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National Trends and Disparities in Bullying and Suicidal Behavior Across Demographic Subgroups of US Adolescents

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Abstract

Objective: Suicidal behavior and bullying victimization are important indicators of adolescent psychological distress, and are patterned by sex, race/ethnicity and sexual identity. This study aimed to estimate trends and disparities in these factors along with key demographics.

Method: Youth Risk Behavior Survey data (2015–2019, N = 44,066) were collected biennially through national cross-sectional surveys of US school-attending adolescents. Survey-weighted logistic regressions examined disparities in past-year bullying and suicidal behavior, overall and by demographics.

Results: Bullying in 2019 was highest for female (vs male) students (odds ratio [OR] = 1.82, 95% CI = 1.62, 2.06), American Indian/Alaskan Native (vs White) students (OR = 1.48, 95% CI = 0.91, 2.41, $p > .05$), and gay/lesbian (vs heterosexual) students (OR = 2.81, 95% CI = 2.07, 3.81). Suicidal behavior disparities affected similar groups. There was minimal evidence for shifts in disparities since 2015, with the exception of bullying for gay/lesbian adolescents. The prevalence of bullying victimization among gay and lesbian adolescents went from 31.6% to 44.5% between 2015 and 2019, surpassing the bisexual and “Not Sure” groups to be the sexual identity group with the highest rate of bullying victimization.

Conclusion: Interventions that operate on multiple structural levels and empower marginalized youth are needed.

Keywords

suicide; bullying; adolescents; disparities; trends

Bullying victimization is a strong determinant of adolescent health, with sequelae including suicidal behavior, depression, anxiety, sleep problems, substance use, and other adverse impacts on health and wellbeing.¹ Although bullying has historically manifested through in-person threats and realized physical violence, the proliferation of digital media platforms has allowed bullying to spread online with a similar set of adverse consequences.² These harmful experiences are often informed by demographic factors, including sex, race, ethnicity, and sexual identity, particularly as bullying is a common mechanism by which marginalized adolescents are victimized.^{3–6} Some research has examined disparities in bullying victimization that persist along demographic factors^{5,7–9}; however, recent shifts may have occurred in the landscape of adolescent bullying, particularly given the rapidly evolving digital environment in which online bullying occurs, and so these factors require continued monitoring.

Suicidal behavior is strongly linked to bullying victimization, especially in the United States, where young people who are victimized have nearly 3 times the odds of suicidal behavior compared to their peers.¹⁰ Suicidal behavior has been increasing among US adolescents. Annual death rates by suicide among young people (aged 10–19 years) increased more than 50% from 2009 to 2018 (4.37 to 7.10 per 100,000).¹¹ Self-harm has increased in adolescence, as emergency department visits by youth due to suicide attempts and ideation nearly doubled between 2007 and 2015.¹² Similar to bullying, these adverse outcomes often exhibit disparities by sex, race/ethnicity, and sexual identity.^{13,14}

To inform policy and practice, surveillance of trends in disparities of suicidal behavior, as well as online and offline bullying victimization, requires data from large, diverse samples in recent years, particularly given the dynamic trends in suicide as well as the constantly changing nature of online interactions. Shifts in disparities in either outcome may signal a need for additional resources and outreach. Understanding the patterns and the extent of demographic heterogeneity would inform interventions, identifying groups who may not currently be sufficiently supported. Demographics of young people facing elevated bullying victimization or suicidal behavior require further monitoring and support as they grapple with these difficult psychosocial experiences, especially because the links between these outcomes mean that similar groups may face bullying and experience suicidal behavior.

Social stress theory provides a framework through which to consider bullying and suicidal behavior as correlated outcomes that may be concentrated among those with social disadvantage that generates stress. Young people with a disadvantaged social status may not only face more stressors, but also have less access to vital resources to assist with coping.^{15,16} A concentration of stressors leads to the potential for syndemic, overlapping social patterning of bullying victimization and suicidal behavior. Understanding the extent to which this occurs is critical for the design of targeted interventions to improve adolescent safety. Syndemics involve synergistic interaction of multiple diseases or health-related experiences in a way that is mutually amplifying and sustaining.^{17,18} Just as bullying may contribute to elevated risk for the psychological distress that leads to suicidal behavior and related symptoms such as hopelessness and depression, so too can these symptoms lead to a later elevated risk of bullying victimization.^{19–22} Therefore, it may be that the distributions of suicidal behavior and bullying victimization fall disproportionately on disadvantaged or marginalized groups.

This study aims to examine disparities in bullying and suicidal behavior by sex, race/ethnicity, and sexual identity within a recent nationally representative sample of US adolescents from 2015 to 2019. In addition, this study aims to evaluate whether there are trends in the magnitude of disparities in bullying victimization and suicidal behavior that could inform national and local strategies to combat these adverse outcomes. Given public health efforts to reduce suicide and bullying, these trends should ideally be declining; however, disparities may persist despite these efforts. The ability to articulate which groups are currently most severely affected by bullying victimization and suicidal behavior, as well as major shifts in these inequities, represents a key step toward improved adolescent wellbeing.

