LGBTQ Identity in Adolescence and the Peer Effects of Coming Out

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Abstract

LGBTQ youth are disproportionately likely to be bullied, which worsens mental health, academic outcomes, and suicide risk. Using unique panel data from a large US school district, I show that students who eventually identify as LGBTQ face bullying disparities long before coming out, which incurs additional harassment. However, coming out has positive externalities: I identify the effect of having LGBTQ peers by exploiting quasi-random cross-cohort variation in exposure within a school. Having LGBTQ peers significantly improves LGBTQ students' experiences, reducing bullying and improving school belonging and district retention. The effects seem driven by reduced stigma and stronger social connections.

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1 Introduction

LGBTQ identities begin developing in adolescence, and LGBTQ youth are much more likely to be bullied and feel less like they belong at school than their cisgender and heterosexual (Cis/Het) peers. For example, in Los Angeles in 2017-2019—the context I study—LGBTQ 9th-graders were 43 percent more likely to be bullied and had 0.25 standard deviations lower feelings of school belonging. These disparities arise despite high levels of stated LGBTQ acceptance—75 percent of 9th-graders say LGBTQ students are accepted—and substantial district- and state-level policy protections for LGBTQ students relative to other areas of the US (Movement Advancement Project).

Despite the magnitude of these gaps and the extent to which bullying and school belonging shape students' development,[1] there is little evidence quantifying the causes of the bullying and belonging disparities facing LGBTQ students. Isolating the role of anti-LGBTQ stigma, gender norms, school supports, or other factors is difficult because all of these evolve together and affect whether students disclose LGBTQ identities. Limited large-scale data further stymies research on this topic. However, understanding what causes LGBTQ students to have such worse school experiences than their peers is crucial for designing effective programs to support LGBTQ students.[2] In 2023, 24 percent of US high-school students identified as LGBTQ or were questioning their sexual orientation or gender identity (Mittleman, 2025).

In this paper, I use unique data from Los Angeles Unified School District (LAUSD) to provide new quantitative evidence on the development of sexual orientation and gender identity (SOGI) in adolescence and the sources of the bullying and belonging disparities facing LGBTQ students. First, I use within-student changes to identify how beginning to identify as LGBTQ, or "coming out," affects a student's own experiences. Second, I study the spillover effects of increased LGBTQ visibility: I test how having LGBTQ peers affects student experiences and underlying mechanisms.

The first set of analyses takes advantage of the novel panel structure of the data to identify how bullying and belonging disparities evolve before and after students begin to identify as LGBTQ, compared to always-Cis/Het students. I observe 43,000 students in 6th-9th grade in 2016 who report their SOGI annually until 2019 in a district-run survey, alongside questions about bullying, belonging at school, and perceptions of LGBTQ acceptance.[3] First, I show that standard statistics

[1] Being bullied worsens mental health and suicide risk and weakens cognitive and non-cognitive skills (Brown and Taylor, 2008; Eriksen et al., 2014; Nikolaou, 2017; Arseneault, 2018; Sarzosa and Urzua, 2021; Rees et al., 2022; Sarzosa, 2024). In contrast, students' feelings of belonging at school have been linked to positive health and behavioral outcomes, and may serve as a protective factor for students facing other stressors (Wilkins et al., 2023).

[2] School-based programs supporting LGBTQ students appeared in the 1990s/2000s and are associated with smaller bullying and mental health disparities for LGBTQ students (Goodenow et al., 2006; Kosciw et al., 2013, 2018).

[3] Students are asked, "Do you identify as lesbian, gay, bisexual, transgender, and/or queer (LGBTQ)?" In 2016 and 2017, they could answer "Yes," "No," or "I'd rather not say;" "I don't know" was added as an option in 2018 and 2019. I pool the latter two options and call these students "uncertain." I label students who respond "no" as "Cis/Het," though asexual or intersex students may be included in this category.

likely understate the size of the adolescent LGBTQ population, due to substantial fluidity in how adolescents identify over time: 14 percent of students ever identify as LGBTQ, though at most 8 percent identify as LGBTQ in a given year.[4]

Furthermore, statistics relying on whether students *currently* identify as LGBTQ mask important disparities. Students who ever, but do not yet, identify as LGBTQ are 8pp (15 percent) more likely to be bullied than their always-Cis/Het peers (p<0.001). The gap appears up to 5 years before identifying as LGBTQ and in elementary school—which is before most adults report recognizing their own sexual or gender minority identity. The gap then increases by 50-75 percent (p<0.001) in the year that students begin identifying as LGBTQ on the survey. Finally, students who always identify as LGBTQ—especially boys—are substantially more likely to be bullied than other "out" students who come out later or ever change how they identify. Taken together, the disparate bullying experienced by LGBTQ students seems driven at least in part by other characteristics—perhaps non-conformity with gender norms—but some bullying seems to specifically target students who are more publicly "out." Effective anti-bullying policies will need a multi-pronged approach.

To gain more precise insight into the causes of the bullying and belonging disparities facing LGBTQ students, I turn to estimating the effect of one important school input: peer composition. There are several reasons why having more LGBTQ peers might matter. First, having more LGBTQ peers might affect bullies' behavior by reducing anti-LGBTQ stigma or weakening gender norms. Longstanding research in psychology shows that exposure to minority groups can reduce stigma among members of the majority group (e.g. Paluck et al., 2019, 2020; Lowe, 2025). Second, bullies target students without strong social connections (Veenstra et al., 2005; Healy et al., 2024). People tend to be friends with those most like themselves (McPherson et al., 2001; Currarini et al., 2009), so having more LGBTQ peers could strengthen LGBTQ students' friendships, reducing bullying. Reduced stigma or stronger friendships may also directly improve feelings of belonging, but belonging may also be affected by a third channel: LGBTQ students may learn through observation that LGBTQ students as a whole are more accepted than they previously thought.

Estimating the effects of having LGBTQ peers is difficult for two reasons. First, students select into schools and classrooms—a common concern in the peer effects literature. Thus, student and parent attitudes, school supports, and the share of peers who identify as LGBTQ will likely be correlated in unobservable ways that also affect student outcomes. Second, observed SOGI is self-reported. If identifying as LGBTQ on the survey depends on exposure to LGBTQ students or LGBTQ-Cis/Het disparities, then the estimated relationship between outcomes and the share identifying as LGBTQ will be biased—even if exposure to peers' "true" SOGI is actually random.

The data from LAUSD is uniquely suited to address these challenges. The survey data de-

[4] Another 20 percent are ever uncertain but never identify as LGBTQ. Mittleman (2023) and Hu and Denier (2023) provide similar evidence of fluidity in how adults (especially young adults) identify.

scribed above merges with administrative data on enrollment, attendance, and demographics. I take advantage of (i) the substantial mixing of LAUSD students transitioning from 206 middle schools to 117 high schools and (ii) the panel of self-reported SOGI to study within-school, cross-cohort variation in the share of one's *9th-grade* cohort who identified as LGBTQ *in 8th grade*.[5] Multiple tests support the assumption that deviations from 9th-grade-school averages in the share of 9th-grade peers who identified as LGBTQ in 8th grade are quasi-random, and focusing on the share of students who identified as LGBTQ in 8th grade eliminates concerns that identifying as LGBTQ may itself depend on exposure to LGBTQ students or LGBTQ-Cis/Het disparities. I use both a linear model—regressing outcomes on the share LGBTQ—and models that allow for non-linearities. The sample is roughly 77,000 students in 9th grade in 2017-2019, 54,000 of whom took the survey measuring bullying, belonging, and perceived acceptance outcomes in 9th grade.

Having more LGBTQ peers substantially improves the school experiences of LGBTQ students. Increasing the share LGBTQ by 10pp—close to the range of the share LGBTQ—closes LGBTQ-Cis/Het gaps in bullying and feelings of belonging at school by 9pp (p=0.04) and 0.3sd (p=0.01), respectively. These effects are large: the bullying and belonging gaps are closed by 38 and 60 percent, respectively, compared to when the share LGBTQ is in the bottom quintile. The effects are driven by marked improvements for LGBTQ students alongside small, negative, statistically insignificant effects on Cis/Het students. Finally, reinforcing the effects on self-reported school experiences, having more LGBTQ peers lowers the likelihood that LGBTQ students leave the district for 10th grade: having 10pp more LGBTQ peers decreases this chance by 5.2pp ($p = 0.04$), which eliminates the LGBTQ-Cis/Het gap.

Understanding *why* having LGBTQ peers matters for student outcomes is key for designing school policy to support LGBTQ students. Schools cannot assign LGBTQ peer density, but they can target the underlying channels through which peers affect outcomes. Several analyses suggest that, in this context, having LGBTQ peers reduces anti-LGBTQ stigma and strengthens LGBTQ students' social ties with other LGBTQ students.

First, increasing the share LGBTQ from the bottom quintile (less than 3.8 percent) to the 20th-50th percentile (3.8-5.6 percent) increases LGBTQ students' perceptions of LGBTQ acceptance by 0.18sd ($p = 0.10$), closing a large gap in beliefs about acceptance compared to Cis/Het students.[6] However, there is a precise null effect on Cis/Het students' perceptions. Thus, while the students who are likely paying the best attention report less stigma, changes in stigma are not perceptible enough to affect other students. Consistent with LGBTQ students' perceptions of stigma being

[5] I follow a large literature that estimates peer effects using within-school, cross-cohort variation in exposure to peers with some pre-determined characteristic (Hoxby, 2000; Angrist and Lang, 2004; Ammermueller and Pischke, 2009; Gould et al., 2009; Carrell and Hoekstra, 2010; Lavy and Schlosser, 2011; Lavy et al., 2012; Black et al., 2013; Merlino et al., 2019; Olivetti et al., 2020; Cools and Patacchini, 2021; Cools et al., 2022; Kiessling and Norris, 2023).

[6] The effects on bullying and belonging are also driven by students with the fewest LGBTQ peers.

most accurate, the panel sample analysis shows that students who eventually identify as LGBTQ do not perceive more LGBTQ stigma than their always-LGBTQ peers until *after* they begin identifying as LGBTQ, likely learning through experience. On the other hand, an alternative explanation is that LGBTQ students misperceive LGBTQ stigma when they have few LGBTQ peers, and learn through observation that their peers are more accepting than expected.

Second, stronger friendships with other LGBTQ students seem to play a role. Consistent with the idea that students prefer friendship with "like" others, I find that when the share LGBTQ increases past a threshold (5-6 percent), having more LGBTQ peers *reduces* how well LGBTQ students report getting along well with those different from themselves by 0.18sd (p=0.01)—even as bullying rates decline. This suggests that LGBTQ students are having fewer *positive* interactions with people different from themselves, perhaps due to more friendships with other LGBTQ students. The short-term effects on bullying and belonging seem to be net positive, but it is not clear whether this social polarization has other downstream consequences.

I've shown that (i) coming out is associated with large social and psychological costs and (ii) having more LGBTQ peers lowers those costs and increases perceived LGBTQ acceptance. Thus, I finally test whether having more LGBTQ peers changes students' disclosed SOGI. This analysis is directly relevant to ongoing policy debates: recent legislation aims to restrict LGBTQ visibility and support in schools, motivated in part by concerns that these efforts encourage students to identify as LGBTQ (ACLU; Izaguirre and Gomez Licon, 2022; Jones, 2022; Yurcaba and Valle, 2022). However, having LGBTQ peers does not make students who identified as Cis/Het in 8th grade more likely to identify as LGBTQ in 9th grade—I can reject that increasing the share LGBTQ by 10pp has effects larger than 0.5pp ($\alpha = 0.05$). In contrast, I find suggestive evidence that the more supportive environment increases *continued* disclosure of LGBTQ identities: having 10pp more LGBTQ peers makes students who identified as LGBTQ in 8th grade 6.5pp (12 percent, p=0.16) more likely to continue to do so in 9th grade.

This paper primarily contributes to the large economics literature on the role of peers in education and a nascent economics literature on bullying and school climate. In addition to work in other fields on LGBTQ-identity development, it also adds to the economic literatures concerning the effects of social identities on economic outcomes and disparities facing LGBTQ individuals.

First, peers crucially affect educational outcomes and social behavior (Sacerdote, 2011; Cools and Patacchini, 2021). While other papers show that disruptive peers lower test scores and educational attainment (Figlio, 2007; Carrell and Hoekstra, 2010; Carrell et al., 2018), no paper, to my knowledge, has studied the effects of peers on bullying or belonging at school. I show that having more peers "like you" reduces victimization and improves belonging. I also provide new evidence on the effects of having peers with a stigmatized identity on perceived stigma and intergroup contact. Interracial contact in high school or college is known to reduce racial bias in the

majority group, weaken preferences for same-race peers among minority groups, and increase future interracial contact (Boisjoly et al., 2006; Merlino et al., 2019; Carrell et al., 2019; Corno et al., 2022; Idoux and Corradini, 2025). While I similarly find that having more LGBTQ peers seems to reduce anti-LGBTQ stigma, it also seems to *reduce* the prevalence of SOGI-diverse friendships.

Second, I study identification with a stigmatized group and whether this decision has externalities, as described in the seminal economics paper on identity by Akerlof and Kranton (2000). I document substantial fluidity in adolescents' SOGI and show that coming out (1) incurs additional bullying but (2) reduces bullying for LGBTQ students as a whole. I also find suggestive evidence that having more LGBTQ peers reinforces whether students continue to disclose non-Cis/Het identities. Similarly, adults are more likely to show an LGBTQ identity on Twitter when others do so (Gromadzki and Siemaszko, 2023). Other social norms around salient social identities have also been shown to affect whether students align themselves with particular groups.[7]

Finally, I contribute to the growing economic literature on disparities facing LGBTQ individuals (Badgett et al., 2021, 2024). In education, the evidence is somewhat paradoxical: LGBTQ adolescents have worse school experiences across the board, but gay men and lesbian women tend to have more education than their heterosexual counterparts—though the pattern for lesbians has recently reversed—whereas bisexual and transgender adults have less (Mittleman, 2022). In nationally representative samples, sexual minority high-schoolers on average have lower achievement, experience more bullying and discrimination and feel less like they belong, undertake more risky behaviors, and have lower planned and actual educational attainment; that said, gay boys perform better academically than heterosexual boys despite their worse non-academic experiences (Sansone, 2019; Mittleman, 2022; Wilkins et al., 2023). I provide causal evidence that having a larger peer group of LGBTQ students is a remarkably strong protective factor against these negative school experiences. Anti-bullying law adoption reduces bullying of LGBTQ students by 21 percent (Rees et al., 2022); having 10pp more LGBTQ peers reduces bullying rates by about 13 percent. I also provide new evidence that bullying and belonging disparities arise long before students come out and systematically vary among those who are out.

The paper proceeds with descriptions of the policy context affecting LGBTQ students in LAUSD and the data from LAUSD in Sections 2 and 3, respectively. Section 4 provides descriptive evidence on adolescent SOGI development and the evolution of bullying gaps. Section 5 describes the strategy for estimating the effect of having LGBTQ peers, Section 6 describes those results, and Section 7 concludes.

[7]Students avoid behaviors associated with stigmatized "high-achievers," unless achievement is valued (Bursztyn and Jensen, 2015). There is mixed evidence around the controversial "acting white" hypothesis that this effect might be larger for Black students if their racial identity is oppositional to performing well at school (e.g. Fordham and Ogbu, 1986; Austen-Smith and Fryer, 2005; Fryer and Torelli, 2010; Tyson et al., 2005). Multi-racial students may adjust their behavior to align with racial identity norms (Darity et al., 2006; Ruebeck et al., 2009; Fryer et al., 2012).

2 Setting and policy background

This paper relies on unique data from Los Angeles Unified School District (LAUSD), the second-largest US school district, and the results will be most generalizable to contexts like LAUSD. Here, I provide details on a key aspect for this paper: policy protections for and acceptance of LGBTQ students in LAUSD and how these compare nationwide and across California.

Policy context. California has some of the most comprehensive laws protecting LGBTQ students. In 2025, it was one of 21 states with laws preventing bullying on the basis of SOGI and one of 18 with explicit guidance for the treatment and inclusion of transgender students (Movement Advancement Project). In 2007, California introduced discrimination protections for LGBTQ students and in 2012, California required schools to adopt strong anti-bullying policies that describe the prohibited bases for bullying, including SOGI (ACLU). Nationally, legal protections for LGBTQ individuals increased throughout the 2000s and 2010s, but have backslid in recent years. In 2025, the ACLU tracked 616 proposed anti-LGBTQ state bills in the US. 277 explicitly target schools, only 3 of which were in California (ACLU).[8] LAUSD also has its own district policies supporting LGBTQ students. SOGI was added to their anti-bullying policy in 2009, three years ahead of the state-wide law. Their office of Human Relations, Diversity and Equity oversees efforts to create affirming learning and working environments for LGBTQ students, staff, and families.

Student experiences. There are regional differences within California, with smaller Cis/Het-LGBTQ gaps in urban areas (Choi et al., 2017). Urban areas are generally perceived as more accepting of LGBTQ individuals and have larger adult LGBTQ populations, though adolescents are similarly likely to identify as LGBTQ in urban and rural areas (Choi et al., 2017). Bullying, perceived school safety, and suicidal ideation gaps between LGB and heterosexual students in LAUSD are slightly better than the state on average. Statewide in 2017-2019, 41 percent of LGB 9th-graders and 57 percent of heterosexual 9th-graders felt safe at school, compared to 46 percent (LGB) vs 57 percent (heterosexual) in LAUSD. Statewide, 27 percent (LGB) and 13 percent (heterosexual) of 9th graders reported being afraid of being beaten up, and 50 percent (LGB) and 30 percent (heterosexual) of students reported experiencing verbal harassment. In LAUSD, 19 percent (LGB) vs 12 percent (heterosexual) of students reported being afraid of being beaten up and 36 percent (LGB) and 23 percent (heterosexual

) reported experiencing verbal harassment. Finally, across the state, 42 percent of LGB 9th-graders and 11 percent of heterosexual 9th graders considered suicide; in LAUSD this was 34 percent and 10 percent, respectively.[9]

[8] The rise in anti-LGBTQ bills began after my sample period, which ends in the 2019-20 school year.

[9] Author's calculations using CalSCHLS (2019) public data dashboard. State-level and LAUSD results are from state- and district-representative samples of schools enrolling 9th-grade students in 2019, with N=17,551 9th-graders in California and N=1,011 in LAUSD (Austin et al., 2020; WestEd, 2019). Students are not required to participate

Thus, LGB students across the state have substantially worse mental health and school experiences than heterosexual students, despite the legal protections for LGBTQ students in California. While these gaps are smaller in LAUSD than California as a whole, they are still strikingly large. This is despite high *stated* acceptance of LGBTQ students in LAUSD: in 2019, 43 percent of 9th-graders agreed and 32 percent strongly agreed that LGBTQ students are accepted at school; statewide statistics are not available.

In summary, my results are most generalizable to urban school districts with strong protections for LGBTQ students and high perceived LGBTQ acceptance. However, even in districts like this, LGBTQ students have substantially worse school experiences than their non-LGBTQ peers.

3 Data

The data covers all students enrolled in LAUSD from 2014-15 to 2019-20. Standard administrative data is linked to student responses to the district's School Experience Survey (SES).

3.1 School Experience Survey (SES)

The survey is administered district-wide and generally in November—henceforth, school years will be referenced by the calendar year of the fall semester—with students taking the SES online via a unique survey link they receive by email. Schools are encouraged to provide class time for students to take the survey and teachers are provided with instructions for administering the survey, which includes reading a confidentiality statement to students (see Appendix B). 98 percent of survey-takers take the survey during the school day. On average, 78 percent of 6-8th graders and 64 percent of 9-12th graders respond each year. Questions about SOGI have been asked since 2016 in all schools serving students in 6th-12th grade and all other outcomes of interest have been included since 2014. The survey is available in English or Spanish.

Sexual orientation and gender identity. In 2016 and 2017, students were asked to respond "Yes," "No," or "I'd rather not say" to the statement, "I identify as LGBTQ (lesbian, gay, bisexual, transgender, or queer)." They also had the option to skip the question. In 2018 and 2019, the option "I don't know" was added. Throughout, I combine "I'd rather not say" and "I don't know" as "Uncertain." Beginning in 2017, the instructions provided to teachers administering the survey included definitions of each component of the LGBTQ acronym following best practices for explaining the terms to children.

This SOGI measure has two main limitations. First, lesbian, gay, bisexual, and transgender students have very different experiences—in particular, transgender students face substantially more

and response rates vary by school. Statewide, 84 percent of 9th-grade students identified as heterosexual and 7.5 percent identified as LGB (Austin et al., 2020). In the LAUSD sample, 79 percent of 9th-grade students identified as heterosexual and 10 percent identified as LGB (WestEd, 2019). Data for transgender students is collected but not publicly available at the district level due to small sample sizes.

stigma and less support. Given the question format, I cannot separately identify these students. I do investigate heterogeneity using the district's administrative record of students' sex.[10]

Second, all measures of SOGI are inherently self-reported and may not reflect how students identify privately or with friends. While LAUSD's efforts to emphasize the anonymity of students' responses should reduce under-reporting of LGBTQ identities due to fear of social repercussions, students may not believe these claims or fear their classmates or teachers will see their responses while taking the survey. That said, students who identify as LGBTQ on the survey are no more likely to take the survey outside of school hours. Even if they do believe their responses are anonymous, there may be underreporting: Coffman et al. (2017) show that further plausible deniability substantially increases the estimated share of adults who identify as LGBTQ. On the other hand, "troublemaking" non-LGBTQ students may report that they identify as LGBTQ (e.g. Savin-Williams and Joyner, 2014). The potential for selective disclosure has different implications for each of my analyses, and is discussed in each corresponding section.

Bullying. Students are asked whether they have (1) had mean rumors or lies spread about them, (2) been teased about what their body looks like, (3) been made fun of because of their looks or the way they talk, (4) been pushed, shoved, slapped, kicked, or hit by someone who wasn't just kidding around, (5) had sexual jokes, comments, or gestures made about them, or (6) been bullied online. In each case, they are asked how many times in the last 12 months they have had that experience at school (for 1-5) or with a peer (for 6), and can answer 0 times, 1 time, 2-3 times, or 4 or more times.[11] I focus on whether a student reports experiencing any bullying and the standardized total frequency of bullying, and disaggregate the types of bullying in the appendix.[12]

Two measures of school belonging and support. LAUSD bases their questions on the most common, well-validated measure of school belonging (Resnick et al., 1997; Furlong et al., 2011). Two related but distinct constructs are measured: "school connectedness," which applies to peer interactions or overall belonging, and "school support," which applies to interactions with adults or explicit support. I label these "belonging" and "adult support." Given my emphasis on peer effects and cross-cohort differences within schools, I expect the former to be more affected and ex-

[10] It is possible for transgender students to change their administrative records in LAUSD, but I observe few such changes. I use a students' recorded gender in the first year they enter the district to avoid endogenous gender-marker changes affecting the results. I refer to this as "sex" as its best interpretation seems to be the sex to which a student was assigned at birth, but refer to "girls" and "boys" for brevity.

[11] Since the SES is administered in the fall, students may report prior-year incidents, biasing the estimated effects of current LGBTQ peers towards zero. However, the instructions that teachers read aloud emphasize that students should reflect on their experiences at their current school in the current year. Results are robust to looking at effects on 10th-grade reported bullying, which may refer to 9th- or 10th-grade experiences (available upon request).

[12] I focus on reporting any of the types of bullying listed on the survey that year because in 2018, the option of "being teased about your body" was added and "being made fun of for the way you look or talk" replaced "being made fun of for the way you talk, walk, or dress." When comparing frequencies, I sum the total reported times bullied (on a scale of 1-4 for each type of bullying) across types of bullying and standardize the count by grade and year. Results are robust to only using the questions that were asked consistently.

amine the two separately, as described next. That said, peer interactions may affect experiences of school support. For example, students who are bullied may perceive their school as less supportive because they have had to seek help and gone unsupported.

Belonging: Students report the extent to which they agree that they feel happy to be at their school, like they are a part of their school, close to people at their school, accepted for who they are at their school, safe at their school, and that kids at their school are kind to each other. Students answer on a Likert scale from 1-4 or 1-5 (depending on the year) ranging from "Strongly disagree" to "Strongly agree," except in the case of feeling safe at school, which is scaled from "Not safe at all" to "Completely safe." My school belonging index averages values of each of the six responses, each standardized to have mean zero and standard deviation one in each grade and year; the index is then standardized to also have mean zero and standard deviation one.

Adult support: In all years, students are asked whether adults at their school treat all students with respect, whether teachers would help them if they were bullied, whether teachers grade them fairly, and whether their school is supportive and inviting. Again, I standardize responses to each question, take the average, and standardize the index.

Perceived LGBTQ acceptance and interactions with out-group members. Students are asked the extent to which they agree with the statement that "LGBTQ (lesbian, gay, bisexual, transgender, or queer) students at my school are accepted" on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). While own anti-LGBTQ bias would likely be under-reported due to social norms (Coffman et al., 2017), eliciting second-order bias beliefs may alleviate this concern. Students are also asked how well they get along with students who are different from themselves on a scale from 1 (Not at all) to 5 (Extremely well). I standardize responses to each question by grade and year. The former measures explicit perceptions of bias; the latter measures whether students have positive interactions with out-group members.

Intended educational attainment. The survey asks whether students' highest intended degree is a high school degree, technical or vocational certification, two- or four-year college degree, or graduate degree. I focus on whether students plan to attain at least a four-year college degree.

3.2 Administrative data

Outcomes. I focus on four main administrative outcomes: daily attendance at school, chronic absenteeism, whether students leave the district the next year, and whether students move to a different school in the district the next year. LAUSD defines chronic absenteeism as a daily attendance rate under 91 percent. Students leaving the district could be enrolling in a private or charter school, relocating to a new district, dropping out (though rare for 9th-graders), or becoming deceased. These outcomes are observed through the 2018-19 school year.

Controls. I observe standard demographics: sex, five mutually-exclusive race and ethnicity

categories—Asian, Pacific Islander, or Filipino; Black; Hispanic; White; and Native American—home language—English, Spanish, or other—whether students were born in the US, participation in special education or gifted programs, and whether the district considers the student to be poor. I also observe whether (one of) a student's parent(s) has a college degree, though only for 53 percent of the sample. I observe standardized math and reading test scores in 3rd-8th grade.

3.3 Validating the bullying and belonging measures

One concern is that middle and high school students do not answer survey questions carefully or truthfully. Several facts, however, suggest that the survey measures of belonging and bullying contain useful information about student experiences. First, as expected, reported experiences of bullying and belonging are strongly persistent from year-to-year, but less persistent when moving to a new school (Appendix Table A1). Second, the administrative enrollment outcomes and students' self-reported plans to go to college correlate with survey measures of belonging and bullying in largely expected ways (Appendix Table A2). Students with a greater sense of school belonging are more likely to plan to go to college, less likely to be chronically absent, and less likely to leave the school or district the following school year. Students who are bullied are more likely to plan to go to college and to leave the school or district for 10th grade. Conditional on other factors, bullying does not relate to absenteeism.

While bullying and belonging are strongly persistent, the relationships between non-academic school experiences and academic outcomes are driven by current, not prior-year, experiences (Appendix Table A2). Thus, context-specific bullying and belonging seem to matter, rather than only reflecting time-invariant individual traits. While bullying and belonging are strongly correlated—students who are bullied have 0.5sd lower school belonging than students who are not—these partial correlations also suggest that bullying and belonging are distinct.

3.4 Analysis samples and summary statistics

3.4.1 Panel sample

Multiple observations of students' self-reported SOGI allow me to study the evolution of LGBTQ identities in adolescence. Based on the years and grades in which I observe SOGI in the SES, I use the sample of students who were in 6th-9th grade (generally 12-15 years old) in 2016 for this analysis and observe them through 2019. However, there is substantial movement in and out of the district and some students do not take the SES each year. The primary panel sample is restricted to students who took the SES in all four years (N=42,337); this is 40 percent of students in these cohorts who are enrolled in the district for all four years (N=107,140). An additional 86,634 students are ever present in these cohorts but for at most three years.

Summary statistics. LAUSD is a majority-Hispanic district primarily serving low-income

students. Students who take the survey all four years are similar to other students who are in the district for all four years, with a few exceptions, while students who are in the district all four years differ slightly from students who move in or out of the district (Table 1). In particular, students who are enrolled in the district for all four years are more likely to be Hispanic and less likely to be Black or White, more likely to speak Spanish at home, more likely to be enrolled in special education or gifted programs, and more likely to be classified as poor by the district. Students who take the survey in all four years have 0.11sd higher test scores than the other students in the district all four years, but have otherwise similar demographics.

3.4.2 Peer effects sample

The peer effects empirical strategy requires focusing on 9th-grade outcomes and knowing whether students identified as LGBTQ in 8th grade. Thus, the sample includes students who are in 9th grade in 2017-18, 2018-19, or 2019-20.[13] The sample is further restricted based on school and cohort characteristics to support the validity of my empirical strategy, which relies on quasi-random variation within a school in the share of students in a cohort (school $\times$ year the student was in 9th grade) who identified as LGBTQ in 8th grade. Appendix C describes the sample restriction process in detail and Appendix Figure A1 shows how these restrictions affect the number of schools, cohorts, and students that are included in the analysis.

To summarize, the sample is first restricted to schools whose youngest students are in 9th grade ("traditional high schools") to ensure that variation in the share LGBTQ results from the shuffling of students into new schools. I follow the literature (e.g. Lavy and Schlosser, 2011; Lavy et al., 2012; Cools et al., 2022) in dropping schools and cohorts in which the share LGBTQ is unreliable—due to small sample sizes—or less likely to be random—due to endogenous school formation or expansion. I also drop 7 Visual and Performing Arts (VAPA) magnet schools, as they are large outliers in terms of the share LGBTQ and LGBTQ acceptance and LAUSD staff report that students sort into these schools accordingly.[14] The restrictions described so far drop about 6 percent of students from the sample enrolled in traditional high schools. Next, I drop cohorts in which the share of students with reported 8th-grade SOGI is particularly small and thus the share LGBTQ is more prone to measurement error; this leaves 85 percent of the students from the original sample. Measurement error in the share LGBTQ is a potential concern for the empirical strategy; I discuss these concerns and show that results are robust to making this criterion more or

[13] The 2019-20 cohort is dropped in the analysis of administrative outcomes, because attendance rates and school and district retention are distorted dramatically by the Covid-19 pandemic in the spring of 2020. The SES was administered in the fall, so 2019 survey outcomes are unaffected.

[14] On average, 15 percent of 9th-graders in VAPA schools identify as LGBTQ compared to 7 percent in non-VAPA schools, and students perceive that LGBTQ students are more accepted at VAPA schools—with 0.28sd stronger agreement overall and 45 percent vs 32 percent strongly agreeing that LGBTQ students are accepted. On the other hand, I find no evidence that LGBTQ students otherwise sort into schools or cohorts that are more accepting of LGBTQ students—see Section 5.3. Results are similar if I include VAPA schools.

less strict in Section 6.5. Finally, I drop 7 outlier cohorts in which more than 15 percent of students identified as LGBTQ in 8th grade—the 99th percentile—which leaves 84 percent of the original sample. The main peer effects sample includes 76,707 students in 117 schools and 330 cohorts, 70 percent of whom take the SES in 9th grade.

Summary statistics. The peer effects sample has similar demographics to the panel sample described above (Table 1). Students who took the SES in 9th grade are similar to the full sample across most demographic characteristics but have slightly higher 8th grade test scores and are more likely to have been in the district in 8th grade.

The analysis disaggregates results based on students' reported SOGI in 8th grade; 8th-grade SOGI is observed for 64 percent of the sample, 76 percent of whom also took the SES in 9th grade. Of those with reported SOGI, 40,630 students identified as Cis/Het, 2,852 identified as LGBTQ, and 5,584 were uncertain. Of those identifying as LGBTQ, about two-thirds are female. Section 4 discusses other demographic differences between LGBTQ and non-LGBTQ students and compares the SOGI distribution in LAUSD with California and the US.

There are large gaps in bullying and school belonging between Cis/Het and LGBTQ or uncertain students (Table 2). On average, students who identified as LGBTQ in 8th grade are 18.6pp (37 percent) more likely to be bullied than those who identified as Cis/Het students, and score 0.28sd lower on the belonging index. Students who were uncertain of their SOGI in 8th grade are 7.5pp more likely to be bullied and score 0.18sd lower on the belonging index. Though boys and girls experience different types of bullying, there are large LGBTQ-Cis/Het bullying and belonging gaps for both boys and girls. These gaps are unchanged after conditioning on other observable demographics and middle school test scores (Appendix Table A3).

LGBTQ and uncertain students also have lower attendance rates, are more likely to move to a new school or leave the district for 10th grade, and are less likely to plan to go to college than their Cis/Het peers (Table 2). The raw LGBTQ-Cis/Het gaps in school attachment are larger for girls and these are unaffected by the inclusion of other controls; for boys, any raw gaps can be fully explained by differences in other demographic characteristics and middle school test scores (Appendix Table A3). Conditional on other observed demographics, these patterns are in line with recent nationally representative samples, in which lesbian and bisexual women and bisexual men have lower educational attainment than their Cis/Het peers, but gay men have higher educational attainment (Mittleman, 2022).

4 The evolution of LGBTQ identity and bullying disparities

I begin with descriptive analysis of the evolution of LGBTQ identities from ages 12-18; retrospective surveys show crucial LGBTQ identity-development milestones happening at these ages (Bishop et al., 2020; Hall et al., 2021). Then, I provide new facts about how school experience

disparities evolve with identity development.

4.1 The evolution of LGBTQ identities

First, I compare the share of students who identify as LGBTQ in a given year to the share that ever or always identify as LGBTQ (Table 3). The first panel shows how students identify among the full sample of students who took the SES in each year. The share of students identifying as LGBTQ increases by 1.2 to 1.4pp per year, from 4.7 percent in 2016 to 8.5 percent in 2019. This is primarily due to students aging, not strong time trends.[15] Ten to eleven percent of students are uncertain of their SOGI each year. These estimates are in line with results from small samples of LAUSD students taking other surveys that are administered state- or nation-wide (Appendix Table A4). In those surveys, students in LAUSD are slightly more likely to identify as LGBTQ than students in California or the US as a whole, though confidence intervals are wide.

The second panel restricts to students who take the survey all four years and shows there is substantial fluidity in SOGI. The share of students identifying as LGBTQ or who are uncertain of their SOGI in each year is almost identical in the full and panel samples. In the panel sample, I can now compare these standard cross-sectional statistics to the share of students who ever (14 percent) or always (1.4 percent) identify as LGBTQ. In addition, 27 percent of students are ever uncertain, 74 percent of whom never identify as LGBTQ in these four years.[16]

Policies that stigmatize LGBTQ identities or programs aiming to support LGBTQ students are likely to affect students who eventually but have not yet come out—either to themselves, on a survey, or publicly—and may continue to affect students who previously questioned a Cis/Het identity but currently report being Cis/Het. In fact, students currently questioning their identity may be more affected than other LGBTQ students. Thus, 14 percent is a better estimate—and indeed still a lower bound—of the welfare-relevant number of students to consider when evaluating the potential impact of these policies or programs. This is 1.7 to 3 times the number of LGBTQ students that would be expected if using the share identifying as LGBTQ in a given year.

One would expect non-Cis/Het identities to be more common and fluidity to be less common as students age. Indeed, the share of students who identify as LGBTQ increases monotonically in student age. For example, 4.9 percent of students observed from 6th to 9th grade (ages 12-15) identify as LGBTQ on average each year, 12.8 percent ever identify as LGBTQ, and 0.3 percent always identify as LGBTQ. In the oldest group—students who are observed from 9th to 12th grade

[15] Appendix Table A19 compares students in the same grade in different years and how the share LGBTQ changes over the four-year period for students separately by their grade in 2016. There are large, statistically significant age trends (0.8 to 1.1pp per year) and smaller time trends, only some of which are statistically significant (-0.1 to 0.5pp per year).

[16] 32 percent of students ever change their reported SOGI over these four years (Appendix Table A6). In a nationally representative sample, 14 percent of those aged 18-24 in 2013 changed their reported sexual orientation in the next five years (Mittleman, 2023).

(ages 15-18)—7.8 percent of identify as LGBTQ on average each year, 15.3 percent ever identify as LGBTQ, and 2.5 percent always identify as LGBTQ (Figure 1).

Older students also exhibit more certainty about their SOGI. First, the ratio of students who ever identify as LGBTQ to students who always identify as LGBTQ falls from 11:3 to 4:3 from the youngest to oldest cohort. Second, the share of students who report being uncertain of their SOGI falls monotonically in student age. Finally, the share of students ever changing their reported SOGI also decreases monotonically with age, from 35 percent for the youngest cohort to 29 percent for the oldest cohort. These age trends are similar for girls and boys (Appendix Figure A2), though girls are much more likely to identify as LGBTQ (discussed further below).

Next, I turn to understanding *how* SOGI changes. First, the distribution of SOGI each year appears relatively stable across time without accounting for the flows between each year, but there is substantial individual-level fluidity (Appendix Figure A3). The majority of students who identify as LGBTQ continue to do so or are uncertain the next year, whereas students who are uncertain are about equally likely to identify as Cis/Het or not in the next year. The annual flows from each category to the others are stable over time.

Second, while SOGI is fluid, students generally make consistent changes in how they identify. Appendix Figure A4 visualizes the distribution of all possible SOGI trajectories. Of students identifying as LGBTQ in 2016, 52 percent continued to identify as LGBTQ in 2017, 18 percent became uncertain, and 29 percent identified as Cis/Het. In 2018, among students identifying as LGBTQ in both of the previous two years, 76 percent continued to identify as LGBTQ, 13 percent became uncertain, and 10 percent identified as Cis/Het. The pattern continued in 2019, with 84 percent of students who had identified as LGBTQ all prior years identifying as LGBTQ. Similarly, of those who identified as LGBTQ in 2016 but as Cis/Het in 2017, the majority continued to identify as Cis/Het through 2019. On the other hand, students who initially identified as LGBTQ and then were uncertain in 2017 were about equally likely to then identify as LGBTQ, Cis/Het, or uncertain in 2018. Broadly, students who switch from any initial identity to identifying as either LGBTQ or Cis/Het tend to continue to identify that way going forward, while students who are uncertain tend to be equally likely to be identify as LGBTQ, Cis/Het, or be uncertain in the next year and demonstrate the most subsequent fluidity.

4.2 Accounting for inattention or misreported SOGI

Of course, it is impossible to separate "real" SOGI fluidity from measurement error. While inattention during a survey can affect conclusions from any self-reported data, researchers are particularly wary of potential misreporting when it comes to SOGI: students may avoid disclosing LGBTQ identities if they fear their responses are not private (Coffman et al., 2017), others may not understand the question, and some "troublemaking" non-LGBTQ students may intentionally

misreport their SOGI (Savin-Williams and Joyner, 2014). Much of the evidence discussed so far suggests that the fluidity I observe represents true changes in SOGI rather than misunderstanding or misreporting; I also carry out several robustness checks, which do not change my conclusions.

As just discussed, Appendix Figure A4 shows that students' changes in reported SOGI are largely stable; students do not move between all three possible responses indiscriminately. Once a student reports a "certain" identity, they subsequently follow very stable trajectories. Students who are uncertain display more fluidity. In addition, the next section shows that several demographic variables strongly predict SOGI fluidity. Random measurement error would not be correlated with demographics. Furthermore, many demographic correlations are opposite what would be predicted if the fluidity was driven by some students maliciously providing inaccurate answers (Savin-Williams and Joyner, 2014) or misunderstanding the question. The demographic correlations also mirror patterns observed in nationally-representative samples of adults.

Next, I replicate the analysis while dropping students who are the most likely to be misclassified (Appendix Table A5). If these students drove the fluidity result, the share ever identifying as LGBTQ or uncertain will approach the cross-sectional share. First, I drop students who identify as Cis/Het in three out of four years, including one year on either end of the sample. The share of students identifying as LGBTQ in each year, ever, or always is unchanged. Now, 8-11 percent of students are uncertain each year and 23 percent are ever uncertain, compared to 27 percent in the full sample. Next, I additionally drop any student who identified as LGBTQ or was uncertain in 2017 but identified as Cis/Het the next three years. The share of students ever identifying as LGBTQ slightly *increases*, and now, 7-10 percent of students are uncertain each year and 20 percent are ever uncertain. Thus, there is still substantial fluidity in this more-restricted sample.

Altogether, these results suggest that the changes in reported SOGI documented here represent thoughtful and accurate student survey responses; they particularly discredit malicious misreporting by non-LGBTQ students and inattention or confusion driving the fluidity results. On the other extreme, suppose the documented fluidity is due to year-to-year changes in willingness to *disclose* fixed LGBTQ identities rather than changes in privately-held identities. Then, the difference between the cross-sectional share LGBTQ in a given year and the share ever identifying as LGBTQ is even starker. In this case, students who ever report that they are LGBTQ but do not currently do so may be even more affected by SOGI-related policies as they are actively "closeted."

4.3 Who identifies as LGBTQ? Who changes reported SOGI?

Appendix Table A6 shows how other demographic characteristics are related to ever identifying as LGBTQ or changing reported SOGI in a multivariate regression. First, consistent with the previous fluidity analysis, students who identify as LGBTQ or who are uncertain in 2016 are 6.9 and 50 times as likely to subsequently change their reported SOGI compared to a student who

identifies as Cis/Het in 2016, respectively. In the analysis that follows, all correlations between demographics and SOGI *fluidity* condition on students' SOGI in 2016.

Girls are 2.5 times as likely as boys to ever identify as LGBTQ, 1.6 times as likely to ever be uncertain, and 1.5 times as likely to ever change their reported SOGI. This is similar to overall patterns among Gen Z and Millennial generations in the US, where women are 2-3 times as likely to identify as LGBTQ (Gallup Inc, 2024); Millennial women surveyed between ages 18-24 are also twice as likely to change their reported SOGI in a five-year window than men (Mittleman, 2023).

Black students are 0.7 times as likely to ever identify as LGBTQ as White students, and Asian (Hispanic) students are 1.2 (0.9) times as likely to ever be uncertain; there are no racial differences in the propensity to change reported SOGI or significant interactions between race and gender. This parallels a nationally representative survey in which Hispanic and White 18-34 year olds were similarly likely to identify as LGBTQ and Black respondents were 0.8 times as likely (Gallup Inc, 2022); Mittleman (2023) also finds minimal racial differences in the likelihood of changing SOGI.

Students in special education programs are 1.4 times as likely to identify as LGBTQ, 1.9 times as likely to be uncertain, and 1.7 times as likely to change their SOGI. Students in gifted programs are 1.2 times as likely to identify as LGBTQ and 1.1 times as likely to be uncertain, though test scores negatively predict identification as LGBTQ or uncertainty conditional on gifted status.[17]

In this low-income school district, whether students are classified as poor by the district and parent education do not predict SOGI or fluidity. In a sample of 7th-, 9th-, and 11th-graders attending a representative sample of California schools in 2013-2015, students whose parents have a college degree are *less* likely to identify as LGBTQ (Choi et al., 2017). In LAUSD, students who speak Spanish (other non-English languages) at home are 0.8 times (0.64 times) as likely to identify as LGBTQ as those who speak English at home.

4.4 The evolution of school experience disparities for LGBTQ students

Next, I provide new evidence on how bullying and belonging disparities evolve as self-reported SOGI changes. The results shed light on the potential determinants of these disparities.

I begin by estimating the following descriptive regression in the panel sample in 2016-2019:

$$Y_{it} = \beta + \zeta CurrentLGBTQ_{it} + \eta NotYetLGBTQ_{it} + \delta EverUncertain_i + \alpha AlwaysLGBTQ_i + \lambda_t + \gamma_g + X'\omega + \varepsilon_{igt},$$

where Y indicates whether student i was bullied in year t, $CurrentLGBTQ$ is an indicator for whether student i identifies as LGBTQ in year t, $NotYetLGBTQ$ is an indicator for whether student i ever identifies as LGBTQ but does not identify as LGBTQ in year t, $EverUncertain$ is an

[17] While data is limited to compare to broader samples, adults on the autism spectrum are more likely to identify as LGBTQ (Warrier et al., 2020; Weir et al., 2021). An autism-spectrum diagnosis qualifies students for special education services, but many autistic individuals are also intellectually gifted (Uddin, 2022).

indicator for whether student i is ever uncertain of their SOGI but never identifies as LGBTQ, and $AlwaysLGBTQ$ is an indicator for whether student i identifies as LGBTQ every year from 2016-2019. I include year and grade fixed effects λ_t and γ_g, and in my preferred specification, a vector of demographic controls X. Standard errors are clustered by student.

To complement the regression analysis, Figure 2 plots the percentage-point gap in bullying rates—compared to always-Cis/Het students—separately by the first year that students start identifying as LGBTQ on the SES. Here, I add 2014 and 2015—years in which I observe bullying but not contemporaneously-reported SOGI.

First, students who ever identify as LGBTQ are substantially more likely to be bullied than students who always identify as Cis/Het, long before they identify as LGBTQ on the survey. Before they come out, students who will eventually identify as LGBTQ are 8pp (15 percent, $p<0.001$) more likely to be bullied than their always-Cis/Het peers (Table 4, column 2). In the most extreme case, even students who do not identify as LGBTQ until 2019 are 4-10pp more likely to be bullied than Cis/Het students in every year, including in 2014—5 years before they start identifying as LGBTQ on the survey (Figure 2). Students who are ever uncertain of their SOGI but never identify as LGBTQ are also 6pp (11 percent, $p<0.001$) more likely to be bullied than always-Cis/Het students. Thus, a point-in-time estimate of the Cis/Het-LGBTQ bullying gap misses gaps between always Cis/Het students and students who eventually but do not currently identify as LGBTQ.

