

## BACKGROUND

It is estimated 1 in 5 children in the United States of America have a diagnosable mental health disorder, with only 21% of these children receiving treatment (American Academy of Pediatrics, 2017). Over the last two decades, there has been a significant increase in the awareness of mental health disorders among populations who are disproportionately affected by them. Among them, lesbian, gay, bisexual, and transgender (LGBT) youth issues have been a consistent area of concern (Gonsiorek, 1988).

Children spend a significant portion of their lives in schools, and schools are known to vary greatly in their quality (Card & Krueger, 1992). The presence or absence of health-related resources and programs in schools has been shown to alter the health outcomes of students in their care (Leger, 1999). However, all programs require funding and the extent to which a school can implement programs depends largely on a school's socioeconomic status (SES). School SES has been strongly correlated with factors such as academic achievement (Perry & McConney, 2013), but its effect on student mental health remains largely unstudied.

This study uses publicly accessible data from several sources to evaluate the moderating effect of school SES on the relationship between sexual orientation and mental health among primary and secondary students.

## METHODS

Surveys were collected from 15,624 students in grades 9-12 through the National Youth Risk Behavior Survey (YRBS) (CDC, 2015). The independent variable is referred to as "Sexuality". This variable representing the sexuality of high school students in grades 9-12 is dichotomous: heterosexual versus LGBT. Mental health is the dependent variable which has four levels with increasing severity: (1) have not felt sad or helpless, (2) felt sad or hopeless, (3) seriously considered attempting suicide, and (4) attempted suicide. The moderating variable, "School SES", is a categorical variable based upon each school district's funding per student.

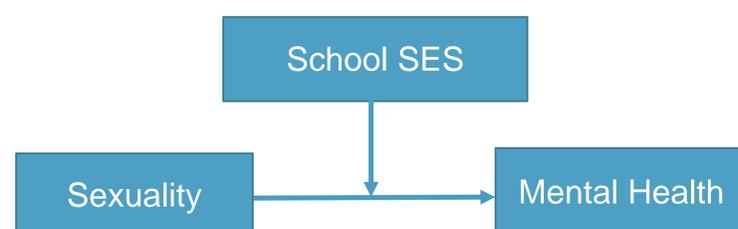


Figure 1

The conceptual model proposes school SES has a moderating effect on the relationship between Sexuality and Mental Health in Figure 1. A 3-variable crosstab analysis was conducted using SPSS to evaluate this moderating effect.

## RESULTS

Initial descriptive analysis of the student populations surveyed in YRBS confirmed expectations that poor mental health indicators were significantly more common among students who were not heterosexual, as shown in Table 1, below:

Table 1

Sexuality	Percentage of population	Felt sad or hopeless	Considered suicide	Planned suicide	Attempted suicide
Heterosexual	85.10%	26%	11.80%	10.90%	8.40%
LGBT	10.40%	52.80%	34.90%	32.90%	28.30%
Not sure	4.50%	43.10%	29.30%	25.70%	23.20%

LGBT students were twice as likely to have felt sad or hopeless and approximately three times as likely to have considered, planned, or attempted suicide relative to their heterosexual peers.

Results of the 3-variable cross-tabulation analysis is in Table 2, below. Note higher values of the school SES variable indicate more funding and higher values of the mental health variable indicate worse mental health:

Table 2

Mental Health * Sexuality * School SES Crosstabulation						
School SES	Mental Health	Sexuality		Total	Chi-Square test	
		Hetero	LGBT			
1	Mental Health	1	12622 (74.3%)	939 (45.9%)	13561 (71.20%)	X <sup>2</sup> = 1056 df = 3 p<0.001
		2	2341 (13.8%)	362 (17.7%)	2703 (14.2%)	
		3	669 (3.9%)	149 (7.3%)	818 (4.3%)	
		4	1367 (8.0%)	594 (29.1%)	1961 (10.3%)	
2	Mental Health	1	3794 (74.6%)	253 (46.3%)	4047 (71.8%)	X <sup>2</sup> = 219 df = 3 df = 3 p<0.001
		2	693 (13.6%)	102 (18.6%)	795 (14.1%)	
		3	228 (4.5%)	52 (9.5%)	280 (5.0%)	
		4	372 (7.3%)	140 (25.6%)	512 (9.1%)	
3	Mental Health	1	3842 (71.7%)	361 (47.5%)	4203 (68.7%)	X <sup>2</sup> = 999 df = 3 p<0.001
		2	816 (15.2%)	100 (13.2%)	916 (15.0%)	
		3	133 (2.5%)	53 (7.0%)	186 (3.0%)	
		4	567 (10.6%)	246 (32.4%)	813 (13.3%)	
4	Mental Health	1	12824 (76.0%)	1230 (50.8%)	14054 (72.8%)	X <sup>2</sup> = 2546 df = 3 p<0.001
		2	2312 (13.7%)	406 (16.8%)	2718 (14.1%)	
		3	390 (2.3%)	218 (9.0%)	608 (3.2%)	
		4	1356 (8.0%)	565 (23.4%)	1921 (10.0%)	

There was a significant association between sexual orientation and mental health for all categories (p<0.001).

## DISCUSSION & LIMITATIONS

The results of this analysis indicate that school socioeconomic status does not have a large moderating effect in the relationship between student sexuality and mental health. This is indicated by the relatively constant distribution of mental health versus sexuality findings across the different socioeconomic levels. This finding is of particular interest in understanding the roles of schools in student mental health. It suggests that school funding does not impact students who are in a sexual minority which is disproportionately affected by mental health disorders, such as LGBT students, any more than their relatively mentally healthier peers. Results of this analysis indicate that the ways in which school funding is being used to improve student mental health need to be reassessed to impact students who are most affected by mental health disorders.

A significant strength of this analysis is the combination of data from different resources to present a novel relationship between variables. However, there are several limitations to this analysis which should be addressed in future projects. While this secondary analysis takes into account funding as an indicator of SES, it largely ignores socio-cultural factors which may vary significantly across the school districts included in the YRBS data set. Socio-cultural factors are a major aspect of socioeconomic status, but require a much more complex analysis to control for them than was feasible in this study. Another limitation present in this analysis is it simplifies mental health based solely on suicide-related variables. Future analyses on this topic would ideally improve upon these limitations.

## CORE COMPETENCIES

Many of the more data driven aspects of the Jefferson College of Population Health's Competencies described in the Student Handbook are addressed in this project. Core competencies addressed include: articulating new priorities in prevention, identifying key socioeconomic and cultural determinants of population health outcomes, applying quantitative and qualitative analytic skills to develop, implement and evaluate programs that address population health issues at the institutional, community, regional, and national levels, and analyzing the impact of socio-cultural factors on access to health care.

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