METHOD

We used Youth Risk Behavior Survey (YRBS) data from 2015 to 2019, collected biennially through national cross-sectional surveys of approximately 15,000 US adolescents who were attending school grades 9 to 12. These data comprise a nationally representative sample of school-attending adolescents in these grades.²³ Participation was voluntary and anonymous, with questionnaire self-administration occurring during a single class period of the school day. The Centers for Disease Control and Prevention's Institutional Review Board approved the protocol. Across all years, the full sample size was 44,066. Response rates at the school

level ranged from 69.0% (2015) to 75.1% (2019), whereas student response rates ranged from 80.3% (2019) to 86% (2015).^{23–25} Individual surveys underwent quality control for substantial nonresponse or inconsistencies.

Measures

YRBS included 4 items related to suicidal behavior. Suicidal ideation was assessed with the following question: “During the past 12 months, did you ever seriously consider attempting suicide?” Suicide plans were examined by asking “During the past 12 months, did you make a plan about how you would attempt suicide?” Suicide attempts were assessed by asking “During the past 12 months, how many times did you actually attempt suicide?” Finally, suicide injury was assessed with the question “If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?” Items that asked for the number of times in which a given suicidal behavior occurred during the past 12 months were dichotomized into any versus none. Each item was assessed independently, with suicide attempts being the primary focus. These items exhibit strong convergent and discriminant validity, mapping strongly onto other suicidality items, particularly in a similar domain (eg, the YRBS ideation item mapping strongly onto the Patient Health Questionnaire ideation item).²⁶ All items exhibited moderate to substantial reliability in this population based on kappa statistics and similarity of prevalence estimates assessed weeks apart (κ range, 52.3–74.3).²⁷

Bullying victimization was examined with 2 items. Offline bullying was assessed with the question “During the past 12 months, have you ever been bullied on school property?” Online bullying was assessed with the question “During the past 12 months, have you ever been electronically bullied? (Count being bullied through texting, Instagram, Facebook, or other social media.)” Both items had yes/no responses. The bullying items did not provide a specific definition of what constitutes bullying, instead relying on adolescents’ personal definitions and experiences. These items were first combined into a dichotomous measure of any bullying victimization vs none. The items were then combined and split into a 4-level exposure: no bullying, offline only, online only, or both online and offline. Although these items have not undergone psychometric validation, this configuration of 4 groups capturing experiences of bullying has been used consistently elsewhere.^{28,29}

Sex was self-described as “male” or “female.” Race and ethnicity were based on 5 categories, with the option to select as many that applied, and reconfigured into 6 mutually exclusive categories: American Indian/Alaskan Native, Asian and Pacific Islander, non-Hispanic Black or African American, Hispanic/Latino, non-Hispanic White, and non-Hispanic Multiracial.

Sexual identity was assessed with options of “Heterosexual (straight),” “Bisexual,” “Gay/Lesbian,” or “Not Sure.”

Statistical Analysis

We used the SURVEYFREQ and SURVEYLOGISTIC procedures (SAS 9.4) to estimate prevalence and fit logistic regression models. We used the DOMAIN statement for subpopulation inference. The YRBS used a stratified 3-stage cluster design that started

with primary sampling units at the county level, secondary units of specific schools, and tertiary units of specific classes in each chosen school and in each of grades 9–12. A weight is applied to each record to adjust for student nonresponse and oversampling of black and Hispanic students.³⁰ All statistical analyses accounted for the complex sampling design of the YRBS, including strata, clusters, and weights.²³

We estimated prevalence of bullying (overall [online or offline], as well as online only, offline only, or co-occurring) in each biennial YRBS survey from 2015 to 2019 by sex, race/ethnicity, and sexual identity. Similarly, we estimated the prevalence of the 4 dichotomous self-reported suicidal behaviors (ie, ideation, plans, attempts, injury) from 2015 onward by sex, race/ethnicity, and sexual identity. Logistic models estimated the association between each demographic category and bullying or suicide-related outcome; no additional variables were included in the models. To examine trends in disparities, we assessed the above relationships across the domain of year and tested the significance of the interaction between year and each demographic for the bullying and suicidal behavior outcomes. Because the sample size was relatively large and missingness was typically low, missing data were not imputed in primary analyses, which aligns with the analytic practices of the YRBS research team. However, to address the elevated missingness in suicide attempt and injury, a sensitivity analysis imputed these outcomes in Stata 16.0 using multiple imputation by chained equations ($k = 5$ imputed datasets). Any primary analysis examining a given outcome across a demographic factor was conducted with all respondents who had data for that outcome and demographic factor, resulting in minimal sample size heterogeneity by model.³¹