Second, students experience even more bullying when they start identifying as LGBTQ. In the years these students identify as LGBTQ, they are 14pp ($p<0.001$) more likely to be bullied than always-Cis/Het students, a 75 percent increase from before they came out (Table 4, column 2). The coming-out penalty is robust to the inclusion of student fixed effects with $p<0.001$ (column 3). The increase is observed independently for every "coming-out cohort:" in the year students begin to identify as LGBTQ, they become as likely to be bullied as the already-out cohorts (Figure 2). Thus, coming out incurs psychological costs. In the peer effects analysis, I test (i) whether coming out has positive externalities for other LGBTQ students and (ii) whether reducing the costs of coming out affects whether students disclose an LGBTQ identity.

Third, students who are more certain of their identity are more likely to be bullied than other out LGBTQ peers. Students who always identify as LGBTQ are an *additional* 7pp more likely to be bullied (50 percent, $p<0.001$) compared to other currently LGBTQ-identifying peers (Table 4, column 2); this is true every year (Figure 2). While the other patterns documented so far are similar for girls and boys, the bullying penalty for always-LGBTQ students is much larger for boys (Table 4, columns 4-9). If always-LGBTQ students are the most visible, perceptions of LGBTQ stigma—particularly against males—will be overly negative and efforts to correct these perceptions would be worthwhile to minimize the psychological costs of questioning a Cis/Het SOGI.

Putting this all together, students who do not yet identify as LGBTQ seem to attract the at-

tention of bullies for perceived differences before those differences are labeled, while the label itself attracts further attention. In some cases, students may be closeted—not publicly out but aware of their own SOGI-minority status—and bullied because they are still detectably "queer." However, bullying gaps between ever-LGBTQ students and their peers arise even in 4th-5th grade (Appendix Figure A5)—before most adults report having started to recognize their own sexual or gender minority identity (Bishop et al., 2020; Hall et al., 2021); this may be because students who later identify as LGBTQ are less likely to conform to traditional gender norms at even younger ages and this carries its own social penalty. Boys who most consistently identify as LGBTQ—who may most obviously violate the strongest gender norms—experience the largest bullying gaps.[18] Further evidence that before coming out, students are bullied for reasons that are not explicitly tied to their SOGI comes from the evolution of perceived LGBTQ acceptance: LGBTQ students' perceptions of whether LGBTQ students are accepted at their school do not begin to diverge from their Cis/Het peers until *after* they begin identifying as LGBTQ (Appendix Table A7). Alongside the bullying penalty associated with beginning to identify as LGBTQ on the survey, this is consistent with identification as LGBTQ on the survey indicating a shift in whether students publicly identify as LGBTQ and students' learning about perceived *group* acceptance through personal experience. Taken together, these results suggest that general anti-bullying efforts and efforts to reduce anti-LGBTQ stigma will both be necessary for closing LGBTQ-Cis/Het bullying gaps.

Other variables in which there are disparities between LGBTQ and Cis/Het students in the cross-section demonstrate similar properties (Appendix Table A7). Patterns are strikingly similar when looking at whether students feel that they belong at school or are supported by adults, though the differences between ever- and always-LGBTQ students are weaker. Consistently, students who ever identify as LGBTQ are more likely to change schools both before and after they come out; however, gaps in absenteeism only appear for students who currently identify as LGBTQ.

5 The effects of LGBTQ peers: Empirical strategy

5.1 Regression specification

I follow the peer effects literature to estimate the effect of having more LGBTQ peers by taking advantage of within-school, cross-cohort variation in the share of students with some particular characteristic (see footnote 5 for papers). The key assumption to interpreting this exposure as quasi-random is that while students or their parents may select into schools based on average school

[18]These patterns are consistent with other work. Burn and Martell (2022) show that gender non-conformity affects labor market outcomes independent of sexual orientation, but does not explain the labor market differentials experienced by sexual minorities. Banan et al. (2025) show that gender non-conforming boys are more socially isolated and have lower school attachment, whereas gender non-conforming girls have better outcomes; however, these authors cannot account for the relationship between SOGI and gender conformity.

characteristics, they are not selecting into schools based on the characteristics *of their particular cohort.* In my case, for example, a school may be known to have an overall high share of students who identify as LGBTQ, or to be particularly accepting, and students may select into that school accordingly. However, students do not know whether the share of students in their particular cohort who identify as LGBTQ will be above or below average for that school. Section 5.3 provides evidence supporting this assumption.[19]

I study a peer characteristic that is self-reported each year and highly fluid. Consequently, how students identify in 9th grade could depend on exposure to other LGBTQ peers or how disproportionately LGBTQ students are the victims of bullying, for example. Then, the relationship between the share *currently* identifying as LGBTQ and current-year outcomes would be confounded by the effects of exposure to LGBTQ students on how many or which students identify as LGBTQ.

I take two steps to solve this concern. First, I focus only on exposure to LGBTQ peers and outcomes in 9th grade—in traditional high schools serving grades 9-12—to take advantage of the shuffling of students between middle and high schools. Second, I define the LGBTQ share of a 9th-grade cohort as the share of that cohort who identified as LGBTQ in 8th grade, eliminating reverse causality.[20] This also allows me to quantify whether having LGBTQ peers affects how students identify in 9th grade.

The effect of LGBTQ peers is expected to be different for those who identify as Cis/Het, LGBTQ, or are uncertain of their SOGI. I estimate the effects separately for each group, again using how students identified *in 8th grade*.

Specifically, I estimate the following regression model:

$$y_i = \alpha_t + \delta_s + f(\%LGBTQ8_{s,t}, SOGI8_{i,t-1}) + X'\eta + Z_9'\zeta_9 + Z_8'\zeta_8 + \varepsilon_{i,s,t},$$

[19] Since 2012, LAUSD operates 16 "Zones of Choice," geographic regions within the district in which students can apply to any school in the zone. 40 percent of students live in a ZOC. In each zone, a centralized mechanism assigns students to schools based on their rank-order preferences. Campos and Kearns (2024) describe the program and its effects. Most relevant for this paper, Campos (2024) shows that parents' preferences for schools in LAUSD are more responsive to school quality than peer characteristics. As discussed by Campos (2024), this may be due to the relative racial and socioeconomic homogeneity in LAUSD compared to other districts, where parents put more weight on peer characteristics. During the sample period, about 13 percent of LAUSD high school students also exercise school choice by enrolling in magnet schools; magnet seats are allocated through a points-based lottery.

[20] This introduces measurement error in the share LGBTQ, as variation in the share of students who did not take the SES in 8th grade or who are new to the district who identify as LGBTQ is unaccounted for. In the main sample, I drop cohorts in which fewer than 35 percent of students reported SOGI in 8th-grade and the median remaining cohort has 8th-grade SOGI reports for 64 percent of students (Appendix Figure A24). In Section 6.5, I show that measurement error due to unobserved 8th-grade SOGI, if anything, biases results towards zero. Note that this is a different concern than the potential for measurement error in the observed *individual* characteristic creating correlated measurement error in the group average. This is the more common concern in the estimation of peer effects as it can bias estimated peer effects upwards, though only when peers are systematically assigned (e.g. Angrist, 2014; Feld and Zolitz, 2017). Results are also robust to this concern (Section 6.5).

for student i attending *9th grade* at school s in year t. The model controls for year and 9th-grade school fixed effects as α_t and δ_s, respectively. The school fixed effects are the key to the causal interpretation of the relationship between the share of 9th-grade peers who identified as LGBTQ in 8th grade and the outcomes of interest: they isolate variation stemming from cross-cohort differences in the share of 9th-grade peers who previously identified as LGBTQ, within the same high school. The assumption is that cohort deviations from the school average share LGBTQ are quasi-random.[21] I control for all other observable demographic characteristics of the student's 9th-grade cohort (Z_9) because the share LGBTQ is correlated with other cohort demographics (e.g. share female, see Section 4), and these other peer demographics may affect student outcomes independently. Z_9 includes the leave-one-out averages of all individual-level demographic controls as well as the share of students with observed 8th-grade SOGI, the share of students who are new to the district, and the size of the cohort. The results are robust to interacting all cohort demographic controls with students' 8th-grade SOGI.

I also control for a vector of individual controls, X, and a vector of 8th-grade cohort controls, Z_8. The individual controls include all observed demographics, 8th-grade test scores, and the share of students in the 9th-grade cohort who attended the same school as student i in 8th grade (or who are new to the district, for new students). Z_8 includes controls referencing student i's 8th-grade cohort: the share who identified as LGBTQ, the share who took the SES, and the cohort size. While I show below that students generally attend 9th-grade with very few of their 8th-grade peers and that this does not vary by students' SOGI, controlling for the share LGBTQ in 8th grade accounts for concerns around unobserved sorting related to SOGI. The results are robust to the choice of controls, including adding fixed effects for the school a student attended for 8th grade and adding a lagged value of the dependent variable when available (see Appendix D.1 for details).

I use two different functions to estimate the effects of having LGBTQ peers. First, I estimate a linear specification, replacing $f(\%LGBTQ8_{s_9,t}, SOGI8_{i,t-1})$ in the above regression with

$$\beta_{CH}\%LGBTQ8_{s_9,t} + \sum_{\substack{SOGI8\in \\ \{Q,U,NR\}}} \beta_{SOGI8}\%LGBTQ8_{s_9,t} \times SOGI8_{i,t-1} + \lambda_{SOGI8}SOGI8_{i,t-1},$$

where $\%LGBTQ8$ is the leave-one-out percent of students in a 9th-grade cohort who identified as LGBTQ in 8th grade, interacted with three variables indicating whether students reported being LGBTQ (Q) or uncertain (U) in 8th grade or having no reported (NR) 8th-grade SOGI, and their main effects. The omitted category is students who identified as Cis/Het in 8th grade. Thus, β_{CH} is the effect of having 1pp more LGBTQ peers for those identifying as Cis/Het, $\beta_{CH} + \beta_Q$ is the effect

[21] Of course, there may be cross-cohort peer effects that are unaccounted for by looking at within-school, cross-cohort differences. One might expect spillover effects from older cohorts to younger cohorts, for example. Then, the peer effects identified using this empirical strategy will represent a lower bound on the overall effects of having more LGBTQ students concentrated in a particular school.

for those identifying as LGBTQ, and β_Q is the effect on the Cis/Het-LGBTQ gap, with analogous interpretations of β_U and β_{NR}.

The effects may, however, be non-linear in the share of LGBTQ students. On one hand, perhaps having some small share of LGBTQ students greater than zero is what matters. Or, perhaps there is no effect until you reach a larger critical mass.[22]

The second specification relaxes the linearity assumption, replacing the $\%LGBTQ8$ variable with indicators for having $\%LGBTQ8$ over various cutoff points. In the main text, I focus on a specification that splits the sample into cohorts with $\%LGBTQ8$ under 3.8 percent, between 3.8 and 5.5 percent, between 5.5 and 8 percent, or above 8 percent (up to 15 percent). These cutoff points represent the 20th, 50th, and 80th percentile of the cohort distribution of $\%LGBTQ8$, respectively, and the average share LGBTQ in each bin is 2.7, 4.7, 6.6, and 9.8 percent, respectively.[23] I find the same results using eight different versions of three cutoff points, and qualitative patterns are the same using 3, 5, 7, 10, 12, or 15 evenly-spaced bins (Appendix Figures A6-A11).

In the remainder of the paper, I refer to the $\%LGBTQ8$ variable as the "share LGBTQ," rather than the "share of 9th-grade cohort who identified as LGBTQ in 8th grade," for brevity, and refer to students who identified as LGBTQ in 8th grade as "LGBTQ students," etc.

Throughout, I present asymptotic standard errors that are clustered by school. Appendix D.2 shows that results are largely robust to an alternative randomization-based inference procedure.

5.2 Sufficient residual variation

Estimating these specifications requires sufficient residual variation in the main variables after accounting for 9th-grade school and year fixed effects. Figure 3 shows across- and within-school variation in the share of 9th-grade students who identified as LGBTQ in 8th grade in the main sample. Across schools, 80 percent of cohorts have a share LGBTQ between 2.9 percent and 9.8 percent. The distributions are similar across years; in particular, there is no district-wide time trend. There is also substantial within-school variation in the share LGBTQ at all levels of the

[22] Non-linear specifications are commonly used to distinguish between models underlying the effects of peer achievement. These models allow the effects of peers at different points in the achievement distribution to have different effects and to affect students differently based on their own baseline achievement level; these non-linearities are important (Hoxby and Weingarth, 2005; Imberman et al., 2012; Burke and Sass, 2013; Cools et al., 2022). Papers that focus on the effects of peer demographics primarily use models like my linear specification (Carrell and Hoekstra, 2010; Lavy and Schlosser, 2011; Black et al., 2013; Merlino et al., 2019; Cools et al., 2022). Gould et al. (2009) and Olivetti et al. (2020) estimate non-linear specifications similar to mine.

[23] Specifically, I replace the $\beta_{CH}\%LGBTQ8$ term with $\beta^1_{CH}\mathbb{1}(\%LGBTQ8 > 20th) + \beta^2_{CH}\mathbb{1}(\%LGBTQ8 > 50th) + \beta^3_{CH}\mathbb{1}(\%LGBTQ8 > 80th)$, then interact each of these three indicators with the three indicators for non-Cis/Het 8th-grade SOGI categories. Then, β^1_{CH} is the effect on Cis/Het students of moving from below the 20th percentile $\%LGBTQ$ to the 20-50th percentile , β^2_{CH} is the effect of moving from the 20-50th to the 50th-80th percentile, and β^3_{CH} is the effect of moving from the 50-80th to over the 80th percentile. The corresponding effects for e.g. LGBTQ students add the coefficient on the interaction term to the corresponding β_{CH}. Now, the λ coefficients on the indicators for 8th-grade SOGI also provide a useful estimate: the gap between non-Cis/Het and Cis/Het students when the share LGBTQ is less than the 20th percentile.

school-average share LGBTQ, with within-school standard deviations averaging 2.2pp.

Appendix Table A8 quantifies within-school *residual* variation after accounting for 9th-grade school fixed effects. The first panel provides summary statistics for the raw share LGBTQ, which averages 5.9 percent with a standard deviation of 2.3pp in the full sample (column 1). The second panel provides summary statistics for the residual share LGBTQ after removing 9th-grade school- and year- fixed effects. The standard deviation of the residual is 1.7pp—74 percent of the raw standard deviation. The raw variation and share of residual variation remaining are identical for each SOGI subgroup (columns 2-5).

The non-linear specification relies on there being sufficient variation in which *bin* a cohort falls into. In the main specification, 99 schools have cohorts in multiple bins. The remaining 18 schools have cohorts that are all in one bin, and are therefore not used in estimating the treatment effects of interest in the non-linear specification; I keep them in the sample to estimate other coefficients.

Finally, estimating the effects for LGBTQ students requires a large-enough sample of LGBTQ students across the distribution of the cohort share LGBTQ. Using the same cutoff points as the main non-linear specification, 212 LGBTQ students have less than 3.8 percent of their peers identifying as LGBTQ, 721 have between 3.8 and 5.5 percent, 1,274 have between 5.5 and 8 percent, and 645 have 8-15 percent. The full distribution is in Appendix Figure A12.

5.3 Validating the quasi-random assumption

Next, I investigate the validity of the underlying identification assumption: that within-school, cross-cohort variation in the share LGBTQ is quasi-random.

5.3.1 (Lack of) LGBTQ student selection into friendly schools or cohorts

Students do not sort into schools or cohorts based on observable measures of LGBTQ acceptance, and LGBTQ students are not more likely to attend high school with their middle-school peers. First, for each school I calculate "baseline" measures of LGBTQ acceptance among the students enrolled in 9th-12th grade in 2016, the year before the oldest cohort in my sample enters 9th grade. LGBTQ students and Cis/Het students attend schools with similar baseline bullying rates, bullying rates among LGBTQ students, belonging levels among LGBTQ students, and average student perceptions of LGBTQ acceptance. Most importantly, given the identification strategy, LGBTQ and Cis/Het students also enroll in cohorts with other 9th-grade peers who reported similar levels of LGBTQ acceptance in their *8th-grade* schools. See Appendix Table A9 for comparisons of means and Appendix Figure A13 for comparisons of distributions.

Second, if there is selection into particular cohorts based on LGBTQ acceptance, the share of students who are LGBTQ and male and the share of students who are LGBTQ and female should be positively correlated; Appendix Figure A14 shows that this is not the case. Of course, this does not address the potential for sex-specific selection into cohorts with friends who share the same

SOGI and sex. However, on average, students went to the same 8th-grade school as only 8 percent of their new 9th-grade peers (90th percentile: 20 percent); this is the same for LGBTQ and Cis/Het students (Appendix Table A9 and Appendix Figure A15).

Finally, if the effects were driven by unobserved differences in cohorts' overall tolerance for those who are different from the majority group, than a higher share LGBTQ would also be associated with smaller racial gaps in bullying and belonging. I focus on racial gaps because the Black-Hispanic gaps are the second-largest in LAUSD (after LGBTQ-Cis/Het gaps). 6.9 percent of LAUSD students are Black, similar to the share LGBTQ. I estimate the same regression as above, but replace the indicators for 8th-grade SOGI with indicators for race. Having more LGBTQ peers does not significantly affect Black-Hispanic gaps in bullying or belonging (Appendix Table A10).

5.3.2 Balance tests

First, Appendix Table A11 regresses the cohort share LGBTQ jointly on all other observed cohort demographics. Without school fixed effects, two demographic variables are statistically significantly related to the share LGBTQ at the 5 percent level—the percent female and percent black—unsurprising, given the demographic correlates of identifying as LGBTQ (Appendix Table A6), though the magnitudes are quite small (column 1). Conditional on school fixed effects there are no observable correlations, though standard errors are large (column 2). All of these cohort-level demographic characteristics are included in the main specification, and the results are robust to interacting each cohort-level demographic control with students' 8th-grade SOGI (Appendix D.1).

Next, I test for balance at the individual level using the main linear specification, separately by students' 8th-grade reported SOGI (Appendix Tables A12 and A13). Each individual demographic characteristic is substituted for the outcome variable in the main specification, excluding controls for all other individual demographic characteristics. There are about as many significant correlations as expected by chance, and all of these demographics are controlled for in the main specification. The most notable is that students who were born in the US are more likely to be in cohorts with a higher share LGBTQ. This would positively bias the estimated effect of having more LGBTQ peers if US-born students have better outcomes than non-US-born students, for reasons unaccounted for by the rich controls. However, the data suggest that this is unlikely: US-born students—especially those who identify as LGBTQ—are *more* likely to be bullied and report *lower* levels of belonging than non-US-born students.[24] Reassuringly—given my focus on

[24]LGBTQ students born in the US (N=3051) were 6pp (se = 2.4) more likely to report being bullied in 8th grade than those not born in the US (N=264), and bullying rates for Cis/Het students are similar regardless of birthplace. If anything, the correlation between the share LGBTQ and whether students are US-born would *negatively* bias the differential effect of having LGBTQ peers for LGBTQ students relative to Cis/Het students. Students born in the US also report 0.15sd lower levels of school belonging than those not born in the US, which would negatively bias the estimated effect on belonging; because this pattern is the same for LGBTQ and Cis/Het students, it would not bias the differential effect.

LGBTQ-Cis/Het gaps—there are no significant differences between Cis/Het and LGBTQ students in the relationship between the share LGBTQ and students' other characteristics (column 2).

5.3.3 Monte Carlo simulation

Following the literature (e.g. Lavy and Schlosser, 2011; Cools et al., 2022), I test whether the standard deviation of the share LGBTQ across cohorts within each school falls within the bounds of what would be expected by chance given the average number of LGBTQ students at that school (Appendix Figure A16, Panel A). Conditional on observing a student's SOGI, I randomly assign students as LGBTQ or not assuming the variable is binomially distributed with a probability of success equal to the average at that school across all cohorts, and calculate the standard deviation of the resulting randomly-assigned cohort-share LGBTQ. I repeat this 1000 times and compare the true standard deviation in the share LGBTQ to the school-specific simulated distribution of standard deviations. 92 percent of schools have a true cross-cohort standard deviation between the 5th and 95th percentile of the simulated standard deviation for their school; 78 percent have a standard deviation between the 10th and 90th percentile. Panel B compares the true distribution of standard deviations across schools to 50 random simulated distributions; the true distribution is not a marked outlier, though there are "missing" schools with both very high and very low standard deviations and some unusual bunching around a standard deviation of 5pp.

5.3.4 Tests for school-specific time trends

I show that school-specific time trends are unlikely to drive my results in two ways. First, Appendix Figure A17 plots the share LGBTQ by school over time and shows that within schools, cohorts do not follow linear trends in the share LGBTQ beyond what would be expected by chance: 22 percent of schools have a 9th-grade share LGBTQ that increases from 2017 to 2018 and then decreases from 2018 to 2019, 36 percent of schools have a share that decreases then increases, 24 percent of schools have a share that increases both years, and 16 percent of schools have a share that decreases both years. If anything, schools with linear trends are under-represented relative to what would be expected by random chance.

Second, I estimate the "effects" of a placebo measure of the share LGBTQ—the share of the *subsequent* 9th-grade cohort that identified as LGBTQ in 8th grade. If variation in the share LGBTQ was due to time trends, this placebo measure would yield similar results as the true share LGBTQ. It does not, though results are noisy (See Appendix D.3 for details).

5.4 No effects on survey response rates

A final concern for interpreting the effects on survey outcomes is that exposure to more LGBTQ peers could affect whether students take the survey, which could bias the estimated effects on observed outcomes. However, I find no effect of having LGBTQ peers on survey response rates in

either the linear or non-linear specification, including no differential effects for Cis/Het, LGBTQ, uncertain, or unknown-SOGI students (Appendix Tables A14 and A15).[25,26]

6 The effects of LGBTQ peers: Results

I begin with bullying and school belonging, the two outcomes with the most striking LGBTQ-Cis/Het gaps and which have been proposed as potential explanations for the disparities in educational attainment. I next turn to potential mechanisms behind these effects, then examine related educational outcomes: daily attendance, school retention, and intended educational attainment. Finally, I test whether there are effects on how students report their SOGI in 9th grade.

6.1 School experiences

6.1.1 Bullying

Having more LGBTQ peers substantially closes the large LGBTQ-Cis/Het bullying gap. In the linear specification (Table 5, column 1), increasing the share LGBTQ by 10pp—moving from the 1st to 95th percentile—closes the gap by 9.0pp (p=0.04). This is a 38 percent reduction relative to the 22pp gap when less than 3.8 percent of a cohort identifies as LGBTQ (bottom quintile), and arises from a 8.4pp reduction in the likelihood that LGBTQ students are bullied (p=0.05).[27] Having 10pp more LGBTQ peers also closes the Uncertain-Cis/Het bullying gap by 7.9pp (p=0.04, 85 percent of the gap in the bottom quintile). This arises from a 7.3pp reduction in the likelihood that uncertain students are bullied (p=0.04). The point-estimated effects on the *frequency* of bullying are similar in sign and magnitude, but noisily estimated (column 2). The effects are driven by reductions in the likelihood of having rumors spread about you, being hit or pushed, having sexual jokes or comments made about you, and being teased about your body (Appendix Table A16).

The point-estimated effect of LGBTQ peers on the LGBTQ-Cis/Het bullying gap is largest when the share LGBTQ is very low (Figure 4), though I cannot reject that the effects of moving from bin to bin are equal (p=0.36). Moving from a cohort that is less than 3.8 percent LGBTQ to

[25] Regardless, the most likely case for systematic non-response would *negatively* bias coefficients in cases where I find a *positive* effect: conditional on their SOGI, students who are bullied and have lower school belonging are less likely to take the survey (Appendix Table A20). If having more LGBTQ peers improves some LGBTQ students' school experiences and causes them to take the survey, the peer-induced responses are negatively selected. That is, LGBTQ students' observed experiences are relatively inflated in cohorts with fewer LGBTQ peers and relatively deflated in cohorts with more LGBTQ peers, flattening the observed relationship and biasing a positive coefficient towards zero.

[26] Conditional on taking the survey, fewer than 3 percent of students skip any question about school experiences and there is no detectable effect of having LGBTQ peers on whether students skip those questions. Six percent skip the question about intended educational attainment, and students with more LGBTQ peers are less likely to skip the question. However, there is no differential effect for LGBTQ versus Cis/Het students.

[27] Throughout, I compare estimated effects to the the gap when the share LGBTQ is in the bottom quintile (estimated in the non-linear specification). Table 2 shows average gaps for alternative comparisons.

one that is up to 5.6 percent LGBTQ closes the gap by 6.4pp (p=0.10).[28] The non-linearity in the effect is more strongly evident the lower the share LGBTQ that I use to separate the first two bins in the non-linear specification (Appendix Figure A6).

6.1.2 Belonging

School belonging. Increasing the share LGBTQ by 10pp closes the LGBTQ-Cis/Het gap in school belonging by 0.3sd (p=0.01)—60 percent of the LGBTQ-Cis/Het gap in belonging when the share LGBTQ is in the bottom quintile. The gap is closed largely by increasing feelings of belonging among LGBTQ students by 0.22sd (p=0.06), while weakly decreasing feelings of belonging among Cis/Het students by 0.07sd (p=0.12) (Table 5, column 3). If anything, uncertain students also feel *less* like they belong.

While I focus on the effects on the overall index to minimize concerns about multiple hypothesis testing, the effects on the underlying components shed some light on mechanisms. The positive effects for LGBTQ students are driven by feeling more a part of their school (by 0.24sd, p=0.03) and like they are accepted for being themselves (by 0.43sd, p<0.01), rather than feeling safer at school or agreeing more that kids are nice. This suggests that the increase in belonging arises through something other than, or in addition to, the reduction in bullying. In contrast, the negative effects on Cis/Het students are driven by feeling less safe at school (by 0.11sd, p=0.02) and agreeing less that kids are nice (by 0.08sd, p=0.09). While there was no effect on whether Cis/Het students reported being bullied, these responses suggest some small, negative spillover effects.

Finally, the effect for LGBTQ students is strongly non-linear: increasing the share LGBTQ from less than 3.8 percent to 3.8-5.5 percent closes the gap by 0.28sd (p<0.01) with negligible effects of further increasing the share LGBTQ (Figure 4). I can weakly reject that the effect of moving from bin to bin is the same across all bins with p=0.11. This pattern is clear no matter the choice of cut-points for the non-linear specification (Appendix Figure A7).

Adult support. The adult support index is less likely to be directly affected by peers, but students experiencing victimization might perceive adult support differently, with the direction depending on the school response to reported victimization. Feelings of belonging with their peers may also spill over to feelings about school in general. While there are no statistically significant effects on the adult support index in either specification, results are qualitatively similar to the effects on the school belonging index (Table 5 and Figure 4).

6.1.3 Mechanisms: Why do LGBTQ peers affect bullying and belonging?

There are two primary mechanisms through which having more LGBTQ peers might reduce bullying of LGBTQ students. First, exposure to members of a stigmatized group can reduce bias and

[28] I focus on the effects on gaps in the main exhibits for brevity. The full non-linear specification that separates direct effects on LGBTQ and Cis/Het students is in Appendix Table A21.

improve inter-group interactions—the *contact hypothesis* (Merlino et al., 2019; Paluck et al., 2019, 2020; Lowe, 2025). Second, since people gravitate towards friends who are similar to themselves (McPherson et al., 2001; Currarini et al., 2009), having more LGBTQ peers may lead to larger or stronger friendship networks for LGBTQ students, reducing victimization since students who are less isolated are less likely to be bullied (Veenstra et al., 2005; Healy et al., 2024). Reduced stigma and stronger friendships may also improve belonging, but belonging may also be affected by a third channel: LGBTQ students may learn through observation that LGBTQ students are more accepted than they expected, even without changes in underlying stigma.[29]

Reductions in (perceived) stigma. Unfortunately, I observe only whether students report that LGBTQ students are accepted at their school and not personal measures of LGBTQ acceptance. While this reduces concerns about social desirability bias (Coffman et al., 2017), it complicates the interpretation of the findings, as second-order beliefs about LGBTQ acceptance may not be accurate (Bursztyn and Yang, 2022). In addition to changing underlying stigma through inter-group contact, having more LGBTQ peers may also affect this measure if students learn about LGBTQ acceptance by observing their peers' interactions.

According to LGBTQ students, having more LGBTQ peers reduces stigma, but Cis/Het students' perceptions are unaffected (Table 5 and Figure 5). Specifically, when the share LGBTQ is less than 3.8 percent, LGBTQ students are much less (0.3sd, $p<0.01$) likely to think that LGBTQ students are accepted than their Cis/Het peers. Increasing the share LGBTQ from less than 3.8 percent to 3.8-5.5 percent increases LGBTQ students' agreement that LGBTQ students are accepted by 0.18sd ($p=0.10$), with no effects of further increasing the share LGBTQ. On the other hand, I find a precise null effect of having LGBTQ peers on Cis/Het students' perceptions.

There are two possible explanations for the divergence in effects on LGBTQ and Cis/Het students' perceptions; which conclusion is correct depends on whether it is LGBTQ students or Cis/Het students who have more accurate perceptions of true LGBTQ acceptance at their school. If, as seems likely, LGBTQ students pay better attention to and have more information about anti-LGBTQ stigma, then having more LGBTQ peers likely reduces stigma, contributing to the reduction in bullying. LGBTQ students having more accurate information than Cis/Het students is consistent with the evidence from the panel sample that ever-LGBTQ students' perceptions of LGBTQ acceptance do not differ from always-Cis/Het students' perceptions until *after* they begin identifying as LGBTQ, suggesting that they are learning about stigma through their lived experience (Section 4.4). However, if it is Cis/Het students who have accurate beliefs, then having LGBTQ peers only corrects LGBTQ students' misperceptions, likely through increased observa-

[29] Having more same-sex-oriented peers of the same sex also expands the pool of potential romantic partners available for some of these students, but my data is not well-suited to identifying this potential channel. The availability of romantic partners has ambiguous predictions for mental health and belonging.

tion of other LGBTQ students. Either way, the change in LGBTQ students' perceptions likely explains a large portion of the overall effect on belonging.

Stronger social connections. While I cannot directly test effects on friendships—the SES does not ask about them—it does ask how well students get along with others different from themselves, and prior work suggests that the availability of demographically-similar peers may relate to this variable through friendship networks (Currarini et al., 2009). Suppose most students have 5 friends and prefer friends "like" themselves. When there are few LGBTQ students, LGBTQ students have to make friends with non-LGBTQ students. As they have more LGBTQ peers, however, they can meet their need for 5 friends entirely with LGBTQ peers. Thus, when the share LGBTQ is relatively high, increasing the share LGBTQ should *lower* the extent to which LGBTQ students report getting along well with those who are different from themselves. There should be no effect on Cis/Het students, whose friendships will continue to be primarily with other Cis/Het students.

This is indeed what I find: while increasing the share LGBTQ beyond the 50th percentile (5.6 percent) has no effect on bullying or belonging, it strongly *reduces* LGBTQ students' reported ability to get along with those different from themselves by 0.18sd (p<0.01) and has, if anything, a small positive effect on Cis/Het students (Figure 5).[30] This suggests that the availability of more LGBTQ friends changes the demographic composition of LGBTQ students' friendships. Having more friends with the same minority identity likely increases belonging. If students also have stronger friendships or more friendships overall, being less socially isolated will also lower the likelihood of being bullied.

6.2 School attachment

Bullying, school belonging, and perceived acceptance have been proposed as possible drivers of the LGBTQ-Cis/Het gaps in school engagement and educational attainment. I find that having more LGBTQ peers has large effects on whether students leave the district the following year, but not absenteeism or school-switching in the district.[31] I find suggestive evidence that having more LGBTQ peers affects intended educational attainment.

6.2.1 School and district retention

Whether changing schools is a positive or negative outcome depends on why students switch schools and what schools they switch to, and there is mixed evidence on the effects of exogenous school moves (Schwartz et al., 2017). However, school retention is highly correlated with bullying and belonging (Appendix Table A2) and exhibits large LGBTQ-Cis/Het gaps (Table 2). Thus, it is

[30] As expected due to the decrease in bullying, moving from the bottom quintile to the 20th-50th percentile improves LGBTQ students' reported ability to get along with those different from themselves by 0.2sd (p=0.02). The inverse U-shape is striking regardless of the choice of cut-points (Appendix Figure A8).

[31] Administrative outcomes are observed at the end of the year so the Covid-19 pandemic restricts the analysis to 2018 and 2019. Thus, identification comes from variation between two, rather than three, cohorts per school.

a useful measure of whether students are happy at school that is recorded in administrative, rather than survey, data.

Increasing the share LGBTQ by 10pp has no effect on whether students move schools within the district, but has large effects on whether LGBTQ students leave the district for 10th grade. Increasing the share LGBTQ by 10pp decreases the chance that LGBTQ students leave the district by 5.2pp (p=0.04)—eliminating the LGBTQ-Cis/Het gap when the share LGBTQ is in the bottom quintile (Table 6). Effects in the main non-linear specification are similar (Figure 6) and do not suggest striking non-linearities: I cannot reject that the effect of moving from bin to bin is equal across all bins (p=0.56).[32] That said, varying the cut-points suggests that the effects are still driven by students with the lowest share of peers who are LGBTQ (Appendix Figure A9). There are no effects for students who are uncertain of their SOGI, consistent with weaker effects on the school experience measures for those students.

6.2.2 Absenteeism

Absenteeism worsens test scores (Goodman, 2014) and is highly correlated with school belonging (Appendix Table A2). The median student in LAUSD attends more than 96 percent of school days, but 18 percent of students are chronically absent—missing at least 9 percent of school days, per LAUSD—and there are large LGBTQ-Cis/Het gaps (Table 2). However, there is no significant effect of having more LGBTQ peers on LGBTQ-Cis/Het gaps in daily attendance rates or chronic absenteeism in either specification (Table 6 and Figure 6). Either bullying and belonging are not the driving factors behind LGBTQ students' disproportionate absenteeism, or chronically absent students' attendance decisions are not marginal to the change in school experiences.

6.2.3 Intended educational attainment

LGBTQ-identified youth are less likely to attend college, and discrimination and bullying are thought to be key mechanisms, though gay boys experience substantially more bullying and are *more* likely to attend college than heterosexual boys (Sansone, 2019; Mittleman, 2022). While academic skills, career goals, or financial constraints primarily determine educational attainment, negative school experiences may discourage students from an academic trajectory. On the other hand, acquiring more education may provide access to more LGBTQ-friendly environments, or LGBTQ individuals may seek additional education due to expected labor market discrimination (Carpenter, 2009; Badgett et al., 2024). Conditional on all other demographic characteristics and 8th-grade test scores, female LGBTQ students in LAUSD are less likely to plan to go to college than their Cis/Het peers; there is no gap for boys.

In the linear and main non-linear specifications, there are no detectable effects of having LGBTQ peers on whether LGBTQ or uncertain students plan to go to college and the confidence

[32]The main exhibits show effects on LGBTQ-Cis/Het gaps; the full non-linear specification is in Appendix Table A22.

intervals are wide (Table 6 and Figure 6). Again, though, adjusting the non-linear specification to study the effects for the students with the very lowest share LGBTQ suggests that LGBTQ students who are most affected on all other measures are also more likely to plan to go to college when they have a few more LGBTQ peers (Appendix Figure A11).

6.3 Sexual orientation and gender identity

Section 4 documents substantial costs—more bullying and lower feelings of belonging—to coming out. At the same time, Sections 6.1 and 6.2 show that having more LGBTQ peers strongly reduces these costs and increases perceived LGBTQ acceptance. Thus, the costs of publicly identifying as LGBTQ are lower when there are more LGBTQ peers. The costs of identifying as LGBTQ privately may also change, if it is easier to acknowledge holding a minority, stigmatized identity when seeing others do so. For some students, having LGBTQ peers may also help them learn about different identities or ways of being themself.

My empirical strategy is well-suited to studying how having LGBTQ peers affects someone's decision to disclose that they identify as LGBTQ. I study the effect of having more peers who identified as LGBTQ *in 8th grade* in one's 9th-grade cohort, and use students' own 8th-grade-reported SOGI to estimate heterogeneous effects. Thus, how they identify on the SES in 9th grade is a natural outcome. That said, one limitation is that I observe a measure of SOGI that is privately reported. If—as expected—the effects of LGBTQ peers largely operate through changing the costs of identifying publicly as LGBTQ, it will be harder to detect effects.

First, at a 95 percent confidence level, I can reject that increasing the share LGBTQ by 10pp increases the likelihood students who identified as Cis/Het in 8th grade identify as LGBTQ in 9th grade by more than 0.5pp (Table 7). This evidence contradicts a theory of "social contagion" in which exposure to LGBTQ peers causes new identification as LGBTQ.

In contrast, having more LGBTQ peers seems to reinforce the continued disclosure of *previously-held* non-Cis/Het identities, though the effects are noisily estimated. Increasing the share LGBTQ by 10pp increases the share of previously-identified LGBTQ students who continue to identify as LGBTQ by 6.5pp (12 percent, p=0.16) and reduces the likelihood they are uncertain of their SOGI or identify as Cis/Het each by about 3pp. The results are parallel for students who were uncertain of their SOGI in 8th grade. Increasing the share LGBTQ by 10pp increases the likelihood that they continue to be uncertain by 4.2pp (14 percent, p=0.25) and decreases the likelihood of identifying as LGBTQ or Cis/Het in 9th grade by 1.1pp and 3.1pp, respectively. There are no effects on whether students answer the question conditional on taking the survey, so differential reporting is unlikely to be affecting the results.[33]

These results suggest that having more LGBTQ peers affects whether SOGI-minority students

[33]There are no noticeable non-linearities (Appendix Table A23).

disclose their identity, but do not yield strong conclusions. I find relatively large, positive, but noisy effects of having more LGBTQ peers on whether students who previously identified as LGBTQ or were uncertain continue to do so. These estimates are quite stable across various sample and specification decisions and attain statistical significance at the 5 percent level in some cases (see Appendix D.1). On the other hand, I find a precise null effect on how students who previously identified as Cis/Het identify in 9th grade.

6.4 Heterogeneity by sex

The effects of LGBTQ peers may vary greatly based on whether a student identifies as lesbian, gay, bisexual, or transgender. While I cannot isolate the effects of LGBTQ peers separately by students' specific SOGI, I can separate LGBTQ students based on their sex as recorded in LAUSD's administrative data. Recall that girls are twice as likely to ever identify as LGBTQ (Section 4); in the peer effects sample, I observe 907 male students and 1,945 female students who identified as LGBTQ in 8th grade.

The results are not statistically distinguishable between the two sexes and point-estimated effects are of the same sign for girls and boys in almost all cases. Here, I review the qualitative patterns; results are available upon request. The reduction in bullying incidence is similar for girls and boys, but there is a larger effect on bullying *frequency* for boys; there are also larger effects on belonging for boys. Effects on perceived LGBTQ acceptance and whether students get along well with those who are different from themselves are identical for girls and boys. Effects on school retention seem to be driven by girls. Both LGBTQ boys and girls are more likely to continue identifying as LGBTQ when they have more LGBTQ peers.

A related question is whether the effects of having male versus female LGBTQ peers are different. If the effects are driven by having more "peers like you," interacting SOGI and sex should make these effects stronger. Unfortunately, the sample is too small to explore this question. The fact that some of the point-estimated effects on bullying and belonging are larger for boys than girls while two-thirds of LGBTQ students are girls suggests that it is not only LGBTQ peers of the same sex that drive effects.

6.5 Accounting for potential measurement error in the share LGBTQ

The share LGBTQ is measured with noise, due to (1) students with unobserved SOGI—due to 8th-grade survey-non-response or being new to the district in 9th grade—or (2) potential misreporting among students with observed SOGI. In both cases, the results of the empirical exercises discussed below suggest that any residual measurement error is likely only biasing coefficients towards zero.

6.5.1 Measurement error due to students with unobserved 8th-grade SOGI

A key challenge in estimating the effects of LGBTQ peers is to deal with the fact that having LGBTQ peers affects whether students report that they identify as LGBTQ. As discussed in detail above, I solve this issue by estimating the effect of having *9th-grade peers* who identified as LGBTQ *in 8th grade.* While this solves the reverse causality issue, it introduces measurement error in the observed share LGBTQ, as variation in the share LGBTQ among students who did not take the SES in 8th grade or who are new to the district is unaccounted for. If the variation in the share of these students who identify as LGBTQ is also quasi-random across cohorts within a school, this will bias my results towards zero; otherwise, it may bias my results in either direction.

Several pieces of evidence suggest that measurement error due to unobserved SOGI does not systematically bias my results; if anything, my results may be attenuated. First, the share with observed 8th-grade SOGI is mainly determined by the share who are new to the district (Appendix Table A18), and students joining the district are no more or less likely to identify as LGBTQ in 9th grade as returning students overall (7.5 vs 7.2 percent, p=0.3).[34] However, students who are returning to the district but did not take the SES in 8th grade are 1pp more likely to identify as LGBTQ in 9th grade than those who did take the survey in 8th grade (p=0.01). Of course, students' reported 9th-grade SOGI is endogenous, but I find no detectable effects of having LGBTQ peers on how students with unknown 8th-grade SOGI identify in 9th grade (Table 7).

My results would only overstate the effects of having more LGBTQ peers if students with unobserved SOGI were more likely to have previously identified as LGBTQ when the observed share LGBTQ is high and vice-versa. Given the lack of observed effect on how students with an unknown 8th-grade SOGI identify in 9th grade, this is only possible if having more LGBTQ peers *reduces* the likelihood that unobserved-LGBTQ students continued to identify as LGBTQ while weakly *increasing* the likelihood for students who are known to have previously identified as LGBTQ (as observed); this is unlikely.

Second, recall that in the main sample, I restrict to cohorts in which at least 35 percent of students have an observed 8th-grade SOGI. Changing this cutoff provides another test for whether unobserved SOGI is affecting my results (Appendix Figures A18-A20). Specifically, I estimate the results when the sample includes cohorts in which at least 10, 20, 30, 40, 50, or 60 percent of students have an observed 8th-grade SOGI.

Broadly, the results are robust across these samples. Results are very similar for any cutoff under 50 percent. Dropping any cohort in which less than 60 percent of students have observed

[34] Conditional on the share new to the district, the share with observed 8th-grade SOGI is positively related to the share Black and share Hispanic and negatively related to the share in poverty. In my sample, neither race or socioeconomic status is a strong predictor of whether students identify as LGBTQ (Section 4). On net, the share with observed SOGI is very weakly negatively correlated with the share LGBTQ (Appendix Table A11).

data causes by far the largest sample restriction and standard errors increase accordingly. The estimated coefficient, however, is stable or increases in magnitude. In general, when the results change, the estimated effects are often smaller in the less-restricted sample and larger in the more-restricted sample, as expected from more or less random measurement error in the independent variable, respectively. Of course, this is not a perfect test for attenuation bias, as the share of students with observed 8th-grade SOGI is not random and there may be heterogeneous effects.

6.5.2 Measurement error in reported SOGI

A more common concern in the peer effects literature is that measurement error in *individuals'* reported SOGI creates measurement error in the aggregate measure; the correlation between measurement error in the individual and cohort characteristic can positively bias the results when peers are not randomly assigned (Angrist, 2014; Feld and Zolitz, 2017). While Section 4 showed that students' SOGI trajectories follow expected paths and that the fluidity in student identities cannot be on the whole explained by inattention or intentionally inaccurate responses, they may play some role. Even so, when peers are randomly assigned, this type of measurement error produces only attenuation bias (Feld and Zolitz, 2017). As described in Section 5.3, the variation I exploit in the share of LGBTQ peers appears quasi-random. To fully address this concern, however, I follow the literature (e.g. Carrell et al., 2018; Cools et al., 2022) and introduce increasing levels of individual-level measurement error in reported 8th-grade SOGI and show that the results are only attenuated (Appendix Figures A21, A22, and A23).[35]

7 Conclusion

In LAUSD and nationwide, LGBTQ students are disproportionately likely to be bullied and feel less like they belong at school, which contributes to mental health and school attachment gaps. This paper brings new evidence on the development of LGBTQ identities in adolescence and the evolution and determinants of these bullying and belonging disparities. There are clear implications for the design of effective school policy to support LGBTQ students. This carries particular importance as increasing numbers of adolescents identify as LGBTQ alongside a recent wave of legislation that aims to restrict schools' ability to foster LGBTQ visibility and provide support.

First, I show that there is substantial fluidity in adolescents' sexual orientation and gender identity. As such, standard statistics that focus on the share of students who identify as LGBTQ in a given year vastly understate the share of the population who is likely to be affected by policies targeting LGBTQ students, if students who ever but do not currently identify as LGBTQ are also

[35] Specifically, for a given level of measurement error (e.g. 10 percent), I randomly choose 10 percent of students with an observed 8th-grade SOGI and reassign their 8th-grade SOGI according to a binomial distribution with a mean of 5.8 percent identifying as LGBTQ (the share in the overall sample). Then, I recalculate the share LGBTQ and estimate the main specification, pooling all non-LGBTQ students as one group for simplicity.

affected. 14 percent of students ever identify as LGBTQ in a four-year period, compared to at most 8.1 percent in an average year. Policies supporting LGBTQ students may provide more benefit than previously realized, especially if they have high fixed costs.

