,12]. This also includes calls to explore how the influence of school climate may differ by youth characteristics such as sex and LGB status [18]. We therefore explored associations between LGB school climate and sexual health outcomes for all youth, with a focus on differences by sexual identity and sex.

Similar to earlier reports [1,2], this study found that LGB youth have an earlier age at first sex, more sexual partners, and were less likely to report condom use at last sex than their heterosexual peers. In the fully adjusted models, youth living in states with more exclusionary LGB school climates, regardless of sexual identity, reported younger age at first sex and lower likelihood of reporting condom use last sex than those in more inclusionary climates; LGB school climate was not associated with number of lifetime partners. This suggests that, although these policies and resources were designed to target LGB youth, they may also create an environment that is supportive of healthy sexual health outcomes for all students regardless of sexual identity. This could be due to the fact that schools with more supportive LGB policies may also have more inclusive approaches to sexual education which is associated with positive sexual health outcomes [30,31], or that heterosexual students might also subject to harassment based on perceived sexual orientation even if they do not identify as LGB. Additional mechanisms may include increased students' knowledge, ability to advocate for condom use or to decline unwanted sex, and willingness to discuss questions with teachers and/or other adults [19,32]. These findings are consistent with previous work using YRBS data that found an association between living in an exclusionary school environment and increased alcohol use and suicidal ideation for both heterosexual and LGB youth [13,17]. School climates that are exclusionary to LGB individuals have also been associated with drug use [33], bullying [33], and mental health outcomes [17,33,34] for LGB and heterosexual youth; these results inform both how

exclusionary environments negatively impact students and how inclusionary environments can facilitate positive outcomes [17,34]. The associations between LGB school climate and sexual health outcomes were stronger in 2015 than in 2017. This may be a result of shifting national-level attitudes around homosexuality (e.g., the passage of marriage equality in June 2015) which could attenuate associations at the school level.

Sexual identity moderated the relationship between LGB school climate and condom use at last sex for bisexuals and lesbian/gay students, suggesting the importance of LGB inclusive policies in promoting sexual health. These findings were supported by the stratified analyses which found that bisexual women living in states with exclusionary school climates reported earlier age at first sex and were less likely to report condom use at last sex than those in inclusionary school climates. Sexual identity moderated the relationship for age at first sex for 'not sure' youth, though in the opposite direction expected; however, the number of 'not sure' youth are small and we may lack the power to accurately represent this relationship. These findings add to the evidence base of how school environments may be associated with different outcomes for youth based on sexual identity. Our findings build on previous work showing that the relationship between the social climate and health outcomes (e.g., substance use policies and substance use) differs for LGB and heterosexual individuals [35,36]. Previous work also found that bisexual women had higher rates of unintended pregnancy and other sexual risk behaviors than their heterosexual peers [1,37]. One potential explanation may be a heightened level of minority stress among bisexual women. The minority stress model describes how multiple, intersecting, forms of stigma may affect behaviors among sexual minorities [21]. Among adolescents, minority stress may be moderated through interactions with, and support from, peers and family [38], highlighting the important role school environments can play in supporting LGB youth and mitigating related stressors. The study findings are consistent with the minority stress model which suggests that bisexuals may face a kind of "double stigma" from both heterosexual and LGB individuals and communities, which could magnify the role of minority stress [39].

Suggestions for Future Work

Future work should explore the relationship between LGB school climate and sexual health outcomes longitudinally to ascertain whether changes in policies and school climates over time have an impact; this would also help determine causality. Additionally, research should examine the pathways through which the LGB school climate affects certain groups and explore why this study found a stronger association among bisexuals, particularly bisexual women. Research should examine associations between states' LGB school climate and comprehensive sexual education policies. Continued work is needed to obtain data that can better represent what is happening at the school level in order to understand what is being taught and how policies are being implemented and enforced.