RESULTS

Distributions of demographic variables, experiences of bullying, and suicidal behavior by year can be seen in Table 1. Across years, the demographic distributions were relatively consistent, with yearly samples ranging from 48.9% (2017) to 50.9% (2015) male respondents, 49.6% (2019) to 53.4% (2015) White respondents, and 79.2% (2019) to 83.2% (2015) heterosexual respondents. Demographic missingness ranged from 0.8% (sex) to 6.1% (sexual identity). Bullying items had low missingness as well, 1.1% for bullying on school property and 1.0% for online bullying. Suicidal behavior items for suicide attempt and injury had relatively high missingness (14.2% and 17.1%, respectively), although this issue has been reported elsewhere, largely due to certain schools removing items.³¹ Other suicide outcomes had low missingness (1.3% for ideation, 2.0% for plans).

Disparities in Overall Bullying Victimization and Suicide Attempts

Although offline and online bullying experiences have not increased in prevalence substantially within most demographic groups, bullying remains disproportionately high for some adolescents (Figure 1, and Figures S1–S4, available online). Experiences of overall bullying victimization exhibited distinct patterns based on demographic factors (Table 2). By sex, bullying was highest among female students. For instance, overall bullying victimization prevalence among female students was 30.4% (95% CI = 29.0, 31.8), compared with 19.3% among male students (95% CI = 18.4, 20.2). Sexual minority

students, especially bisexual students, faced higher bullying than their heterosexual peers (eg, bisexual students' overall bullying victimization prevalence: 42.2%, 95% CI = 39.3, 45.1; heterosexual students: 22.7%, 95% CI = 21.8, 23.6). More than one-third of all sexual minority students experienced bullying, either online or offline. Bullying outcomes also differed by racial and ethnic identities. The lowest prevalence of bullying victimization existed among Black adolescents (17.6%, 95% CI = 16.1, 19.1), whereas the highest existed among non-Hispanic Multiracial students (30.5%, 95% CI = 27.5, 33.5). Almost one-third of American Indian, Alaskan Native, and non-Hispanic Multiracial adolescents faced bullying.

The groups with the highest prevalence of suicide attempts were similar to those with the highest overall bullying victimization from 2015 to 2019. Suicide attempts were highest among female students (10.6%, 95% CI = 9.6, 11.6) vs male students (5.7%, 95% CI = 5.1, 6.3); American Indian/Alaskan Native adolescents (16.2%, 95% CI = 9.5, 23.0) vs White (6.9%, 95% CI = 6.2, 7.6); and bisexual students (26.5%, 95% CI = 23.9, 29.1) vs heterosexual (6.1%, 95% CI = 5.6, 6.6). These disparities are disconcerting, with 1 in 6 American Indian or Alaskan Native adolescents reporting a past-year suicide attempt, and 1 in 4 bisexual students doing so as well. Although different racial/ethnic groups had the highest prevalence of bullying victimization (non-Hispanic Multiracial) and suicide attempts (American Indian/Alaskan Native), non-Hispanic Multiracial students had the second-highest prevalence of suicide attempts and American Indian/Alaskan Native adolescents had the second-highest prevalence of bullying victimization. These disparities persisted using the multiply imputed suicide attempt outcome (Table S1, available online).

Time Trends in Overall Bullying Victimization and Suicide Attempts

Although the patterns of bullying victimization and suicide attempts demonstrated clear overlapping inequities, the magnitude of these inequities has remained largely invariant since 2015. For sex, although the size of the gap between male and female students for bullying and suicide attempts has weakened somewhat since 2015, neither decline was substantial (Table 3, interaction *p* value, overall bullying: 0.3873; attempts: 0.3185). For sexual identity, however, there was some significant heterogeneity in the bullying disparities, in which the gap between gay/lesbian students and their heterosexual peers widened since 2015 (interaction *p* = 0.0062; 2015 OR = 1.46, 95% CI = 1.03, 2.06; 2019 OR = 2.81, 95% CI = 2.07, 3.81). By 2019, almost half of gay and lesbian students had faced bullying. This, however, was the only significant trend for either bullying or suicide attempt disparities. For race and ethnicity, none of the disparities exhibited significant shifts since 2015. Similarly, no suicide attempt disparities exhibited significant shifts between 2015 and 2019 using the multiply imputed suicide attempt outcome (Table S2, available online).