Second, students who eventually, but do not yet, identify as LGBTQ are substantially more likely to be bullied than their always-Cis/Het peers, up to 5 years before they start to identify as LGBTQ and as early as elementary school. Coming out is then associated with an additional bullying penalty. Among those who are "out," students who are the most certain of their identity—especially boys—are also disproportionately likely to be bullied. Taken together, the disparate bullying experienced by students who ever identify as LGBTQ is likely due in part to anti-LGBTQ stigma but also due to other correlated factors, like violation of traditional masculinity or femininity norms. School policies will need to address multiple factors to reduce the bullying gap.

Third, I show that LGBTQ community and visibility are important determinants of the school experiences of LGBTQ students. Specifically, having more LGBTQ peers dramatically shrinks LGBTQ-Cis/Het gaps in bullying and belonging and the likelihood of leaving the district by improving the experiences of LGBTQ students. The effects of having more LGBTQ peers are largest when the share LGBTQ is extremely low. The effects most likely derive from a reduction in anti-LGBTQ stigma, as well as stronger friendships for LGBTQ students with peers "like" themselves.

Schools cannot assign peers based on SOGI—even if SOGI was observable, this would violate discrimination laws—but the results have several policy prescriptions. In a context like LAUSD, particular attention should be paid to supporting socially isolated students and to providing opportunities for social connection. In addition, despite high overall agreement that LGBTQ students are accepted among *Cis/Het* students, LGBTQ students disagree. Increased LGBTQ visibility improves LGBTQ students' perceptions of LGBTQ acceptance. If, as the data suggests, LGBTQ students' perceptions are more likely to be accurate, then increased visibility likely reduces stigma. Alternatively, LGBTQ students misperceive levels of overall LGBTQ acceptance when acceptance levels are high but observable positive interactions are limited. Efforts to improve these perceptions may reduce LGBTQ-Cis/Het gaps in school belonging; how to credibly do so when the share LGBTQ is low is an interesting avenue for future research.

I provide new causal evidence that policies promoting LGBTQ visibility and inclusion are likely to provide valuable support. Supporters of the wave of legislation that aims to restrict schools' ability to offer these programs cite fears of "indoctrination" or "social contagion." My final piece of evidence contradicts this argument: having more peers who identify as LGBTQ has a precisely-estimated null effect on whether students who previously identified as Cis/Het start to identify as LGBTQ. On the other hand, having more LGBTQ peers reduces the social costs associated with coming out, and consistently, I find suggestive evidence that this increases the chance that students who previously identified as LGBTQ in 8th grade continue to disclose these identities

at their new 9th-grade school.

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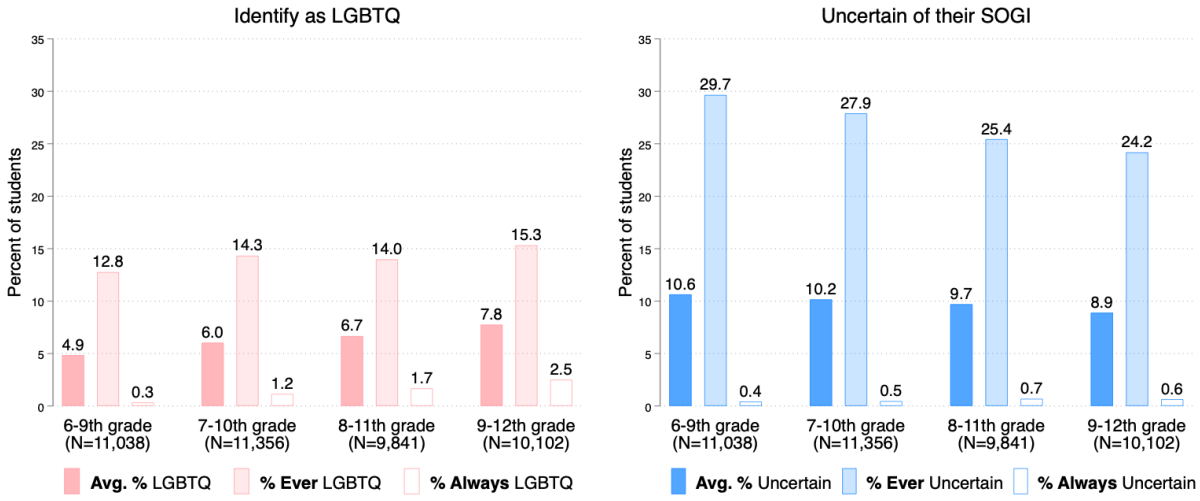
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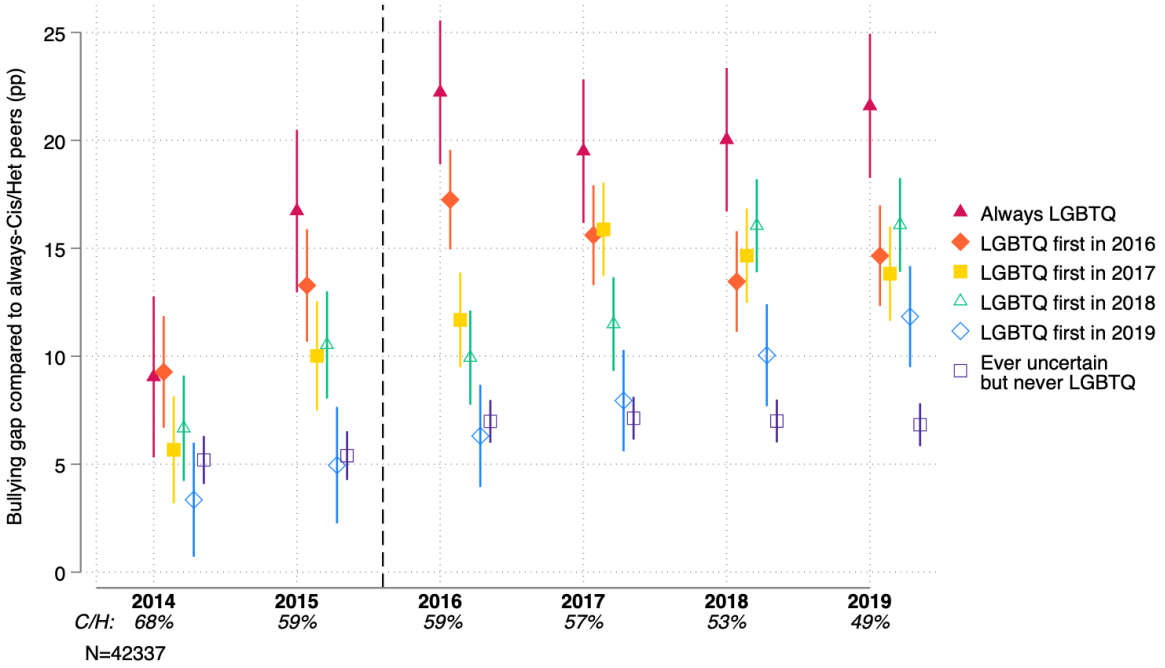
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Figure 1: LGBTQ identity evolution by cohort



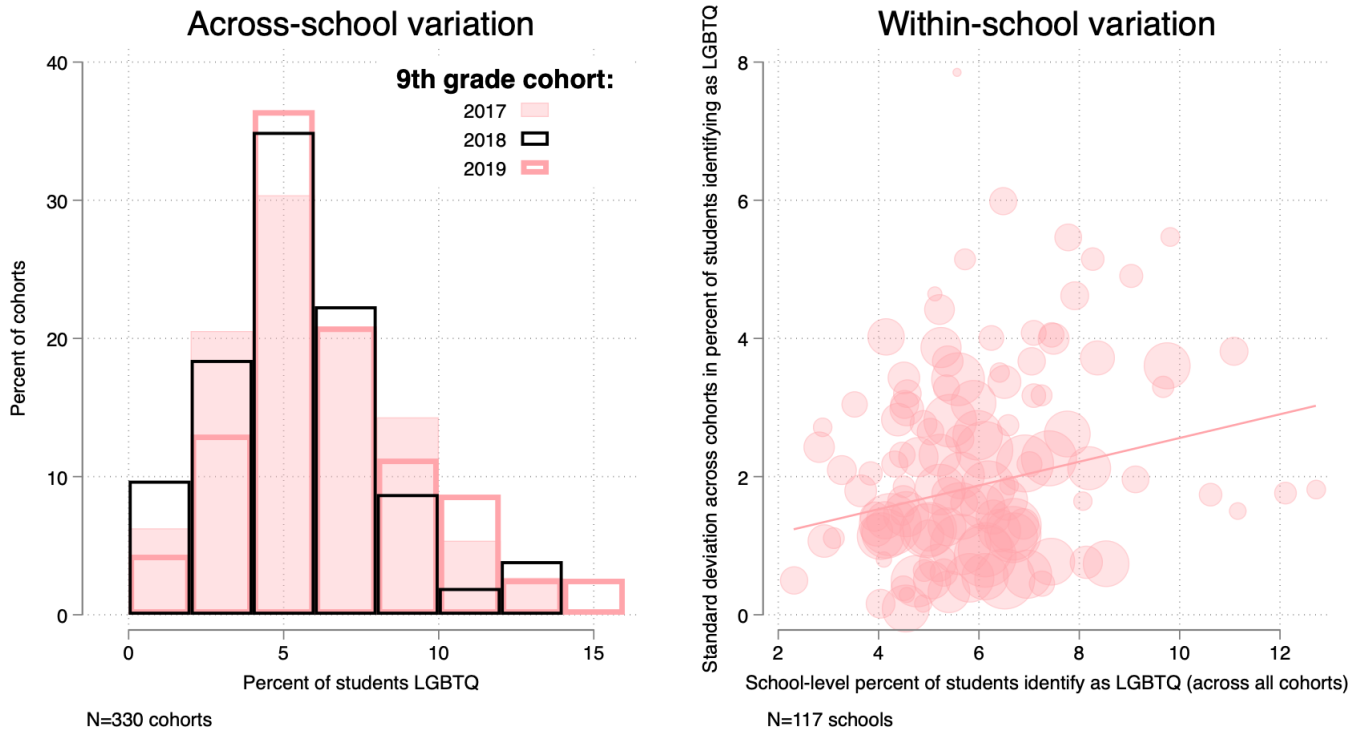
Note: This figure provides statistics that are analogous to those in Table 3, separately by the grades in which students are observed. The left plot shows the share of students who identify as LGBTQ on average, ever, or always. The right plot shows the share of students who are uncertain of their SOGI on average, ever, and always. The share LGBTQ in a given year is averaged across all four years. The sample is students whose SOGI is observed in all four sample years (N=42,337). The largest standard error on any of the above means is 0.5pp, so all estimate-comparisons of interest are statistically significantly different from each other at a less than a 1% significance level.

Figure 2: Bullying gaps accounting for fluid SOGI



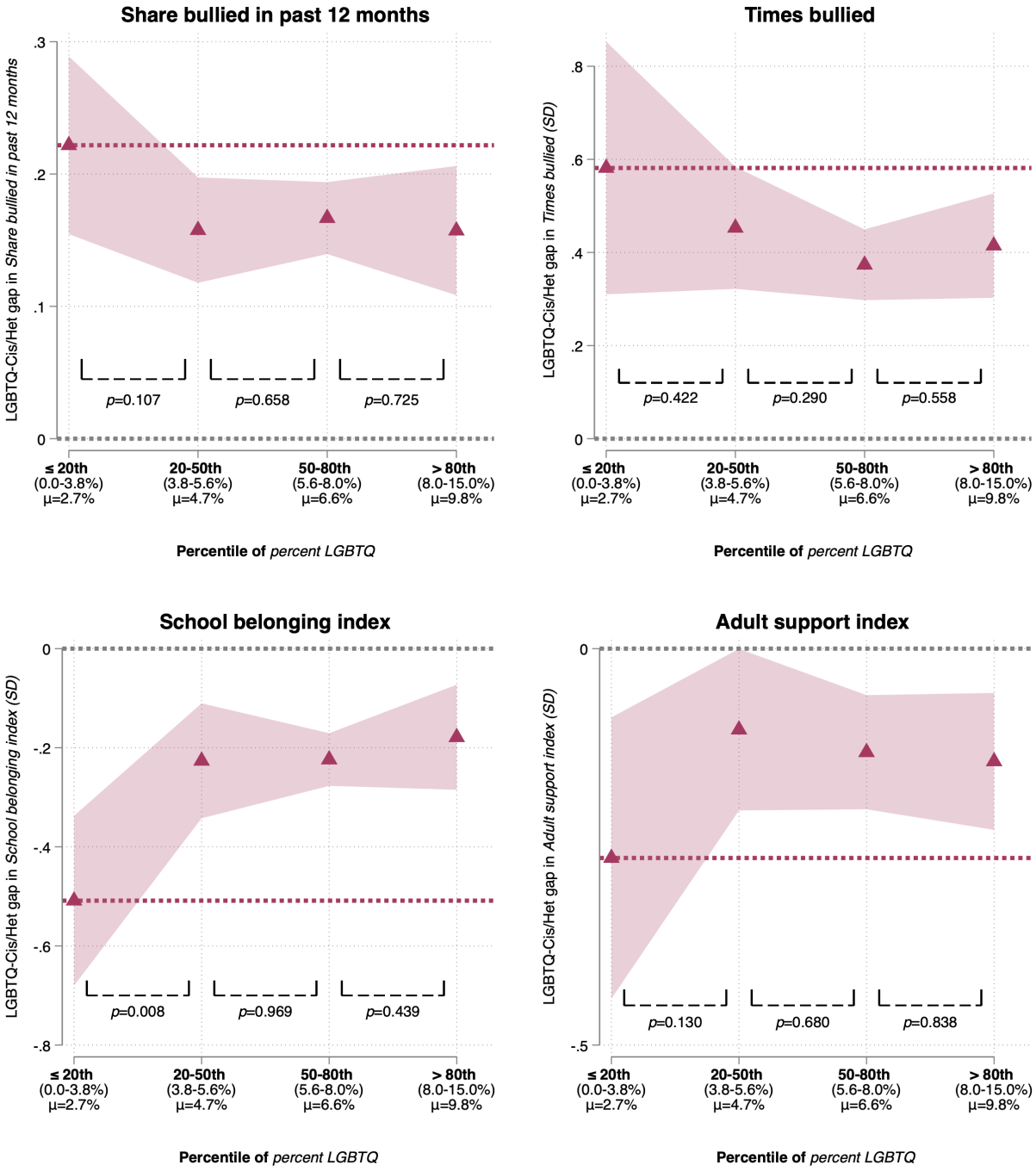
Note: This figure plots the percentage point increase in the likelihood of being bullied, relative to students who always identify as Cis/Het, separately by *when* students begin to identify as LGBTQ on the survey. Spikes are 90 percent confidence intervals. The percent of always-Cis/Het students who are bullied in each year is given in italics below the horizontal axis. I observe bullying starting in 2014 but do not observe SOGI until 2016, so "Always LGBTQ" and all other legend categories refer to the post-2016 period. Students who are classified as "first identifying as LGBTQ" in a particular year first identify as LGBTQ in that year but may change how they identify in subsequent years. The sample is students in 6th-9th grade in 2016 whose SOGI is observed in all four subsequent years (N=42,337). Statistics from before 2016 are calculated among students already in the district at that time who answered the survey in that year (N=32,700 in 2014 and 31,767 in 2015).

Figure 3: Variation in the share of students identifying as LGBTQ



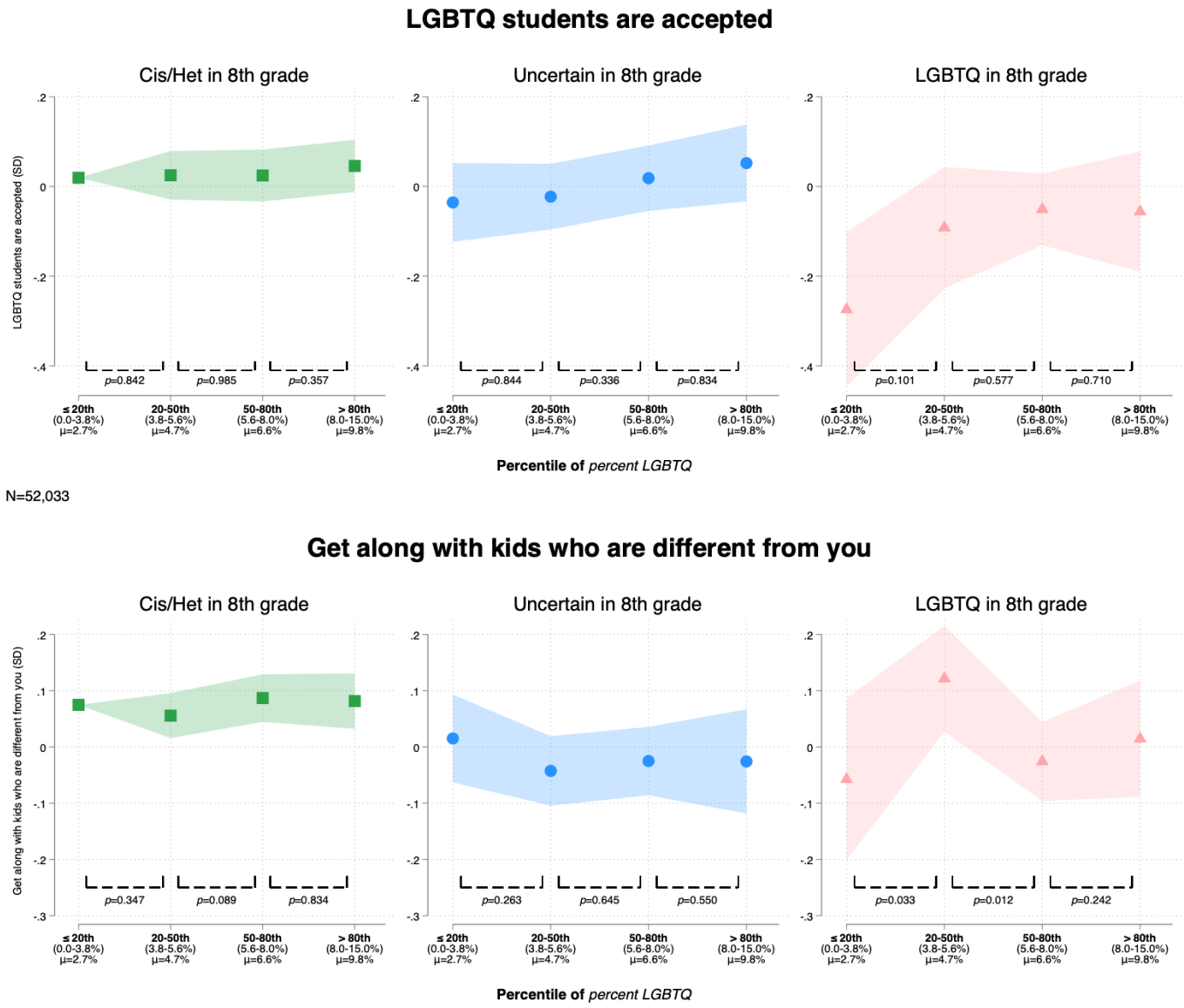
Note: The figure on the left plots the distribution of the percent of students in a cohort (students in the same school enrolled in 9th grade in the same year) who identified as LGBTQ in 8th grade, separately by the year that students are in 9th grade. The figure on the right plots the standard deviation of the percent LGBTQ across cohorts in each school against the average (cross-cohort) percent LGBTQ at that school. Scatter marker sizes indicate the total number of students per school in the main analysis sample. The sample in both figures is all cohorts/schools in the peer effects sample (see Section 3.4.2).

Figure 4: Non-linear peer effects specification: Effects on bullying and belonging **gaps**



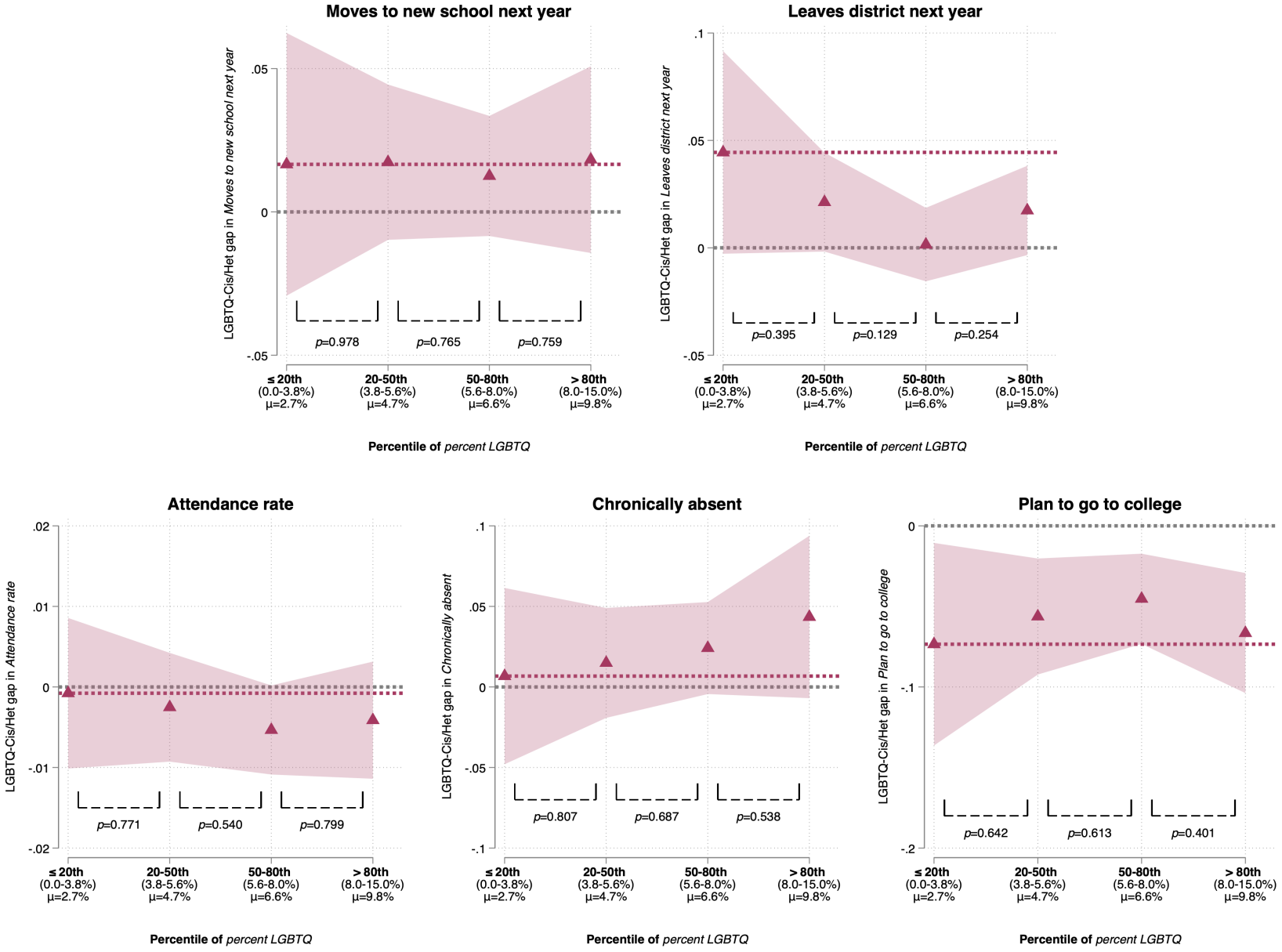
Note: This figure shows the results from the non-linear specification for bullying and belonging outcomes, plotting the resulting LGBTQ-Cis/Het **gap** in each bin. The underlying coefficients are in Appendix Table A21. The sample and controls are the same as in Table 5. The figure includes 95 percent confidence intervals, which are calculated from standard errors are clustered by school.

Figure 5: Non-linear peer effects specification: Effects on LGBTQ acceptance and inter-group contact by 8th-grade SOGI



Note: This figure shows the results from the non-linear specification for acceptance and inter-group contact outcomes, plotting levels of each variable separately by students' 8th-grade SOGI. The underlying coefficients are in Appendix Table A21. The sample and controls are the same as in Table 5. The figure includes 95 percent confidence intervals, which are calculated from standard errors that are clustered by school. *p*-values testing whether there is an effect of increasing the percent LGBTQ from bin to bin, separately by 8th-grade SOGI, are calculated using the estimates from the same regression and provided on the graph.

Figure 6: Non-linear peer effects specification: Effects on school attachment **gaps**



Note: This figure shows the results from the non-linear specification for school attachment outcomes, plotting the resulting LGBTQ-Cis/Het **gap** in each bin. The underlying coefficients are in Appendix Table A22. The sample and controls are the same as in Table 6. The figure includes 95 percent confidence intervals, which are calculated from standard errors that are clustered by school.

Table 1: Sample demographic characteristics

	Sample ever enrolled in panel sample cohorts			Peer effects sample	
	Full sample ever in cohort	In district all years	Took survey all years	Full sample	Has survey outcomes
Panel A: Share with variable=1 if not missing					
Female	0.479	0.486	0.512	0.476	0.491
Asian	0.066	0.069	0.075	0.062	0.066
Black	0.097	0.067	0.043	0.069	0.058
Hispanic	0.742	0.792	0.820	0.798	0.809
White	0.092	0.069	0.060	0.067	0.065
Native American	0.004	0.003	0.003	0.003	0.003
Home language English	0.365	0.319	0.285	0.319	0.308
Home language Spanish	0.567	0.616	0.647	0.618	0.628
Special education flag	0.091	0.134	0.095	0.119	0.107
Gifted flag	0.145	0.220	0.257	0.160	0.185
Poverty flag	0.841	0.891	0.904	0.898	0.899
Born in USA	0.853	0.896	0.906	0.859	0.887
Parent college degree	0.204	0.180	0.174	0.169	0.170
In district in 2016	0.901	0.928	0.945	—	—
In district in 8th grade	—	—	—	0.810	0.852
Panel B: Average standardized test scores if not missing					
Ave. middle school math score	-0.062	-0.031	0.118	—	—
Ave. middle school reading score	-0.061	-0.035	0.108	—	—
8th grade math score	—	—	—	-0.074	-0.010
8th grade reading score	—	—	—	-0.076	-0.013
Panel C: Share missing variable					
Female	0.007	0.000	0.000	0.005	0.001
Race/ethnicity	0.003	0.000	0.000	0.002	0.001
Home language	0.003	0.000	0.000	0.002	0.001
Special education flag	0.000	0.000	0.000	0.000	0.000
Gifted flag	0.000	0.000	0.000	0.000	0.000
Poverty flag	0.008	0.000	0.000	0.004	0.000
Born in USA	0.000	0.000	0.000	0.000	0.000
Parent college degree	0.475	0.365	0.344	0.364	0.328
Ave. middle school math score	0.228	0.059	0.028	—	—
Ave. middle school reading score	0.235	0.064	0.031	—	—
8th grade math score	—	—	—	0.224	0.163
8th grade reading score	—	—	—	0.229	0.168
N	193,774	107,140	42,337	76,707	53,677

Note: This table shows demographic characteristics for various samples. The first three columns concern the selection of students in the panel sample. The first column is all students who ever appear enroll in LAUSD with one of the cohorts that was in 6-9th grade in 2016 between 2016 and 2019. The second restricts to students who are in the district in all four of those years. The third restricts to the main sample used in the fluidity analysis: the set of students whose SOGI is observed in all four sample years (see Section 3.4.1). The fourth and fifth columns concern the peer effects sample; this is students who were in 9th grade in 2017, 2018, or 2019 and are in cohorts that meet the sample restriction criteria (see Section 3.4.2). The fourth column shows all students in this sample; the fifth column restricts to the subset of students who took the School Experience Survey (SES) in 9th grade. Panel A shows the share of students with each demographic characteristic as recorded in the first year the student appears in the district. Panel B shows the most relevant middle school test scores. Panel C shows the share missing each variable.

Table 2: Summary statistics for outcome variables in the peer effects sample

	SOGI in 8th grade			
	Cis/Het Mean	Δ LGBTQ	Δ Uncertain	Δ Missing SOGI8
Panel A: 9th-grade SOGI				
LGBTQ in 9th grade	0.025	0.514***	0.109***	0.048***
Uncertain in 9th grade	0.070	0.119***	0.246***	0.045***
Cis/Het in 9th grade	0.905	-0.633***	-0.356***	-0.092***
Panel B: 9th-grade school experience outcomes				
Bullied in last 12 months	0.504	0.186***	0.075***	0.010*
Total times bullied (SD)	-0.062	0.444***	0.172***	0.020*
School belonging index (SD)	0.073	-0.277***	-0.175***	-0.049***
School belonging index (SD)	0.066	-0.155***	-0.085***	-0.036**
LGBTQ students accepted (SD)	0.035	-0.057*	-0.008	-0.036***
Get along w/ kids diff from you (SD)	0.063	-0.033	-0.112***	-0.088***
Panel C: 9th-grade school attachment outcomes				
Daily attendance rate	0.947	-0.008***	-0.007***	-0.023***
Chronically absent	0.142	0.044***	0.024***	0.095***
New school next year	0.088	0.020***	0.009	0.027***
Leave district next year	0.061	0.019***	0.002	0.092***
Plan not to attend college	0.301	0.039***	0.083***	0.065***
Plan highest degree is 4-year college	0.352	-0.012	-0.039***	-0.036***
Plan to go to graduate school	0.347	-0.027**	-0.044***	-0.029***
Missing 9th-grade survey response	0.234	0.025**	0.010	0.178***
N	40630	2852	5584	27641

Note: This table shows the average of each outcome variable separately by students' 8th-grade reported SOGI for the main peer effects sample, with Cis/Het means in column 1 and the difference for LGBTQ, Uncertain, and unknown SOGI in columns 2-4, respectively. *, **, and *** indicate significant differences at the 10, 5, and 1 percent levels, respectively; standard errors are clustered by school. When outcomes are measured in the SES, they are averaged only for students who answered the question on the SES; the share who did not take the SES in 9th grade is reported in the last row. All indices are reported in standard deviations. Chronic absenteeism is daily attendance less than 91 percent. Demographic predictors of SOGI can be found in Appendix Table A6. Appendix Table A3 shows gaps separately by gender and after accounting for all other observed demographic characteristics.

Table 3: Comparing SOGI with and without accounting for fluidity

	Percent in the given year:				Ever	Always
	2016	2017	2018	2019	(in any year)	(in all years)
Panel A: If took survey in a given year						
Cis/Het	77.8	80.4	78.6	80.2		
LGBTQ	4.7	5.9	7.3	8.5		
Uncertain	9.6	10.8	10.7	9.6		
Q Non-Response	7.8	2.9	3.4	1.6		
N	114,266	97,551	104,385	101,865		
Panel B: If took SES all four years (N=42,337)						
Cis/Het	80.1	81.9	80.9	81.6	95.2	58.9
LGBTQ	4.4	5.6	7.0	8.1	14.1	1.4
Uncertain	9.8	10.7	10.1	8.9	26.9	0.6
Q Non-Response	5.7	1.8	1.9	1.4	10.3	0.0

Note: This table compares the percent of students reporting each SOGI in a given year (in columns 1-4) to the percent of students who ever or always identify with a particular SOGI. The first panel includes the full sample of students who ever show up in the cohorts in 6th-9th grade in 2016 who took the survey in each year (and for whom the share ever and always identifying as LGBTQ cannot be consistently calculated). The second panel restricts to the students whose SOGI is observed in all four sample years. In 2016 and 2017, students are considered "uncertain" if they answered "I don't know" to the SOGI question; in 2018 the option "I prefer not to answer" was added and these students are additionally categorized as "uncertain."

Table 4: Bullying gaps accounting for SOGI fluidity

	Full sample			Girls			Boys		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Identify as LGBTQ	0.152***	0.142***	0.046***	0.147***	0.144***	0.048***	0.132***	0.131***	0.036*
	(0.006)	(0.006)	(0.011)	(0.007)	(0.007)	(0.014)	(0.009)	(0.009)	(0.020)
Not yet LGBTQ	0.093***	0.083***	–	0.085***	0.083***	–	0.097***	0.096***	–
	(0.007)	(0.007)		(0.009)	(0.009)		(0.012)	(0.012)	
Ever uncertain but never LGBTQ	0.067***	0.062***	–	0.060***	0.058***	–	0.071***	0.070***	–
	(0.004)	(0.004)		(0.006)	(0.006)		(0.006)	(0.006)	
Always LGBTQ	0.072***	0.066***	–	0.043***	0.044***	–	0.153***	0.154***	–
	(0.013)	(0.013)		(0.015)	(0.015)		(0.028)	(0.028)	
Controls:									
School and year-grade FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Demographics		✓			✓			✓	
Student FE			✓			✓			✓
Sample:									
Full	✓	✓		✓	✓		✓	✓	
Switchers			✓			✓			✓
N	165,667	165,667	21,012	85,139	85,139	13,823	80,528	80,528	7,189
Mean, Always Cis/Het:	0.545			0.567			0.525		

Note: This table shows how LGBTQ-Cis/Het bullying gaps depend on students' current and eventual SOGI. Students in 6th-9th grade in 2016 whose SOGI is observed over all four years from 2016-2019 are included in the sample, with data at the student-year level from 2016 to 2019. Whether students report being bullied in a given year is regressed on indicators for whether the student currently identifies as LGBTQ, whether they always identify as LGBTQ, whether they will eventually but do not yet identify as LGBTQ, and whether they are ever uncertain but never identify as LGBTQ. All regressions include school fixed effects and year-grade fixed effects and all other observed student demographics are added in columns 2, 5, and 8. In columns 3, 6, and 9, the sample is restricted to students who ever but do not always identify as LGBTQ, so the coefficient on the "currently LGBTQ" variable represents the change in bullying when students begin to identify as LGBTQ. These columns include student fixed effects. Columns 1-3 include the full sample, columns 4-6 restrict to girls, and columns 7-9 restrict to boys. Standard errors are clustered by student. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 5: Linear peer effects specification: School experiences

	Bullied indicator	Total times bullied (SD)	School belonging (SD)	Adult support (SD)	LGBTQ accepted (SD)	Get along others (SD)
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
% LGBTQ	0.0006	0.0041	-0.0076	-0.0015	0.0018	0.0029
	(0.0021)	(0.0036)	(0.0049)	(0.0048)	(0.0043)	(0.0032)
% LGBTQ × LGBTQ	-0.0090**	-0.0170	0.0300***	0.0054	0.0157	-0.0040
	(0.0043)	(0.0115)	(0.0113)	(0.0100)	(0.0105)	(0.0116)
% LGBTQ × Uncertain	-0.0079**	-0.0100	0.0006	-0.0083	0.0078	-0.0073
	(0.0039)	(0.0078)	(0.0081)	(0.0073)	(0.0063)	(0.0069)
% LGBTQ × No SOGI	-0.0021	-0.0016	0.0062	-0.0054	-0.0024	-0.0043
	(0.0026)	(0.0045)	(0.0047)	(0.0044)	(0.0046)	(0.0048)
Main effects:						
LGBTQ	0.2214***	0.5234***	-0.4200***	-0.1686**	-0.2009***	-0.0316
	(0.0284)	(0.0790)	(0.0721)	(0.0652)	(0.0724)	(0.0701)
Uncertain	0.1171***	0.2212***	-0.1589***	-0.0256	-0.0712*	-0.0559
	(0.0238)	(0.0501)	(0.0504)	(0.0464)	(0.0421)	(0.0423)
No SOGI known	0.0442***	0.0702**	-0.1066***	-0.0611*	-0.0248	-0.0094
	(0.0161)	(0.0314)	(0.0321)	(0.0317)	(0.0302)	(0.0308)
N	51,805	52,399	52,812	52,814	52,033	51,748
Mean: Cis/Het	0.5044	-0.0623	0.0727	0.0668	0.0349	0.0628
%LGBTQ + %LGBTQ × LGBTQ	-0.0084*	-0.0129	0.0224*	0.0038	0.0174	-0.0011
	(0.0043)	(0.0116)	(0.0118)	(0.0100)	(0.0107)	(0.0111)
%LGBTQ + %LGBTQ × Uncertain	-0.0073**	-0.0059	-0.0070	-0.0098	0.0096	-0.0044
	(0.0035)	(0.0075)	(0.0092)	(0.0084)	(0.0074)	(0.0070)

Note: This table shows the results from the linear peer effects specification for school experience outcomes. Outcomes are indicators for reporting experiencing any type of bullying, a standardized count of the frequency of bullying a student reports experiencing, the school belonging index, adult support index, extent of agreement that LGBTQ students are accepted at their school in standard deviation units, and extent to which students report getting along well with those different from them in standard deviation units. The sample is students enrolled in 9th grade in LAUSD between 2017-2019, in schools and cohorts that meet the sample restriction criteria (Section 3.4.2) and who took the SES in 9th grade. 9th-grade outcomes are regressed on the percent of students in the 9th-grade cohort who identified as LGBTQ *in 8th grade* from 0-100, indicators for 8th-grade SOGI, and interactions of the percent LGBTQ with the 8th-grade SOGI indicators. The omitted group for 8th-grade SOGI is students who identified as Cis/Het. Regressions also include fixed effects for year and 9th-grade-school, demographic controls, the share of students coming from the same 8th-grade school, cohort demographic controls, the share of students in the 9th-grade cohort who took the SES in 8th grade and the share who are new to the district, the size of the 9th-grade cohort, the share of a student's 8th-grade cohort who identified as LGBTQ, the share of the student's 8th-grade cohort who took the SES, and the size of the 8th-grade cohort. The final two rows show the implied effect of increasing the share LGBTQ by 1pp for LGBTQ and uncertain students, respectively. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 6: Linear peer effects specification: School attachment

	New school next year	Leaves district next year	Attendance rate	Chronically absent	Plan to go to college
	(1)	(2)	(3)	(4)	(5)
Peer effects:					
% LGBTQ	-0.0006	-0.0011	0.0002	0.0007	-0.0014
	(0.0021)	(0.0012)	(0.0004)	(0.0015)	(0.0016)
% LGBTQ × LGBTQ	0.0005	-0.0041*	-0.0000	0.0045	0.0025
	(0.0033)	(0.0024)	(0.0008)	(0.0046)	(0.0043)
% LGBTQ × Uncertain	-0.0020	0.0029	-0.0010*	0.0042	0.0038
	(0.0020)	(0.0018)	(0.0006)	(0.0027)	(0.0031)
% LGBTQ × No SOGI	0.0011	0.0000	-0.0001	0.0002	-0.0011
	(0.0017)	(0.0014)	(0.0004)	(0.0018)	(0.0027)
Main effects:					
LGBTQ	0.0126	0.0379**	-0.0039	-0.0011	-0.0708**
	(0.0202)	(0.0168)	(0.0049)	(0.0272)	(0.0281)
Uncertain	0.0207	-0.0132	0.0032	-0.0217	-0.0704***
	(0.0125)	(0.0108)	(0.0037)	(0.0164)	(0.0197)
No SOGI known	0.0197*	0.0268***	-0.0147***	0.0615***	-0.0264
	(0.0108)	(0.0094)	(0.0025)	(0.0121)	(0.0167)
N	45,975	50,844	50,150	50,150	49,533
Mean: Cis/Het	0.0876	0.0611	0.9475	0.1423	0.6987
%LGBTQ + %LGBTQ × LGBTQ	-0.0001	-0.0052**	0.0002	0.0052	0.0012
	(0.0037)	(0.0025)	(0.0010)	(0.0049)	(0.0044)
%LGBTQ + %LGBTQ × Uncertain	-0.0027	0.0018	-0.0008	0.0049*	0.0025
	(0.0026)	(0.0019)	(0.0007)	(0.0027)	(0.0031)

Note: This table shows the results from the linear peer effects specification for school attachment outcomes. Outcomes are the share of days of the year in which the student was present (daily attendance), an indicator for having a daily attendance rate under 92 percent, an indicator for moving to a new school within the district for 10th grade, an indicator for leaving the district in 10th grade, and an indicator for whether a student reports intending to go to college. The specification is otherwise the same as Table 5. The sample differs in columns 1-4: these administrative outcomes are observed for all students (not just those who took the SES) but are only available in 2017 and 2018, so the youngest cohort is dropped. The final two rows show the implied effect of increasing the share LGBTQ by 1pp for LGBTQ and uncertain students, respectively. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table 7: Linear peer effects specification: SOGI in 9th grade

	LGBTQ	Uncertain	Cis/Het	Question Non-response
	(1)	(2)	(3)	(4)
Peer effects:				
% LGBTQ	-0.0009	-0.0004	0.0013	-0.0009
	(0.0007)	(0.0009)	(0.0011)	(0.0008)
% LGBTQ × LGBTQ	0.0074	-0.0028	-0.0046	-0.0003
	(0.0047)	(0.0035)	(0.0046)	(0.0014)
% LGBTQ × Uncertain	-0.0002	0.0047	-0.0044	0.0012
	(0.0024)	(0.0038)	(0.0034)	(0.0008)
% LGBTQ × No SOGI	0.0009	0.0019	-0.0027	0.0013
	(0.0010)	(0.0015)	(0.0017)	(0.0012)
Main effects:				
LGBTQ	0.4556***	0.1252***	-0.5808***	0.0014
	(0.0304)	(0.0230)	(0.0293)	(0.0094)
Uncertain	0.1063***	0.2054***	-0.3116***	-0.0052
	(0.0151)	(0.0227)	(0.0216)	(0.0052)
No SOGI known	0.0455***	0.0284***	-0.0739***	-0.0037
	(0.0067)	(0.0098)	(0.0099)	(0.0078)
N	52,097	52,097	52,097	53,677
Mean: Cis/Het	0.0250	0.0700	0.9050	0.0210
%LGBTQ + %LGBTQ × LGBTQ	0.0065	-0.0032	-0.0033	-0.0013
	(0.0046)	(0.0034)	(0.0045)	(0.0016)
%LGBTQ + %LGBTQ × Uncertain	-0.0011	0.0042	-0.0031	0.0002
	(0.0024)	(0.0036)	(0.0032)	(0.0010)

Note: This table shows the results from the linear peer effects specification for 9th-grade SOGI outcomes. Outcomes are indicators for identifying as LGBTQ, Uncertain, or Cis/Het, or taking the survey but not answering the SOGI question *in 9th grade.* The specification and sample is otherwise the same as Table 5. The final two rows show the implied effect of increasing the share LGBTQ by 1pp for students who identified as LGBTQ or uncertain in 8th grade, respectively. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Online Appendix: LGBTQ Identity in Adolescence and the Peer Effects of Coming Out

Hannah Ruebeck

October 2026

Appendix A: Supplementary tables and figures

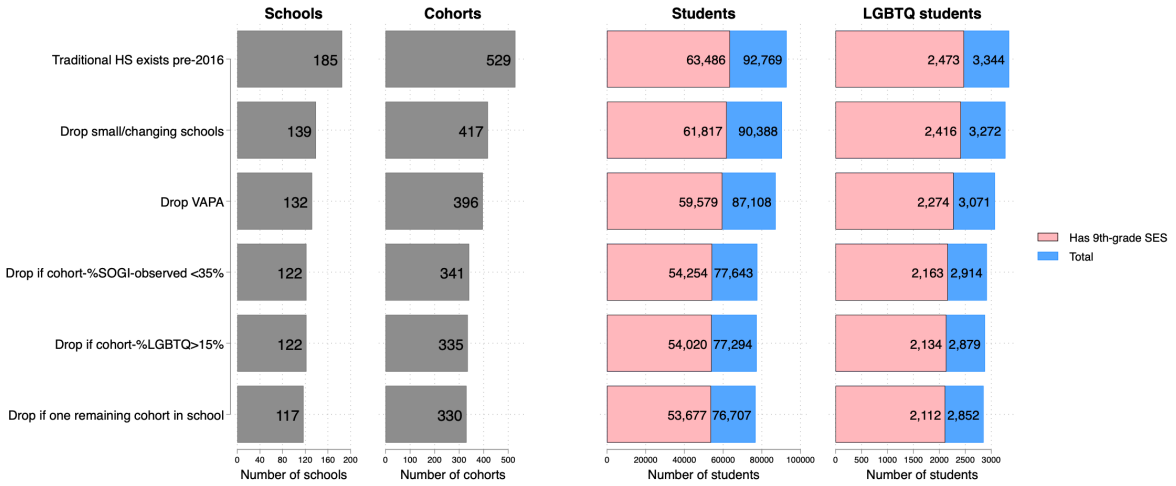
Appendix B: Survey administration instructions

Appendix C: Description of peer effects sample restriction

Appendix D: Additional robustness exercises

A Supplementary tables and figures

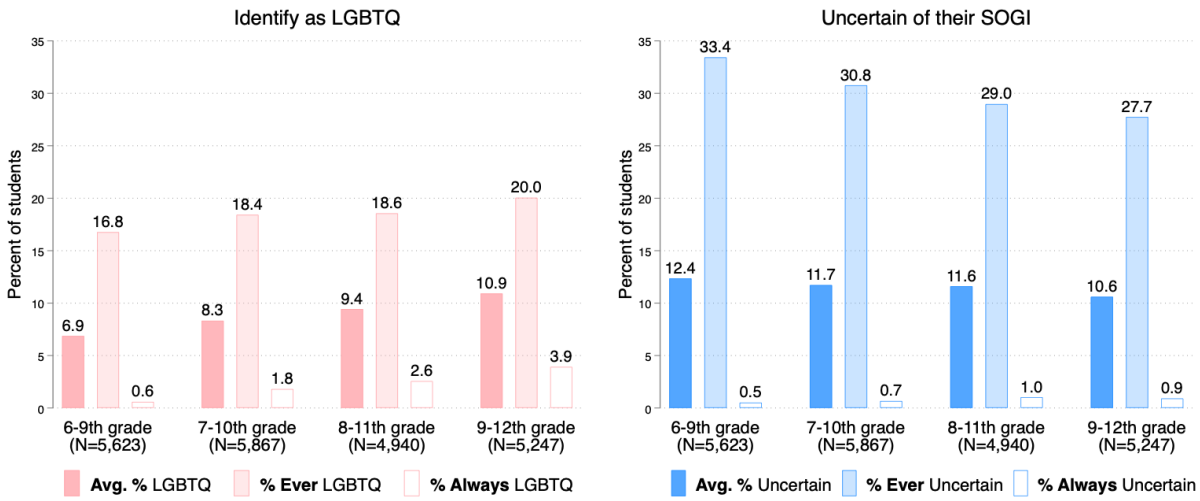
Figure A1: Sample restrictions



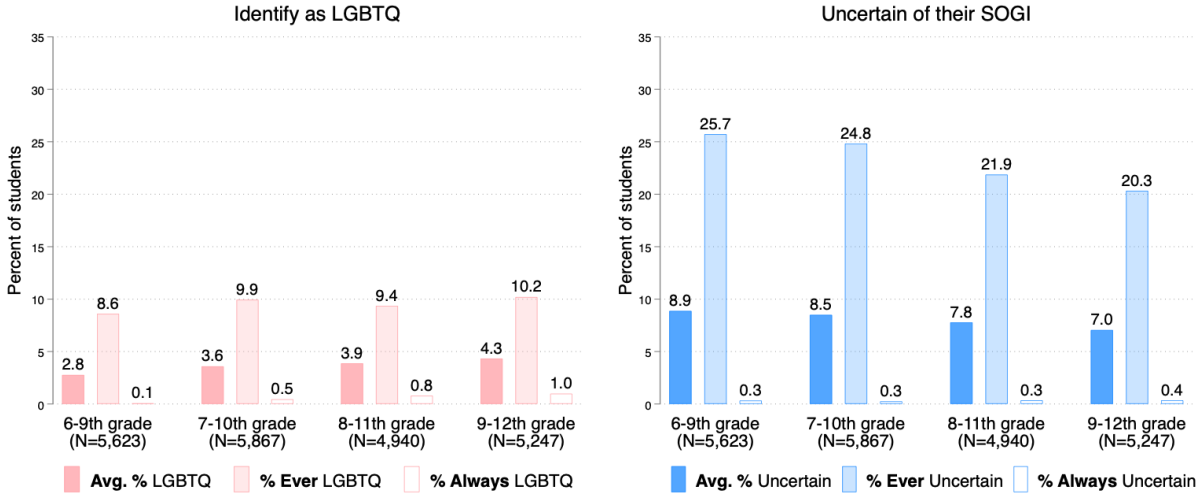
Note: This figure shows the sample restriction process and resulting number of schools, cohorts, and students in the peer effects analysis. Each row additionally applies one more restriction criterion; the main analysis sample is in the bottom row. "Traditional high schools" are schools whose youngest enrolled students are in 9th grade. "VAPA" refers to visual and performing arts magnet schools. Appendix C describes the sample restriction process in detail.