Strengths and Limitations

This study expands upon previous work that has explored the relationship between state-level sexual education policies and sexual health outcomes by exploring the school climate. A strength of this study is the use of factor analysis to ensure that multiple components of the school climate could be used as a single measure. Previous studies have explored

associations between a single practice (such as the existence of a gay-straight alliance) but those rarely exist in isolation to other school policies which could confound results. Additionally, we explored the relationship by sex and sexual identity instead of grouping all LGB youth into one category. This allowed us to elucidate relationships that may not have been otherwise noticed, such as the associations between LGB school climate sexual health outcomes for bisexual youth. Furthermore, our inclusion of youth identifying as "not sure" contributes to our nascent understand of their unique patterns of disparities, and highlights the need for additional research. These findings are based on probability-based samples at the state-level, which provides generalizable results for a substantial portion of US-based adolescents. Data come from two waves (2015 and 2017) which adds to the generalizability and points to the need to explore potential changes over time.

The results should be considered with certain limitations. First, the data are cross-sectional, limiting our ability to infer causality. While the CDC SHP data were collected at the school-level, the reported data were aggregated at the state level. As a result, we cannot definitively say that students within the YRBS sample are representative of the students who attended schools within the SHP. Not all states in the YRBS include questions about sexual identity, which could reduce the statistical power of our analyses. This may explain the marginally significant findings—especially for small groups (e.g., "don't know" category). Individuals' gender identity cannot be inferred using the YRBS. Importantly, states that include questions about sexual identity represent a wide range of political climates. It should also be noted that youth in the YRBS did not necessarily attend the same schools that completed the SHP questionnaire. Only principals and teachers completed the LGB climate items, which reduces biases related to students describing the school climate and their own behaviors. Future research should explore potential differences in subjective interpretations of school climates versus objective reporting of which services exist.

This study addresses the Institute of Medicine's call for research examining the social influences of health for LGB individuals. We demonstrate that the LGB school climate is associated with sexual health behaviors for all youth and that associations differ by sex and sexual identity: bisexuals, particularly bisexual women, had the most significant association. In addition, bisexual women also have higher baseline levels of certain sexual risk behaviors than their heterosexual peers (e.g., less condom use and higher rates of pregnancy) [40]. Living in a state with an exclusionary LGB school climates was associated with younger age at first sex and less condom use for all youth, suggesting that such climates are associated with detrimental health outcomes for youth regardless of their sexual identity. It is crucial that research continues to explore the drivers of these health disparities in order to support healthy life course trajectories for all youth.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Descriptive Characteristics of US High School Students Stratified by Sexual Identity, YRBS 2015 & 2017

	Sexual Identity (N = 24,664; Year 2015)								Sexual Identity (Total N = 23,144; Year 2017)							
	Heterosexual		Gay/Lesbian		Bisexual		Not Sure		Heterosexual		Gay/Lesbian		Bisexual		Not Sure	
Race	#	row %	#	row %	#	row %	#	row %	#	row %	#	row %	#	row %	#	row %
White	10293	87.64	281	2.01	963	7.87	304	2.48	10669	84.65	295	2.32	1204	10.21	323	2.82
Black	3082	85.31	97	2.54	351	10.08	85	2.07	2080	84.59	85	3.19	251	9.75	92	2.47
Hispanic/Latino	5524	86.17	240	2.54	671	7.80	202	3.49	4623	85.20	186	2.89	615	9.01	269	2.90
Other	2100	85.93	84	2.46	285	7.46	102	4.15	1966	84.12	68	2.27	318	10.49	100	3.13
Age																
14 or younger	1092	76.15	45	3.30	186	11.27	77	9.28	1031	82.63	32	1.36	175	11.74	52	4.27
15	3708	83.88	145	2.98	488	9.35	151	3.79	3235	82.22	128	3.03	503	11.89	136	2.86
16	5830	86.92	181	1.94	673	8.52	188	2.62	5316	84.15	183	2.54	705	10.42	246	2.89
17	6781	89.04	209	2.00	622	7.09	170	1.86	6347	85.60	186	2.61	694	9.49	218	2.30
18 or older	3588	87.65	122	2.30	301	7.62	107	2.43	3409	86.63	105	2.68	311	7.57	132	3.12
Condom Use last sex																
Yes	12917	90.39	215	1.21	1072	6.71	300	1.69	11542	89.52	181	1.44	1098	6.83	366	2.21
No	7393	81.48	448	3.77	1112	10.17	353	4.58	7185	77.93	412	4.15	1198	14.26	378	3.67
Age at First Sex																
11 or younger	1035	68.77	72	3.98	190	11.82	139	15.43	712	71.14	72	6.26	183	14.26	126	8.33
12	887	82.68	44	3.36	128	9.81	53	4.16	671	78.78	39	5.48	119	11.87	47	3.87
13	2105	86.10	86	2.04	300	9.45	64	2.41	1593	79.14	67	3.53	285	14.44	75	2.88
14	4531	84.67	149	2.47	569	10.17	154	2.68	3915	83.29	138	2.39	552	11.87	133	2.45
15	5739	88.95	154	2.01	564	6.65	155	2.39	5592	86.69	139	1.81	634	9.16	165	2.34
16	4415	91.28	126	2.04	335	5.81	82	0.87	4722	87.69	106	2.07	432	8.33	145	1.90
17 or older	2098	88.06	64	1.88	150	8.30	38	1.76	1949	88.53	61	2.80	164	5.21	79	3.46
Number of Lifetime Partners																
1	8988	90.11	260	2.00	759	5.91	217	1.98	8782	87.11	247	2.22	871	8.28	303	2.39
2	3876	86.27	143	2.94	459	8.66	119	2.13	3637	83.80	129	3.25	489	10.05	133	2.90
3+	7179	83.34	268	2.13	980	10.43	326	4.09	6073	82.41	237	2.82	934	11.57	312	3.20