Trends and Disparities in Bullying Victimization Subtypes and Other Suicidal Behavior Outcomes

For the more specific forms of bullying victimization (online only, offline only, and co-occurring online/offline bullying) and the remaining suicidal behavior outcomes (ideation, plans, and injury), the disparities overlapped those seen for overall bullying and suicide attempts (Table S3, available online). Each bullying and suicidal behavior outcome was more prevalent for female students and for sexual minority adolescents compared to

heterosexual peers. For instance, co-occurring online and offline bullying was higher for female students (Table S3, available online) (13.7%, 95% CI = 12.8, 14.6, vs male adolescents: 6.4%, 95% CI = 5.8, 6.9) and for sexual minority adolescents (bisexual: 20.1%, 95% CI = 17.8, 22.4; gay/lesbian: 15.7%, 95% CI = 12.6, 18.8; “Not Sure”: 13.9%, 95% CI = 11.5, 16.3; and heterosexual: 8.8%, 95% CI = 8.4, 9.3). These outcomes were especially severe among sexual minority youth, most notably bisexual youth, with nearly half of bisexual students reporting suicidal ideation and two-fifths making suicidal plans.

For race and ethnicity, each adverse outcome was most prevalent for American Indian/Alaskan Native (co-occurring online/offline bullying, suicidal ideation, suicidal injury) or non-Hispanic Multiracial adolescents (offline only bullying, online only bullying, suicidal plans). Each outcome was lowest for Black (online only bullying, co-occurring online/offline bullying, suicidal ideation, suicidal plans) or Asian/Pacific Islander students (offline only bullying, suicidal injury). For instance, suicidal injury was highest for American Indian/Alaskan Native adolescents (Table S3, available online) (5.7%, 95% CI = 1.6, 9.9, followed by non-Hispanic Multiracial: 4.1%, 95% CI = 2.7, 5.4; Black: 3.5%, 95% CI = 2.7, 4.4; Hispanic/Latino: 3.2%, 95% CI = 2.7, 3.7; White: 2.0%, 95% CI = 1.7, 2.3; and Asian/Pacific Islander: 1.8%, 95% CI = 0.9, 2.6). Suicidal ideation affected over a quarter of American Indian, Alaskan Native, and non-Hispanic Multiracial youth.

However, there was no evidence of major shifting trends in these disparities; none of the interactions between year and demographic were appreciable except between Black and White adolescents for online bullying only ($p = 0.024$). However, the trend in the disparity between Black and White adolescents was not monotonic, and thus not an ongoing linear trend in the disparity.

Using the multiply imputed suicidal injury outcome (Table S4, available online), results were nearly identical to the nonimputed suicidal injury results, following the same demographic patterns described above.

DISCUSSION

The consistent disparities seen in highly prevalent adolescent bullying and suicidal outcomes along sex, race, and sexual identity require urgent attention, as they pose potentially serious threats to the safety and wellbeing of vulnerable young people. There is clear evidence of consistent overlapping inequities in suicidal behavior and bullying victimization along demographic factors of sexual identity, sex, and to an extent, race and ethnicity. Bullying persists as just one of the mechanisms by which marginalized young people are harmed, and the mental health consequences are aligned with the groups most at risk, as the groups bullied most frequently (female students, sexual minority adolescents, American Indian, Alaskan Native, and non-Hispanic Multiracial adolescents) also have the highest levels of suicidal behavior. The overlap of groups facing elevated bullying victimization and experiencing suicidal behavior is particularly disconcerting given the strong links between them.^{1,32,33}

The groups with the highest levels of suicidal behaviors and bullying victimization were consistent across outcomes, and also consistent with a syndemic framework, given that both suicidal behavior and bullying occur among marginalized populations in what may be a mutually reinforcing manner at the individual level.^{17,18} Such patterning is also broadly consistent with a social stress framework, in which outcomes that are detrimental to health are concentrated among those with the highest levels of overall adversity experiences.¹⁶ However, as has been demonstrated in other examinations of syndemic and social stress theory,³⁴ the groups experiencing the lowest levels of these outcomes were not always consistent with this framework of marginalization.

For sex and sexual identity, outcomes were least prevalent in more socially advantaged groups (ie, male and heterosexual adolescents); however, for race and ethnicity, outcomes were lowest among Black or Asian and Pacific Islander students, rather than White students (with the exception of suicide attempts). Thus, patterning of suicidal behavior and bullying is not universally consistent with a social stress framework. However, it is consistent with preliminary evidence seen in prior research reporting not only lower rates of bullying victimization for certain populations of adolescents of color, but related cultural differences in perceptions and reporting of bullying.⁷

For certain adolescents of color, particularly Black and Hispanic/Latino adolescents, rates of specific bullying victimization behaviors (eg, being stolen from or being hit) were similar or higher compared to rates reported by White peers, even as these adolescents of color reported significantly less bullying.³⁵ Part of this may be due to different cultural pressure to portray “toughness” in the face of harm or adversity.³⁵ Black and Hispanic/Latino students also report poorer relationships with adults and lower connectedness in schools, and so may not feel empowered to disclose bullying or feel sufficient social support to do so safely.⁵ These mechanisms may partially explain the divergence in disparities between bullying and suicide outcomes for certain adolescents of color.