Figure A2: LGBTQ identity evolution by cohort and sex

Panel A: Girls



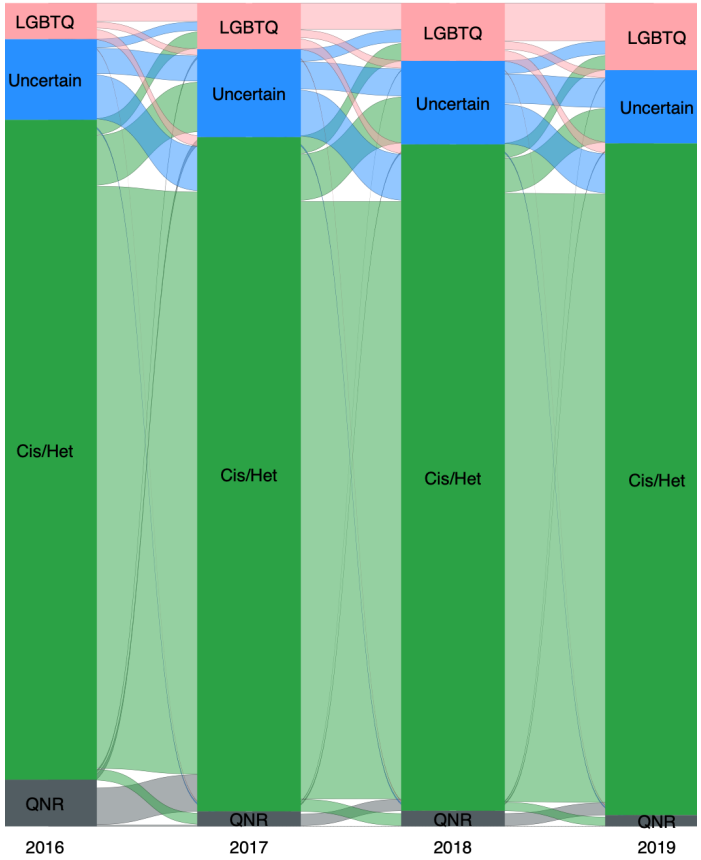
Panel B: Boys



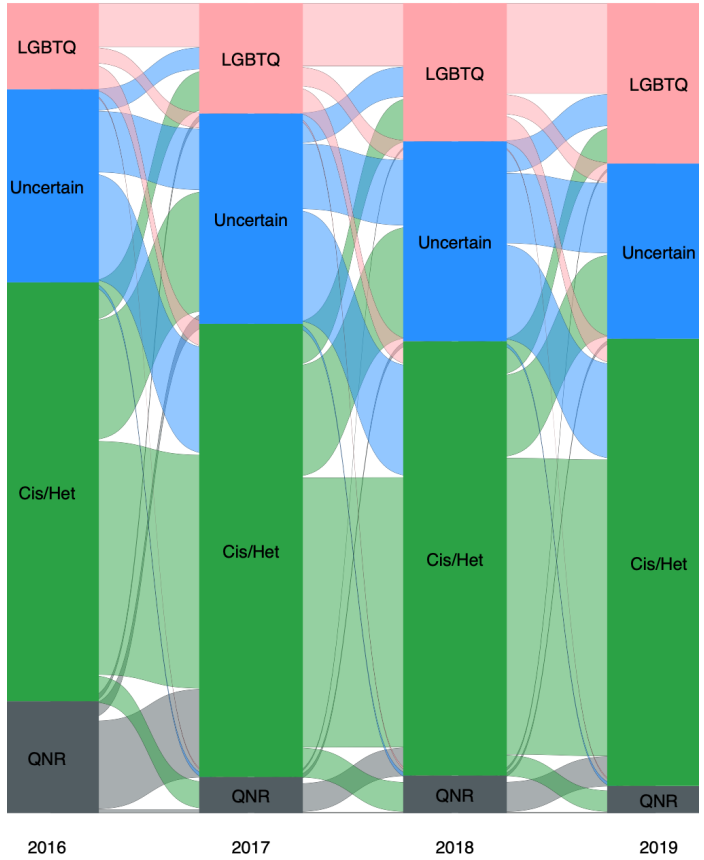
Note: This figure provides statistics that are analogous to those in Figure 1, separately by students' sex.

Figure A3: Visualizing SOGI flows

Panel A: Full sample

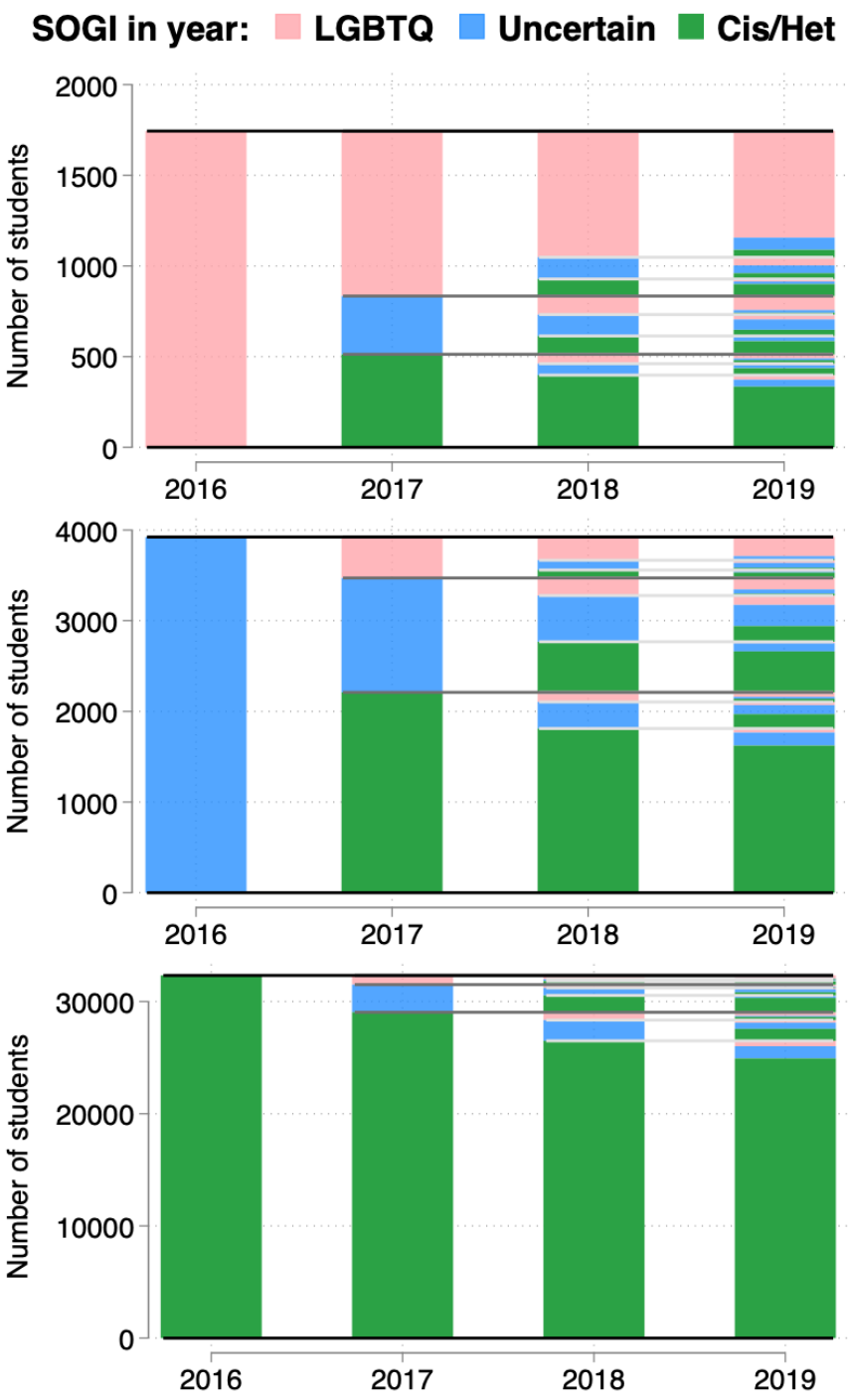


Panel B: Excluding always Cis/Het



Note: This figure visualizes the average flows in and out of each SOGI identification from year to year using a Sankey plot. Panel A includes all students in the panel sample whose SOGI is observed in all four years. Panel B excludes students who identify as Cis/Het in all four years. In 2016 and 2017, students are considered "uncertain" if they answered "I don't know" to the SOGI question; in 2018 the option "I prefer not to answer" was added and these students are additionally categorized as "uncertain." QNR indicates question non-response.

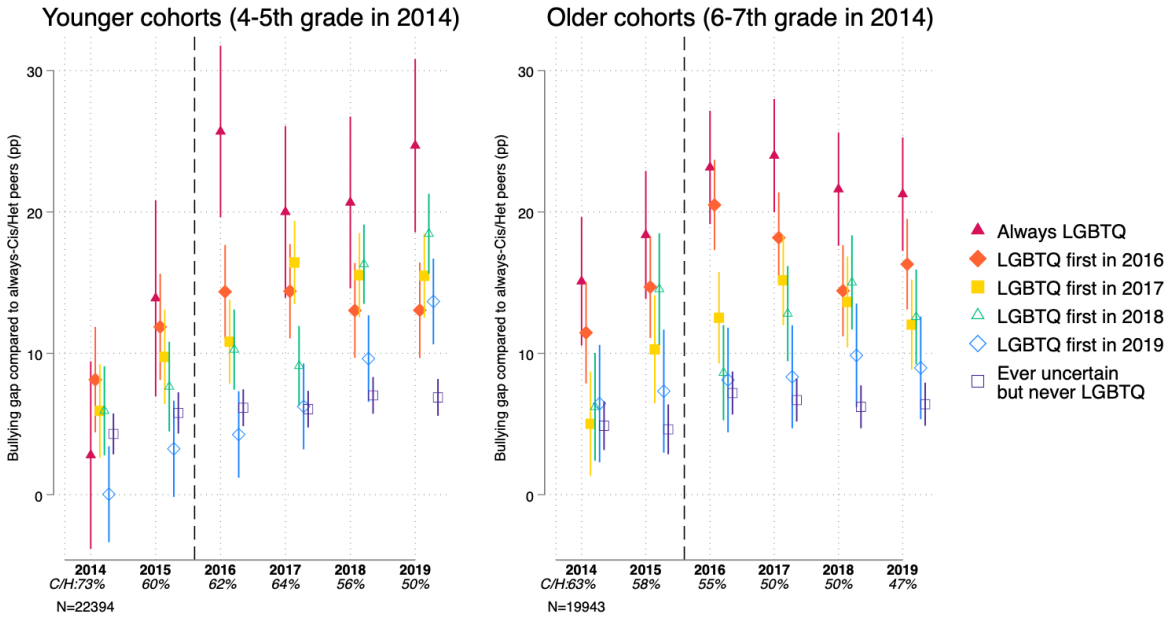
Figure A4: SOGI changes in consistent ways over time



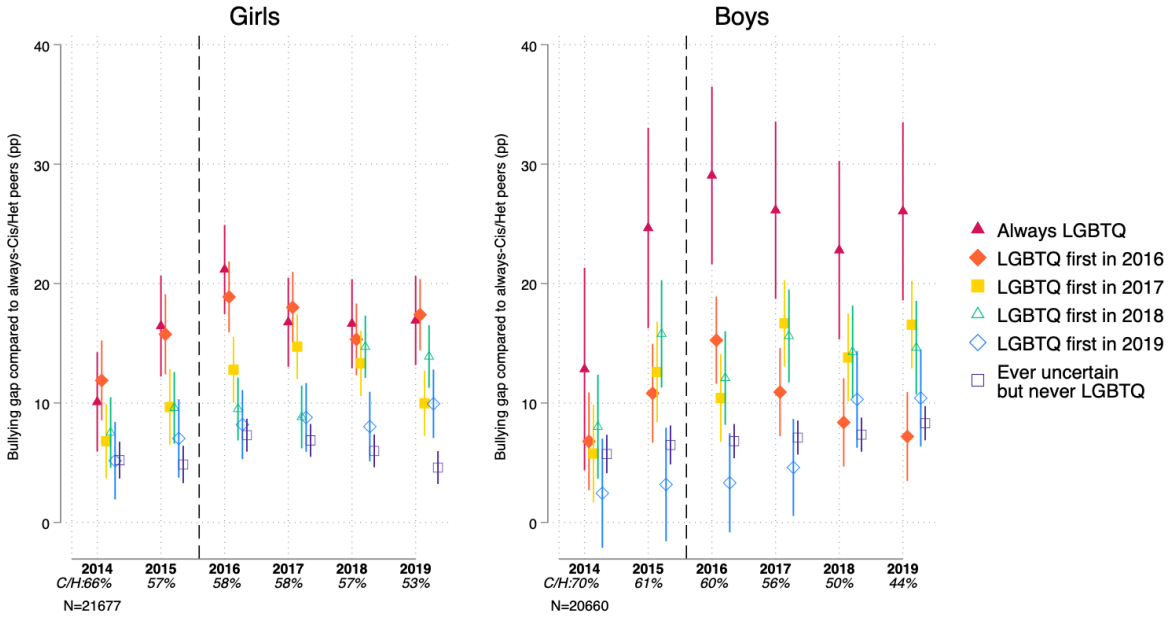
Note: This figure visualizes the distribution of every possible four-year SOGI trajectory. The sample is all students in the panel sample whose SOGI is observed in all four years and identified as LGBTQ, were uncertain of their SOGI, or identified as Cis/Het in 2016. In 2016 and 2017, "uncertain" indicates answering "I don't know" to the SOGI question; in 2018 the option "I prefer not to answer" was added and "uncertain" indicates choosing either option. The first panel is students who identified as LGBTQ in 2016. Those who continue to identify as LGBTQ in 2017 continue to be plotted in pink; those who are uncertain are instead represented in blue, and those who begin identifying as Cis/Het are instead represented in green. This continues in each year, with the light gray lines splitting the sample based on how they identified in the previous year. Panels B and C are analogous for students who were uncertain of their SOGI or identified as Cis/Het in 2016, respectively.

Figure A5: Bullying gaps accounting for fluid SOGI by age and gender

Panel A: Age

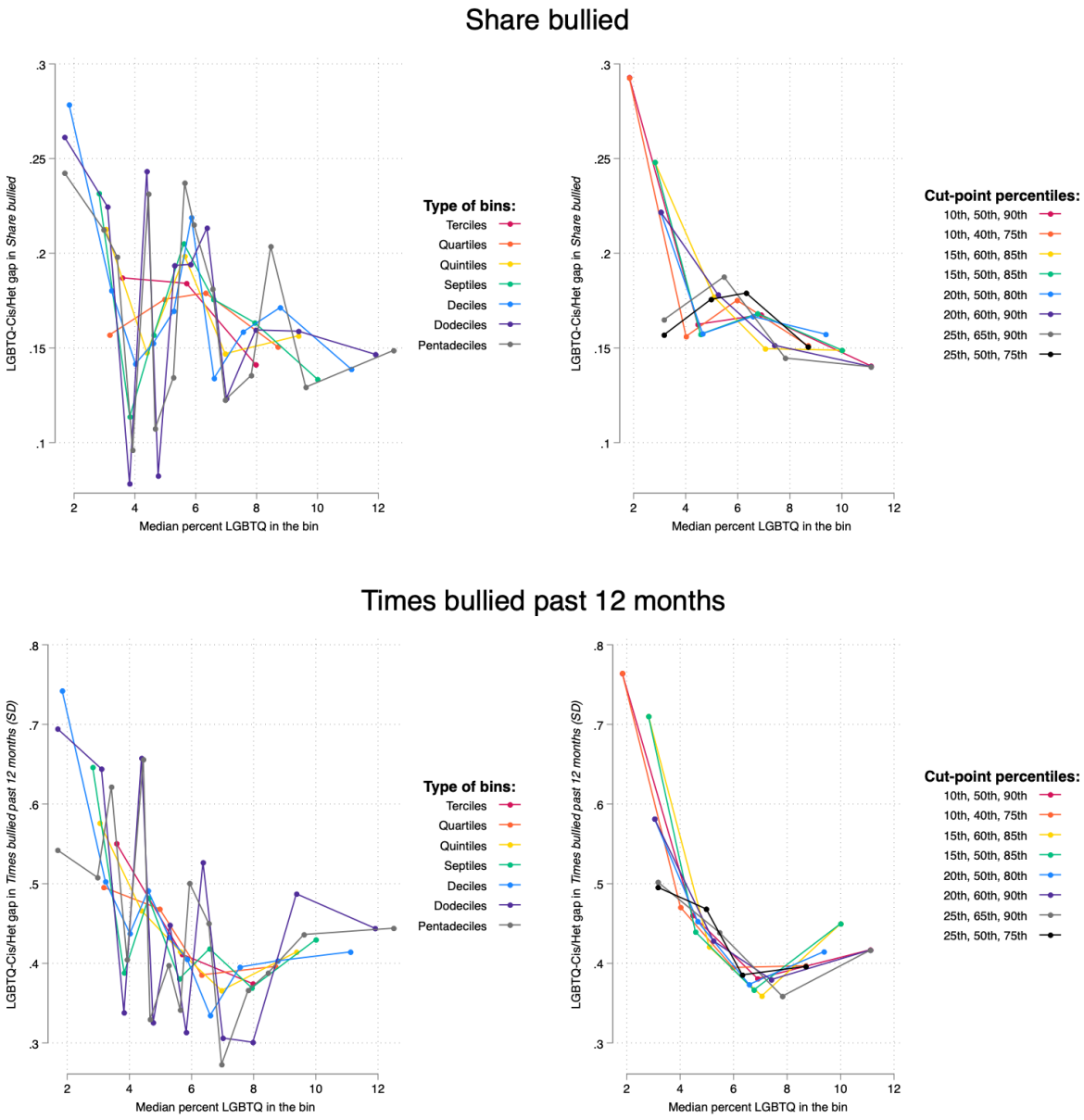


Panel B: Gender



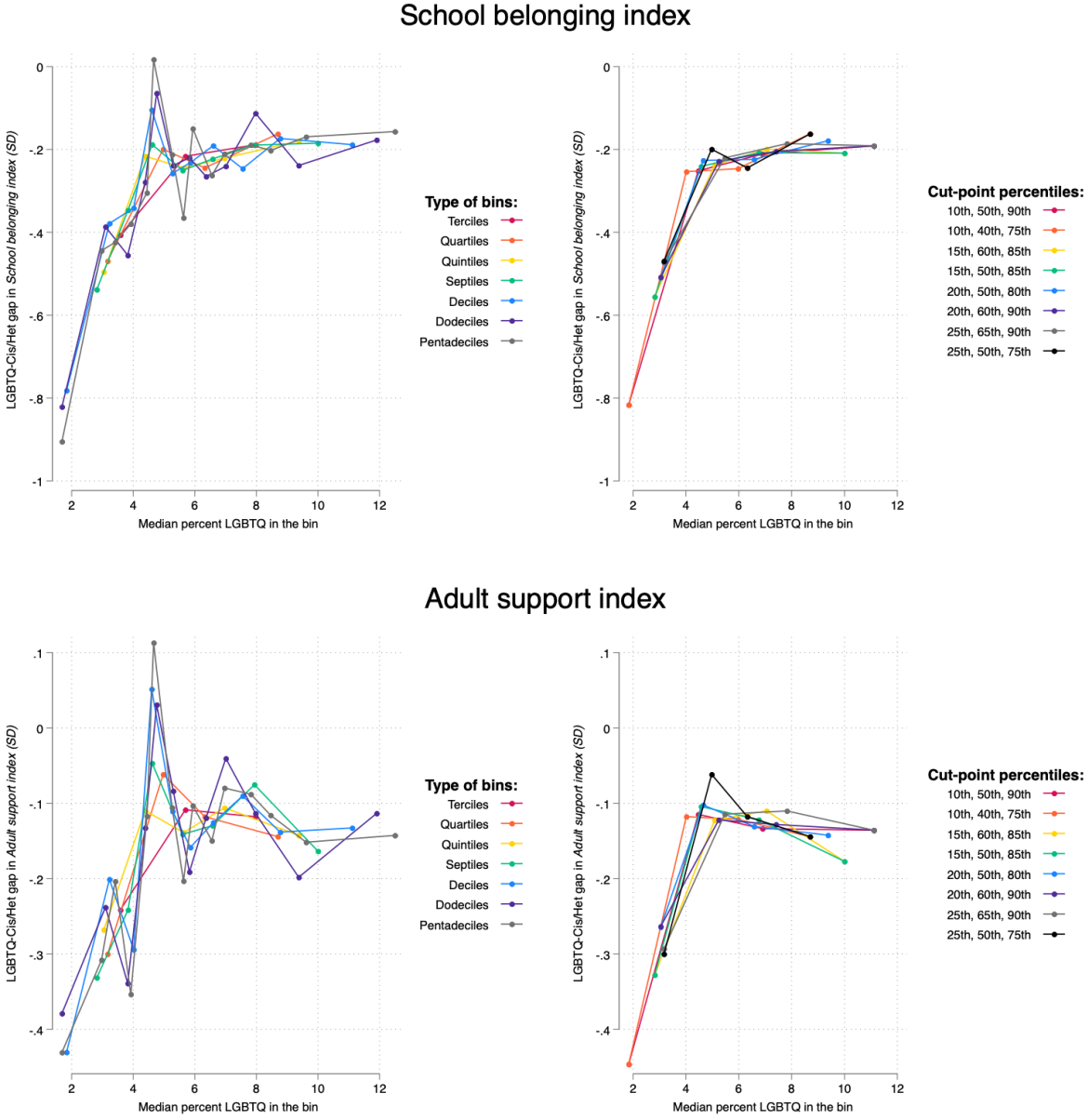
Note: This figure replicates Figure 2 separately for students who were in 6th or 7th grade in 2016 and those who were in 8th or 9th grade (in the top row) and by sex (in the bottom row). Spikes are 90 percent confidence intervals. Recall that SOGI was first observed in 2016, so "Always LGBTQ" and all other SOGI categories refer to the post-2016 period.

Figure A6: Varying the non-linear cut-points: Effects on the LGBTQ-Cis/Het bullying **gaps**



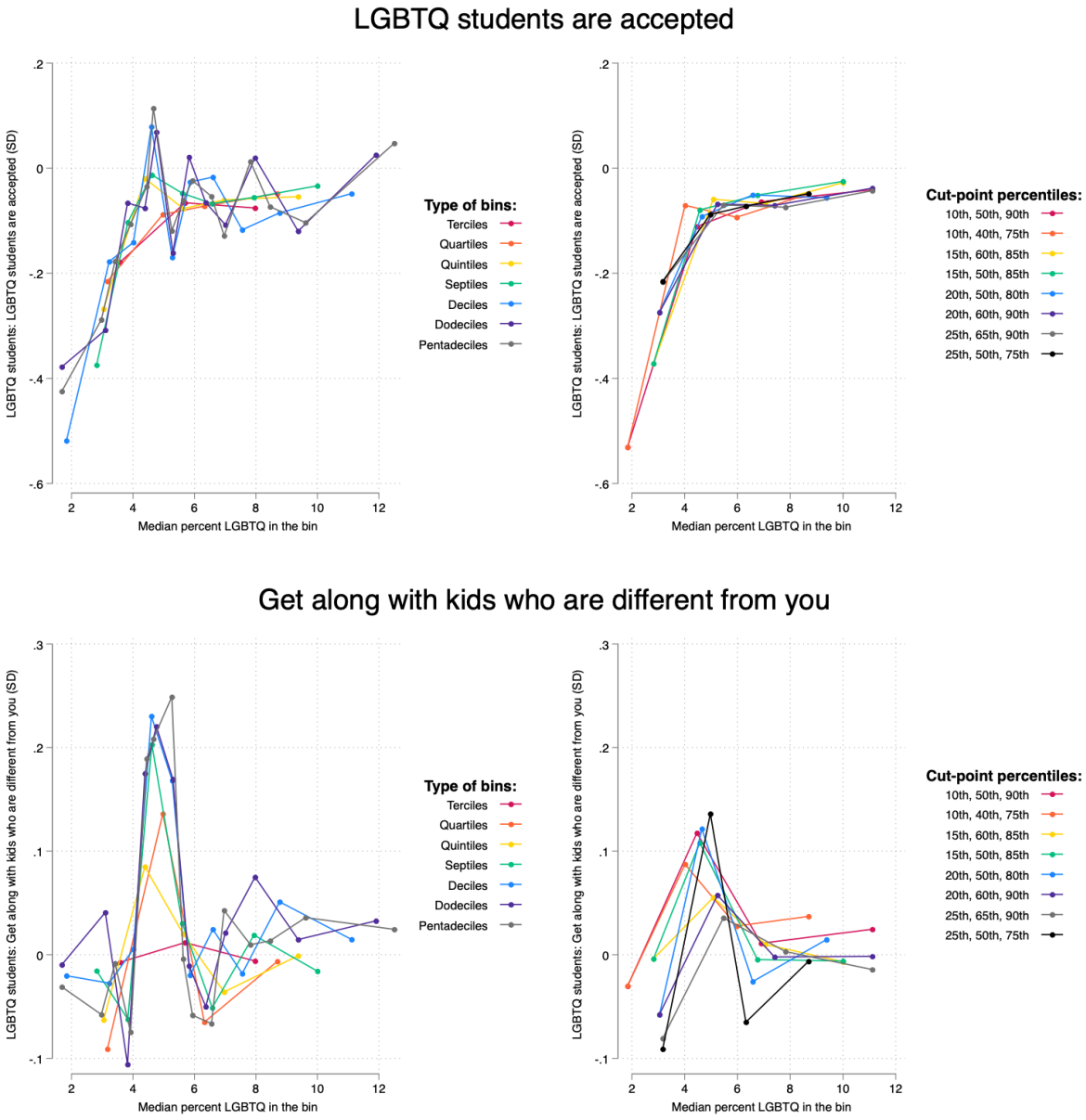
Note: This figure plots the effects on the LGBTQ-Cis/Het **gap** in the bullying outcomes from the non-linear specification when the cut-points used to separate cohorts into bins are varied. The specification and sample are the same as in Figure 4 or Appendix Table A21 with the different bin definitions. On the left, I use increasing numbers of equally-spaced bins. On the right, I use four bins as in the main analysis but vary the percentiles of the share LGBTQ used as cut-points.

Figure A7: Varying the non-linear cut-points: Effects on the LGBTQ-Cis/Het belonging **gaps**



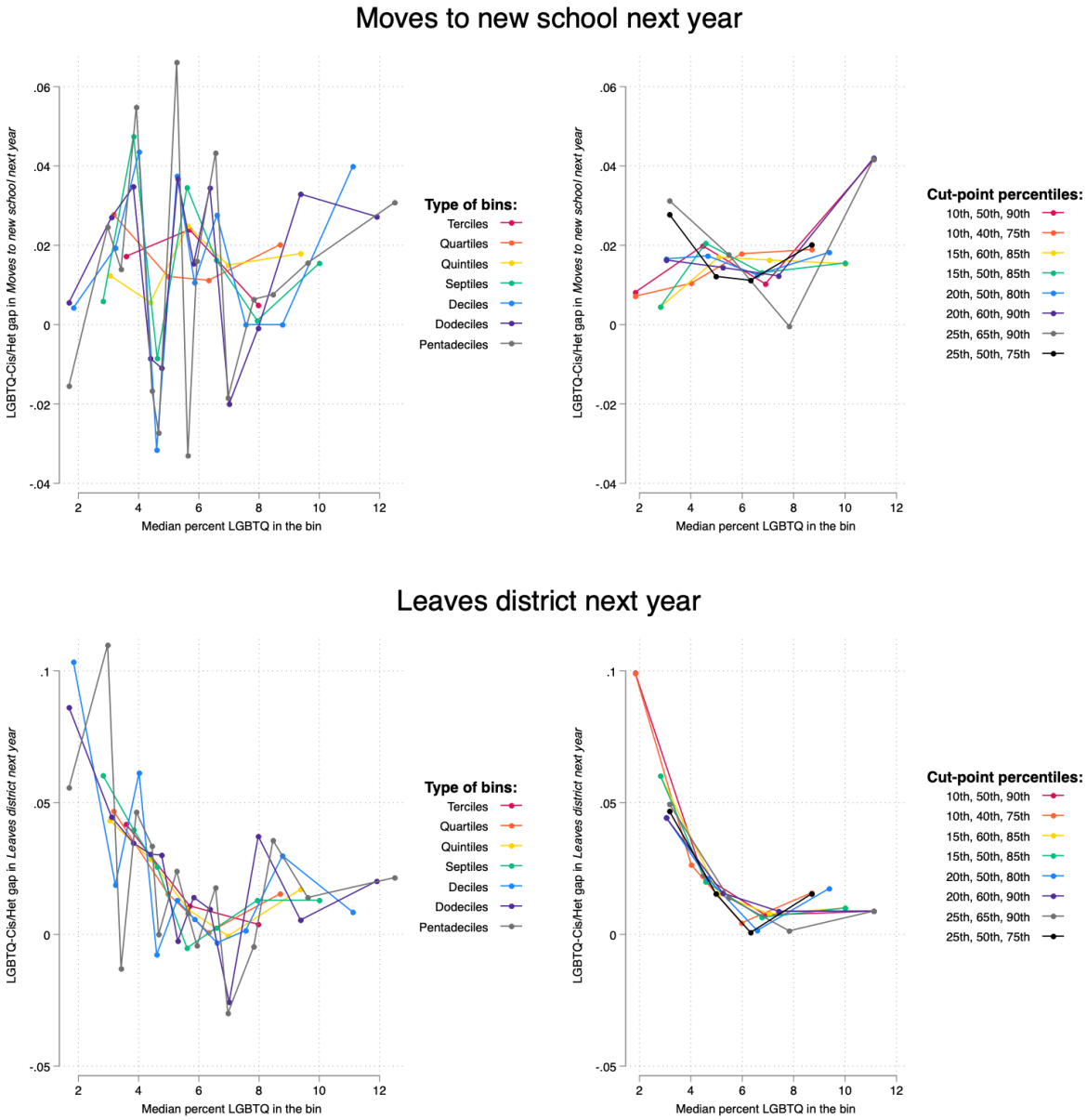
Note: This figure plots the effects on the LGBTQ-Cis/Het **gap** in the belonging outcomes from the non-linear specification when the cut-points used to separate cohorts into bins are varied. It mirrors Appendix Figure A6 for these outcomes.

Figure A8: Varying the non-linear cut-points: Effects on LGBTQ students' perceptions of acceptance and inter-group contact



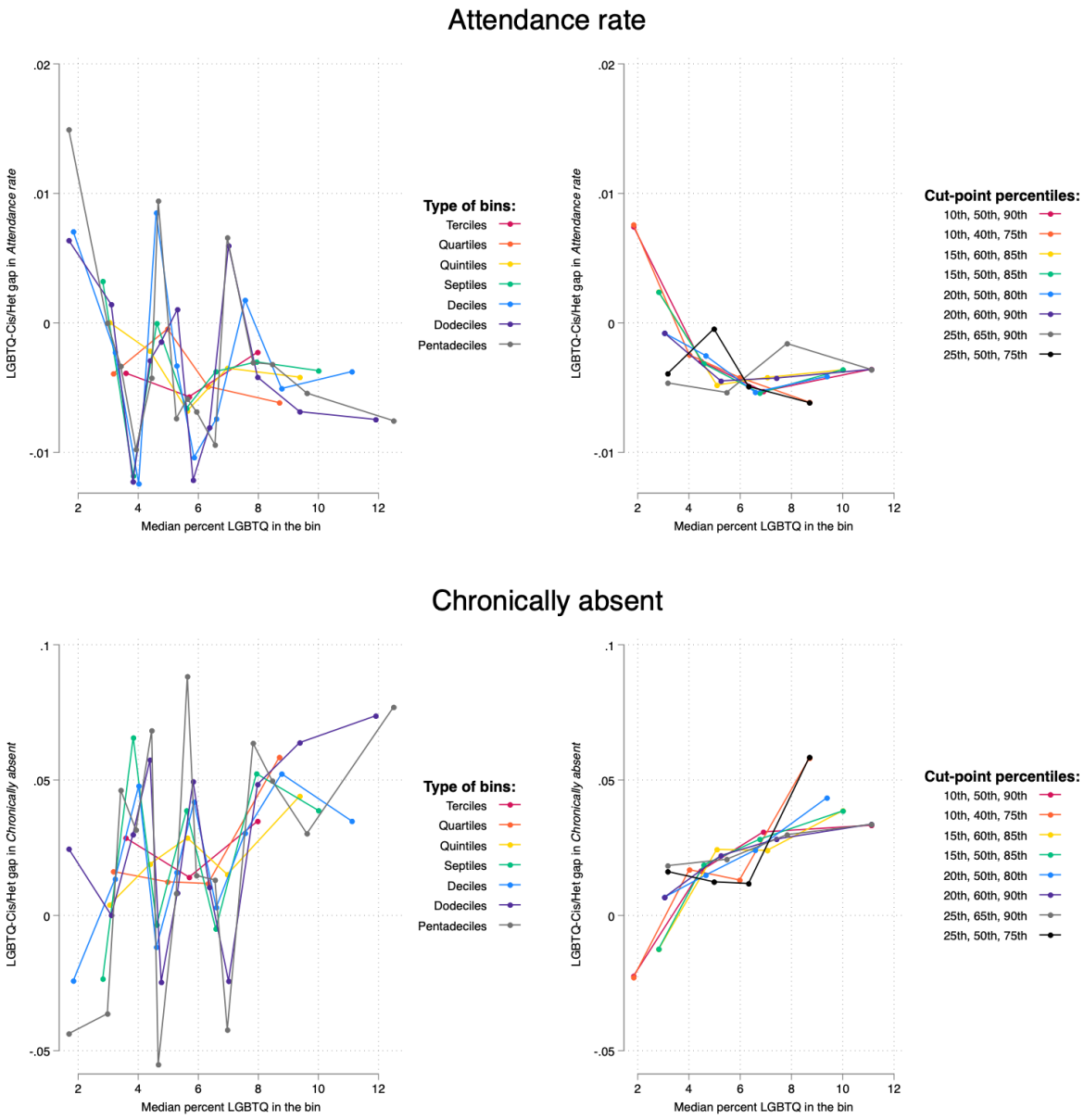
Note: This figure plots the effects on LGBTQ students' perceptions of LGBTQ acceptance and reported ability to get along with kids who are different from themselves from the non-linear specification when the cut-points used to separate cohorts into bins are varied. It mirrors Appendix Figure A6 for these outcomes but plots effects on LGBTQ students, rather than the LGBTQ-Cis/Het gap.

Figure A9: Varying the non-linear cut-points: Effects on the LGBTQ-Cis/Het school retention **gaps**



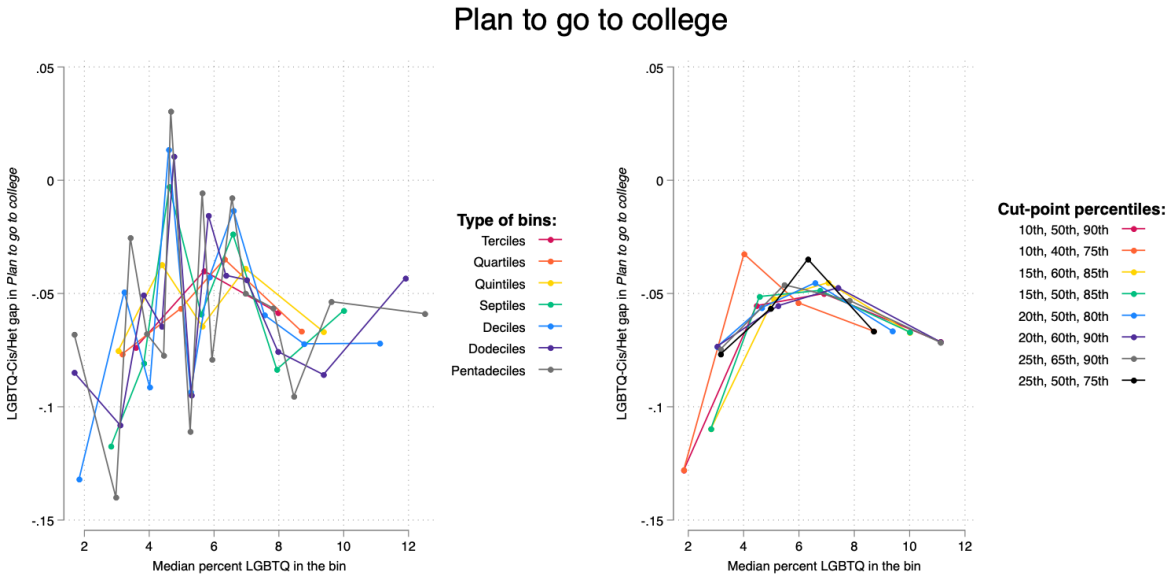
Note: This figure plots the effects on the LGBTQ-Cis/Het **gap** in the school and district retention outcomes from the non-linear specification when the cut-points used to separate cohorts into bins are varied. It mirrors Appendix Figure A6 for these outcomes.

Figure A10: Varying the non-linear cut-points: Effects on the LGBTQ-Cis/Het attendance **gaps**



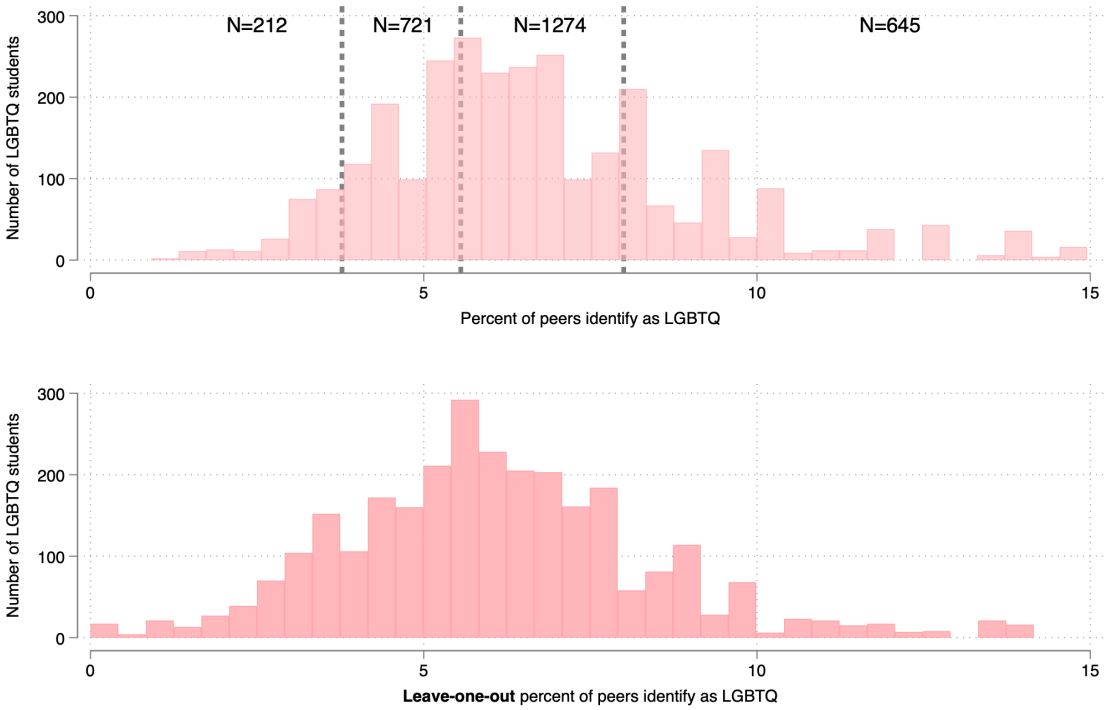
Note: This figure plots the effects on the LGBTQ-Cis/Het **gap** in the attendance outcomes from the non-linear specification when the cut-points used to separate cohorts into bins are varied. It mirrors Appendix Figure A6 for these outcomes.

Figure A11: Varying the non-linear cut-points: Effects on the LGBTQ-Cis/Het intended educational attainment **gaps**



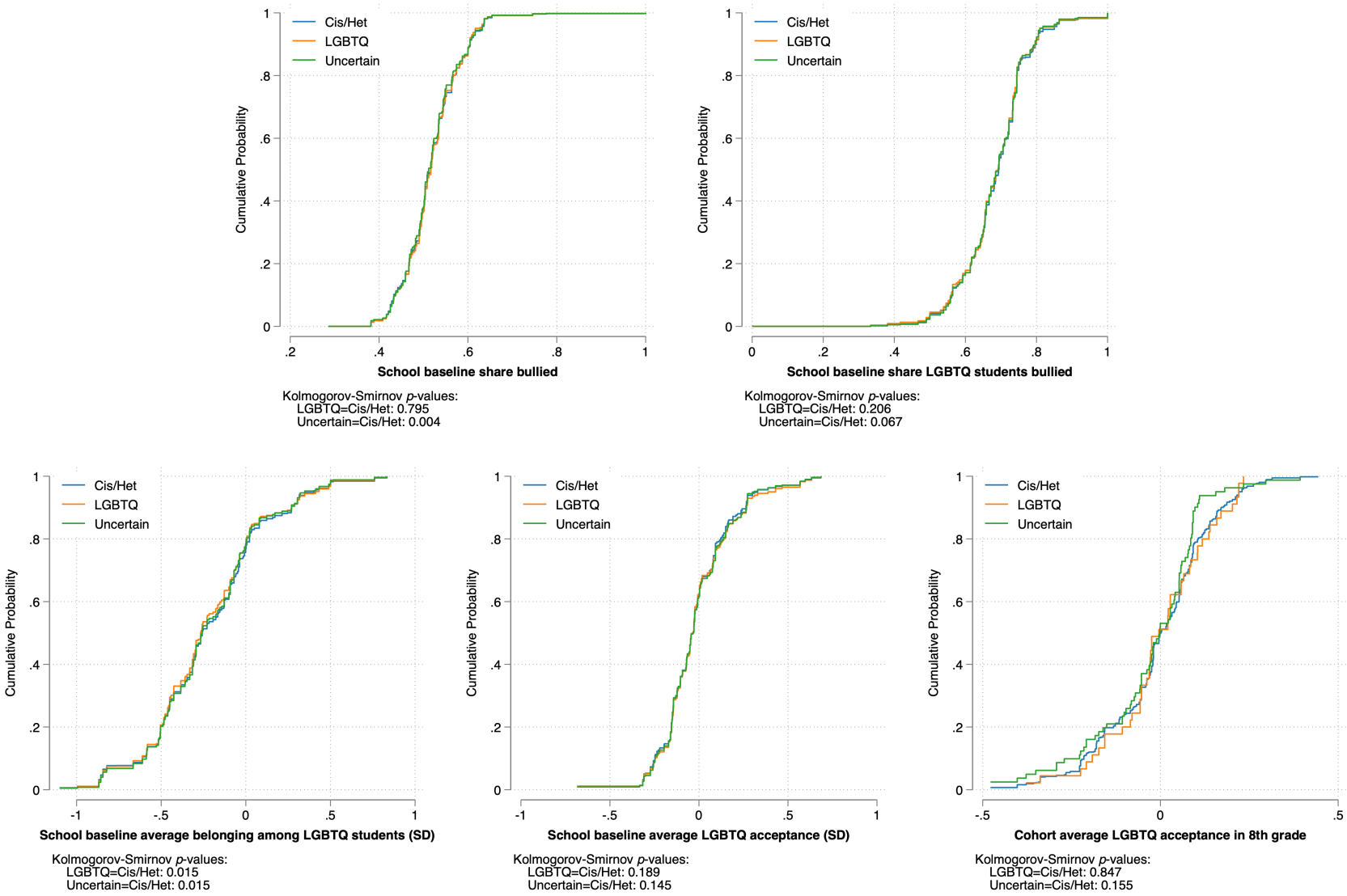
Note: This figure plots the effects on the LGBTQ-Cis/Het **gap** in planned educational attainment from the non-linear specification when the cut-points used to separate cohorts into bins are varied. It mirrors Appendix Figure A6 for this outcomes.