Table 2:

Linear Regression: Between Age of First Sex and LGB School Climate, YRBS 2017

	M1: SHP + Demographics				M2: M1+GINI				M3: M2+Climate+SexID Interaction			
	β	**SE**	**p-value**	**95%CI**	**β**	**SE**	**p-value**	**95%CI**	**β**	**SE**	**p-value**	**95% CI**
LGB School Climate	**−0.042**	**0.016**	**0.008**	**(−0.067,−0.016)**	**−0.042**	**0.016**	**0.007**	**(−0.068,−0.016)**	**−0.041**	**0.015**	**0.009**	**(−0.066,−0.015)**
GINI					−0.213	0.565	0.706	(−1.142,0.716)	−0.434	0.553	0.433	(−1.344,0.477)
Sexual Identity												
Heterosexual	0.000				0.000				0.000			
Gay/Lesbian	**−0.497**	**0.077**	**<0.0001**	**(−0.623,−0.370)**	**−0.496**	**0.077**	**<0.0001**	**(−0.622,−0.370)**	**−0.516**	**0.076**	**<0.0001**	**(−0.641,−0.391)**
Bisexual	**−0.457**	**0.036**	**<0.0001**	**(−0.517,−0.397)**	**−0.457**	**0.036**	**<0.0001**	**(−0.517,−0.397)**	**−0.457**	**0.037**	**<0.0001**	**(−0.517,−0.396)**
Not sure	**−0.557**	**0.068**	**<0.0001**	**(−0.669,−0.445)**	**−0.556**	**0.068**	**<0.0001**	**(−0.669,−0.444)**	**−0.544**	**0.069**	**<0.0001**	**(−0.658,−0.430)**
Race/Ethnicity												
White	0.000				0.000				0.000			
Black	**−0.474**	**0.040**	**<0.0001**	**(−0.540,−0.409)**	**−0.471**	**0.041**	**<0.0001**	**(−0.539,−0.403)**	**−0.476**	**0.041**	**<0.0001**	**(−0.544,−0.408)**
Hispanic/Latino	**−0.235**	**0.029**	**<0.0001**	**(−0.282,−0.188)**	**−0.232**	**0.031**	**<0.0001**	**(−0.282,−0.181)**	**−0.233**	**0.030**	**<0.0001**	**(−0.282,−0.183)**
Other	**−0.196**	**0.039**	**<0.0001**	**(−0.260,−0.132)**	**−0.195**	**0.039**	**<0.0001**	**(−0.259,−0.130)**	**−0.193**	**0.039**	**<0.0001**	**(−0.257,−0.130)**
Age												
14 or younger	**−2.262**	**0.042**	**<0.0001**	**(−2.331,−2.193)**	**−2.262**	**0.042**	**<0.0001**	**(−2.331,−2.193)**	**−2.259**	**0.042**	**<0.0001**	**(−2.328,−2.190)**
15	**−1.430**	**0.035**	**<0.0001**	**(−1.488,−1.372)**	**−1.430**	**0.035**	**<0.0001**	**(−1.487,−1.372)**	**−1.431**	**0.035**	**<0.0001**	**(−1.488,−1.374)**
16	**−0.759**	**0.035**	**<0.0001**	**(−0.817,−0.701)**	**−0.758**	**0.035**	**<0.0001**	**(−0.816,−0.700)**	**−0.762**	**0.035**	**<0.0001**	**(−0.820,−0.704)**
17	**−0.260**	**0.035**	**<0.0001**	**(−0.318,−0.202)**	**−0.260**	**0.035**	**<0.0001**	**(−0.317,−0.202)**	**−0.263**	**0.035**	**<0.0001**	**(−0.321,−0.206)**
18 or older	0.000				0.000				0.000			
Sex												
Female	**0.377**	**0.026**	**<0.0001**	**(0.335,0.419)**	**0.377**	**0.026**	**<0.0001**	(0.335,0.419)	**0.373**	**0.026**	**<0.0001**	**(0.331,0.416)**
Male	0.000				0.000				0.000			
Interaction												
Gay x LGB School Climate									0.010	0.107	0.926	(−0.166,0.185)
Bisexual x LGB School Climate									−0.066	0.045	0.142	(−0.141,0.008)
Not sure x LGB School Climate									**0.278**	**0.098**	**0.004**	**(0.117,0.438)**