The relationships between demographic characteristics and our outcomes of interest changed over time only for gay/lesbian students (vs heterosexual peers) for overall bullying victimization. This growing disparity warrants attention. Our results show clear evidence of entrenched homonegativity and its harmful impact. Almost half of gay/lesbian students faced bullying by 2019, and bisexual students had the highest rate of every suicidal outcome. The mechanisms by which these harms are enacted can be varied; sexual minority youth may be threatened or injured with weapons, may endure homophobic insults or remarks from peers and school staff, or may experience physical and sexual harassment.^{36–38} Often, these incidents go unreported by students because of doubts concerning whether someone would effectively intervene. Such doubts are understandable, given that over 60% of sexual minority students who reported an incident in 2019 received an inadequate response.³⁸

Disparities in bullying and suicidal behavior should be addressed with focused programmatic efforts tailored to the most affected groups. For instance, sexual minority students in schools with LGBT-inclusive antibullying policies reported lower rates of victimization and a greater sense of belonging in schools.³⁹ Schools need to ensure that they take student reports seriously and hold perpetrators of homophobic behaviors accountable.

Further potential policy changes include the implementation of ongoing school climate surveys capturing discrimination and bias, establishing gay–straight alliances, and expanding curricula to include LGBT topics, promoting inclusivity and understanding.⁴⁰

With regard to gender, programmatic efforts might incorporate gender differences in bullying, aiming to reduce the amplified victim-blaming and shaming of bodily characteristics or sexual behaviors that young female students experience.⁸ With regard to race and ethnicity, many major bullying programs are less effective for students of color compared to their White peers.⁵ The direct application of antibullying programs that are less effective for students of color without any modification to provide additional support contributes to systemic racism in schools. Such applied programs may differentially preserve the safety and wellbeing of White students over peers of color. Other school-based practices that disproportionately harm students of color include elevated levels of discipline and suspension, as well as the implementation of school resource officers, instituting an authoritarian presence to combat bullying that imposes an added stressor to minority students who already face elevated risk of police violence.⁴¹ The result of this systemic racism in school responses to bullying is an environment in which students of color may feel unsupported or threatened by an institution inclined to view them as perpetrators rather than victims when bullying arises.

Bullying itself can be rooted in racist beliefs and behaviors, taking the form of bias-based insults, physical harm, or social and linguistic microaggressions.^{42,43} For instance, Black adolescents report that such microaggressions and harm can take the form of assumed intellectual inferiority, consistently being overlooked in school and social settings, having to navigate projected stereotypical roles, and being overdisciplined.^{43,44} Such microaggressions and harm are particularly rampant for Native American students. In one youth focus group, 77% of participants reported being called a racial slur at school, either by students or staff.⁴⁵ This, coupled with elevated levels of discriminatory discipline and ignorance of indigenous trauma embedded in school curricula, can create a uniquely hostile environment, reflected in the elevated rates of bullying victimization and suicidal behaviors seen in this study.^{41,45} Less research has been conducted on multiracial adolescents, the other racial/ethnic group with the highest rates of bullying victimization and suicide attempts, although the harm that they face is likely amplified in part due to racism and bias aimed at the multiple identities that they embody simultaneously.

Strategies to incorporate race and ethnicity more thoroughly into antibullying programming include education surrounding culture, diversity and bias, inclusion of distinct smaller-minority groups (eg, indigenous youth) in research and monitoring, and community role models who can facilitate resilience and emotional well-being in young people of color.⁵ Educators and other adults in adolescents' lives should adopt an antiracist perspective, holding racism accountable when it manifests, including racist bullying.^{46,47}

Just as interventions to combat bullying must be informed by these dynamics, so should suicide prevention. For instance, suicide counselors should be culturally competent to understand and respond to the unique stressors that may have an impact on young female students, sexual minority adolescents, and young people of color. In addition, given the

evidence of overlap in the experiences of bullying and suicidal behavior, further research, ideally longitudinal, should incorporate this demographic heterogeneity in an effort to elucidate the complex processes that might link bullying to suicidal symptoms in vulnerable young people.

This study is strengthened by the large sample size and recency of YRBS data, providing robust estimates of pertinent outcomes. This study also benefits from comprehensive examination of nuanced patterns of bullying victimization and a broad variety of suicidal outcomes. In addition, by extending analyses beyond isolated disparities and by incorporating temporal heterogeneity, we articulated recent shifts in bullying victimization for gay/lesbian adolescents, identifying a growing problem that warrants urgent attention. Finally, our analytic decisions align with prior analyses,^{28,29,31} ensuring that our work builds on existing literature and fully benefits from the YRBS data.

There are, however, limitations of the YRBS. The survey weighting required in analyses of YRBS data limits the precision of estimates. In addition, suicidal behavior items lacked nuance. For suicidal ideation, as an example, students could not report the intensity or frequency of thoughts, but only whether or not they occurred at all during the past 12 months. Similarly, bullying was self-reported as occurring or not occurring, rather than the frequency, intensity, or specific content of the bullying. Offline bullying was likely underestimated, as the survey items addressed only instances occurring on school property, not in other settings. Demographic factors were also limited, lacking the ability to examine gender apart from sex and featuring only a narrow selection of response options for sexual identity. This may explain the 1% missingness for sex and nearly 6% missingness for sexual identity, as young people opt to leave items blank rather than to misidentify themselves.