Figure A12: Distribution of the number of LGBTQ students at each percent LGBTQ



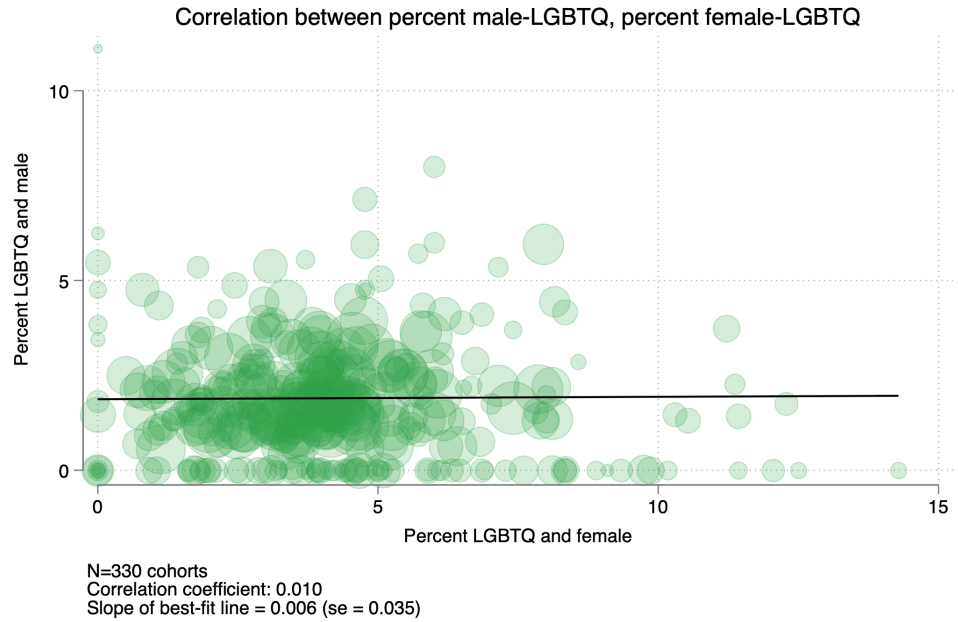
Note: This figure plots the distribution of LGBTQ students across cohorts by their percent LGBTQ. In the top figure, I use the overall percent LGBTQ that determines bins for the non-linear specification and show the number of LGBTQ students in each bin; dashed lines indicate the cutoff points. The bottom panel shows the same distribution using the leave-one-out percent LGBTQ that is used in the linear specification.

Figure A13: LGBTQ vs Cis/Het selection into 9th-grade schools or cohorts



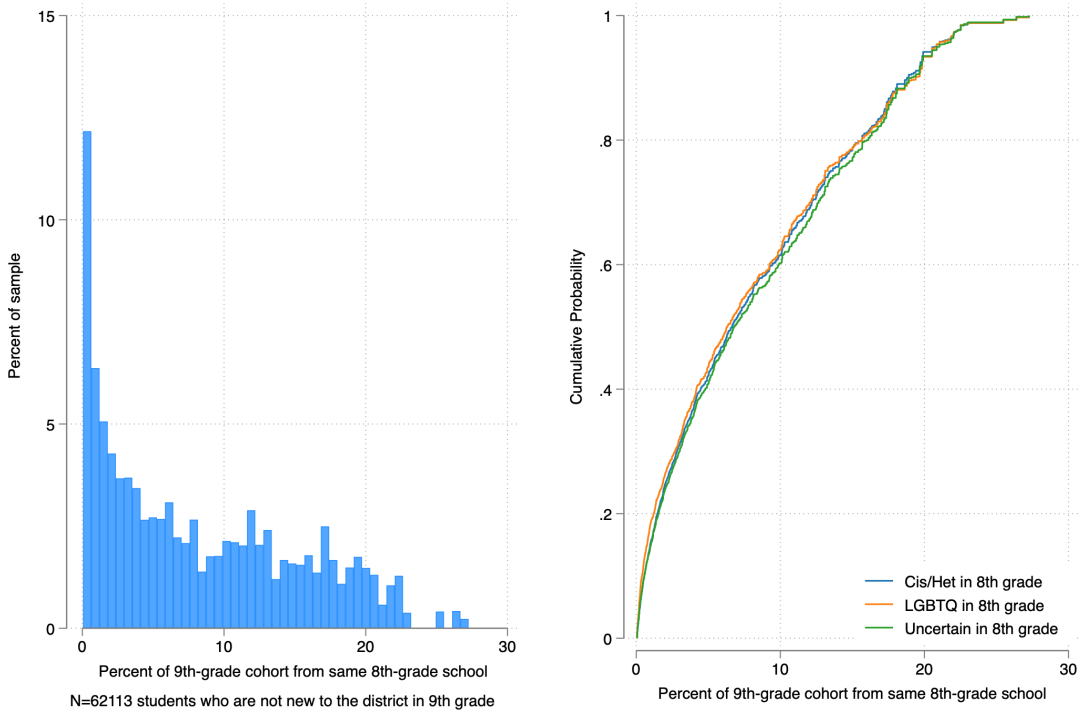
Note: This figure provides information on the types of schools that LGBTQ or Uncertain students attend in 9th grade compared to Cis/Het students. Each plot shows the share of students attending schools according to some characteristic indicating their overall acceptance level of LGBTQ students. Students' SOGI is as reported in 8th grade. In the first four graphs, this is a school-wide measure based on the experiences of students enrolled in 9th-12th grade in 2016 in that school, while the distribution is plotted for all students in the main peer effects sample who attend 9th grade in 2017, 2018, or 2019. In the final graph, this is students' own cohort's perception of LGBTQ acceptance *at their 8th-grade school.* Thus, the first four panels relate to school selection. The final panel relates to cohort selection. *p*-values are presented from Kolmogorov-Smirnov tests of equal distributions.

Figure A14: Comparing percent female-LGBTQ to percent male-LGBTQ



Note: This figure compares the percent of students who are LGBTQ and male and the share of students who are LGBTQ and female in each cohort in the main sample. Marker size indicates the size of the cohort.

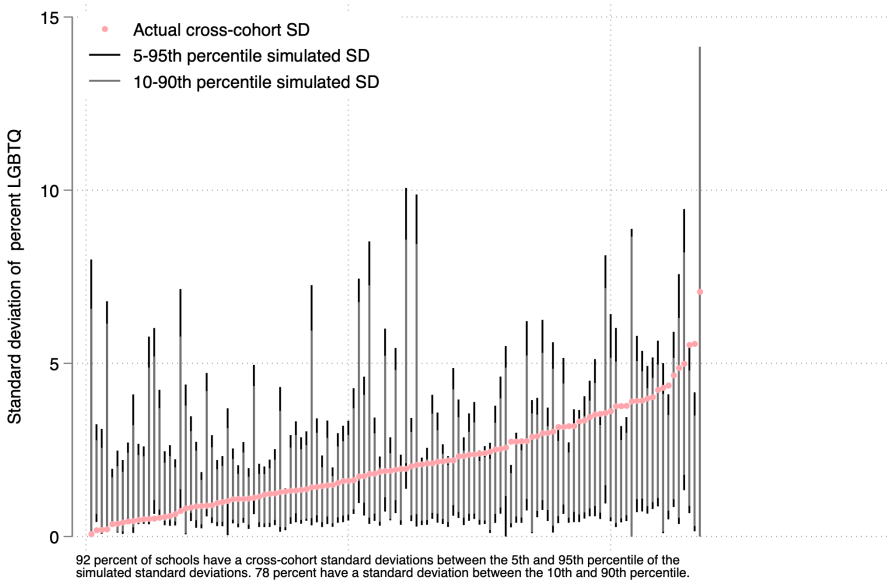
Figure A15: Selecting into 9th-grade schools with 8th-grade peers



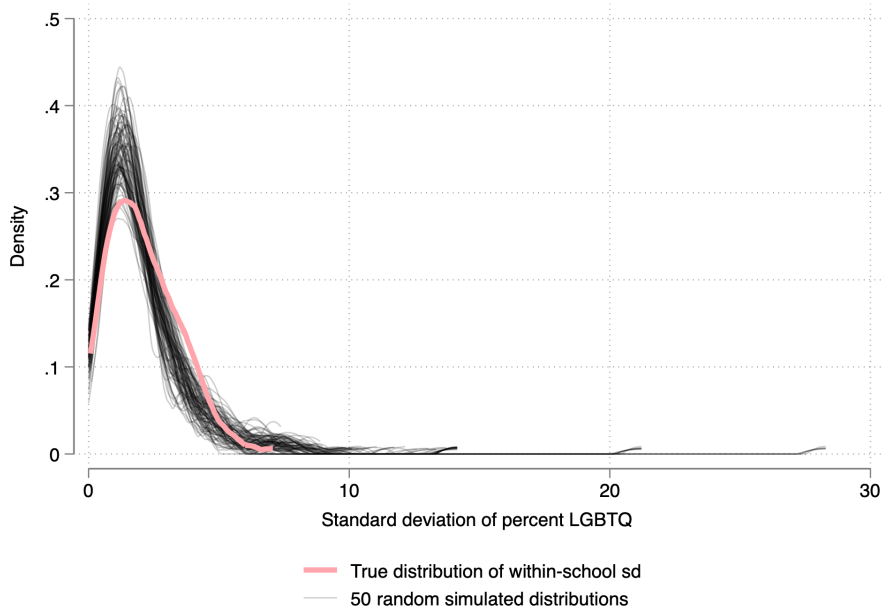
Note: The left graph shows the distribution of the percent of students' 9th-grade cohort coming from the same 8th-grade school. The right graph plots the corresponding cumulative distribution functions separately for students who identified as Cis/Het, LGBTQ, or were uncertain in 8th grade.

Figure A16: Comparing real and simulated within-school standard deviations in the share LGBTQ

Panel A: Comparing true within-school variation to the school-level empirical distribution with random SOGI assignment

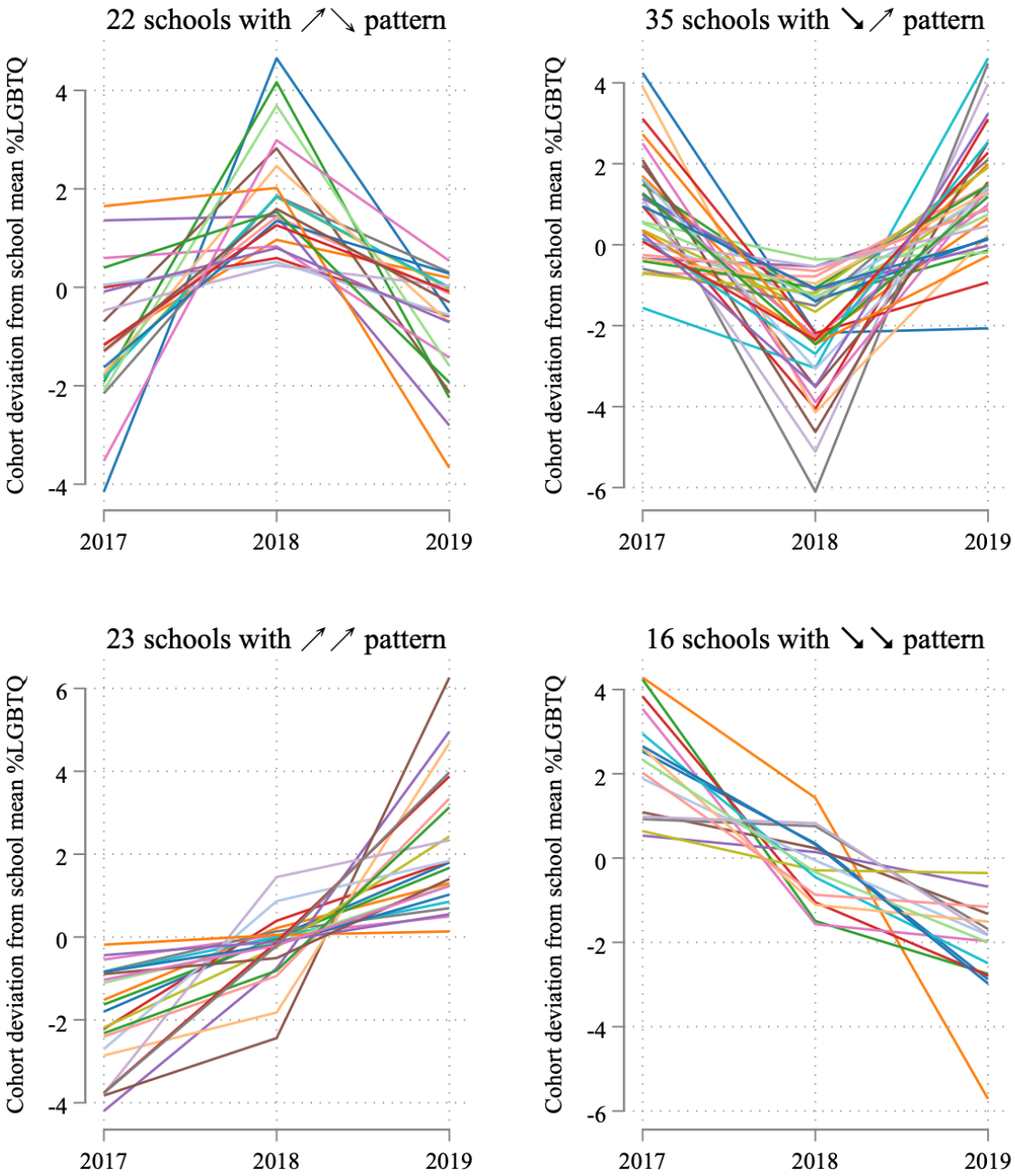


Panel B: Comparing true cross-school distribution of within-school variation to 50 simulated distributions



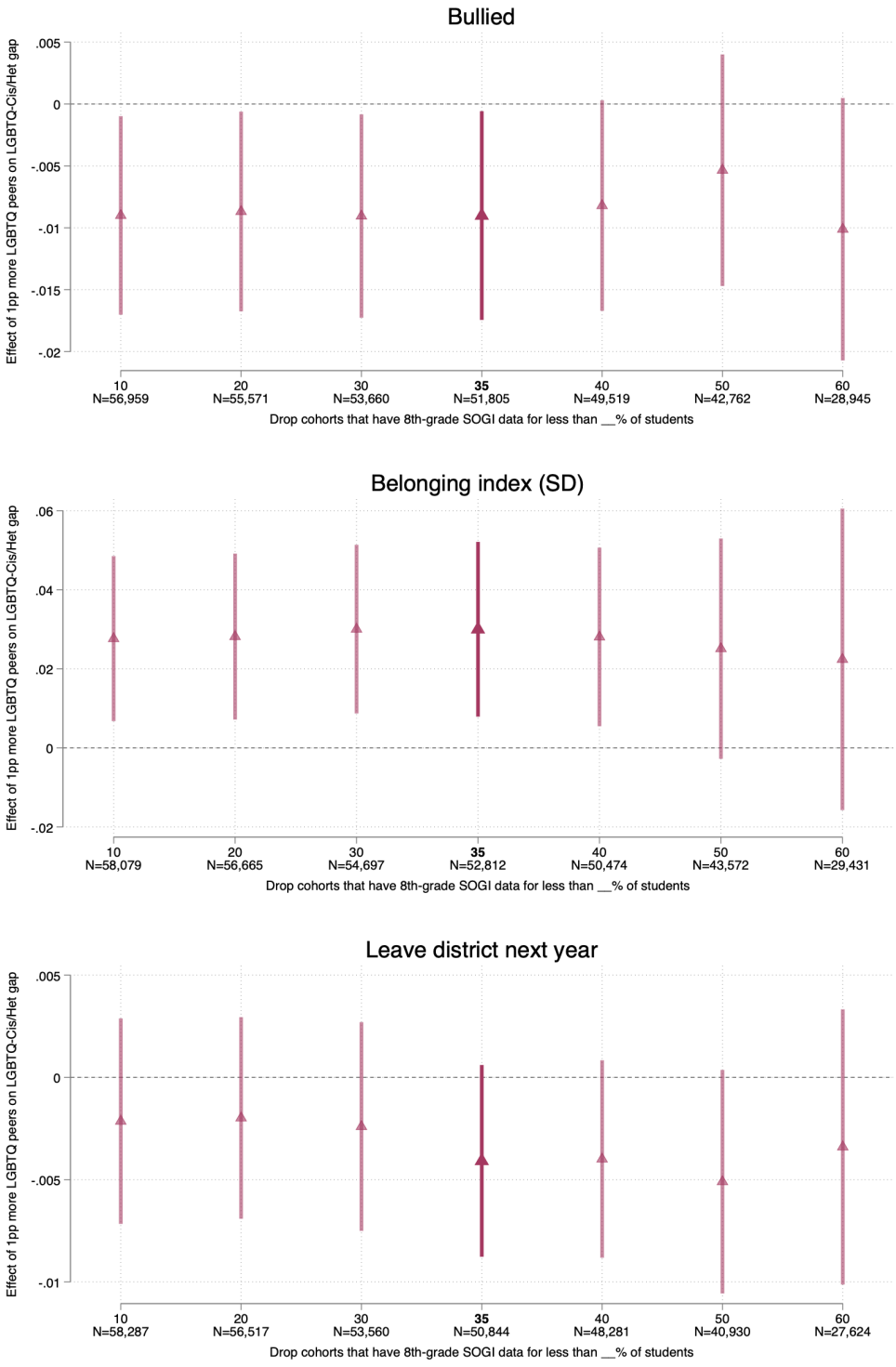
Note: This figure compares the observed within-school, cross-cohort standard deviations in the percent LGBTQ to simulated distributions of the same statistic when students are randomly assigned to be LGBTQ or not when being LGBTQ is assumed to be binomially distributed with a mean equal to the observed school average percent LGBTQ. Panel A compares the true cross-cohort standard deviation in the percent LGBTQ observed in each school (ranked across the x-axis by the size of the observed standard deviation) to the empirical distribution of within-school cross-cohort variation from 1,000 iterations of the Monte Carlo procedure just described. Panel B compares the observed cross-school distribution of within-school, cross-cohort standard deviations to the same distribution using the first 50 of the random simulations.

Figure A17: Within-school trends in the share LGBTQ



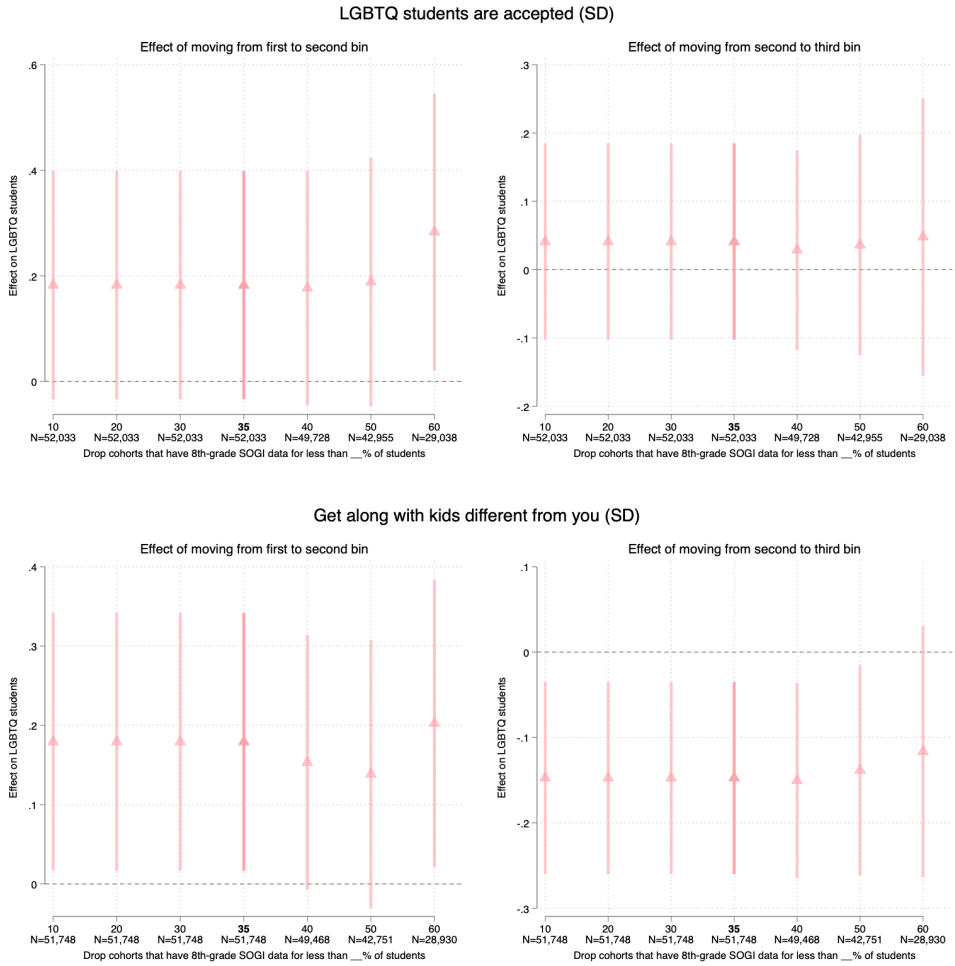
Note: This figure plots time trends in the share LGBTQ separately by school. The vertical axis plots the cohort deviation in the share LGBTQ from the overall share LGBTQ in the school across all three years. Schools are plotted separately in the four quadrants by whether they follow zig-zagging trends, increasing, or decreasing trends. The sample is schools that meet the main sample criteria for all three years. Another 21 schools meet the main sample criteria for two years; of those 8 have a decreasing shares LGBTQ over those two years and 13 have an increasing share.

Figure A18: Sample restrictions to reduce measurement error: Bullying, belonging, and leaving the district



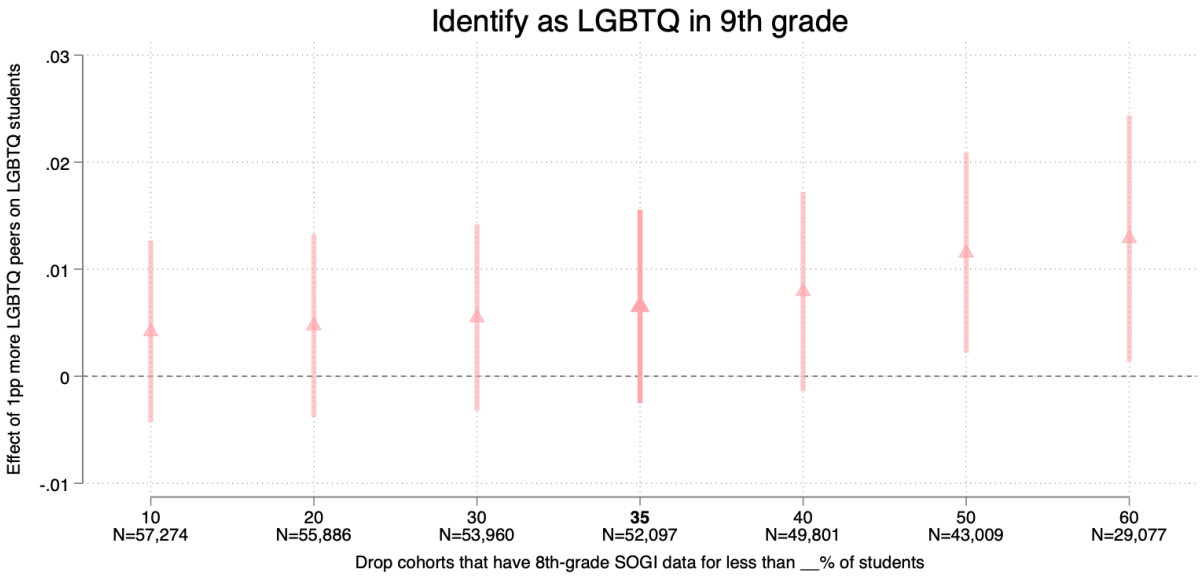
Note: This figure shows the main peer effects results, varying how the sample is restricted to account for missing data in the share of 9th-grade students who identified as LGBTQ in 8th grade. In the main analysis, cohorts are dropped if they have 8th-grade SOGI data for less than 35% of students in 9th grade (bolded in the figure). Here, I show the estimated effect of having 1pp more LGBTQ peers when I drop cohorts with varying shares of students missing 8th-grade SOGI data. I show results when I drop cohorts that have data for less than 10% of students, up to dropping cohorts that have data for less than 60% of students, in increments of 10pp.

Figure A19: Sample restrictions to reduce measurement error: Perceived acceptance and intergroup contact



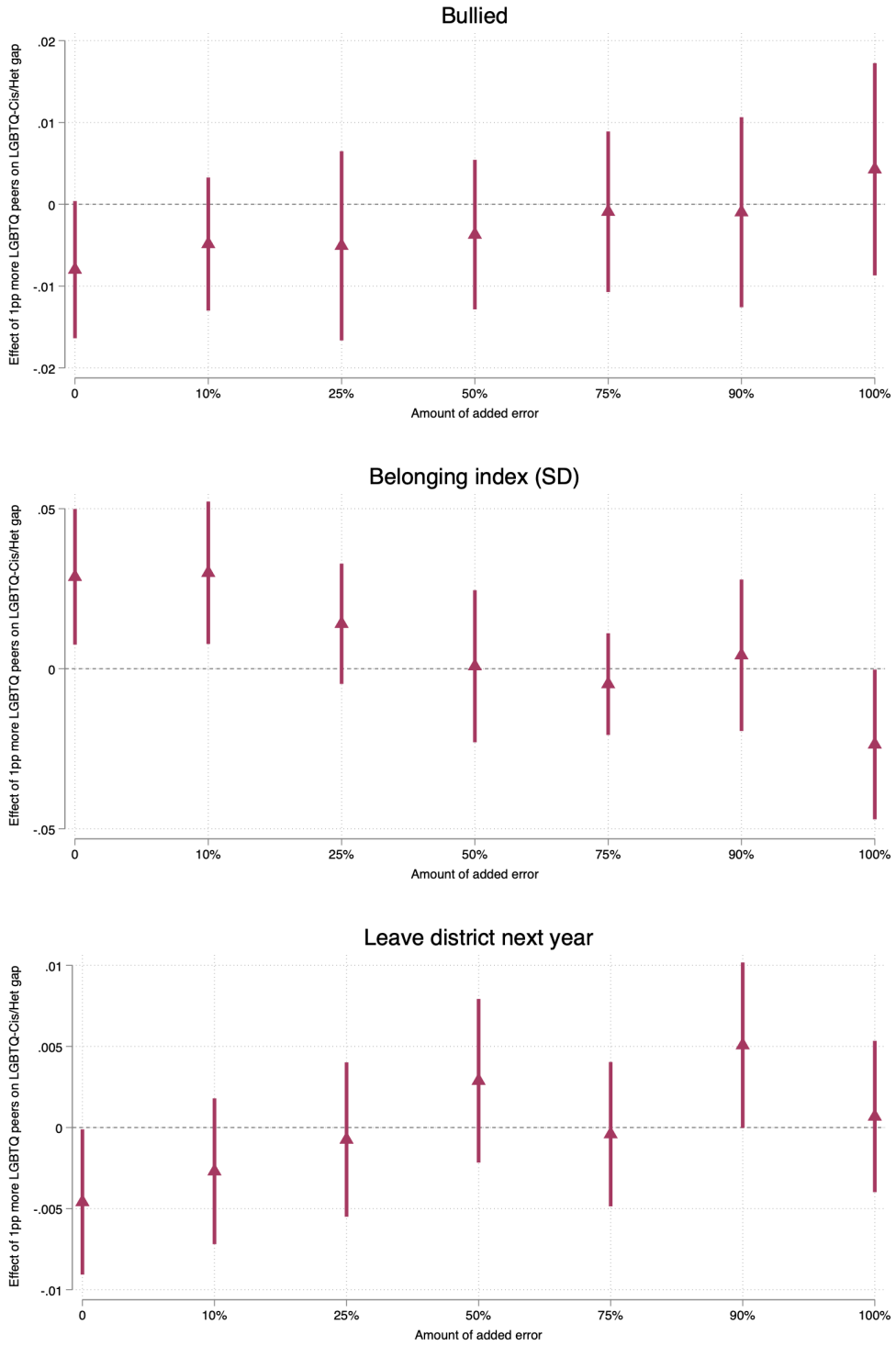
Note: This figure shows the robustness of the main results to the decision to drop cohorts based on the share of students who have 8th-grade SOGI data, but tests the effects on LGBTQ students' perceptions of LGBTQ acceptance and the degree to which they report getting along with those who are different from themselves in the non-linear specification. The figures on the left show the effect of moving from the first to second bin and the figures on the right show the effect of moving from the second to third bin. The procedure is otherwise analogous to A18.

Figure A20: Sample restrictions to reduce measurement error: SOGI in 9th-grade



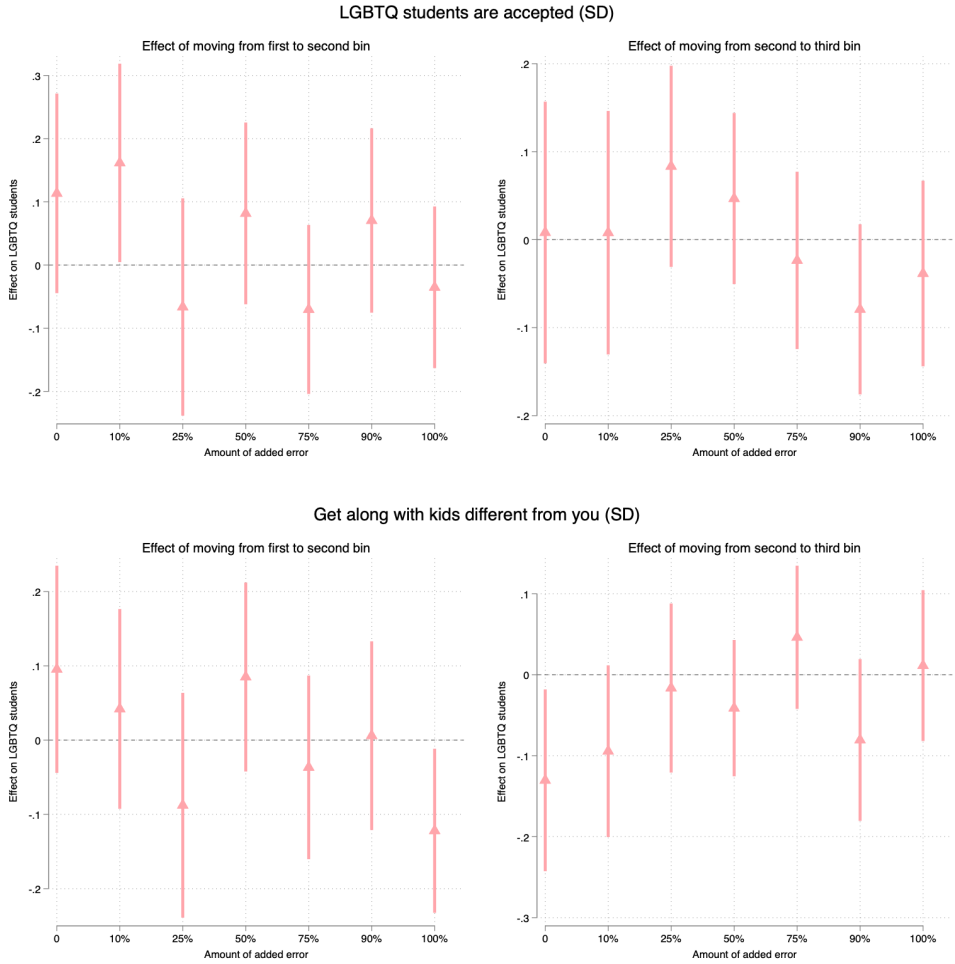
Note: This figure shows the robustness of the main results to the decision to drop cohorts based on the share of students who have 8th-grade SOGI data, but tests the effects on whether LGBTQ students identify as LGBTQ in 9th grade. The procedure is otherwise analogous to A18.

Figure A21: Attenuation bias: Bullying, belonging, and leaving the district



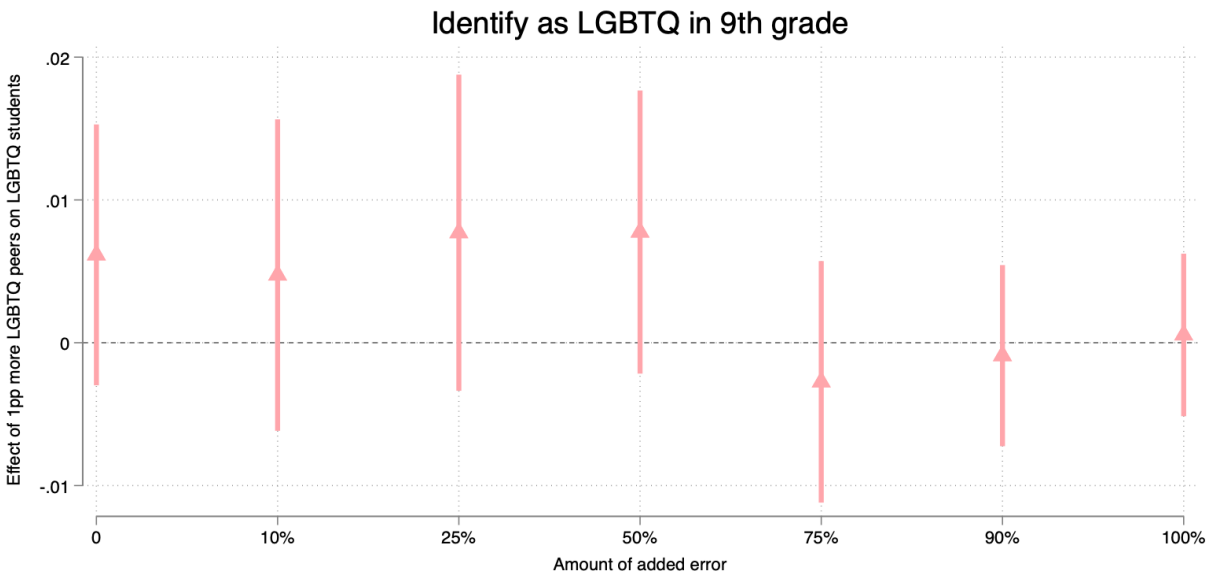
Note: This figure shows the results of the increased measurement error simulations when the outcome whether students are bullied, the belonging index, and whether students leave the district for 10th grade in the linear specification. The estimated effect of having 1pp more LGBTQ peers on the LGBTQ/Cis-Het **gap** is plotted when percent of sample on the x-axis has their observed SOGI replaced with a randomly-generated version according to a binomial distribution with a likelihood of "success" equal to the average share LGBTQ in the sample. The percent LGBTQ in each cohort is recalculated and the corresponding treatment effect on the gap between LGBTQ and Cis/Het students is plotted.

Figure A22: Attenuation bias: Perceived acceptance and inter-group contact



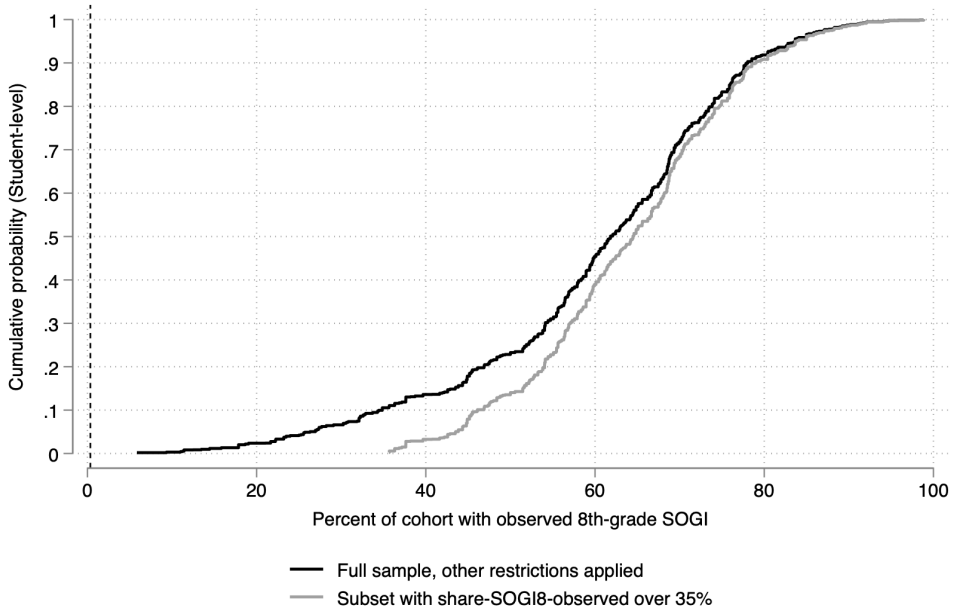
Note: This figure shows the results of the increased measurement error simulations, but tests the effects on LGBTQ students' perceptions of LGBTQ acceptance and the degree to which they report getting along with those who are different from themselves in the non-linear specification. The figures on the left show the effect of moving from the first to second bin and the figures on the right show the effect of moving from the second to third bin. The procedure is otherwise analogous to A21.

Figure A23: Attenuation bias: SOGI in 9th-grade



Note: This figure shows the results of the increased measurement error simulations, but tests the effects on whether LGBTQ students identify as LGBTQ in 9th grade. The procedure is otherwise analogous to A21.

Figure A24: Potential for measurement error to bias the results



Note: This figure plots the cumulative density function of the percent of the cohort with observed 8th-grade SOGI across all students. The lighter line shows the distribution in the main analysis sample, which restricts to cohorts with a share over 35 percent. The darker line shows the distribution without this restriction (but with all other sample restrictions in place).

Table A1: Bullying and belonging are persistent and context-specific

	Bullying		Belonging	
	(1)	(2)	(3)	(4)
Lag DV	0.410***	0.410***	0.515***	0.515***
	(0.003)	(0.003)	(0.004)	(0.004)
New school	-0.030***	0.001	0.074***	0.035***
	(0.006)	(0.008)	(0.009)	(0.010)
New school * Lag DV	-0.034***	-0.059***	-0.098***	-0.115***
	(0.006)	(0.011)	(0.006)	(0.012)
Ninth grade	–	0.762***	–	-2.271***
		(0.015)		(0.019)
Lag DV * Ninth grade	–	-0.009	–	-0.005
		(0.018)		(0.020)
New school * Ninth grade	–	-0.093***	–	0.152***
		(0.017)		(0.020)
Lag DV * New school * Ninth grade	–	0.042**	–	0.026
		(0.021)		(0.024)

Note: This table shows the relationship between present and prior-year bullying and belonging and how this dependency is moderated by moving to a new school. The sample is students in the panel sample who took the SES in all four years. The specifications also include grade and year fixed effects. Standard errors, in parentheses, are clustered by student. ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A2: Correlation between bullying and belonging and other educational outcomes

	Plan to go to college			Chronically absent			Leave school or district	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Belonging index (SD)	0.033***	0.030***	0.028***	-0.022***	-0.022***	-0.020***	-0.020***	-0.020***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Bullied	0.012**	0.012**	0.009*	-0.005	-0.004	-0.005	0.012***	0.013***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Lag-Belonging index (SD)	–	0.009***	0.001	–	-0.001	0.002	–	0.001
		(0.003)	(0.003)		(0.002)	(0.002)		(0.002)
Lag-Bullied	–	0.005	0.001	–	-0.006	0.000	–	-0.002
		(0.005)	(0.005)		(0.005)	(0.004)		(0.004)
Lagged DV	–	–	0.300***	–	–	0.523***	–	–
			(0.006)			(0.013)		
N	48876	48876	48876	33029	33029	33029	33038	33038
Mean	0.673	0.673	0.673	0.134	0.134	0.134	0.128	0.128

Note: This table shows the relationships between the key survey measures of school belonging and bullying and the key educational outcomes: intended educational attainment, chronic absenteeism, and school retention. The first specification (columns 1, 4, and 7) includes individual demographic controls (the same as in the main analysis), 8th-grade-school and 9th-grade-school fixed effects, and year fixed effects. The second specification (columns 2, 5, and 8) adds lagged values of the bullying and belonging indicators. The third specification (columns 3 and 6) adds lagged values of the dependent variable (irrelevant for the outcome school retention, as all students in the sample have moved to a new school for 9th grade and none have left the district). Controls are recoded to be zero if missing and missing indicators are included but not shown. The sample is students in the peer effects sample with observed values of the outcome (e.g. who were in 9th grade in 2017 or 2018 for the administrative outcomes or who answered the SES in 9th grade for the survey outcome). ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A3: LGBTQ-Cis/Het gaps in 9th grade outcomes, by gender

	Female students			Male students			LGBTQ	
	Cis/Het	Δ LGBTQ		Cis/Het	Δ LGBTQ		M-F gap	
	Mean	Unadj.	Adj.	Mean	Unadj.	Adj.	Unadj.	Adj.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LGBTQ in 9th grade	0.032	0.594***	0.591***	0.019	0.324***	0.323***	0.284***	0.230***
Uncertain in 9th grade	0.080	0.106***	0.106***	0.061	0.133***	0.122***	-0.007	0.001
Cis/Het in 9th grade	0.888	-0.700***	-0.698***	0.921	-0.457***	-0.445***	-0.276***	-0.231***
Bullied in last 12 months	0.532	0.182***	0.176***	0.479	0.157***	0.156***	0.077***	0.076***
Hit or pushed	0.121	0.088***	0.088***	0.168	0.124***	0.112***	-0.083***	-0.057***
Had rumors spread	0.321	0.093***	0.092***	0.250	0.144***	0.136***	0.020	0.029
Teased about the way you talk	0.278	0.182***	0.176***	0.248	0.140***	0.138***	0.072***	0.071***
Teased about body	0.268	0.141***	0.139***	0.235	0.101***	0.098***	0.074***	0.085***
Bullied online	0.076	0.085***	0.085***	0.056	0.074***	0.068***	0.031*	0.049**
Had sexual jokes/gestures made	0.254	0.163***	0.152***	0.207	0.131***	0.134***	0.078***	0.056*
Total times bullied (SD)	-0.049	0.456***	0.441***	-0.074	0.401***	0.383***	0.080	0.107
School belonging index	0.046	-0.301***	-0.292***	0.096	-0.187***	-0.170***	-0.164***	-0.152***
Adult support index (SD)	0.065	-0.160***	-0.144***	0.068	-0.137***	-0.111***	-0.027	-0.026
LGBTQ students accepted (SD)	0.183	-0.133***	-0.121***	-0.099	-0.086*	-0.060	0.236***	0.274***
Get along w/ kids diff from you (SD)	0.133	-0.091***	-0.098***	-0.001	0.004	0.029	0.040	0.010
Daily attendance rate	0.948	-0.009***	-0.007***	0.947	-0.007**	-0.001	0.000	-0.010**
Chronically absent	0.139	0.046***	0.036***	0.145	0.046***	0.017	-0.007	0.049**
New school next year	0.089	0.024**	0.024**	0.087	0.011	0.008	0.015	0.020
Leave district next year	0.061	0.025***	0.024***	0.061	0.006	0.005	0.019	0.017
Plan not to attend college	0.226	0.071***	0.074***	0.370	0.069***	0.015	-0.143***	-0.049**
Plan highest degree is 4-year college	0.347	-0.005	-0.006	0.357	-0.022	0.000	0.007	-0.032
Plan to go to graduate school	0.427	-0.066***	-0.067***	0.273	-0.047***	-0.015	0.136***	0.081***
N	18783	1945		21847	907			

Note: This table shows how Cis/Het-LGBTQ gaps in outcomes differ by sex for the main peer effects sample. The outcomes are the same as in Table 2, adding indicators for never experiencing each type of bullying as these differ by sex. Columns 1 and 4 show the means for male and female Cis/Het students, respectively. Columns 2 and 3 show the difference in means for female LGBTQ students compared to female Cis/Het students, without and with accounting for all other observed demographic variables. Columns 5 and 6 are analogous for male LGBTQ students. Finally, columns 7 and 8 show the unadjusted and demographic-adjusted male-female gap for LGBTQ students. Columns 3, 6, and 8 add controls for race, gender, 8th grade standardized test scores, language spoken at home, participation in special education and gifted programs, US nationality, and parent education. All controls are recoded to zero if missing and missing indicators are included. ***, **, and * indicate statistically significant differences at the 1, 5, and 10 percent significance levels, respectively.