** Boldface indicates statistical significance (p<0.05)

Table 3:

Logistic Regression: Between Condom Use and LGB School Climate, YRBS 2017

	M1: SHP + Demographics			M2: M1 + GINI			M3: M2+ClimatexSexId Interaction		
	OR	**95%CI**	**p-value**	**OR**	**95%CI**	**p-value**	**OR**	**95%CI**	**p-value**
LGB School Climate	**0.943**	**(0.908,0.977)**	**0.008**	**0.943**	**(0.908,0.978)**	**0.008**	**0.947**	**(0.909,0.986)**	**0.028**
GINI				0.586	(0.374,6.726)	0.600	0.514	(0.348,6.593)	0.642
Sexual Identity									
Heterosexual	1.000			1.000			1.000		
Gay/Lesbian	**0.264**	**(0.226,0.307)**	**<0.0001**	**0.263**	**(0.226,0.307)**	**<0.0001**	**0.244**	**(0.232,0.256)**	**<0.0001**
Bisexual	**0.625**	**(0.573,0.681)**	**<0.0001**	**0.625**	**(0.573,0.681)**	**<0.0001**	**0.638**	**(0.575,0.708)**	**<0.0001**
Not sure	**0.623**	**(0.539,0.720)**	**<0.0001**	**0.622**	**(0.538,0.719)**	**<0.0001**	**0.642**	**(0.548,0.752)**	**<0.0001**
Race/Ethnicity									
White	1.000			1.000			1.000		
Black	0.984	(0.898,1.079)	0.772	0.977	(0.889,1.073)	0.677	0.981	(0.892,1.078)	0.731
Hispanic/Latino	**0.898**	**(0.838,0.961)**	**0.006**	**0.891**	**(0.829,0.958)**	**0.006**	**0.893**	**(0.830,0.961)**	**0.007**
Other	0.910	(0.826,1.002)	0.092	0.907	(0.823,1.000)	0.083	0.906	(0.821,0.999)	0.082
Age									
14 or younger	**1.473**	**(1.301,1.669)**	**<0.0001**	**1.472**	**(1.299,1.667)**	**<0.0001**	**1.469**	**(1.296,1.665)**	**<0.0001**
15	**1.548**	**(1.417,1.692)**	**<0.0001**	**1.547**	**(1.415,1.691)**	**<0.0001**	**1.547**	**(1.415,1.691)**	**<0.0001**
16	**1.364**	**(1.269,1.467)**	**<0.0001**	**1.363**	**(1.268,1.467)**	**<0.0001**	**1.364**	**(1.268,1.468)**	**<0.0001**
17	**1.137**	**(1.056,1.223)**	**0.007**	**1.136**	**(1.056,1.223)**	**0.007**	**1.135**	**(1.054,1.222)**	**0.008**
18 or older	1.000			1.000			1.000		
Sex									
Female	**0.687**	**(0.654,0.721)**	**<0.0001**	**0.687**	**(0.653,0.721)**	**<0.0001**	**0.686**	**(0.652,0.720)**	**<0.0001**
Male	1.000			1.000			1.000		
Interaction									
Gay x LGB School Climate							**0.660**	**(0.644,0.684)**	**<0.0001**
Bisexual x LGB School Climate							**0.861**	**(0.761,0.975)**	**0.049**
Not sure x LGB School Climate							1.122	(0.964,1.305)	0.213