Other limitations include the extent to which the dataset is representative. In YRBS, data are not included from certain states year to year.^{23–25} The school-based sampling excludes certain populations of young people, such as homeless youth who are not attending school and home-schooled youth. Sample size also limited the extent to which these analyses could produce reliable year-specific results for American Indian and Alaskan Native adolescents' health outcomes. Given the evidence of severe behavioral health burden among these groups,⁴⁸ methodological changes to sampling in YRBS are necessary to ensure the inclusion and representation of these young people in discussions of suicidal symptoms.

In conclusion, both suicidal behavior and bullying disproportionately affect female adolescents, sexual minority adolescents, and American Indian, Alaskan Native, and non-Hispanic Multiracial adolescents. Heterogeneity in trends suggests that the gap between gay and lesbian adolescents and their peers for the outcome of bullying victimization may be growing. Among the majority of groups, however, inequities in bullying victimization and suicidal behavior have been consistent in magnitude since 2015, suggesting that efforts to reduce disparities may need further resources or new approaches. Interventions to reduce bullying or suicidal behavior must recognize the heterogeneity that exists in these adverse outcomes on the basis of demographic factors. Empowering these marginalized young people is a critical step toward adolescent wellbeing and health equity, and the

implementation of informed, tailored interventions to limit bullying and suicidal behavior are just one step in this empowerment.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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The data that support the findings of this study are available in the Centers for Disease Control and Prevention's Adolescent and School Health resources at <https://www.cdc.gov/healthyyouth/data/yrbs/data.htm>. These data were derived from the following resources available in the public domain: YRBSS National Dataset, <https://www.cdc.gov/healthyyouth/data/yrbs/data.htm>.

In addition to the discussion above, this work fundamentally acknowledges how factors of sex, race, ethnicity, and sexual identity shape psychosocial outcomes, and that we must recognize the unique, diverse experiences people have. This sample allowed for participants to express many personal identities, though we recognize that we were unable to address other facets of human diversity like religion or disability, and so we must expand this line of inquiry to other identities. The pursuit of inclusivity and representation within research is an important goal, and we hope to expand the discussion of bullying and suicidal outcomes to prioritize diversity, both for the accuracy of findings and to respect others.

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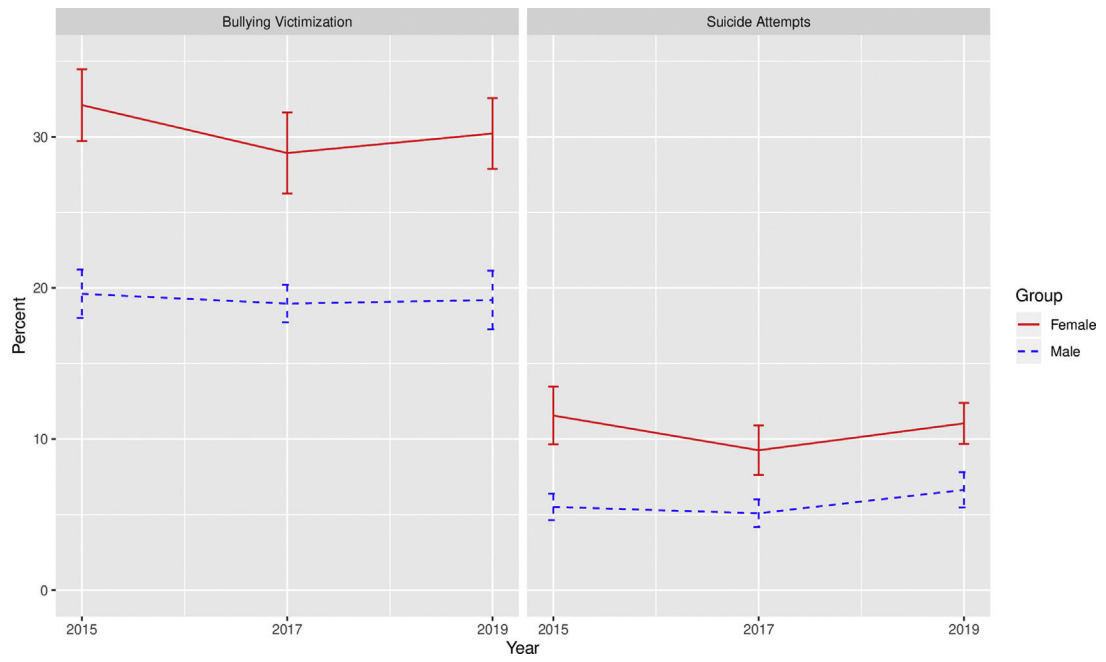


FIGURE 1. Trends in Bullying Victimization and Suicide Attempts Among High School Students, Youth Risk Behavior Survey 2015–2019, by Sex
Note: Please note color figures are available online.