Table A4: Estimated SOGI shares in the California Healthy Kids Survey and the Youth Risk Behavior Surveillance System

	2019 California Healthy Kids Survey						2021 YRBSS		2019 YRBSS
	LAUSD			California			LAUSD	United States	United States
	7th	9th	11th	7th	9th	11th	9th-12th	9th-12th	9th-12th
Sexual orientation:									
Heterosexual	80	79	77	80.4	83.9	83.6	72.7	75.5	84.4
Gay or lesbian	1	2	3	0.8	1.6	2.2	3.7	3.2	2.5
Bisexual	5	8	8	4.4	5.9	6.3	10.3	12.1	8.7
Other	2	1	2	2.0	1.5	1.4	4.4	3.9	
Questioning							5.2	5.2	
Not sure (yet)	7	5	3	5.9	3.9	3.4	3.7		4.5
Decline to answer	5	5	7	6.5	3.3	3.1			
Gender identity:									
Not transgender	92	92	91	93.0	94.7	95.3			
Transgender	1	2	2	0.6	0.9	0.8			
Not sure	3	2	1	2.1	1.5	1.1			
Decline to answer	4	4	7	4.3	2.9	2.7			
Sample size	1,165	1,011	773	11,536	17,551	16,761	2,042	16,271	12,975

Note: This table reproduces results on the prevalence of various sexual orientation and gender identities from the California Healthy Kids Survey (WestEd, 2019; Austin et al., 2020) and the Youth Risk Behavior Surveillance System (CDC 2020, 2023; https://heplausd.net/yrbs/). Each cell shows the percent of students in the given sample identifying with a particular sexual orientation or gender identity. The CHKS provides data from students in a representative sample of schools in LAUSD (columns 1-3) and across California (columns 4-6); student participation is optional and rates vary by school. Students in 7th, 9th, and 11th grade are surveyed. The YRBSS provides data for 9th-12th-grade students in a representative sample of schools in LAUSD (column 7) and a nationally representative sample (columns 8 and 9); student participation is optional and rates vary by school. CHKS results that are representative of LAUSD are only available in 2019. From the YRBSS, LAUSD-specific statistics are currently only available for 2021, so I provide both 2021 and 2019 national statistics from the YRBSS to facilitate comparison with the CHKS results. Questions eliciting sexual orientation are phrased similarly in both surveys; the exception is that in the CHKS "not sure" includes "yet" and the separate response "questioning" is not available. YRBSS results condition on students who answer the question; CHKS results do not. National YRBSS results are weighted to be nationally representative.

Table A5: Comparing SOGI with and without fluidity (robustness)

	Percent in the given year: 2016	2017	2018	2019	Ever (in any year)	Always (in all years)
Panel A: Took survey in all four years, full sample (N=42,337)						
Cis/Het	80.1	81.9	80.9	81.6	95.2	58.9
LGBTQ	4.4	5.6	7.0	8.1	14.1	1.4
Uncertain	9.8	10.7	10.1	8.9	26.9	0.6
Q Non-Response	5.7	1.8	1.9	1.4	10.3	0.0
Panel B: Drop students cis/het in 3 of 4 years but not in 2017 or 2018 (N=38,416)						
Cis/Het	78.5	85.1	84.1	79.7	94.7	64.9
LGBTQ	4.8	5.5	6.9	9.0	14.0	1.5
Uncertain	10.8	8.5	8.2	9.8	23.4	0.6
Q Non-Response	5.9	0.9	0.8	1.5	8.6	0.0
Panel C: Drop students cis/het in last 3 of 4 years (N=36,793)						
Cis/Het	81.9	84.5	83.4	78.8	94.5	67.8
LGBTQ	5.0	5.7	7.2	9.4	14.6	1.6
Uncertain	6.9	8.8	8.6	10.2	20.0	0.6
Q Non-Response	6.2	0.9	0.8	1.6	9.0	0.0

Note: This table repeats the SOGI fluidity analysis comparing the percent of students identifying as LGBTQ in a given year to the share ever or always identifying as LGBTQ in increasingly-restricted samples to account for potential measurement error and provide lower bounds on the fluidity estimates. Panel A replicates the results in Table 3. Panel B drops any students who identified as Cis/Het in three out of the four years, including both 2016 and 2019. This means they switched away from identifying as Cis/Het in only one of the two middle years and then again identified as Cis/Het. Panel C additionally drops the students who identified as Cis/Het in 3 out of 4 years but identified as LGBTQ or uncertain in the first year.

Table A6: Demographic correlates of SOGI and SOGI fluidity

	Ever LGBTQ			Ever Uncertain			Ever Change SOGI		
	Linear probability		Odds	Linear probability		Odds	Linear probability		Odds
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	0.11***	0.11***	2.48***	0.08***	0.08***	1.58***	0.06***	0.06***	1.47***
	(0.02)	(0.02)	(0.31)	(0.02)	(0.02)	(0.14)	(0.02)	(0.02)	(0.14)
Race/ethnicity:									
Asian	-0.00	-0.01	0.94	0.03*	0.02	1.18*	0.01	-0.00	1.06
	(0.01)	(0.01)	(0.13)	(0.02)	(0.02)	(0.11)	(0.01)	(0.02)	(0.11)
Asian*Female	-0.03	-0.03	0.89	-0.00	0.00	0.98	0.00	0.00	1.03
	(0.02)	(0.02)	(0.15)	(0.02)	(0.02)	(0.11)	(0.02)	(0.02)	(0.14)
Black	-0.04***	-0.04***	0.70**	-0.03*	-0.05**	0.85	-0.02	-0.03	0.92
	(0.01)	(0.01)	(0.11)	(0.02)	(0.02)	(0.10)	(0.02)	(0.02)	(0.11)
Black*Female	0.01	0.01	1.15	0.02	0.02	1.09	0.02	0.02	1.10
	(0.02)	(0.03)	(0.23)	(0.03)	(0.03)	(0.15)	(0.03)	(0.03)	(0.18)
Hispanic	-0.01	-0.01	0.93	-0.03**	-0.04***	0.87*	-0.02*	-0.04**	0.88
	(0.01)	(0.01)	(0.10)	(0.01)	(0.02)	(0.07)	(0.01)	(0.01)	(0.08)
Hispanic*Female	-0.02	-0.02	0.86	0.01	0.01	1.02	0.01	0.01	1.07
	(0.02)	(0.02)	(0.11)	(0.02)	(0.02)	(0.09)	(0.02)	(0.02)	(0.11)
Native American	-0.04	-0.05	0.63	-0.01	-0.01	0.98	0.02	0.00	1.11
	(0.04)	(0.03)	(0.33)	(0.06)	(0.06)	(0.31)	(0.06)	(0.06)	(0.36)
Native American*Female	0.06	0.05	1.67	0.07	0.08	1.35	0.06	0.07	1.30
	(0.07)	(0.07)	(1.04)	(0.09)	(0.09)	(0.58)	(0.08)	(0.08)	(0.54)
Home language:									
Spanish	-0.03***	-0.03***	0.79***	0.01*	0.01	1.06*	0.00	-0.00	1.03
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.04)
Other non-Eng	-0.05***	-0.05***	0.64***	-0.02	-0.01	0.92	-0.02	-0.01	0.90
	(0.01)	(0.01)	(0.06)	(0.02)	(0.02)	(0.08)	(0.01)	(0.01)	(0.08)
Grade in 2016:									
6th grade	-0.02***	-0.02	0.81***	0.06***	0.07***	1.35***	0.07***	0.07***	1.50***
	(0.01)	(0.02)	(0.04)	(0.01)	(0.03)	(0.06)	(0.01)	(0.02)	(0.07)
7th grade	-0.01	-0.00	0.93	0.04***	0.05**	1.23***	0.05***	0.05**	1.38***
	(0.01)	(0.02)	(0.05)	(0.01)	(0.03)	(0.06)	(0.01)	(0.02)	(0.06)
8th grade	-0.01*	-0.01	0.91*	0.01*	0.03	1.08*	0.01*	0.02	1.09*
	(0.01)	(0.02)	(0.05)	(0.01)	(0.03)	(0.05)	(0.01)	(0.02)	(0.05)
Special education	0.04***	0.04***	1.41***	0.14***	0.15***	1.91***	0.09***	0.10***	1.69***
	(0.01)	(0.01)	(0.07)	(0.01)	(0.01)	(0.07)	(0.01)	(0.01)	(0.07)
Gifted	0.02***	0.02***	1.22***	0.01**	0.01*	1.06*	0.01**	0.01*	1.07*
	(0.01)	(0.01)	(0.06)	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.04)
Poverty	0.00	0.00	1.04	0.00	-0.01	1.02	0.00	-0.01	1.01
	(0.01)	(0.01)	(0.06)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.05)
Parent coll. degree	-0.00	-0.00	0.98	-0.01	-0.01	0.95	-0.01	-0.01	0.94
	(0.01)	(0.01)	(0.05)	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.04)
Missing parent coll.	0.01*	0.01	1.06*	0.01	0.00	1.03	0.00	0.00	1.02
	(0.00)	(0.00)	(0.04)	(0.01)	(0.01)	(0.03)	(0.00)	(0.00)	(0.03)
Gr-8 math (SD)	-0.02***	-0.02***	0.86***	0.00	0.00	1.00	0.00	0.01	1.03
	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.03)
Gr6-8 reading (SD)	0.01	0.01*	1.05	-0.05***	-0.05***	0.79***	-0.05***	-0.05***	0.75***
	(0.00)	(0.00)	(0.04)	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)	(0.02)
SOGI in 2016:									
LGBTQ							0.43***	0.43***	6.91***
							(0.01)	(0.01)	(0.40)
Uncertain							0.69***	0.69***	49.63***
							(0.01)	(0.01)	(3.29)
No answer							0.03***	0.03***	1.14***
							(0.01)	(0.01)	(0.06)
Not asked							0.00	0.00	1.00
							(.)	(.)	(.)
N	42,337	42,337	42,337	42,337	42,337	42,337	42,331	42,331	42,331
Sample mean	0.140			0.269			0.319		
School in 2017 FE		×			×			×	

Note: This table shows the correlation between SOGI and SOGI fluidity in the panel sample of students in 6th-9th grade in 2016 whose SOGI is observed every year from 2016-2019. The outcomes of interest are indicators for ever identifying as LGBTQ, ever being uncertain, and ever changing SOGI. Columns 1-2, 4-5, and 7-8 use a linear probability model with an OLS regression. Columns 1, 4, and 7 regress the outcome on all reported demographic characteristics as well as indicators for missing each characteristic (the latter are not shown). Columns 7-9 add controls for students' SOGI reported in 2017, with Cis/Het as the omitted category. Columns 2, 5, and 8 add school-in-2016 fixed effects. Columns 3, 6, and 9 show odds ratios calculated from the analogous logistic regression, omitting the school fixed effects. Standard errors are clustered by school in 2017. ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A7: Gaps in school experiences accounting for SOGI fluidity

	LGBTQ (SD) acceptance		School (SD) belonging (SD)		Adult (SD) support (SD)		Chronically absent		Switch schools	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Identify as LGBTQ	-0.081***	0.018	-0.237***	-0.060**	-0.166***	-0.055**	0.012***	0.007	0.014***	0.006
	(0.012)	(0.027)	(0.013)	(0.024)	(0.013)	(0.022)	(0.004)	(0.008)	(0.004)	(0.012)
Not yet LGBTQ	0.001	–	-0.151***	–	-0.080***	–	0.004	–	0.010***	–
	(0.014)		(0.015)		(0.014)		(0.003)		(0.004)	
Ever uncertain, never LGBTQ	-0.089***	–	-0.178***	–	-0.132***	–	-0.003	–	0.003	–
	(0.008)		(0.009)		(0.009)		(0.002)		(0.002)	
Always LGBTQ	-0.060*	–	-0.041	–	-0.028	–	-0.001	–	-0.011	–
	(0.035)		(0.033)		(0.031)		(0.008)		(0.008)	
Controls:										
School and year-grade FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Demographics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Student FE		✓		✓		✓		✓		✓
Sample:										
Full	✓		✓		✓		✓			
Switchers		✓		✓		✓		✓		✓
N	165,302	20,980	167,633	21,243	167,960	21,291	126,984	16,110	99,100	12,627
Mean, Always Cis/Het:	0.065		0.130		0.118		0.060		0.101	

Note: This table shows how LGBTQ-Cis/Het gaps in perceived LGBTQ acceptance, school belonging, adult support, chronic absenteeism, and school retention depend on students' current and eventual SOGI. It parallels the regressions in Table 4 using the specifications in columns 2 and 3 of Table 4. Note that school retention drops students from the sample in any year in which they are in the oldest possible grade in their school. School retention and absenteeism are also not observed in 2019 due to not observing students the following year and the Covid-19 pandemic, respectively. Standard errors are clustered by student. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A8: Residual variation in percent LGBTQ

	All students	Cis/Het	LGBTQ	Uncertain	SOGI Unknown
Mean	5.90	5.78	6.05	5.94	6.05
SD	2.31	2.27	2.32	2.31	2.37
10th p, 90th p	3.17, 8.73	3.12, 8.53	3.29, 8.97	3.18, 8.93	3.17, 9.05
Min, max	0.00, 15.09	0.00, 15.09	0.00, 14.15	0.00, 15.09	0.00, 14.95
Net of fixed effects:					
Mean	-0.00	-0.00	-0.18	0.02	0.02
SD	1.73	1.68	1.73	1.68	1.80
10th p, 90th p	-2.18, 2.18	-2.06, 2.08	-2.22, 2.14	-2.08, 2.08	-2.33, 2.68
Min, max	-9.41, 6.38	-6.75, 6.38	-9.41, 4.59	-6.75, 6.38	-6.75, 6.13
N	76707	40630	2852	5584	27641

Note: This table shows how the variation in the percent of students who identify as LGBTQ remaining in the fixed effect specification compares to the raw variation in the same variable. The first panel shows the raw average, standard deviation, 10th and 90th percentile, and minimum and maximum of the percent of students in a students' cohort who identified as LGBTQ in 8th grade for all students in the peer effects sample (in column 1) and then separately by 8th-grade SOGI (in columns 2-5). The second panel shows the same statistic for the residual of the share LGBTQ after regressing the variable on year and 9th-grade school fixed effects.

Table A9: LGBTQ vs Cis/Het selection into schools

	Average school or cohort characteristic		LGBTQ-Cis/Het Difference	Difference with school FE
	Cis/Het	LGBTQ		
	(1)	(2)	(3)	(4)
Panel A: School baseline characteristics				
Share female	0.481	0.482	0.001	–
Share Asian	0.072	0.068	-0.004*	–
Share Black	0.067	0.067	-0.000	–
Share Hispanic	0.789	0.792	0.003	–
Share Native American	0.003	0.003	0.000	–
Share English at home	0.299	0.295	-0.004	–
Share Spanish at home	0.633	0.639	0.006	–
Share Special Education	0.055	0.057	0.001	–
Share Gifted	0.103	0.100	-0.003**	–
Share parents college degree	0.159	0.155	-0.004	–
Share in poverty	0.825	0.827	0.002	–
Share born in US	0.838	0.834	-0.004**	–
Share bullied	0.520	0.520	-0.000	–
Share LGBTQ students bullied	0.687	0.685	-0.003	–
Average belonging if LGBTQ (SD)	-0.219	-0.231	-0.013	–
Average school LGBTQ acceptance (SD)	-0.017	-0.009	0.007	–
Panel B: Cohort characteristics				
Share female	0.477	0.478	0.001	-0.000
Share Asian	0.067	0.063	-0.004*	-0.000
Share Black	0.064	0.064	-0.000	-0.000
Share Hispanic	0.796	0.799	0.003	0.001
Share Native American	0.003	0.003	0.000	-0.000
Share English at home	0.327	0.322	-0.005	0.000
Share Spanish at home	0.608	0.615	0.008	0.001
Share Special Education	0.116	0.119	0.002**	0.000
Share Gifted	0.171	0.163	-0.008***	-0.002**
Share parents college degree	0.166	0.163	-0.003	0.001
Share in poverty	0.892	0.893	0.001	-0.001
Share born in US	0.867	0.862	-0.005**	0.001
Average 8th-grade LGBTQ acceptance (SD)	-0.005	-0.001	0.005	-0.001
Share peers from same 8th-grade school	0.084	0.082	-0.001	-0.001
N	40630	2852		

Note: This table shows the characteristics of the schools and cohorts that LGBTQ students enroll in for 9th-grade compared to the schools that Cis/Het students enroll in for 9th grade. Student SOGI is as reported in 8th grade. Panel A shows the school average characteristic among students in 9th-12th grade in 2016, that is, the students who would have been observable to students as they selected a high school but are not themselves in the sample. Panel B shows the cohort characteristics of students' own 9th-grade class. All measures of peers' demographics are leave-one-out averages of pre-9th grade characteristics. All variables are shares from 0-1 unless marked by (SD), indicating standard deviation units. Columns 1 and 2 show the average for Cis/Het and LGBTQ students, respectively. Column 3 shows the difference between the two. Column 4 shows the difference between the two with the inclusion of school fixed effects, for the cohort characteristics. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A10: Testing effects of LGBTQ peers on racial gaps

	Bullied indicator	Total times bullied (SD)	School belonging (SD)	Adult support (SD)	LGBTQ accepted (SD)	Get along others (SD)
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
% LGBTQ	-0.0008	0.0009	-0.0048	-0.0048	0.0006	0.0012
	(0.0017)	(0.0031)	(0.0050)	(0.0046)	(0.0040)	(0.0029)
% LGBTQ × Black	-0.0027	0.0095	0.0057	0.0048	0.0162	-0.0034
	(0.0034)	(0.0074)	(0.0110)	(0.0101)	(0.0115)	(0.0091)
% LGBTQ × White	0.0036	0.0017	-0.0036	0.0108	0.0009	-0.0002
	(0.0048)	(0.0093)	(0.0087)	(0.0095)	(0.0100)	(0.0095)
% LGBTQ × Asian	-0.0012	0.0102	0.0017	-0.0039	0.0021	-0.0039
	(0.0041)	(0.0095)	(0.0079)	(0.0076)	(0.0073)	(0.0076)
Main effects:						
Black	0.0611**	0.0757	-0.1772**	-0.1754**	-0.2247***	0.0298
	(0.0234)	(0.0530)	(0.0781)	(0.0680)	(0.0752)	(0.0618)
White	0.0199	0.1065	0.0489	-0.0837	-0.0767	0.0652
	(0.0351)	(0.0679)	(0.0643)	(0.0676)	(0.0704)	(0.0643)
Asian	0.0335	-0.0280	-0.0703	0.0559	0.0378	0.0162
	(0.0259)	(0.0584)	(0.0540)	(0.0545)	(0.0530)	(0.0505)
N	51,613	52,207	52,618	52,620	51,842	51,559
Hispanic mean	0.5075	-0.0535	0.0461	0.0674	0.0465	0.0166

Note: This table shows the effects from the linear specification, testing the effects of having LGBTQ peers on on the bullying and belonging gaps by *race*, rather than 8th-grade SOGI. The samples and specifications are otherwise the same as in Table 5, replacing the indicators for 8th-grade SOGI with indicators for being Black, White, and Asian; the omitted group is Hispanic students. The specification replaces the race controls with controls for students' 8th-grade SOGI. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A11: Correlation between cohort share LGBTQ and other characteristics

	Percent LGBTQ	
	(1)	(2)
Percent cohort in LAUSD 8th grade	0.00	0.02
	(0.03)	(0.06)
Percent with SOGI8 observed	-0.05**	-0.04
	(0.02)	(0.03)
Cohort size (hundreds)	-0.10	-0.01
	(0.09)	(0.41)
Average percent cohort from same MS	0.02	0.17
	(0.04)	(0.11)
Percent female	0.05**	0.01
	(0.02)	(0.05)
Percent Asian	-0.01	-0.04
	(0.03)	(0.11)
Percent Black	-0.07**	-0.10
	(0.04)	(0.12)
Percent Hispanic	-0.07	-0.01
	(0.05)	(0.09)
Percent Native American	0.02	-0.33
	(0.45)	(0.47)
Percent home lang. Spanish	0.03	0.01
	(0.03)	(0.06)
Percent home lang. other non-Eng.	-0.07*	-0.15
	(0.04)	(0.11)
Percent born in USA	-0.00	0.04
	(0.03)	(0.07)
Percent special education	0.03	-0.04
	(0.05)	(0.08)
Percent gifted	0.00	-0.03
	(0.02)	(0.05)
Percent parents coll. deg.	-0.02	0.07
	(0.03)	(0.05)
Percent missing parents coll. deg.	-0.02	-0.01
	(0.02)	(0.04)
Percent poverty	-0.00	-0.02
	(0.02)	(0.05)
Year FE	×	×
School FE		×
N cohorts	330	330
Average dependent variable	5.950	

Note: This table shows the correlation between the percent of students who identify as LGBTQ and the percent of students with other demographic characteristics across all cohorts in the main peer effects sample. Column 1 regresses the share of students in the cohort (school × 9th-grade year) who identified as LGBTQ in 8th grade on the percent with each other demographic or compositional characteristic of the cohort that is included as a control variable in the main specification—though in the main specification, the demographic cohort characteristics are calculated as leave-one-out measures as individual-level demographics are also included. Independent and dependent "percent" variables are all measured from 0-100. Column 2 adds school fixed effects. Standard errors in parentheses are robust to heteroskedasticity. ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A12: Individual-level balance table, full sample

	%LGBTQ	%LGBTQ × LGBTQ	%LGBTQ × Uncertain	%LGBTQ × no SOGI	Sample size	Slope, LGBTQ	Slope, Uncertain
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
8th grade math	0.0048*	-0.0007	0.0008	0.0061	59,538	0.0040	0.0055
	(0.0025)	(0.0076)	(0.0054)	(0.0055)		(0.0074)	(0.0054)
8th grade reading	0.0037	0.0000	0.0061	0.0047	59,131	0.0037	0.0098*
	(0.0026)	(0.0080)	(0.0058)	(0.0060)		(0.0074)	(0.0056)
Home lang. English	0.0015	0.0007	-0.0020	-0.0026	76,532	0.0022	-0.0005
	(0.0014)	(0.0039)	(0.0029)	(0.0021)		(0.0041)	(0.0029)
Home lang. Spanish	0.0001	-0.0001	0.0037	0.0008	76,532	0.0000	0.0038
	(0.0016)	(0.0039)	(0.0026)	(0.0019)		(0.0041)	(0.0027)
Special ed. flag	0.0002	-0.0020	-0.0007	-0.0022	76,707	-0.0018	-0.0006
	(0.0012)	(0.0026)	(0.0026)	(0.0015)		(0.0027)	(0.0027)
Gifted flag	-0.0012	-0.0040	0.0059**	0.0038**	76,707	-0.0052	0.0048*
	(0.0013)	(0.0031)	(0.0024)	(0.0016)		(0.0033)	(0.0025)
Poverty flag	-0.0004	-0.0015	-0.0008	-0.0022*	76,426	-0.0018	-0.0011
	(0.0007)	(0.0021)	(0.0015)	(0.0012)		(0.0021)	(0.0014)
Female	0.0000	0.0034	0.0036	-0.0012	76,329	0.0035	0.0036
	(0.0019)	(0.0039)	(0.0032)	(0.0021)		(0.0038)	(0.0032)
Born in USA	0.0030**	0.0033	0.0043**	-0.0063**	76,683	0.0063**	0.0072***
	(0.0012)	(0.0024)	(0.0019)	(0.0026)		(0.0027)	(0.0024)
Parent college degree	0.0039*	-0.0035	-0.0019	0.0014	48,748	0.0003	0.0020
	(0.0023)	(0.0034)	(0.0023)	(0.0017)		(0.0044)	(0.0029)
Missing parent college	0.0002	0.0020	-0.0001	-0.0027	76,707	0.0022	0.0000
	(0.0017)	(0.0039)	(0.0028)	(0.0023)		(0.0038)	(0.0029)
Asian	0.0001	0.0011	-0.0020*	0.0004	76,583	0.0012	-0.0018
	(0.0008)	(0.0015)	(0.0012)	(0.0009)		(0.0016)	(0.0012)
Black	-0.0002	0.0037*	-0.0001	-0.0016	76,583	0.0035*	-0.0002
	(0.0008)	(0.0021)	(0.0017)	(0.0014)		(0.0021)	(0.0018)
Hispanic	0.0007	-0.0028	0.0015	-0.0013	76,583	-0.0020	0.0022
	(0.0014)	(0.0030)	(0.0021)	(0.0016)		(0.0031)	(0.0020)
Native	0.0002	-0.0004	-0.0002	-0.0003	76,583	-0.0002	0.0000
	(0.0002)	(0.0003)	(0.0004)	(0.0002)		(0.0004)	(0.0004)

Note: This table shows the "effect" of having more LGBTQ peers on student demographic characteristics in the full peer effects sample. The regression is the same as in the main linear specification (see Table 7), but individual-level controls are excluded and iteratively used as the outcomes. Each row shows estimates from a separate regression for each individual demographic variable, with the coefficients of interest across the columns. The percent LGBTQ is measured from 0-100. Standard errors are clustered by school. ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A13: Individual-level balance table, sample with SES outcomes in 9th grade

	%LGBTQ	%LGBTQ × LGBTQ	%LGBTQ × Uncertain	%LGBTQ × no SOGI	Sample size	Slope, LGBTQ	Slope, Uncertain
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
8th grade math	0.0031	0.0043	0.0004	0.0076	44,928	0.0073	0.0034
	(0.0033)	(0.0079)	(0.0062)	(0.0061)		(0.0076)	(0.0066)
8th grade reading	0.0020	0.0052	0.0055	0.0083	44,665	0.0072	0.0076
	(0.0032)	(0.0089)	(0.0066)	(0.0064)		(0.0083)	(0.0070)
Home lang. English	0.0016	-0.0001	-0.0028	-0.0044*	53,633	0.0015	-0.0012
	(0.0016)	(0.0044)	(0.0032)	(0.0024)		(0.0044)	(0.0032)
Home lang. Spanish	-0.0002	-0.0002	0.0047	0.0027	53,633	-0.0003	0.0045
	(0.0018)	(0.0044)	(0.0029)	(0.0022)		(0.0045)	(0.0031)
Special ed. flag	-0.0009	-0.0033	-0.0023	-0.0024	53,677	-0.0042	-0.0032
	(0.0013)	(0.0028)	(0.0030)	(0.0017)		(0.0030)	(0.0029)
Gifted flag	-0.0004	-0.0055	0.0058**	0.0039**	53,677	-0.0059	0.0053*
	(0.0017)	(0.0040)	(0.0028)	(0.0019)		(0.0041)	(0.0028)
Poverty flag	-0.0002	-0.0040	0.0000	-0.0028**	53,654	-0.0041*	-0.0002
	(0.0007)	(0.0025)	(0.0020)	(0.0014)		(0.0025)	(0.0020)
Female	0.0016	0.0035	0.0049	-0.0025	53,635	0.0051	0.0065*
	(0.0021)	(0.0040)	(0.0035)	(0.0024)		(0.0039)	(0.0034)
Born in USA	0.0025**	0.0019	0.0047**	-0.0066**	53,671	0.0045	0.0072***
	(0.0013)	(0.0027)	(0.0019)	(0.0026)		(0.0029)	(0.0024)
Parent college degree	0.0035	-0.0036	-0.0037	-0.0006	36,070	-0.0001	-0.0002
	(0.0026)	(0.0036)	(0.0028)	(0.0019)		(0.0046)	(0.0034)
Missing parent college	-0.0018	0.0016	0.0007	-0.0029	53,677	-0.0002	-0.0011
	(0.0017)	(0.0048)	(0.0029)	(0.0025)		(0.0048)	(0.0030)
Asian	0.0002	0.0014	-0.0017	-0.0001	53,617	0.0016	-0.0015
	(0.0010)	(0.0018)	(0.0013)	(0.0011)		(0.0019)	(0.0015)
Black	-0.0004	0.0014	-0.0001	-0.0020	53,617	0.0010	-0.0005
	(0.0008)	(0.0021)	(0.0018)	(0.0013)		(0.0020)	(0.0018)
Hispanic	0.0016	-0.0028	0.0022	-0.0002	53,617	-0.0012	0.0037
	(0.0016)	(0.0035)	(0.0024)	(0.0017)		(0.0035)	(0.0024)
Native	0.0001	-0.0000	-0.0003	-0.0003	53,617	0.0001	-0.0002
	(0.0002)	(0.0004)	(0.0004)	(0.0002)		(0.0005)	(0.0004)

Note: This table is the same as Appendix Table A12 but restricts the sample to students who took the SES in 9th grade. Standard errors are clustered by school. ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A14: Linear specification: Survey-taking and question non-response

	Missing Survey	Missing Bullied	Missing Belong	Mi Accepts LGBTQ	Mi Get along others	Mi Plan college
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
% LGBTQ	-0.0057	-0.0005	-0.0011*	-0.0011	-0.0012	-0.0037**
	(0.0045)	(0.0009)	(0.0006)	(0.0007)	(0.0008)	(0.0015)
% LGBTQ × LGBTQ	0.0002	-0.0009	-0.0001	-0.0005	-0.0006	-0.0013
	(0.0037)	(0.0015)	(0.0010)	(0.0013)	(0.0018)	(0.0025)
% LGBTQ × Uncertain	-0.0013	-0.0009	0.0005	0.0003	0.0000	-0.0002
	(0.0023)	(0.0008)	(0.0005)	(0.0008)	(0.0012)	(0.0018)
% LGBTQ × No SOGI	0.0027	0.0009	0.0012	0.0010	0.0009	0.0014
	(0.0026)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0015)
Main effects:						
LGBTQ	0.0155	0.0034	0.0045	0.0043	0.0036	0.0059
	(0.0232)	(0.0099)	(0.0069)	(0.0086)	(0.0112)	(0.0161)
Uncertain	0.0091	0.0024	-0.0015	-0.0011	0.0010	0.0031
	(0.0162)	(0.0053)	(0.0038)	(0.0058)	(0.0075)	(0.0114)
No SOGI known	0.0368**	-0.0026	-0.0046	-0.0024	0.0005	0.0078
	(0.0168)	(0.0075)	(0.0071)	(0.0077)	(0.0078)	(0.0092)
N	76,707	53,677	53,677	53,677	53,677	53,677
Mean: Cis/Het	0.2345	0.0269	0.0087	0.0223	0.0265	0.0619
%LGBTQ + %LGBTQ × LGBTQ	-0.0054	-0.0014	-0.0012	-0.0016	-0.0019	-0.0050
	(0.0058)	(0.0017)	(0.0011)	(0.0015)	(0.0020)	(0.0030)
%LGBTQ + %LGBTQ × Uncertain	-0.0070	-0.0014	-0.0006	-0.0007	-0.0012	-0.0039*
	(0.0051)	(0.0009)	(0.0007)	(0.0011)	(0.0013)	(0.0021)

Note: This table shows the effects in the linear specification on indicators for whether students took the survey and or did not answer each question conditional on taking the survey. The specification and sample are otherwise the same as Table 5. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A15: Non-linear specification: Survey-taking and question non-response

	Missing Survey	Missing Bullied	Missing Belong	Mi Accepts LGBTQ	Mi Get along others	Mi Plan college
	(1)	(2)	(3)	(4)	(5)	(6)
%LGBTQ>20th pctile	-0.011	-0.002	-0.004	-0.004	-0.000	-0.006
	(0.036)	(0.005)	(0.004)	(0.004)	(0.006)	(0.010)
%LGBTQ>50th pctile	-0.017	-0.003	-0.002	-0.003	-0.006	-0.003
	(0.028)	(0.004)	(0.003)	(0.004)	(0.004)	(0.008)
%LGBTQ>80th pctile	-0.017	0.004	0.000	0.002	-0.000	-0.010
	(0.029)	(0.005)	(0.004)	(0.004)	(0.005)	(0.008)
%LGBTQ>20th pctile * LGBTQ	-0.005	0.006	0.000	0.007	-0.005	-0.006
	(0.030)	(0.013)	(0.012)	(0.013)	(0.018)	(0.024)
%LGBTQ>50th pctile * LGBTQ	-0.005	-0.004	-0.002	0.001	-0.004	-0.010
	(0.020)	(0.009)	(0.006)	(0.010)	(0.009)	(0.016)
%LGBTQ>80th pctile * LGBTQ	0.003	-0.002	-0.001	-0.006	0.004	0.011
	(0.021)	(0.008)	(0.005)	(0.008)	(0.010)	(0.013)
LGBTQ	0.029	-0.004	0.006	-0.004	0.006	0.010
	(0.024)	(0.011)	(0.011)	(0.011)	(0.017)	(0.022)
N	76,707	53,677	53,677	53,677	53,677	53,677
Cis/Het mean in <20th pctile	0.236	0.025	0.012	0.023	0.026	0.058
%LGBTQ>20th + %LGBTQ>20th × LGBTQ	-0.016	0.005	-0.004	0.003	-0.005	-0.012
%LGBTQ>50th + %LGBTQ>50th × LGBTQ	-0.022	-0.008	-0.004	-0.002	-0.010	-0.013
%LGBTQ>80th + %LGBTQ>80th × LGBTQ	-0.014	0.002	-0.001	-0.003	0.004	0.000
p, all bin-to-bin gap effects equal	0.962	0.835	0.987	0.679	0.837	0.626
p, all bin-to-bin direct effects equal	0.988	0.776	0.952	0.923	0.716	0.845

Note: This table shows the effects in the non-linear specification on indicators for whether students took the survey and or did not answer each question conditional on taking the survey. The specification and sample are otherwise the same as Appendix Table A21. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A16: Linear peer effects specification: Types of bullying

	Had rumors spread	Bullied online	Hit or pushed	Sexual jokes or comments	Teased about how look, talk	Teased about body
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
% LGBTQ	0.0004	-0.0001	0.0016	0.0010	0.0022	0.0017
	(0.0017)	(0.0008)	(0.0012)	(0.0016)	(0.0017)	(0.0023)
% LGBTQ × LGBTQ	-0.0094**	-0.0023	-0.0061	-0.0066	-0.0027	-0.0097
	(0.0045)	(0.0032)	(0.0043)	(0.0044)	(0.0047)	(0.0062)
% LGBTQ × Uncertain	-0.0057*	0.0013	0.0007	-0.0067**	-0.0077*	-0.0065
	(0.0034)	(0.0025)	(0.0028)	(0.0028)	(0.0040)	(0.0039)
% LGBTQ × No SOGI	0.0001	0.0005	-0.0016	-0.0001	0.0005	-0.0002
	(0.0021)	(0.0010)	(0.0017)	(0.0021)	(0.0019)	(0.0023)
Main effects:						
LGBTQ	0.1649***	0.0941***	0.1308***	0.1872***	0.1805***	0.1856***
	(0.0301)	(0.0229)	(0.0264)	(0.0299)	(0.0302)	(0.0413)
Uncertain	0.0747***	0.0276*	0.0327*	0.1009***	0.1099***	0.0959***
	(0.0209)	(0.0155)	(0.0171)	(0.0192)	(0.0248)	(0.0277)
No SOGI known	0.0111	0.0069	0.0246**	0.0249*	0.0184	-0.0020
	(0.0146)	(0.0074)	(0.0105)	(0.0132)	(0.0133)	(0.0157)
N	52,102	52,211	52,088	52,170	52,059	35,514
Mean: Cis/Het	0.2839	0.0651	0.1454	0.2294	0.2622	0.2505
%LGBTQ + %LGBTQ × LGBTQ	-0.0090*	-0.0024	-0.0045	-0.0057	-0.0004	-0.0080
	(0.0045)	(0.0033)	(0.0042)	(0.0045)	(0.0047)	(0.0065)
%LGBTQ + %LGBTQ × Uncertain	-0.0052*	0.0012	0.0022	-0.0057*	-0.0055	-0.0048
	(0.0031)	(0.0024)	(0.0027)	(0.0029)	(0.0037)	(0.0043)

Note: This table shows the results from the linear peer effects specification for the individual types of bullying outcomes. The outcomes, sample, and specification are the same as Table 5. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A17: Linear peer effects specification: Components of belonging

	Happy at school (SD)	Part of school (SD)	Safe at school (SD)	Accepted for being myself (SD)	Kids are nice (SD)	Close to people (SD)
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
% LGBTQ	-0.0046	-0.0040	-0.0114**	-0.0047	-0.0080*	0.0027
	(0.0045)	(0.0038)	(0.0050)	(0.0040)	(0.0047)	(0.0067)
% LGBTQ × LGBTQ	0.0107	0.0284**	0.0144	0.0475***	0.0146	0.0206
	(0.0116)	(0.0118)	(0.0094)	(0.0104)	(0.0097)	(0.0144)
% LGBTQ × Uncertain	0.0074	0.0001	-0.0089	-0.0029	0.0069	0.0048
	(0.0096)	(0.0076)	(0.0066)	(0.0085)	(0.0066)	(0.0083)
% LGBTQ × No SOGI	0.0079	0.0077*	0.0032	0.0030	0.0007	0.0065
	(0.0051)	(0.0043)	(0.0039)	(0.0047)	(0.0041)	(0.0056)
Main effects:						
LGBTQ	-0.1725**	-0.3390***	-0.2914***	-0.5999***	-0.2351***	-0.2265**
	(0.0733)	(0.0750)	(0.0615)	(0.0721)	(0.0634)	(0.0893)
Uncertain	-0.1533***	-0.1057**	-0.0427	-0.1912***	-0.1037**	-0.1389**
	(0.0572)	(0.0478)	(0.0419)	(0.0522)	(0.0435)	(0.0534)
No SOGI known	-0.0979***	-0.1015***	-0.0582**	-0.1183***	-0.0259	-0.0788*
	(0.0333)	(0.0302)	(0.0285)	(0.0319)	(0.0291)	(0.0408)
N	52,666	52,190	52,325	52,125	52,294	35,635
Mean: Cis/Het	0.0651	0.0482	0.0414	0.0780	0.0407	0.0502
%LGBTQ + %LGBTQ × LGBTQ	0.0061	0.0244**	0.0030	0.0428***	0.0067	0.0233
	(0.0115)	(0.0113)	(0.0101)	(0.0111)	(0.0108)	(0.0149)
%LGBTQ + %LGBTQ × Uncertain	0.0027	-0.0039	-0.0203**	-0.0076	-0.0011	0.0075
	(0.0095)	(0.0081)	(0.0085)	(0.0093)	(0.0072)	(0.0095)

Note: This table shows the results from the linear peer effects specification for the components of the school belonging index. The sample and specification are the same as Table 5. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A18: Correlation between cohort share with observed SOGI and other characteristics

	Percent with SOGI8 variable	
	(1)	(2)
Percent cohort in LAUSD 8th grade	0.80***	0.71***
	(0.05)	(0.09)
Cohort size (hundreds)	-0.66**	0.76
	(0.27)	(1.47)
Average percent cohort from same MS	0.28	0.08
	(0.18)	(0.32)
Percent female	0.08	0.04
	(0.06)	(0.11)
Percent Asian	0.11	0.33
	(0.07)	(0.48)
Percent Black	0.24**	0.57*
	(0.12)	(0.29)
Percent Hispanic	0.58***	0.58**
	(0.16)	(0.23)
Percent Native American	-0.30	1.47
	(1.10)	(0.98)
Percent home lang. Spanish	-0.30***	0.03
	(0.07)	(0.12)
Percent home lang. other non-Eng.	0.26	-0.23
	(0.16)	(0.32)
Percent special education	-0.25**	0.08
	(0.12)	(0.14)
Percent gifted	0.02	0.02
	(0.08)	(0.12)
Percent parents coll. deg.	0.03	0.13
	(0.10)	(0.14)
Percent missing parents coll. deg.	-0.13**	-0.02
	(0.06)	(0.07)
Percent poverty	-0.02	-0.18**
	(0.08)	(0.09)
Year FE	×	×
School FE		×
N cohorts	330	330
Average dependent variable	65.313	

Note: This table shows the correlation between the percent of students with observed 8th-grade SOGI and the percent of students with other demographic characteristics across all cohorts in the main peer effects sample. All independent and dependent "percent" variables range from 0 to 100. Column 1 regresses the percent of students in the cohort (school x 9th-grade year) who had a measure of SOGI in 8th grade on the percent with each other demographic or compositional characteristic of the cohort that is included as a control variable in the main specification—though in the main specification, the demographic cohort characteristics are calculated as leave-one-out measures and individual-level demographics are also included. Column 2 adds school fixed effects. Standard errors in parentheses are robust to heteroskedasticity. ***, **, and * indicate statistically significant correlations at the 1, 5, and 10 percent levels, respectively.

Table A19: Time versus age patterns in identifying as LGBTQ

	Percent identify as LGBTQ:				
	2016	2017	2018	2019	Slope (SE)
Grade 6	2.6	–	–	–	–
Grade 7	4.1	4.3	–	–	0.199 (0.297)
Grade 8	5.1	5.2	5.8	–	0.369 (0.186)
Grade 9	6.0	6.0	6.8	6.7	0.305 (0.113)
Grade 10	–	7.1	7.3	8.1	0.517 (0.177)
Grade 11	–	–	8.4	8.3	-0.104 (0.373)
Grade 12	–	–	–	9.6	–
Slope	1.10	0.93	0.82	0.88	
(SE)	(0.11)	(0.13)	(0.13)	(0.12)	

Note: This table shows the percent identifying as LGBTQ in the panel sample by year and grade among the sample that took the SES and were asked about their SOGI in all four years (N=42,337). The final column shows the estimated slope when regressing the percent LGBTQ on a linear year variable among students in the given grade. The final row shows the estimated slope when regressing the share LGBTQ on a linear grade variable in the given year. Standard errors for the estimated slope coefficients are clustered by school and in parentheses.

Table A20: 9th-grade survey non-response rates by 8th-grade reported SOGI, bullying, and belonging at school

	Cis/Het		LGBTQ		Uncertain		SOGI not known	
	%	N	%	N	%	N	%	N
Full sample	0.234	40,630	0.259	2,852	0.245	5,584	0.412	27,641
Bullied in 8th grade	0.240	26,759	0.268	2,350	0.246	4,162	–	
Not bullied in 8th grade	0.223	13,537	0.219	480	0.239	1,371	–	
Below median belonging in 8th grade	0.249	19,114	0.267	1,801	0.252	3,297	–	
Above median belonging in 8th grade	0.221	21,410	0.248	1,044	0.234	2,275	–	

Note: This table shows the share of students who are missing 9th-grade survey responses by their 8th-grade SOGI, whether they reported being bullied in 8th grade, and whether they reported below- or above-median levels of school belonging in 8th grade. The sample size in each cell is shown to the right of each estimate.