** Boldface indicates statistical significance (p<0.05)

Table 4:

Logistic Regression: Between Lifetime Sex Partners (1–2 vs 3+ Partners) and LGB School Climate, YRBS 2017

	M1: SHP + Demographics			M2: M1 + GINI			M3: M2+ClimateyxSexId Interaction		
	OR	**95% CI**	**p-value**	**OR**	**95% CI**	**p-value**	**OR**	**95% CI**	**p-value**
LGB School Climate	0.927	(0.879,0.977)	0.822	0.987	(0.932,0.957)	0.716	1.032	(0.984,1.084)	0.277
GINI				5.795	(0.812,41.347)	0.141	2.401	(0.506,11.393)	0.355
Education									
Sexual Identity									
Heterosexual	1.000			1.000			1.000		
Gay/Lesbian	0.924	(0.754,1.132)	0.505	0.920	(0.751,1.127)	0.479	0.780	(0.613,1.000)	0.093
Bisexual	**0.762**	**(0.679,0.856)**	**<0.0001**	**0.762**	**(0.678,0.856)**	**<0.0001**	1.020	(0.930,1.123)	0.705
Not sure	**0.687**	**(0.575,0.821)**	**<0.0001**	**0.679**	**(0.568,0.812)**	**<0.0001**	**0.765**	**(0.631,0.928)**	**0.022**
Race/Ethnicity									
White	1.000			1.000			1.000		
Black	**0.708**	**(0.633,0.793)**	**<0.0001**	**0.681**	**(0.605,0.765)**	**<0.0001**	0.971	(0.876,1.076)	0.635
Hispanic/Latino	**0.860**	**(0.793,0.933)**	**0.001**	**0.828**	**(0.759,0.904)**	**<0.0001**	0.941	(0.871,1.019)	0.198
Other	1.024	(0.905,1.159)	0.754	1.006	(0.886,1.141)	0.942	1.078	(0.966,1.203)	0.277
Age									
14 or younger	**1.897**	**(1.568,2.294)**	**<0.0001**	**1.882**	**(1.555,2.276)**	**<0.0001**	1.029	(0.879,1.203)	0.771
15	**1.946**	**(1.730,2.188)**	**<0.0001**	**1.934**	**(1.720,2.176)**	**<0.0001**	1.132	(1.025,1.250)	0.054
16	**1.570**	**(1.418,1.739)**	**<0.0001**	**1.564**	**(1.412,1.732)**	**<0.0001**	**1.156**	**(1.052,1.271)**	**0.018**
17	**1.276**	**(1.150,1.417)**	**0.002**	**1.272**	**(1.146,1.412)**	**0.001**	1.128	(1.024,1.242)	0.053
18 or older	1.000			1.000			1.000		
Sex									
Female	**1.462**	**(1.347,1.586)**	**<0.0001**	**1.461**	**(1.346,1.585)**	**<0.0001**	**1.145**	**(1.073,1.223)**	**0.001**
Male	1.000			1.000			1.000		
Interaction									
Gay x LGB School Climate							1.240	(0.881,1.747)	0.301
Bisexual x LGB School Climate							0.970	(0.844,1.114)	0.718
Not sure x LGB School Climate							0.914	(0.675,1.236)	0.623

** Boldface indicates statistical significance (p<0.05)