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Sample Size per Year and Percentages of Demographic Variables, Bullying, and Suicidal Behavior, Youth Risk Behavior Survey 2015 to 2019

TABLE 1

	2015	Weighted % (95% CI)	2017	Weighted % (95% CI)	2019	Weighted % (95% CI)
Total sample size	15,624		14,765		13,677	
Sex: female ^a	7,757	48.3 (45.2, 51.5)	7,526	50.3 (47.9, 52.7)	6,885	48.9 (47.6, 50.3)
Male	7,749	50.9 (47.8, 54.1)	7,112	48.9 (46.4, 51.4)	6,641	50.2 (48.8, 51.5)
Race/ethnicity ^a : AI/AN	163	0.6 (0.3, 0.9)	137	0.5 (0.3, 0.7)	145	0.6 (0.5, 0.8)
API	727	4.3 (2.6, 6.0)	764	4.2 (3.0, 5.4)	687	5.2 (2.6, 7.9)
Black	1,667	13.3 (9.5, 17.2)	2,796	13.1 (9.9, 16.4)	2,040	11.8 (8.2, 15.4)
Hispanic/Latino	5,121	21.8 (15.6, 28.1)	3,647	22.4 (16.8, 28.0)	3,038	25.3 (18.6, 32.0)
White	6,849	53.4 (45.5, 61.2)	6,261	52.4 (45.9, 58.9)	6,668	49.6 (42.2, 57.0)
Multiracial	739	4.5 (3.8, 5.3)	823	5.4 (4.5, 6.3)	661	4.3 (3.5, 5.1)
Sexual identity ^a : bisexual	922	5.6 (4.8, 6.4)	1,137	7.6 (6.7, 8.5)	1,151	8.2 (7.4, 8.9)
Gay/lesbian	324	1.9 (1.5, 2.3)	357	2.2 (1.8, 2.7)	380	2.3 (2.0, 2.7)
Heterosexual	12,954	83.2 (79.1, 87.3)	12,012	80.4 (75.9, 84.9)	10,853	79.2 (74.9, 83.5)
Not sure	503	3.0 (2.5, 3.5)	602	3.9 (3.4, 4.5)	591	4.2 (3.6, 4.8)
Offline bullying	2,956	20.2 (18.7, 21.8)	2,665	19.0 (17.7, 20.4)	2,703	19.5 (17.8, 21.2)
Online bullying	2,268	15.5 (14.3, 16.8)	2,113	14.9 (13.7, 16.1)	2,138	15.7 (14.3, 17.1)
Suicidal ideation	2,808	17.7 (16.6, 18.8)	2,571	17.2 (16.1, 18.3)	2,633	18.8 (17.6, 19.9)
Suicidal plans	2,331	14.6 (13.4, 15.8)	2,030	13.6 (12.4, 14.8)	2,151	15.7 (14.7, 16.8)
Suicide attempts	1,203	8.6 (7.5, 9.6)	837	7.4 (6.4, 8.3)	1,067	8.9 (7.9, 9.9)
Suicidal injury	399	2.8 (2.2, 3.4)	286	2.4 (2.0, 2.9)	225	2.5 (2.1, 2.9)

Note: AI/AN = American Indian/Alaskan Native; API = Asian and Pacific Islander.

^aDemographics may not add to 100% due to missingness; other variables represent weighted percentages of nonmissing respondent data.

Percentages and Odds Ratios (and 95% CIs) for Any Bullying Victimization and Suicide Attempts Among Demographic Subgroups of Adolescent Students, Youth Risk Behavior Survey 2015 to 2019

TABLE 2

	Any bullying, % (95% CI)	Any bullying, OR (95% CI)	Suicide attempts, % (95% CI)	Suicide attempts, OR (95% CI)
Sex				
Female	30.4 (29.0, 31.8)	1.83 (1.71, 1.96)	10.6 (9.6, 11.6)	1.96 (1.71, 2.25)
Male	19.3 (18.4, 20.2)	Reference	5.7 (5.1, 6.3)	Reference
Race/ethnicity				
American Indian/Alaskan Native	30.1 (23.8, 36.4)	1.08 (0.80, 1.46)	16.2 (9.5, 23.0)	2.62 (1.60, 4.30)
Asian and Pacific Islander	19.2 (16.8, 21.6)	0.60 (0.51, 0.70)	7.3 (5.5, 9.1)	1.06 (0.80, 1.41)
Black	17.6 (16.1, 19.1)	0.54 (0.48, 0.60)	9.9 (8.4, 11.4)	1.49 (1.24, 1.79)
Hispanic/Latino	20.1 (18.9, 21.4)	0.63 (0.58, 0.69)	9.5 (8.5, 10.5)	1.42 (1.20, 1.68)
Non-Hispanic multiracial	30.5 (27.5, 33.5)	1.10 (0.95, 1.27)	12.9 (10.8, 15.0)	2.00 (1.62, 2.47)
White	28.5 (27.4, 29.7)	Reference	6.9 (6.2, 7.6)	Reference
Sexual identity				
Bisexual	42.2 (39.3, 45.1)	2.49 (2.22, 2.80)	26.5 (23.9, 29.1)	5.56 (4.80, 6.45)
Gay/lesbian	36.8 (32.8, 40.9)	1.99 (1.66, 2.38)	19.7 (15.7, 23.8)	3.79 (2.92, 4.93)
Not sure	32.6 (29.6, 35.5)	1.65 (1.44, 1.89)	14.8 (12.3, 17.2)	2.67 (2.17, 3.28)
Heterosexual	22.7 (21.8, 23.6)	Reference	6.1 (5.6, 6.6)	Reference