Table A21: Non-linear peer effects specification: Bullying, belonging, and perceived acceptance

	Bullied indicator	Total times bullied (SD)	School belonging (SD)	Adult support (SD)	LGBTQ accepted (SD)	Get along others (SD)
	(1)	(2)	(3)	(4)	(5)	(6)
%LGBTQ>20th pctile	0.018	0.038	-0.030	0.010	0.006	-0.019
	(0.012)	(0.025)	(0.026)	(0.027)	(0.028)	(0.020)
%LGBTQ>50th pctile	0.007	-0.003	-0.017	-0.023	-0.000	0.031*
	(0.010)	(0.017)	(0.020)	(0.023)	(0.022)	(0.018)
%LGBTQ>80th pctile	-0.017	-0.011	0.001	0.021	0.021	-0.005
	(0.011)	(0.020)	(0.029)	(0.032)	(0.023)	(0.026)
%LGBTQ>20th pctile * LGBTQ	-0.064	-0.129	0.282***	0.162	0.177	0.198**
	(0.039)	(0.160)	(0.105)	(0.106)	(0.109)	(0.086)
%LGBTQ>50th pctile * LGBTQ	0.009	-0.079	0.003	-0.028	0.041	-0.179***
	(0.020)	(0.075)	(0.067)	(0.069)	(0.077)	(0.060)
%LGBTQ>80th pctile * LGBTQ	-0.009	0.041	0.045	-0.012	-0.027	0.046
	(0.027)	(0.070)	(0.058)	(0.057)	(0.063)	(0.061)
LGBTQ	0.222***	0.581***	-0.509***	-0.264***	-0.294***	-0.132*
	(0.034)	(0.138)	(0.087)	(0.090)	(0.088)	(0.073)
N	51,805	52,399	52,812	52,814	52,033	51,748
Cis/Het mean in <20th pctile	0.493	-0.080	0.140	0.102	0.019	0.075
%LGBTQ>20th + %LGBTQ>20th × LGBTQ	-0.046	-0.091	0.252**	0.172	0.182	0.179**
%LGBTQ>50th + %LGBTQ>50th × LGBTQ	0.016	-0.083	-0.015	-0.051	0.041	-0.147**
%LGBTQ>80th + %LGBTQ>80th × LGBTQ	-0.026	0.030	0.046	0.009	-0.005	0.040
p, all bin-to-bin gap effects equal	0.361	0.423	0.117	0.327	0.230	0.009
p, all bin-to-bin direct effects equal	0.399	0.528	0.158	0.301	0.329	0.024

Note: This table shows the results from the non-linear peer effects specification for school experience outcomes. Outcomes and samples are the same as Table 5. The regression replaces the linear "% LGBTQ" variable with indicators for having a percent LGBTQ above the 20th percentile, above the 50th percentile, and above the 80th percentile but is otherwise the same as the linear specification. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A22: Non-linear peer effects specification: School attachment

	New school next year	Leaves district next year	Attendance rate	Chronically absent	Plan to go to college
	(1)	(2)	(3)	(4)	(5)
%LGBTQ>20th pctile	0.024	0.004	-0.001	0.015*	-0.002
	(0.019)	(0.006)	(0.002)	(0.008)	(0.012)
%LGBTQ>50th pctile	0.015	-0.005	0.001	-0.010	-0.007
	(0.017)	(0.005)	(0.002)	(0.007)	(0.008)
%LGBTQ>80th pctile	-0.031**	0.003	-0.001	0.015	0.005
	(0.014)	(0.010)	(0.003)	(0.011)	(0.011)
%LGBTQ>20th pctile * LGBTQ	0.001	-0.023	-0.002	0.008	0.017
	(0.027)	(0.027)	(0.006)	(0.033)	(0.037)
%LGBTQ>50th pctile * LGBTQ	-0.005	-0.020	-0.003	0.009	0.011
	(0.016)	(0.013)	(0.005)	(0.023)	(0.022)
%LGBTQ>80th pctile * LGBTQ	0.006	0.016	0.001	0.019	-0.021
	(0.019)	(0.014)	(0.005)	(0.031)	(0.025)
LGBTQ	0.017	0.044*	-0.001	0.007	-0.073**
	(0.023)	(0.024)	(0.005)	(0.028)	(0.032)
N	45,975	50,844	50,150	50,150	49,533
Cis/Het mean in <20th pctile	0.083	0.053	0.950	0.128	0.726
%LGBTQ>20th + %LGBTQ>20th × LGBTQ	0.025	-0.019	-0.002	0.023	0.015
%LGBTQ>50th + %LGBTQ>50th × LGBTQ	0.010	-0.025*	-0.002	-0.001	0.004
%LGBTQ>80th + %LGBTQ>80th × LGBTQ	-0.025	0.019	0.000	0.035	-0.016
p, all bin-to-bin gap effects equal	0.925	0.166	0.842	0.961	0.565
p, all bin-to-bin direct effects equal	0.317	0.105	0.954	0.751	0.733

Note: This table shows the results from the non-linear peer effects specification for school attachment outcomes. Outcomes and samples are the same as in Table 6. The regression replaces the linear "% LGBTQ" variable with indicators for having a share LGBTQ above the 20th percentile, above the 50th percentile, and above the 80th percentile but is otherwise the same as the linear specification. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table A23: Non-linear peer effects specification: SOGI in 9th grade

	LGBTQ	Uncertain	Cis/Het	Question Non-response
	(1)	(2)	(3)	(4)
%LGBTQ>20th pctile	-0.001	0.001	-0.000	-0.002
	(0.004)	(0.006)	(0.007)	(0.004)
%LGBTQ>50th pctile	-0.002	-0.007	0.009	-0.003
	(0.003)	(0.005)	(0.006)	(0.004)
%LGBTQ>80th pctile	-0.004	0.006	-0.002	0.001
	(0.004)	(0.006)	(0.007)	(0.005)
%LGBTQ>20th pctile * LGBTQ	-0.033	0.062	-0.029	0.004
	(0.051)	(0.042)	(0.041)	(0.013)
%LGBTQ>50th pctile * LGBTQ	0.030	-0.032	0.002	-0.001
	(0.028)	(0.026)	(0.026)	(0.008)
%LGBTQ>80th pctile * LGBTQ	0.023	0.022	-0.045*	-0.003
	(0.028)	(0.024)	(0.025)	(0.008)
LGBTQ	0.506***	0.068*	-0.574***	-0.003
	(0.042)	(0.035)	(0.035)	(0.012)
N	52,097	52,097	52,097	53,677
Cis/Het mean in <20th pctile	0.024	0.069	0.907	0.022
%LGBTQ>20th + %LGBTQ>20th × LGBTQ	-0.034	0.063	-0.029	0.002
%LGBTQ>50th + %LGBTQ>50th × LGBTQ	0.028	-0.039	0.011	-0.004
%LGBTQ>80th + %LGBTQ>80th × LGBTQ	0.019	0.028	-0.047*	-0.001
p, all bin-to-bin gap effects equal	0.614	0.226	0.518	0.887
p, all bin-to-bin direct effects equal	0.638	0.143	0.376	0.946

Note: This table shows the results from the non-linear peer effects specification for 9th-grade SOGI outcomes. Outcomes and samples are the same as in Table 7. The regression replaces the linear "% LGBTQ" variable with indicators for having a share LGBTQ above the 20th percentile, above the 50th percentile, and above the 80th percentile but is otherwise the same as the linear specification. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

B Survey administration details

Survey administration dates

The School Experience Survey was generally administered in the fall of each academic year during my sample period. The exception is the 2016-17 school year, when students took the survey between January 19th and February 7th. In 2017-18 the survey was administered from October 30 to November 17, in 2018-19 it was administered from October 29 to December 7, and in 2019-20 it was administered from October 28 to December 6. Following the 2020 school year (the end of my sample period), the survey began to be administered in the beginning of the spring semester.

Survey administration instructions

This section includes the reference guide shared with schools in LAUSD regarding the administration of the survey, followed by the instructions provided to teachers for administering the SES in their classroom. Instructions are included for the 2019-20 school year but are largely identical (except for dates) in each year.

TITLE: 2019-20 School Experience Survey

NUMBER: REF-5714.8

ISSUER: Oscar Lafarga, Executive Director
Office of Data and Accountability

DATE: September 30, 2019

ROUTING
Local District
Administrators
Principals
Other Site Administrators
School Administrative Assistant

PURPOSE: This Reference Guide provides instructions for schools and Local Districts for the 2019-20 School Experience Survey (SES) Fall administration. The SES is administered to students, parents and staff. It focuses on academics, school climate and student social-emotional learning. Survey administration will take place between **October 28 and December 6, 2019.**

MAJOR CHANGES: This Reference Guide replaces REF-5714.7, dated October 5, 2018. The dates for the survey schedule and delivery of paper surveys are updated to reflect the current school year. The following represent the major changes and action items:

- Schools must encourage all eligible students and parents to participate in the survey and must ensure that all administrators, staff, and teachers complete the survey.
- Schools must deliver completed, *paper-based* parent surveys to the Local Testing Centers on **December 11 and 12, 2019**. **Please do *NOT* use school mail**.
- **ACTION ITEMS**
  - ✓ **Identify SES Coordinator: No later than October 14, 2019**
  - ✓ **Administer SES: October 28 – December 6, 2019**
  - ✓ **Complete Administration of All Surveys: December 6, 2019**

INSTRUCTIONS:

I. BACKGROUND

The SES provides valuable information to stakeholders about LAUSD schools. Developed with input from parents, teachers, unions, and community-based organizations, the SES documents the perceptions of parents, staff, and grade 4-12 students about their experiences at their school. Respondents at all traditional Elementary, Middle, and High Schools, as well as at Early Education Centers, Primary Centers, Special Education Centers, Options Schools, and Affiliated Charter[1] Schools will complete surveys. Students and school staff must complete surveys online while parents have the option of

[1] Independent charters may opt to participate in the survey if they choose to do so.

completing either a paper survey *or* an online survey. The data gathered via this survey will be reported in detail for each school in early 2020 to allow schools to plan for the following school year. School-level results will be accessible via SES Dashboard as well as via a downloadable Excel data file. Survey data is also reported on the Local Control Accountability Plan (LCAP) Scorecard, the California School Dashboard (local indicators), and Unified Enrollment Site. This includes respondent participation rates on the survey as well as school-level aggregated results.

II. SCHOOL RESPONSIBILITIES

A. **PAPER**-based parent surveys: Schools must receive, distribute, collect, and return parent paper-based surveys.

Each of the following school types will receive boxes/envelopes containing paper-based School Experience Surveys for Parents:

- ***Early Education Centers***: Parents (1 per student household at each school*)
- ***Elementary Schools***: Parents (1 per student household at each school*)
- ***Secondary Schools***: Parents (1 per student household at each school*). Parent surveys will be delivered bundled by secondary students' homeroom teacher period.
- ***Span Schools***: Parents (1 per student household at each school level).

NOTE: Only* **ONE *paper-based parent survey is printed for each household per school. If multiple students attending a particular school share a household, the parent survey is printed for and distributed to the* ***oldest child only.***

B. **ONLINE** Surveys: Schools must administer student and staff surveys online **no later than the last day of the SES window** (Friday, December 6, 2019). *If parents opt to take the online survey instead of the paper-based survey, they too must complete their survey online no later than December 6, 2019.*

Student Surveys: Students in grades 4 through 12 will click the appropriate student survey link at http://achieve.lausd.net/schoolexperiencesurvey and login to the survey by:

1. Selecting their school's Local District (e.g., South)
2. Entering their 10-digit LAUSD ID.

Note: students who enrolled after September 20, 2019, should not participate in the survey. Their 10-digit LAUSD ID will not be recognized and they will not be able to log into the survey.

Schools should ensure that enough time with devices is scheduled in advance so that all eligible students can complete their online survey before the end of the survey window. Schools can choose when to administer online surveys during the school day.

Staff Surveys: School staff who work at least 50% FTE (Teachers, Principals, and out of Classroom Personnel) also complete their surveys online by going to http://achieve.lausd.net/schoolexperiencesurvey and clicking the appropriate link to access the Staff Survey. Before beginning the survey, staff members must:

1. Select their school from a drop-down menu
2. Select their role (Teacher, Principal, SAA, Counselor, and Other Staff) from a drop-down menu.

Parent ONLINE Surveys: As noted above, parents have the option of completing their survey *online if they prefer to do so*. It is highly recommended that schools encourage parents to complete surveys online instead of taking the paper-based survey to reduce the burden of having to collect and return parent surveys to the Testing Centers. Schools can monitor online parent, student, and staff participation rates during the survey window. Any parent who opts to complete the survey online should:

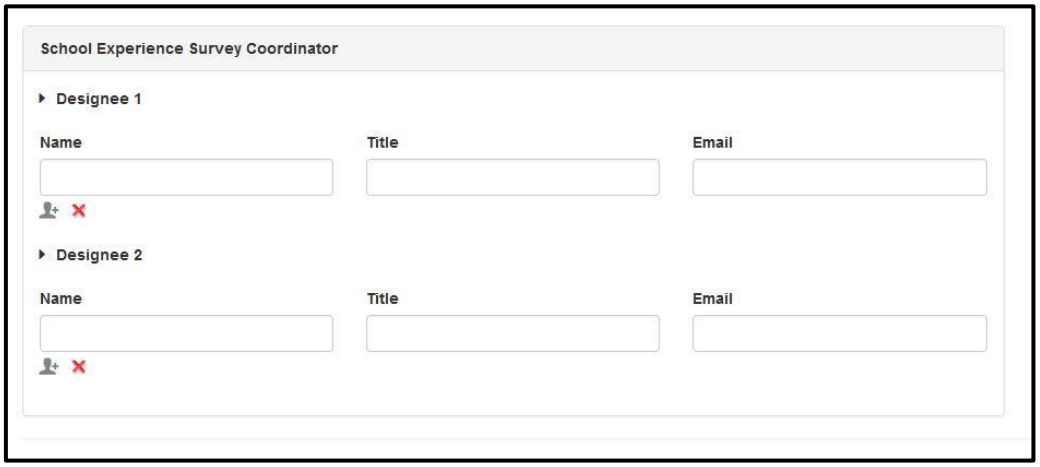
1. Go to http://achieve.lausd.net/schoolexperiencesurvey
2. Input the 10-digit parent code found on the top right corner of his or her parent letter.

Schools with the capacity to do so should encourage parents to use the school computer lab or parent center computers during parent/teacher conferences to complete their survey while on campus.

Confidentiality of Survey Data: It should be noted that all survey results are confidential, and no identifiable data are ever shared with school sites or third parties. Only LAUSD's Research and Reporting Branch staff (not school site staff) can access the full survey data and must adhere to strict data privacy protocols. Results are only shared in a de-identified format and are publicly reported as summary data only if there is a sample size of at least 11 individuals (students, parents, or staff).

Survey Instructions: Instructions for survey administration will be inside the boxes received by schools during the week of October 21st. The package will contain instructions for administering student surveys online, distributing and administering the parent surveys, envelopes for collecting completed parent paper-based surveys, and instructions for delivering the parent surveys to the Testing Centers. **If surveys have not arrived at your school by October 23rd, please contact LAUSD's School Experience Survey team at (213) 241-5600 and someone will assist you.**

C. School Experience Survey Coordinator: The principal should designate a staff member responsible for distributing, administering, collecting, and returning School Experience Survey materials. **Please complete the following information in the Principal Portal by October 14, 2019.** Look for the "School Experience Survey Coordinator" section located under the Certification menu:



D. Communication: Communicate with your school community to ensure all respondents (students, staff, and parents) know about the survey and understand why it is important to complete the survey. Make sure all respondents know the deadline for completing the survey and make sure parents, in particular, know when they must return their paper-based survey to your school so that you have time to return all parent surveys to the Testing Center (see Section III below for details).

E. Recommendations for a successful SES administration: Schools with high response rates for surveys in past years engaged in a number of practices that could be helpful to your school as you administer these surveys. The following suggestions are based on these best practices:

- ☐ Announce the Parent Survey at staff and parent meetings (e.g., ELAC), and write announcements in parent newsletters, bulletins, and on the school webpage.
- ☐ Include a reminder about the survey when communicating to parents. Send a ConnectEd message on the day the surveys are sent home encouraging them to complete the survey.
- ☐ Set a date for parents to return the survey to the school. Follow up with another ConnectEd call on the day before they are due reminding them about how important their voices are and urging them to complete and return their surveys.
- ☐ Have your parent center and/or computer lab open for parents who wish to take the survey online during parent conferences.
- ☐ Administer all student surveys on the same day. Select a day known to have high student and staff attendance.
- ☐ Have your principal send an email invitation to staff including the survey link and a clear deadline for completion. To verify completion, ask staff to print the "thank you" page of the survey which shows after clicking submit.
- ☐ Ensure that the front office staff is prepared to answer questions about the survey, especially from parents.

- ☐ Offer incentives to students for returning the parent surveys. If parents complete the survey online, they can print the thank you page displayed after they hit the submit button to verify completion.
- ☐ Remind staff regularly about the surveys, for example by writing messages on the office whiteboard and in weekly bulletins.
- ☐ Invite students, parents and staff to ask questions about the survey, making sure you take their opinions seriously.

F. Protect the confidentiality of surveys.

It is imperative that everyone involved in the handling of completed surveys take every precaution to ensure that a respondent's answers are not viewed by anyone other than the respondent. Care should be taken by leaders at the school, including the appointed coordinator of the survey administration, to make sure finished parent surveys are sealed in their envelopes, not opened, and not tampered with.

G. Deliver all completed parent paper-based surveys to your Testing Center.

Make sure that all completed parent surveys are placed in the same boxes/envelopes used to deliver the surveys to your school. If you have students with disabilities who cannot take the survey, please email the total ***number*** of students who did not take the survey due to their disabilities to SchoolExperienceSurvey@lausd.net along with your school name and location code. These counts will be removed from your totals before response rates are calculated. Surveys not completed should be shredded or similarly destroyed to protect confidentiality.

Although schools must NOT open the sealed parent envelopes, please be aware that blank surveys will not be counted as "completed" in your response rates.

Deliver the boxes to your regular Testing Center. You will be required to use your single sign-on to indicate that you have delivered the surveys. Your Local Testing Centers will be open for dropping off surveys from 8:00 am to 4:00 pm on December 11th and 12th, 2019. If you are an Independent Charter, please deliver your surveys to the Testing Center nearest to your school. **NOTE:** Only the Central Testing Center is staffed year-round.

The Central Testing Center will also be open for deliveries from all schools on December 13th from 8:00 am to 4:00 pm.

NOTE: NO SURVEY MATERIALS WILL BE ACCEPTED AFTER DECEMBER 13, 2019. SCHOOLS MUST ENSURE ALL SURVEYS ARE RETURNED BY THIS DEADLINE.

III. 2019-20 TESTING CENTER LOCATIONS

Listed below are the Testing Center locations for delivery of SES materials.

LOCATED IN	LOCATION	PHONE NUMBER AND DROP OFF DAYS/TIMES
LOCAL DISTRICT EAST	**CENTRAL TESTING CENTER (C)** **2151 North Soto Street** **Los Angeles, CA 90032** (Intersection of San Bernardino Freeway and Soto Street; north on Soto Street. Enter into **Local District-East** complex.)	PHONE: (323) 224-2408 Open for dropping off surveys from 8:00 am to 4:00 pm on **December 11 and 12, 2019.** **Also open for deliveries on December 13th from 8:00 am to 4:00 pm.*
LOCAL DISTRICT SOUTH	**SOUTH TESTING CENTER (S)** **Banneker Special Education Center** **14024 South San Pedro Street** **Los Angeles, CA 90061** (Intersection Rosecrans and Main; east on Rosecrans ¼ mile to San Pedro St., left 1/10 mile.)	PHONE: (310) 366-7358 Open for dropping off surveys from 8:00 am to 4:00 pm on **December 11 and 12, 2019.**
LOCAL DISTRICT NORTHWEST	**VALLEY TESTING CENTER (V)** **Mulholland Middle School** **17120 Vanowen Street** **Lake Balboa, CA 91406** **Room 74-75** (Intersection of Victory and Balboa, north on Balboa to Vanowen; Vanowen left one block)	PHONE: (818) 609-2591 Open for dropping off surveys from 8:00 am to 4:00 pm on **December 11 and 12, 2019.**
LOCAL DISTRICT WEST	**WEST TESTING CENTER (W)** **Charnock Road Elementary School** **11133 Charnock Road, Room 32** **Los Angeles, CA 90034** (Intersection of Venice Blvd and Sepulveda Blvd; north on Sepulveda Blvd for ¼ mile)	PHONE: (310) 836-1578 Open for dropping off surveys from 8:00 am to 4:00 pm on **December 11 and 12, 2019.**

RELATED RESOURCES:

- School Experience Survey website: http://achieve.lausd.net/SchoolExperienceSurvey
- Testing Center website: http://achieve.lausd.net/testing
- Testing Center Assignments: MEM-6901.2 Testing Center Assignments for 2019-20

ASSISTANCE: For assistance, contact the School Experience Survey team at (213) 241-5600 or email SchoolExperienceSurvey@lausd.net

CLASSROOM ADMINISTRATION INSTRUCTIONS
ONLINE SCHOOL EXPERIENCE SURVEY FOR TEACHERS AND STUDENTS

Thank you for taking time to administer the School Experience Survey in your classroom and for taking the School Experience Survey yourself. We look forward to providing useful information about your school in early 2020 when the results are published. If you have questions, contact us at SchoolExperienceSurvey@lausd.net or 213-241-5600.

Teacher Survey Instructions

Please complete your School Experience Survey online by clicking the appropriate link at https://achieve.lausd.net/schoolexperiencesurvey. The survey is completely anonymous and takes around 30 minutes to complete.

Student Survey Instructions

Student surveys may only be completed online. Students in grades 4 through 12 will click the appropriate student survey link at https://achieve.lausd.net/schoolexperiencesurvey.

Teachers should budget about 45 minutes to obtain and distribute 10-digit student IDs, and to administer the survey. The student survey will take roughly 30 minutes to complete online. The survey is compatible with smart phones, iPads, Chromebooks, laptops, and desktops, etc.

Step-by-Step Instructions for Administering Student Surveys

1. Schedule time to administer student surveys online by using devices in class or in a computer lab.

   Students will need their 10-digit LAUSD ID for login. Print out each student's 10-digit LAUSD ID from the MiSiS Class Roster Five Column Report. Visit the MiSiS job aide at https://achieve.lausd.net/Page/6104 if you need help with the report.

2. **ON THE DAY OF SURVEY ADMINISTRATION READ THESE INSTRUCTIONS ALOUD:**

   "*This survey gives you a chance to tell LAUSD what you think of your school and the results will be used to help make school improvements. Answer each question honestly. I will not see your individual answers and neither will anyone else at the school. Using a mouse or the touchpad, select the response that best matches your experience AT THIS SCHOOL THIS YEAR.*

   You have the right to stop this survey whenever you wish. You do not have to answer any question that makes you feel uncomfortable. If you are unsure of an answer, make your best guess or leave the answer blank. When you finish answering the last question, hit the "submit" button. Remember: This is not a test and there are no right or wrong answers. You may now begin."

3. Have students go to the website https://achieve.lausd.net/schoolexperiencesurvey and click on the link for the Student SES. Students have the option of taking either the English or Spanish version by clicking on the drop down language menu on the survey.

4. Students will be prompted for their 10-digit LAUSD ID. Make sure students enter their IDs exactly as they appear with capital letters/numbers and no spaces.

5. **IF A STUDENT CANNOT LOG IN:** This means that the student was not included in the roster used to create passwords for the survey. Rosters were pulled September 20, 2019. New students cannot take the survey because they do not have enough experience with their current school. A student who cannot log in will not take the survey and this will not impact his or her school's response rate.

CLASSROOM ADMINISTRATION SUPPORTS
FOR ONLINE SCHOOL EXPERIENCE SURVEY FOR STUDENTS

The following supports will assist teachers to make sure all their students understand the questions that are being asked on the School Experience Survey. If teachers believe that some of their students will find the questions or the vocabulary challenging, please implement the following supports. If you have questions, contact us at SchoolExperienceSurvey@lausd.net or 213-241-5600.

SUPPORTS FOR STUDENT SURVEY

Student surveys may only be completed online. Students in grades 4 through 12 will click the appropriate student survey link at https://achieve.lausd.net/schoolexperiencesurvey.

The entire survey can be found on the School Experience Survey website at https://achieve.lausd.net/schoolexperiencesurvey. The survey questions can be found under Quick Links > Survey Questions. If necessary, please read the entire survey to your students the same day you administer the survey, but before students begin. You may read the survey in English and Spanish, if necessary.

VOCABULARY

Here is a list of vocabulary words and definitions to be used if students do not understand a word. Please make sure you use the exact definition we give you.

 # 20. LGBTQ (from Defining LGBTQ Words for Children @ http://www.welcomingschools.org/resources/definitions/youth-definitions/)

Lesbian – People who love people of the same gender. Two women.
Gay - People who love people of the same gender.
Bisexual - People who love people of two genders.
Trans-gender - When your gender identity (how you feel) is different than what doctors/midwives assigned to you when you were born (girl/boy or sex assigned at birth).
Queer - People use this word as a way to identify with and celebrate people of all gender identities and all the ways people love each other. When used in a mean way, it is a word that hurts.

Vocabulary word	Spanish translation	Definition
1. accepted	**1. aceptado**	**1.** a good opinion of someone or something
2. accomplishment	**2. logros**	**2.** something done successfully
3. achieving	**3. logrando**	**3.** to get or reach (something) by working hard
4. activities	**4. actividades**	**4.** actions of a particular kind
5. assignment	**5. asignaciones**	**5.** a job or duty that is given to someone
6. attention	**6. atención**	**6.** carefully thinking about, listening to, or watching someone or something
7. bully	**7. bully**	**7.** someone who frightens, hurts, or threatens smaller or weaker people
8. capable	**8. capaz**	**8.** able to do something
9. challenging	**9. desafiante**	**9.** a difficult task or problem**:** something that is hard to do
10. compliment	**10. elogio**	**10.** saying something good about someone or something
11. criticize	**11. criticar**	**11.** to express disapproval of (someone or something)
12. decision	**12. decisión**	**12.** a choice that you make about something after thinking about it
13. difficult	**13. difícil**	**13.** not easy**:** takes much work or skill to do or make
14. directions	**14. direcciones**	**14.** a statement that tells a person what to do and how to do it**:** an order or instruction
15. disagreed	**15. desacuerdo**	**15.** to have a different opinion**:** to fail to agree
16. distractions.	**16. distracciones.**	**16.** something that makes it difficult to think or pay attention**.**
17. evidence	**17. evidencia**	**17.** something which shows that something else exists or is true.
18. extra-curricular	**18. extra curricular**	**18.** used to describe extra activities (like sports) that can be done by the students in a school but that are not part of the regular schedule of classes
19. government	**19. gobierno**	**19.** the group of people who control and make decisions for a country, state, etc.
20. LGBTQ	**20. LGBTQ**	**20.** LGBTQ (See below)
21. naturally	**21. naturalmente**	**21.** used to describe something that happens or exists by itself without being controlled or changed by someone
22. neighborhood	**22. barrio**	**22.** a section of a town or city
23. organizations	**23. organizaciones**	**23.** a company, business, club, etc., that is formed for a particular purpose
24. participate	**24. participar**	**24.** to take part with others in doing something
25. remembered	**25. recordado**	**25.** to think of (something or someone from the past) again
26. respectful	**26. respetuoso**	**26.** acting like someone or something is good, valuable, important, etc.
27. information	**27. información**	**27.** facts or details about something
28. conclusions	**28. conclusiones**	**28.** a final decision or judgment
29. supportive	**29. dar apoyo**	**29.** giving help or encouragement to someone
30. inviting	**30. invitando**	**30.** attractive in a way that makes you want to do something, go somewhere, be near someone, etc.

C Description of peer effects sample restriction

I make several restrictions to the sample in the peer effects analysis based on school and cohort characteristics to support the validity of the empirical strategy. Appendix Figure A1 shows how these restrictions affect the number of schools, cohorts, and students included in the analysis. Appendix D.1 shows that the main results are generally not sensitive to these decisions.

First, I restrict the sample to 185 traditional high schools—meaning that they first enroll students in 9th grade—that existed before the 2015-16 school year. Thus, variation in the share of students who identified as LGBTQ in 8th grade results from the shuffling of students into new high schools. These schools enroll 92,769 students in 9th grade from 2018-2020 (3,344 of whom identified as LGBTQ in 8th grade), 63,486 (2,473) of whom take the SES in 9th grade.

Second, to limit endogenous school formation, expansion, or contraction, I drop small schools, schools with extremely large changes in enrollment, and schools that do not exist in every year of the sample period (following the literature, e.g. Lavy and Schlosser 2011; Lavy et al. 2012; Cools et al. 2022). This includes schools with a cohort with fewer than 5 students, schools that didn't exist in all three years of the sample, and schools with any change in enrollment of 80 percent or more between consecutive years (dropping 46 schools enrolling 2,381 students). These three factors are highly correlated.

Third, I drop 7 Visual and Performing Arts (VAPA) magnet schools from the main analysis sample, as they are large outliers in terms of the share LGBTQ and LGBTQ acceptance, and LAUSD staff report that students sort into these schools accordingly. This should not affect the empirical strategy unless students are sorting into particular *cohorts* at those schools, but are dropped in an abundance of caution. The results are not sensitive to this decision. While this restriction drops 3.6 percent of students overall, it drops 6 percent of students who identified as LGBTQ in 8th grade.

Fourth, I drop cohorts in which the share of students with reported 8th-grade SOGI is particularly small. In the main sample, I drop cohorts in which less than 35 percent of students have data on their 8th-grade SOGI, either because they are new to the district, did not take the SES, or did not answer the SOGI question. This restriction drops 55 cohorts out of the 396 remaining after the previous restrictions.

Fifth, I drop 7 outlier cohorts that meet all other criteria but in which more than 15 percent of students identified as LGBTQ in 8th grade—the 99th percentile. Due to the reliance on within-school, cross-cohort variation in the empirical strategy, a final 5 cohorts are dropped because only one cohort remains in a given school after these cohort-based restrictions.

D Additional robustness exercises

D.1 Specification choices to support the quasi-random exposure assumption

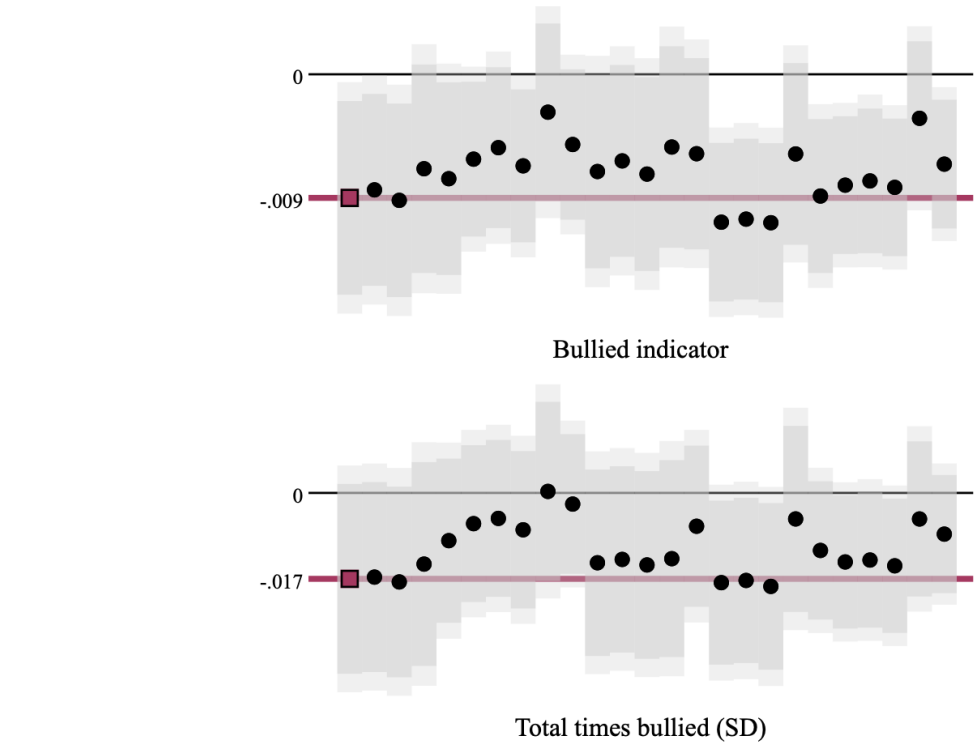
Appendix Figures D1-D7 present the key coefficients underlying the main results and show that they are very robust to changing the choice of control variables and sample definitions. These variations help support assumptions that underly the causal interpretation of the analysis and show that results do not depend on specific researcher decisions. I focus on the main specification presented in the paper for each outcome: LGBTQ-Cis/Het gaps for all educational outcomes, and effects on LGBTQ students for the mechanism outcomes and 9th-grade SOGI. I focus on the linear specification for brevity, except when the effects were highly non-linear. Then, I show one chart for the effect of moving from the lowest to second-lowest bin (less than 3.8 percent LGBTQ to 3.8-5.5 percent LGBTQ) and a second chart for the effect of moving from the second lowest to second highest bin (3.8-5.5 to 5.5-8 percent).

Choice of controls. The results are remarkably robust to the inclusion or exclusion of various controls. First, adding 8th-grade-school fixed effects does not affect the estimated coefficients, though it weakens statistical power. Second, removing controls for all other other cohort demographics (e.g. share of each race/ethnicity, share female, average 8th grade test scores, etc.) does not effect the estimated coefficients, nor does interacting all cohort demographic characteristics with students' own SOGI. Lastly, when available, I add a lagged value of the dependent variable as a control. This specification estimates the effects of peers on *changes* in school experiences or attachment rather than levels. The only affected variable is the effect on the *frequency* of bullying; the estimated coefficients fall by about half.

Sample restrictions. To support the assumption that within-school, cross-cohort variation in the share LGBTQ are quasi-random I make several sample restrictions. First, following the literature, I drop schools that are very small or have large enrollment changes from year-to-year (e.g. Lavy and Schlosser, 2011; Lavy et al., 2012; Cools et al., 2022). I also drop Visual and Performing Arts magnet schools, which have a reputation for being particularly LGBTQ-friendly, and cohorts in which more than 15 percent of students identify as LGBTQ, as these are large outliers. Only the latter affects any coefficients; when including these outlier cohorts the magnitude of the effects on bullying and belonging are reduced.

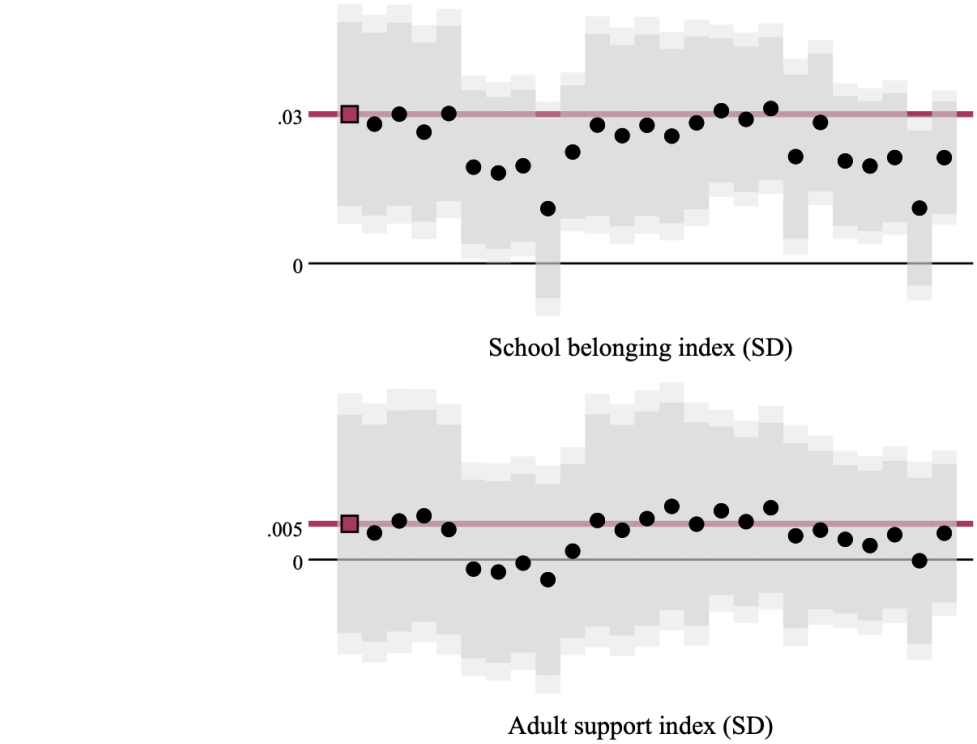
The main results are also unchanged if I drop one school at a time from the main sample. Appendix Figures D8, D9, and D10 plot the distribution of these 117 estimated coefficients, which are tightly clustered around the main estimates.

Figure D1: Specification chart: Effects on LGBTQ-Cis/Het **gaps** in bullying in the linear specification



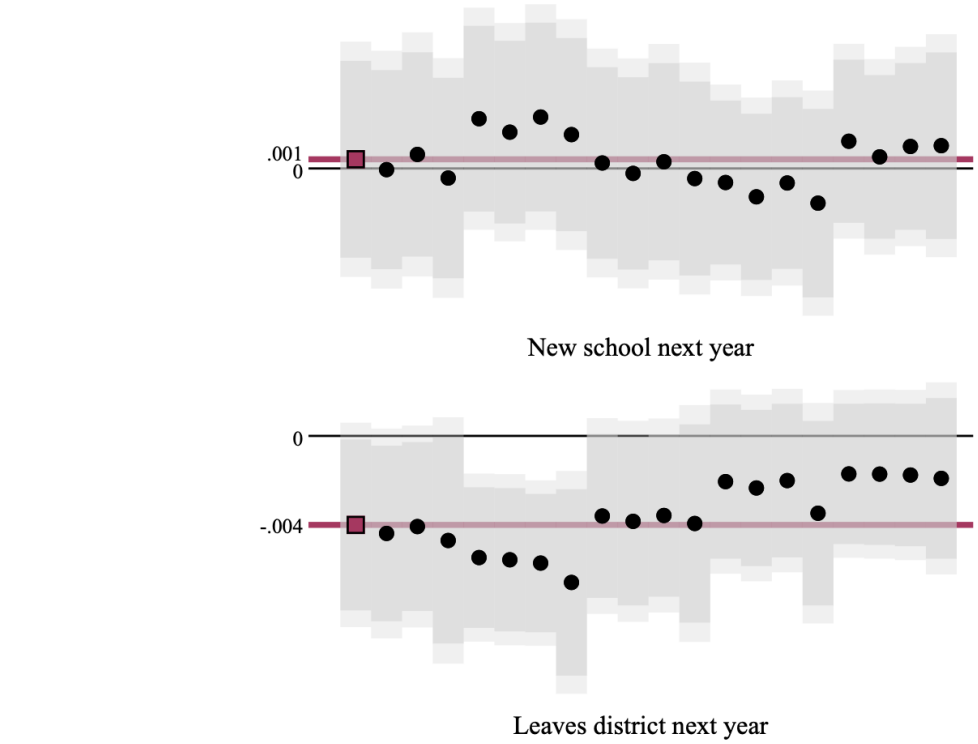
Note: This figure plots the estimated effect of having 1pp more LGBTQ peers on LGBTQ-Cis/Het **gaps** in bullying outcomes**,** estimated in the linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The main estimates are the coefficients on the "% LGBTQ x LGBTQ" variable in columns 1 and 2 of Table 5. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D2: Specification chart: Effects on LGBTQ-Cis/Het **gaps** in belonging in the linear specification



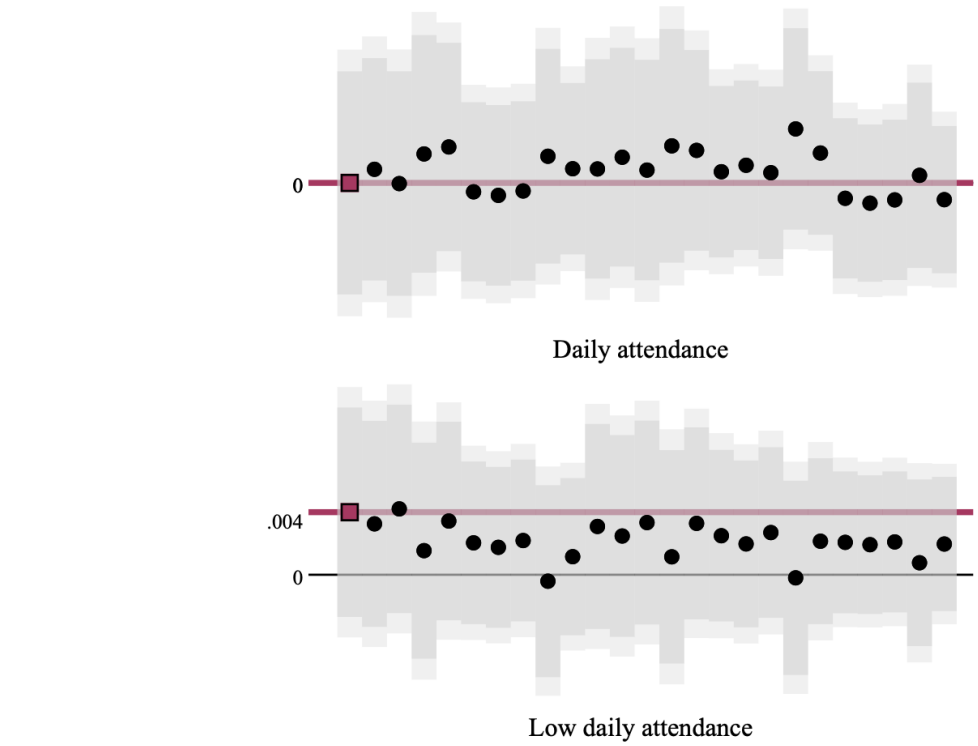
Note: This figure plots the estimated effect of having 1pp more LGBTQ peers on LGBTQ-Cis/Het **gaps** in school belonging and adult support**,** estimated in the linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The main estimates are the coefficients on the "% LGBTQ x LGBTQ" variable in columns 3 and 4 of Table 5. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D3: Specification chart: Effects on LGBTQ-Cis/Het **gaps** in district and school retention in the linear specification



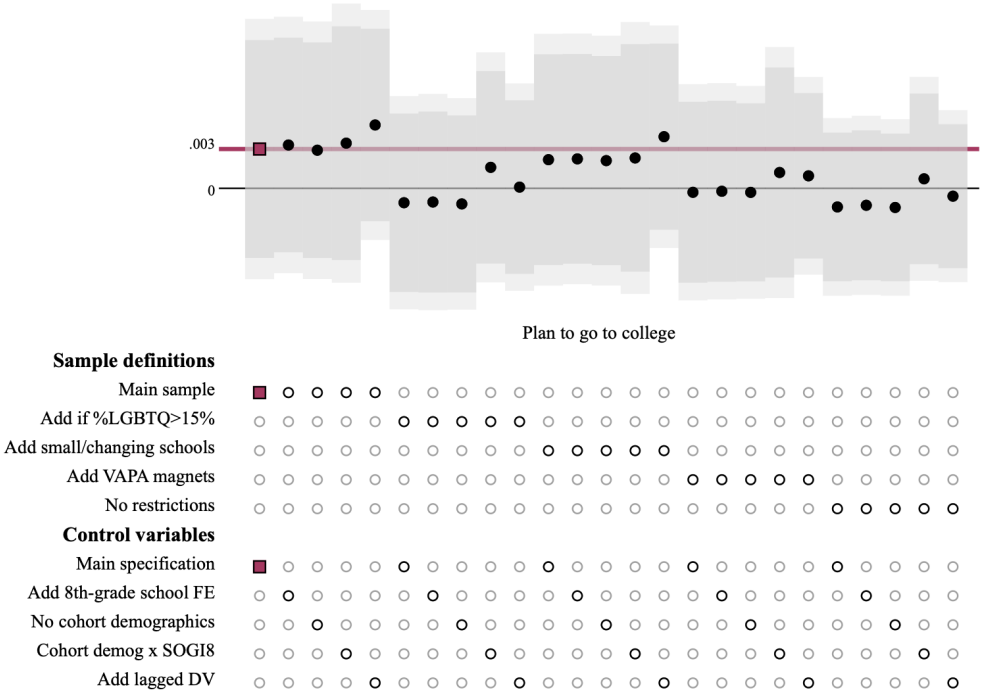
Note: This figure plots the estimated effect of having 1pp more LGBTQ peers on LGBTQ-Cis/Het **gaps** in school and district retention**,** estimated in the linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The main estimates are the coefficients on the "% LGBTQ x LGBTQ" variable in columns 3 and 4 of Table 6. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D4: Specification chart: Effects on LGBTQ-Cis/Het **gaps** in attendance in the linear specification



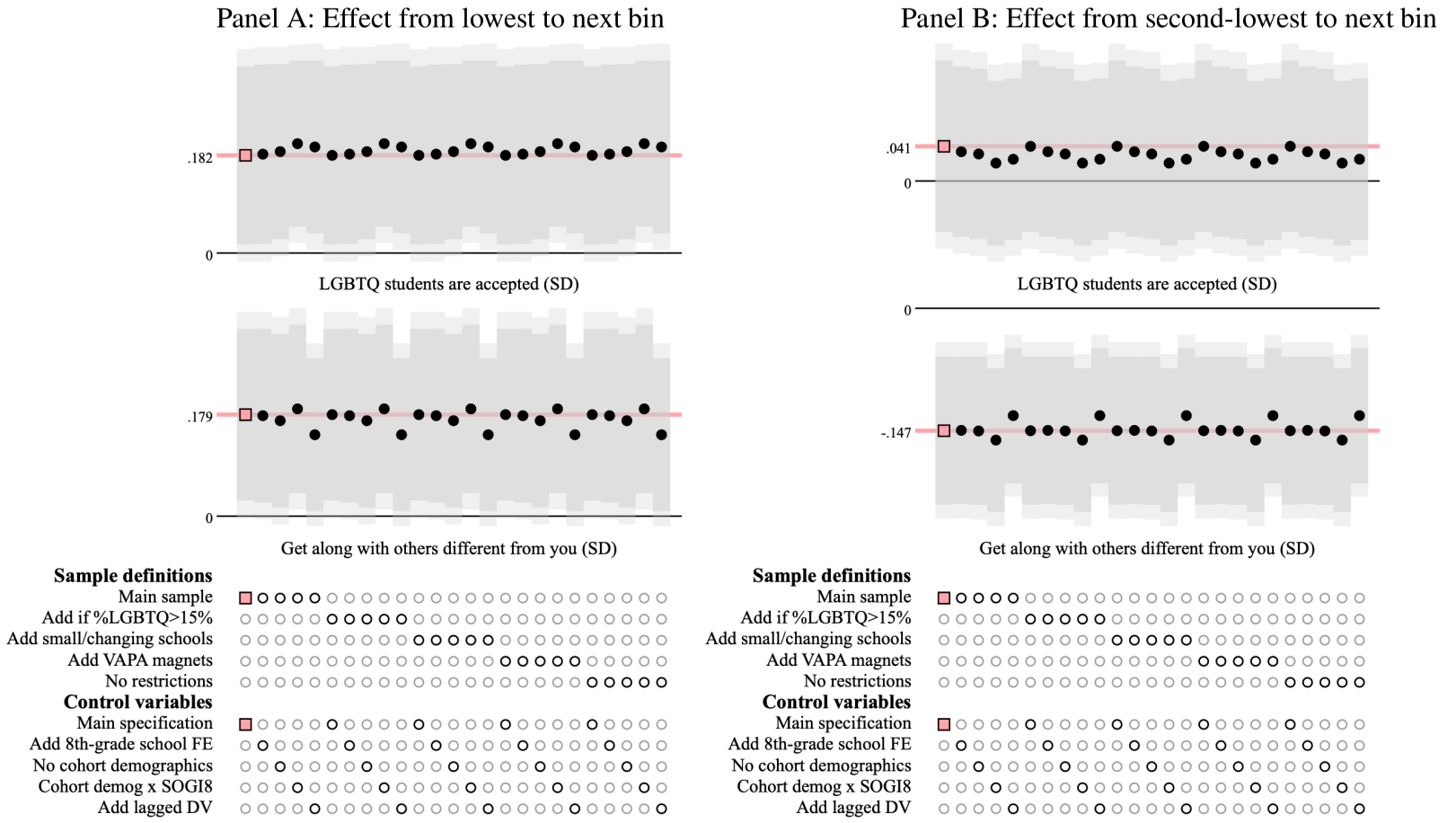
Note: This figure plots the estimated effect of having 1pp more LGBTQ peers on LGBTQ-Cis/Het **gaps** in attendance outcomes**,** estimated in the linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The main estimates are the coefficients on the "% LGBTQ x LGBTQ" variable in columns 1 and 2 of Table 6. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D5: Specification chart: Effects on LGBTQ-Cis/Het **gaps** in intended educational attainment in the linear specification