Time Trends in Bullying and Suicide Attempt Disparities Including Odds Ratios (95% CIs), Youth Risk Behavior Survey 2015 to 2019

TABLE 3

Outcome	Comparison	Year			2-Group interaction <i>p</i>	Overall demographic interaction <i>p</i>
		2015	2017	2019		
Any bullying	Sex: female vs male (reference)	1.94 (1.76, 2.13)	1.74 (1.53, 1.98)	1.82 (1.62, 2.06)	.3873	.3873
	Race/ethnicity: American Indian/Alaskan Native vs White (reference)	0.83 (0.52, 1.32)	0.97 (0.63, 1.51)	1.48 (0.91, 2.41)	.2238	.5944
	Race/ethnicity: Asian/Pacific Islander vs White (reference)	0.60 (0.42, 0.87)	0.61 (0.50, 0.75)	0.58 (0.48, 0.69)	.8915	
	Race/ethnicity: Black vs White (reference)	0.47 (0.38, 0.59)	0.61 (0.52, 0.72)	0.54 (0.45, 0.65)	.1971	
	Race/ethnicity: Hispanic/Latino vs White (reference)	0.63 (0.52, 0.76)	0.68 (0.60, 0.78)	0.59 (0.51, 0.68)	.2993	
	Race/ethnicity: Non-Hispanic multiracial vs White (reference)	1.13 (0.85, 1.50)	1.14 (0.89, 1.45)	1.04 (0.82, 1.31)	.8343	
	Sexual identity: bisexual vs heterosexual (reference)	2.71 (2.21, 3.30)	2.75 (2.23, 3.38)	2.16 (1.85, 2.54)	.1146	.0428
	Sexual identity: gay/lesbian vs heterosexual (reference)	1.46 (1.03, 2.06)	1.87 (1.41, 2.48)	2.81 (2.07, 3.81)	.0062	
	Sexual identity: "not sure" vs heterosexual (reference)	1.57 (1.25, 1.98)	1.70 (1.32, 2.19)	1.71 (1.35, 2.16)	.8603	
	Sexual identity: "not sure" vs heterosexual (reference)	2.24 (1.76, 2.85)	1.90 (1.48, 2.45)	1.75 (1.41, 2.16)	.3185	.3185
Suicide attempts	Sex: female vs male (ref)	2.42 (1.35, 4.33)	1.11 (0.38, 3.27)	3.99 (1.76, 9.04)	.1882	.2401
	Race/ethnicity: American Indian/Alaskan Native vs White (reference)	1.16 (0.77, 1.75)	1.02 (0.55, 1.89)	0.99 (0.63, 1.55)	.8660	
	Race/ethnicity: Asian/Pacific Islander vs White (reference)	1.34 (0.95, 1.91)	1.65 (1.22, 2.25)	1.57 (1.14, 2.16)	.7039	
	Race/ethnicity: Black vs White (reference)	1.75 (1.31, 2.34)	1.37 (1.02, 1.84)	1.14 (0.87, 1.49)	.1110	
	Race/ethnicity: Hispanic/Latino vs White (reference)	2.46 (1.61, 3.75)	1.86 (1.37, 2.52)	1.73 (1.25, 2.39)	.4134	
	Race/ethnicity: Non-Hispanic multiracial vs White (reference)	6.86 (5.41, 8.72)	5.54 (4.28, 7.18)	4.72 (3.65, 6.10)	.1090	.3518
	Sexual identity: bisexual vs heterosexual (reference)	3.98 (2.39, 6.64)	3.96 (2.42, 6.47)	3.53 (2.46, 5.05)	.9036	
	Sexual identity: gay/lesbian vs heterosexual (reference)	2.34 (1.64, 3.33)	2.91 (2.08, 4.05)	2.80 (1.90, 4.11)	.6690	
	Sexual identity: "not sure" vs heterosexual (reference)					