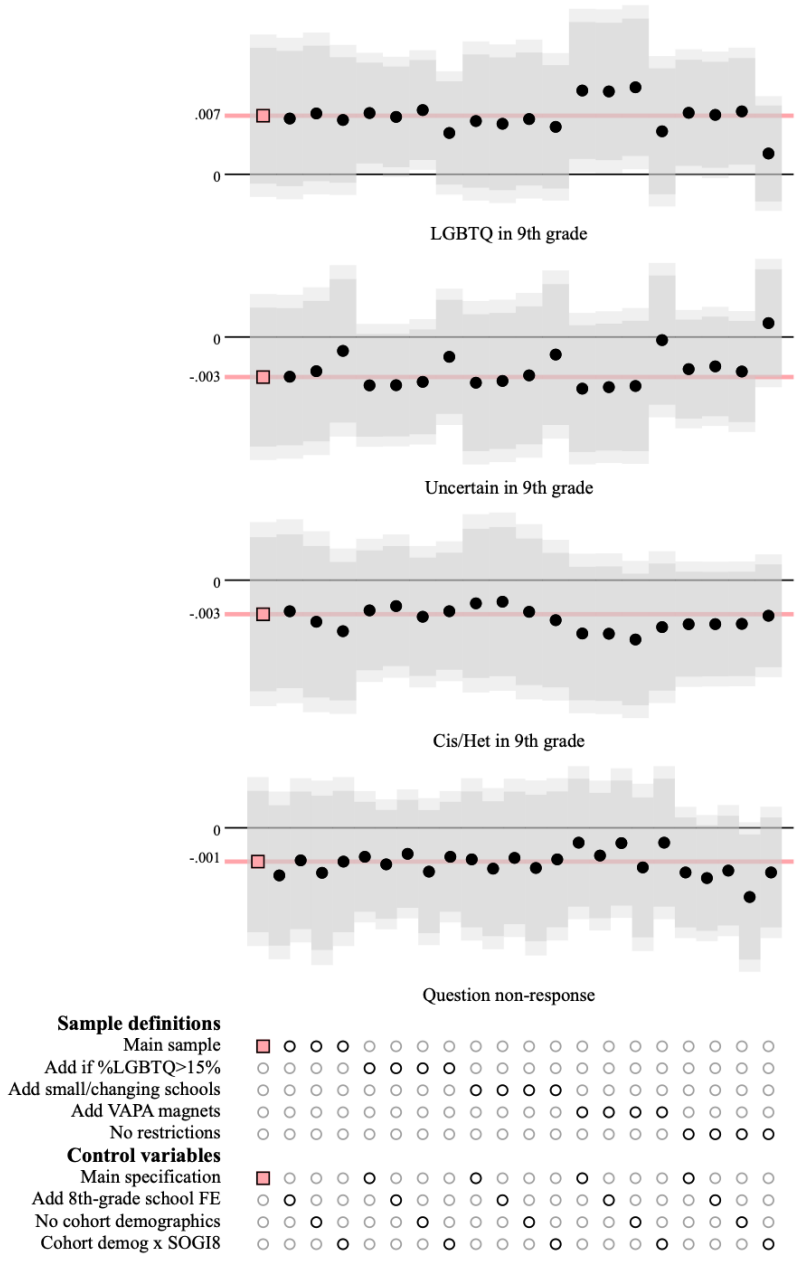
Note: This figure plots the estimated effect of having more LGBTQ peers on LGBTQ-Cis/Het **gaps** in intended educational attainment**,** estimated in the linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The main estimates are the coefficients on the "% LGBTQ x LGBTQ" variable in columns 5 and 6 of Table 6. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D6: Specification chart: Effects on LGBTQ students' perceptions of LGBTQ acceptance and inter-group contact in the non-linear specification



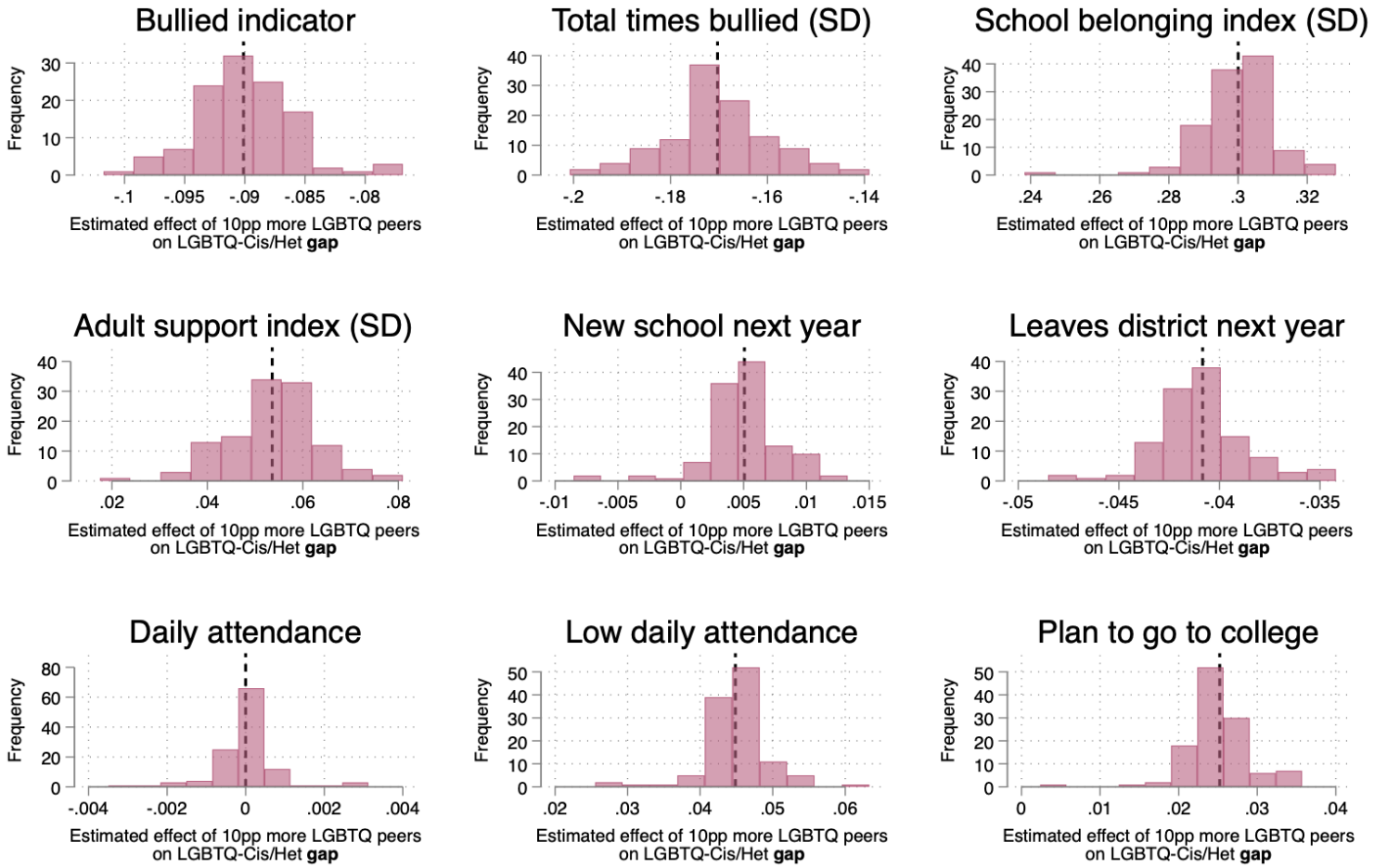
Note: This figure plots the estimated effect of having more LGBTQ peers on **LGBTQ students'** perceptions of LGBTQ acceptance and inter-group contact**,** estimated in the non-linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The chart on the left shows the effect of moving from a cohort with less than 3.8 percent LGBTQ to one with 3.8-5.5 percent LGBTQ. The chart on the right shows the effect of moving from a cohort with 3.8-5.5 percent LGBTQ to one with 5.5-8 percent LGBTQ. The main estimates are the differences between bins between LGBTQ and Cis/Het students in Figure 5. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D7: Specification chart: Effects on LGBTQ students' 9th-grade reported SOGI in the linear specification



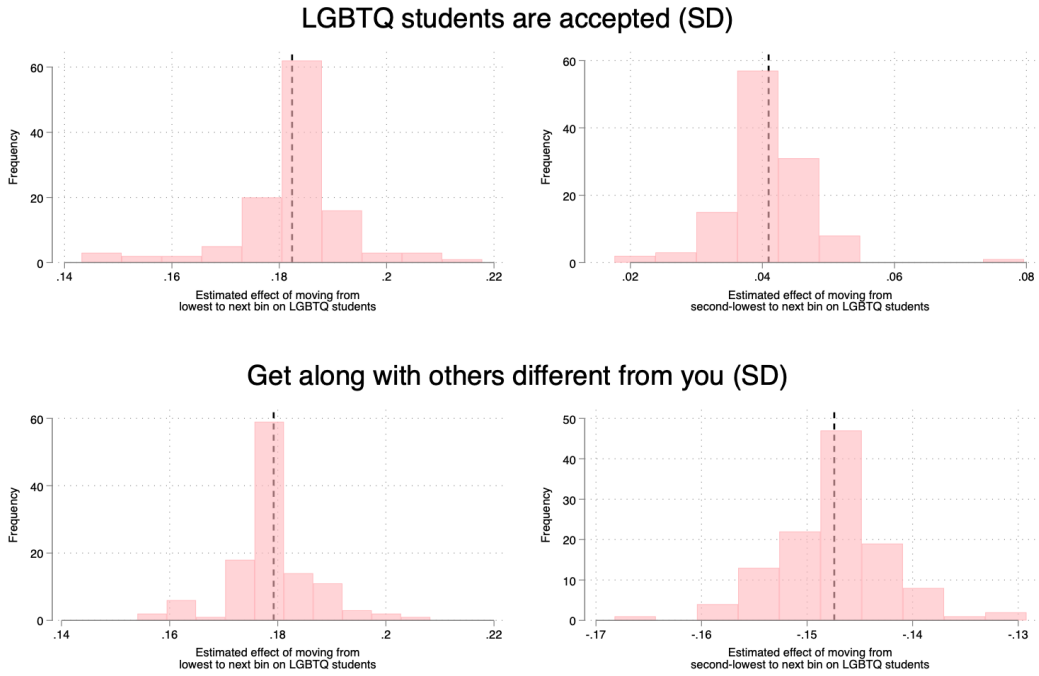
Note: This figure plots the estimated effect of having 1pp more LGBTQ students on **LGBTQ students'** 9th-grade SOGI, estimated in the linear specification when iterating over different choices of sample definitions and control variables for the school experience outcomes. The main estimates are those at the bottom of Table 7. 95 and 90 percent confidence intervals are shown in light and dark bars, respectively, and estimated with standard errors clustered by school.

Figure D8: Histogram of estimated effects when dropping one school at a time: School experiences and attachment



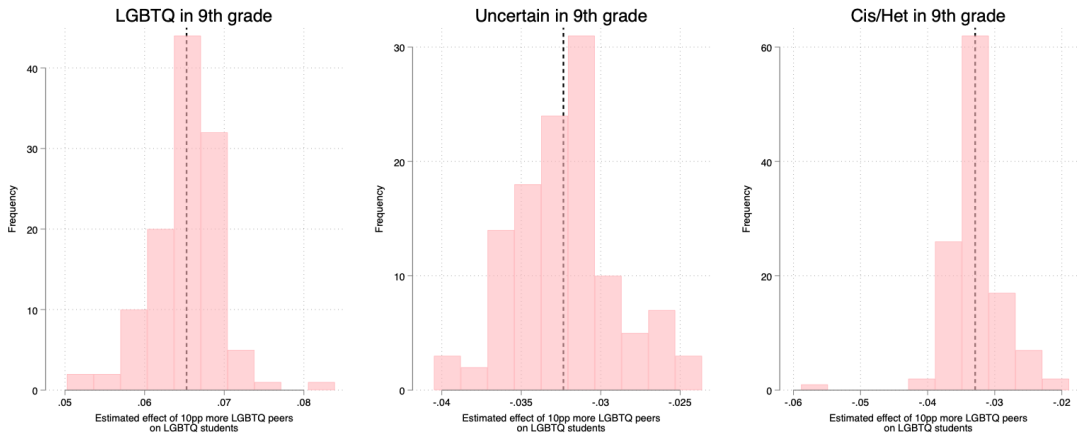
Note: This figure plots the distribution of the estimated effects on the LGBTQ-Cis/Het gap in school experience and attachment outcomes when the linear specification is estimated 117 times, iteratively dropping each school in the main sample. The main estimates are shown in vertical dashed lines.

Figure D9: Histogram of estimated effects when dropping one school at a time: Perceived acceptance and inter-group contact



Note: This figure plots the distribution of the estimated effects on LGBTQ students' perceptions of LGBTQ acceptance and reported ability to get along well with those who are different from themselves when the non- linear specification is estimated 117 times, iteratively dropping each school in the main sample. The first column shows the effect of moving from the bottom quintile to the 20-50th percentile; the second column shows the effect of moving from the 20-50th percentile to the 50-80th percentile. The main estimates are shown in vertical dashed lines.

Figure D10: Histogram of estimated effects when dropping one school at a time: 9th-grade SOGI



Note: This figure plots the distribution of the estimated effects on LGBTQ students' 9th-grade SOGI when the linear specification is estimated 117 times, iteratively dropping each school in the main sample. The main estimates are shown in vertical dashed lines.

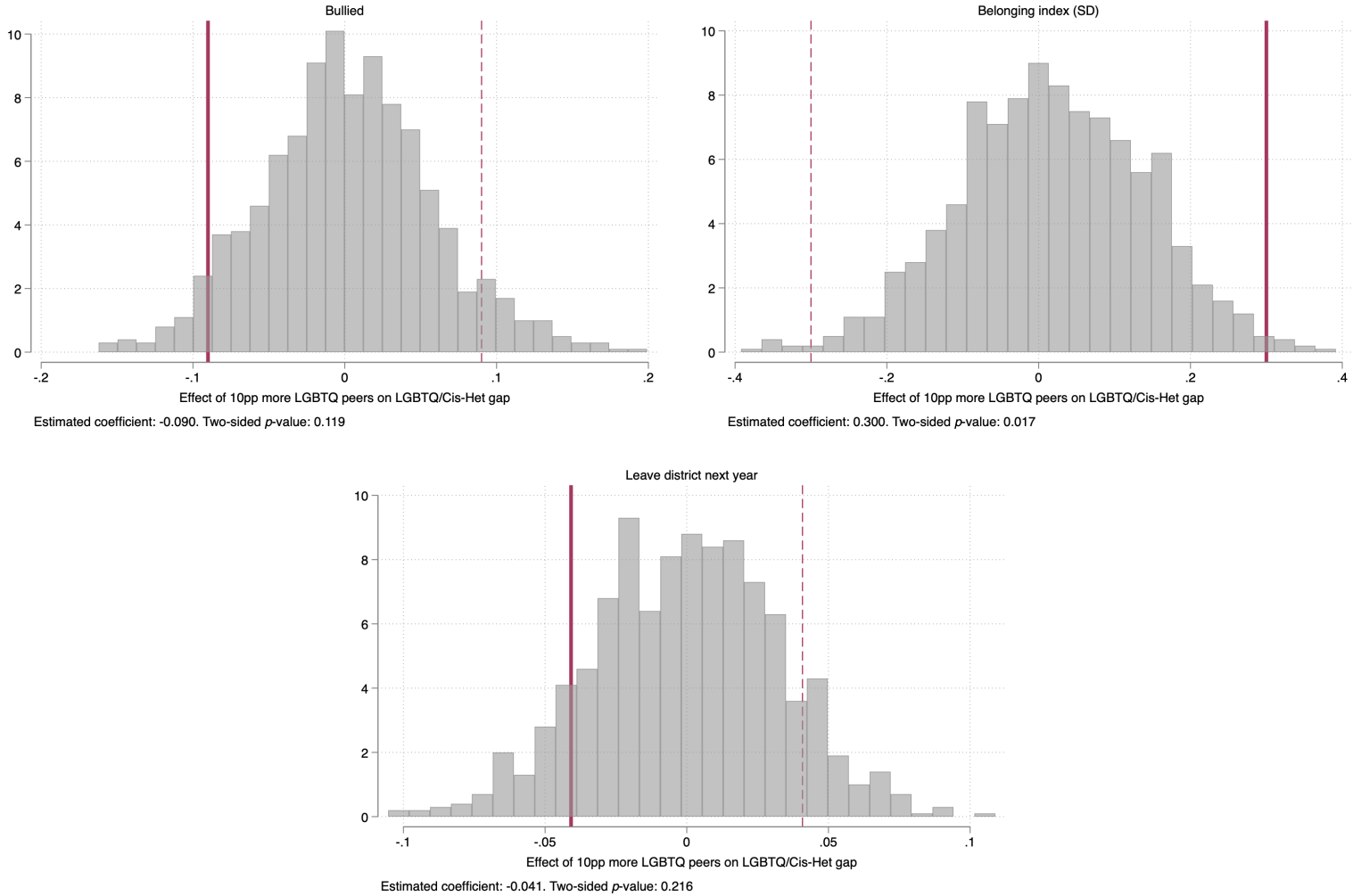
D.2 Randomization inference

Another concern is that the magnitude of the effects that attain standard levels of statistical significance resulted by chance. To bolster the interpretation of the main results, I estimate the empirical distribution of the coefficient of interest under the null hypothesis of no effect and compare the estimated coefficient to that distribution (Fisher, 1935; Rosenbaum, 2002). Specifically, I calculate the residual from a regression of the leave-one-out share LGBTQ on school and year fixed effects. Then, I randomly re-assign students the residual of one of the three cohorts at their school, accounting for whether students identify as LGBTQ. I also calculate the 20th, 50th, and 80th percentile of the residuals to estimate the main non-linear specification. In 1000 iterations, I estimate the main regressions using the randomly-assigned placebo residuals; the resulting placebo coefficients deliver the empirical distribution of the coefficient under the null. The randomization-inference two-sided p-value is the share of placebo coefficients that are larger than the observed estimate in absolute value.

The results are broadly robust (Appendix Figures D11, D12, and D13). The effect of LGBTQ peers on the LGBTQ-Cis/Het gap in belonging maintains a p-value of 0.017 in the linear specification; this is driven by the effect of moving from the lowest to second-lowest bin in the non-linear specification (p=0.000) with no effect thereafter (p=0.96). The effects on the LGBTQ-Cis/Het gap in bullying and whether students leave the district are more sensitive, with marginally and insignificant randomization-inference p-values of 0.12 and 0.21, respectively, in the linear specification.

The non-linear effects on perceived acceptance of LGBTQ students and inter-group contact are also strongly robust. Moving from the lowest to second-lowest bin increases LGBTQ students' agreement that LGBTQ students are accepted (p=0.014) and that students get along with those different from themselves (p=0.001). Moving from the second-lowest to third-lowest bin has no effect on perceived acceptance, but reverses the initial effect on whether students get along with those different from themselves (p=0.004).

Figure D11: Randomization inference: Bullying, belonging, and leaving the district



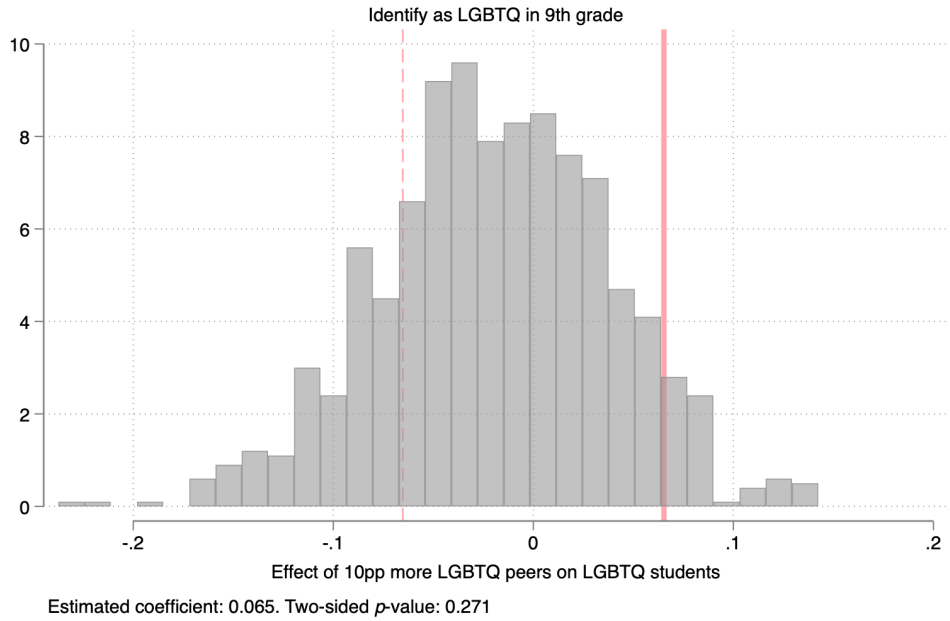
Note: This figure shows the results of the randomization inference simulations when the outcome is whether students are bullied, the belonging index, and whether students leave the district for 10th grade in the linear specification. The estimated effect of having **10pp** more LGBTQ peers on the LGBTQ/Cis-Het **gap** is presented in the vertical solid line and the negative of that value is the dashed line. In 1000 simulations, I randomly re-assign the within-school residual share-LGBTQ and estimate the corresponding "effect"; the histogram plots the resulting empirical distribution of the estimated effect under the null hypothesis of no effect. The two-sided *p*-value is the share of simulated coefficients that are greater in absolute value that the estimated effect under the true value of the share-LGBTQ.

Figure D12: Randomization inference: Perceived acceptance and inter-group contact



Note: This figure shows the results of the randomization inference simulations when the outcome is perceptions of LGBTQ acceptance and how well they get along with those who are different from themselves. The effect on LGBTQ students of moving from the lowest- to second-lowest bin of the share-LGBTQ in the main non-linear specification is presented on the left and the effect of moving from the second- to third-lowest bin is on the right. The effects of LGBTQ peers on LGBTQ students' perceptions are presented in the vertical solid lines and the negative of each value is the dashed line. In 1000 simulations, I randomly re-assign the within-school residual share-LGBTQ and estimate the corresponding "effect"; the histogram plots the resulting empirical distribution of the estimated effect under the null hypothesis of no effect. The two-sided p-value is the share of simulated coefficients that are greater in absolute value that the estimated effect under the true value of the share-LGBTQ.

Figure D13: Randomization inference: SOGI in 9th-grade



Note: This figure shows the results of the randomization inference simulations when the outcome is whether students identify as LGBTQ in 9th grade. The estimated effect of having **10pp** more LGBTQ peers for LGBTQ students is presented in the vertical solid line and the negative of that value is the dashed line. In 1000 simulations, I randomly re-assign the within-school residual share-LGBTQ and estimate the corresponding "effect"; the histogram plots the resulting empirical distribution of the estimated effect under the null hypothesis of no effect. The two-sided p-value is the share of simulated coefficients that are greater in absolute value that the estimated effect under the true value of the share-LGBTQ.

D.3 Placebo *share LGBTQ*

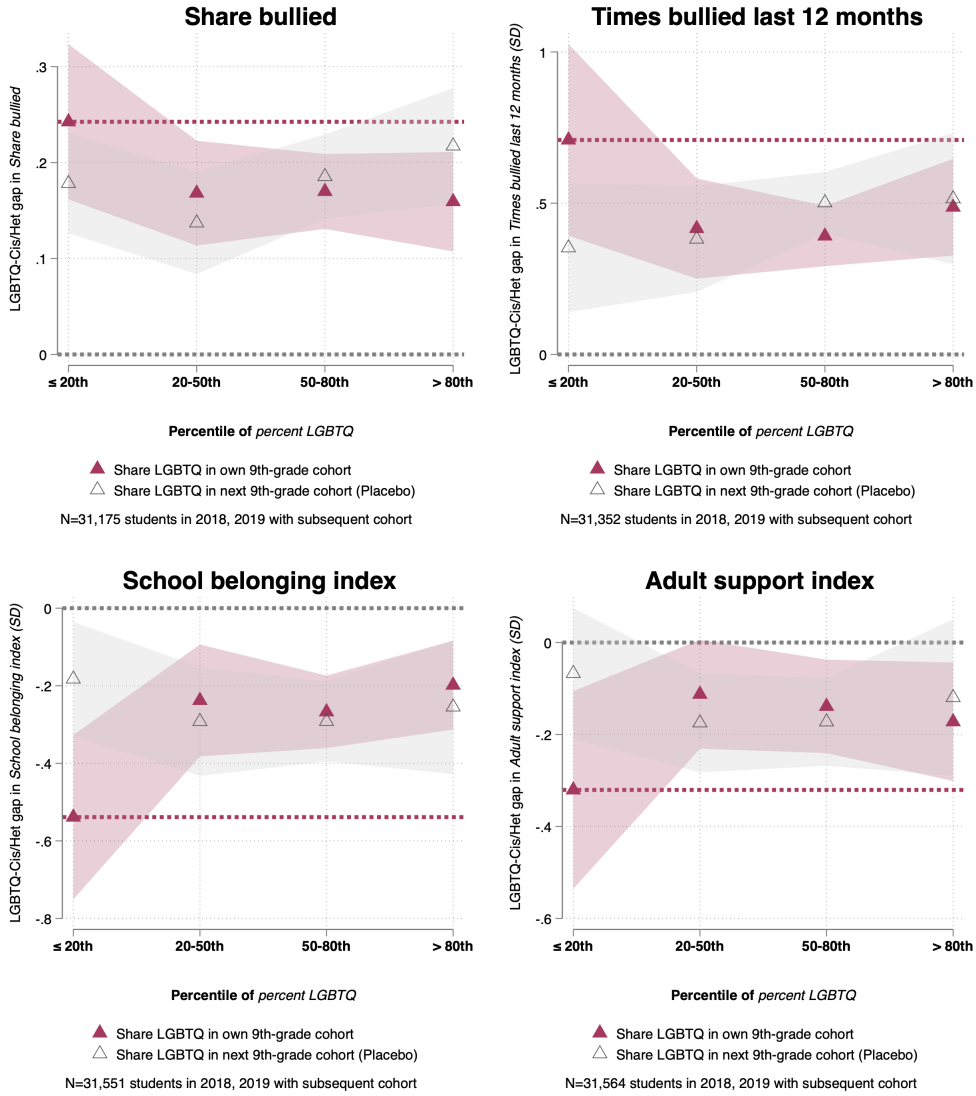
If school trends over time were explaining my results, then replacing the share LGBTQ in a student's own 9th-grade cohort with the share LGBTQ in the *next year's* 9th-grade cohort would yield similar apparent effects. Otherwise, the share LGBTQ in the next year's 9th-grade cohort—who have not yet arrived at the school when one's own cohort is in 9th grade—should not have effects.

Having information about next years' 9th grade cohort requires that I drop the youngest cohort from the sample. Thus, the exhibits presenting these results show robustness in two ways: first, I replicate the main analysis using only the two older cohorts and find the same results. Second, I carry out the placebo analysis and show that the estimated "effects" are null or opposite the effects I find using the true share LGBTQ.

The effects replicate in this smaller sample, though standard errors are larger due to the reduction in sample size and most linear estimates are no longer statistically significant. I focus on the non-linear specification as these figures make it very straightforward to compare both baseline LGBTQ-Cis/Het gaps when the true- or placebo-share LGBTQ is very low and the magnitude and shape of the treatment effects (Appendix Figures D14, D15, and D16). For all outcomes, gaps when the placebo-share LGBTQ is low are substantially smaller than the gaps when the true share LGBTQ is low, or nonexistent. Furthermore, there are no effects of increasing the placebo-share LGBTQ on LGBTQ-Cis/Het gaps. This is confirmed in the linear specification (Appendix Tables D1-D4). That said, the results are somewhat inconclusive, as I cannot reject that the estimated real and placebo effects are the same.

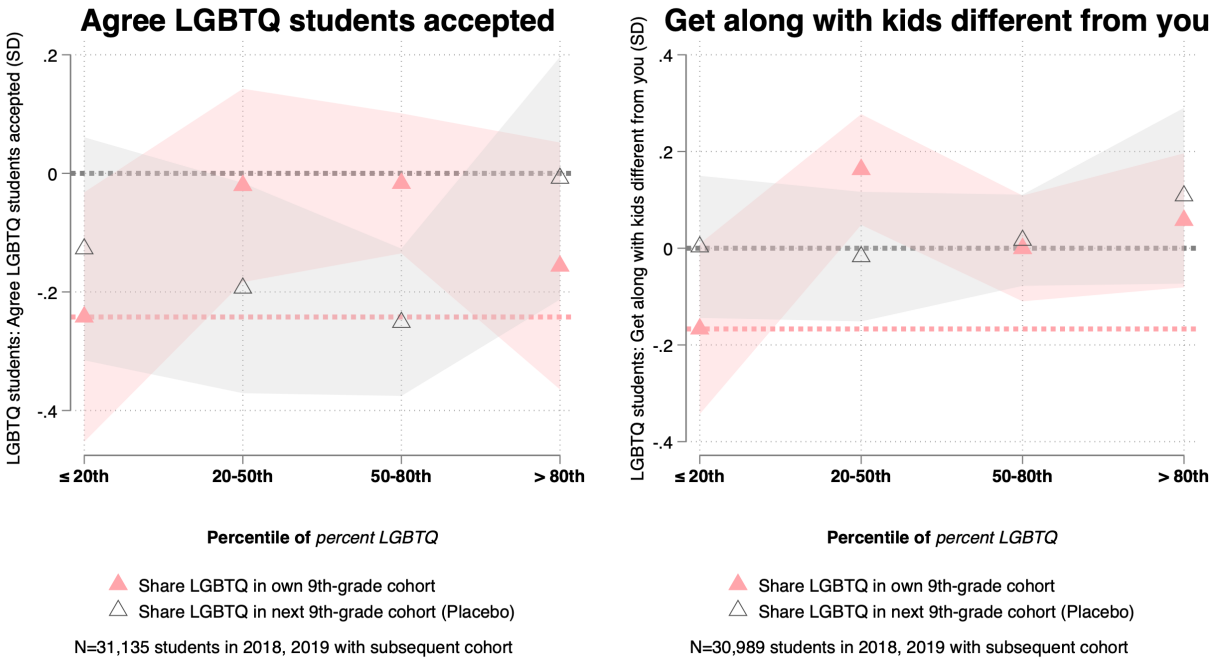
Given the noisy estimated effects on 9th-grade SOGI, it is more difficult to adjudicate between the replicated and placebo results. The magnitudes are similar in the replicated results and smaller in the placebo results, though of the same sign (Appendix Tables D5 and D6).

Figure D14: Placebo test: Effects on LGBTQ-Cis/Het **gaps** in bullying and belonging



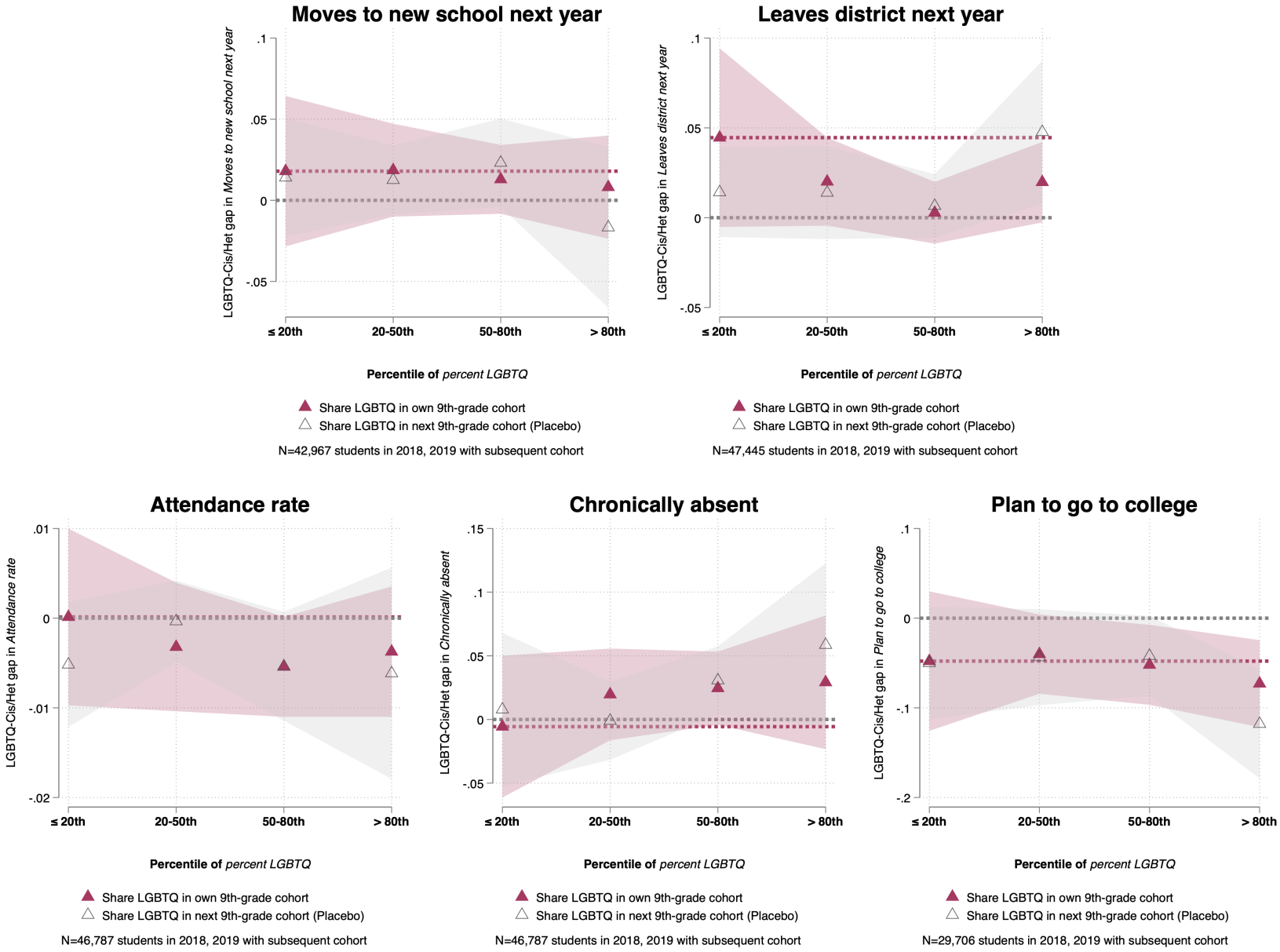
Note: This figure shows the placebo test for bullying and belonging outcomes. In pink, it shows the effects from the non-linear specification on LGBTQ-Cis/Het **gaps**, replicated in the sample that has placebo measures of LGBTQ exposure (matching Figure 4). Then, it plots the results from the same specification using the placebo measure of LGBTQ exposure—the share of the *next year's* 9th-grade cohort share LGBTQ—in gray.

Figure D15: Placebo test: Perceptions of LGBTQ acceptance and inter-group contact among LGBTQ students



Note: This figure shows the placebo test for perceived acceptance and inter-group contact outcomes. In pink, it shows the effects from the non-linear specification on LGBTQ students' perceptions, replicated in the sample that has placebo measures of LGBTQ exposure (matching the rightmost panel of Figure 5). Then, it plots the results from the same specification using the placebo measure of LGBTQ exposure—the share of the *next year's* 9th-grade cohort share LGBTQ—in gray.

Figure D16: Placebo test:Effects on LGBTQ-Cis/Het **gaps** in bullying and belonging in the non-linear specification



Note: This figure shows the placebo test for the school attachment outcomes. In pink, it shows the effects from the non-linear specification on LGBTQ-Cis/Het **gaps**, replicated in the sample that has placebo measures of LGBTQ exposure (matching Figure 6). Then, it plots the results from the same specification using the placebo measure of LGBTQ exposure—the share of the *next year's* 9th-grade cohort share LGBTQ—in gray.

Table D1: Placebo test: Linear peer effects specification: School experiences (replicating main results in sample with placebo variable)

	Bullied indicator	Total times bullied (SD)	School belonging (SD)	Adult support (SD)	LGBTQ accepted (SD)	Get along others (SD)
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
% LGBTQ	0.0015	0.0021	-0.0093	0.0008	-0.0020	0.0040
	(0.0031)	(0.0050)	(0.0074)	(0.0070)	(0.0073)	(0.0048)
% LGBTQ × LGBTQ	-0.0061	-0.0056	0.0236*	0.0063	0.0040	-0.0063
	(0.0052)	(0.0167)	(0.0127)	(0.0143)	(0.0154)	(0.0161)
% LGBTQ × Uncertain	-0.0071	-0.0113	-0.0082	-0.0117	0.0036	-0.0144
	(0.0056)	(0.0104)	(0.0109)	(0.0101)	(0.0091)	(0.0090)
% LGBTQ × No SOGI	0.0006	0.0055	0.0036	-0.0140**	-0.0025	-0.0041
	(0.0033)	(0.0059)	(0.0069)	(0.0061)	(0.0062)	(0.0060)
Main effects:						
LGBTQ	0.2106***	0.4802***	-0.4107***	-0.1904**	-0.1453	0.0093
	(0.0359)	(0.1066)	(0.0860)	(0.0850)	(0.0984)	(0.0964)
Uncertain	0.1092***	0.2339***	-0.0918	0.0016	-0.0234	0.0164
	(0.0314)	(0.0601)	(0.0621)	(0.0596)	(0.0571)	(0.0527)
No SOGI known	0.0318	0.0514	-0.0840*	-0.0101	-0.0254	0.0188
	(0.0198)	(0.0353)	(0.0448)	(0.0392)	(0.0390)	(0.0391)
N	31,175	31,352	31,551	31,564	31,135	30,989
Mean: Cis/Het	0.5046	-0.0740	0.0827	0.0797	0.0373	0.0618
Peer effect if LGBTQ	-0.0045	-0.0035	0.0143	0.0071	0.0019	-0.0022
	(0.0055)	(0.0171)	(0.0136)	(0.0157)	(0.0155)	(0.0153)
Peer effect if Uncertain	-0.0056	-0.0091	-0.0175	-0.0108	0.0015	-0.0104
	(0.0050)	(0.0104)	(0.0120)	(0.0121)	(0.0123)	(0.0090)

Note: This table replicates Table 5 for the sample that has placebo percent LGBTQ variables observed (students in 9th grade in 2017 and 2018), continuing to use the real values of the percent LGBTQ. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table D2: Placebo test: Linear peer effects specification: School attachment (replicating main results in sample with placebo variable)

	New school next year	Leaves district next year	Attendance rate	Chronically absent	Plan to go to college
	(1)	(2)	(3)	(4)	(5)
Peer effects:					
% LGBTQ	-0.0005	-0.0009	0.0002	0.0009	0.0000
	(0.0021)	(0.0013)	(0.0004)	(0.0016)	(0.0020)
% LGBTQ × LGBTQ	-0.0012	-0.0045*	0.0001	0.0017	-0.0013
	(0.0032)	(0.0025)	(0.0008)	(0.0043)	(0.0052)
% LGBTQ × Uncertain	-0.0013	0.0019	-0.0010	0.0027	0.0039
	(0.0021)	(0.0017)	(0.0006)	(0.0027)	(0.0046)
% LGBTQ × No SOGI	0.0009	-0.0005	0.0000	-0.0001	0.0014
	(0.0017)	(0.0014)	(0.0004)	(0.0020)	(0.0031)
Main effects:					
LGBTQ	0.0213	0.0407**	-0.0048	0.0126	-0.0449
	(0.0198)	(0.0175)	(0.0052)	(0.0262)	(0.0332)
Uncertain	0.0180	-0.0068	0.0029	-0.0113	-0.0610**
	(0.0130)	(0.0106)	(0.0039)	(0.0163)	(0.0291)
No SOGI known	0.0228**	0.0315***	-0.0157***	0.0666***	-0.0468**
	(0.0111)	(0.0096)	(0.0027)	(0.0130)	(0.0190)
N	42,967	47,445	46,787	46,787	29,706
Mean: Cis/Het	0.0877	0.0605	0.9473	0.1423	0.7183
Peer effect if LGBTQ	-0.0017	-0.0055**	0.0003	0.0026	-0.0013
	(0.0036)	(0.0026)	(0.0011)	(0.0048)	(0.0058)
Peer effect if Uncertain	-0.0017	0.0009	-0.0009	0.0036	0.0039
	(0.0026)	(0.0018)	(0.0007)	(0.0027)	(0.0048)

Note: This table replicates Table 6 for the sample that has placebo percent LGBTQ variables observed (students in 9th grade in 2017 and 2018), continuing to use the real values of the percent LGBTQ. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table D3: Placebo test: Linear peer effects specification: School experiences (placebo independent variable)

	Bullied indicator	Total times bullied (SD)	School belonging (SD)	Adult support (SD)	LGBTQ accepted (SD)	Get along others (SD)
	(1)	(2)	(3)	(4)	(5)	(6)
Peer effects:						
Placebo % LGBTQ	-0.0009	0.0025	-0.0066	0.0019	-0.0067	-0.0125**
	(0.0027)	(0.0056)	(0.0079)	(0.0073)	(0.0074)	(0.0049)
Placebo % LGBTQ × LGBTQ	0.0052	0.0240	-0.0073	-0.0064	0.0116	0.0187
	(0.0044)	(0.0160)	(0.0138)	(0.0119)	(0.0136)	(0.0122)
Placebo % LGBTQ × Uncertain	-0.0027	-0.0051	0.0123	0.0035	-0.0063	0.0109
	(0.0053)	(0.0095)	(0.0096)	(0.0089)	(0.0115)	(0.0096)
Placebo % LGBTQ × No SOGI	0.0033	0.0026	0.0008	-0.0008	-0.0046	0.0021
	(0.0027)	(0.0052)	(0.0065)	(0.0066)	(0.0068)	(0.0059)
Main effects:						
LGBTQ	0.1442***	0.3053***	-0.2271***	-0.1132	-0.1909**	-0.1378*
	(0.0288)	(0.1028)	(0.0851)	(0.0740)	(0.0922)	(0.0779)
Uncertain	0.0849**	0.2006***	-0.2114***	-0.0849	0.0336	-0.1293**
	(0.0331)	(0.0620)	(0.0598)	(0.0590)	(0.0716)	(0.0625)
No SOGI known	0.0156	0.0685*	-0.0677	-0.0857**	-0.0125	-0.0166
	(0.0189)	(0.0372)	(0.0443)	(0.0417)	(0.0447)	(0.0407)
N	31,175	31,352	31,551	31,564	31,135	30,989
Mean: Cis/Het	0.5046	-0.0740	0.0827	0.0797	0.0373	0.0618
Peer effect if LGBTQ	0.0044	0.0264*	-0.0140	-0.0045	0.0050	0.0062
	(0.0049)	(0.0159)	(0.0168)	(0.0152)	(0.0146)	(0.0127)
Peer effect if Uncertain	-0.0035	-0.0027	0.0057	0.0054	-0.0130	-0.0016
	(0.0055)	(0.0112)	(0.0115)	(0.0116)	(0.0114)	(0.0095)

Note: This table mimics Table 5, replacing the true percent LGBTQ with the placebo percent LGBTQ (the percent LGBTQ in the *subsequent* 9th-grade cohort). The sample is the same as Appendix Table D1. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table D4: Placebo test: Linear peer effects specification: School attachment (placebo independent variable)

	New school next year	Leaves district next year	Attendance rate	Chronically absent	Plan to go to college
	(1)	(2)	(3)	(4)	(5)
Peer effects:					
Placebo % LGBTQ	-0.0015	-0.0009	0.0004	-0.0032**	0.0018
	(0.0024)	(0.0010)	(0.0003)	(0.0014)	(0.0023)
Placebo % LGBTQ × LGBTQ	-0.0022	0.0002	-0.0000	0.0053	-0.0071
	(0.0032)	(0.0026)	(0.0008)	(0.0043)	(0.0050)
Placebo % LGBTQ × Uncertain	-0.0040	0.0001	-0.0002	-0.0009	0.0016
	(0.0025)	(0.0015)	(0.0007)	(0.0029)	(0.0041)
Placebo % LGBTQ × No SOGI	-0.0018	0.0017	-0.0007	0.0033*	-0.0028
	(0.0013)	(0.0013)	(0.0005)	(0.0018)	(0.0030)
Main effects:					
LGBTQ	0.0267	0.0136	-0.0039	-0.0097	-0.0114
	(0.0196)	(0.0158)	(0.0044)	(0.0269)	(0.0327)
Uncertain	0.0344**	0.0035	-0.0020	0.0093	-0.0486*
	(0.0170)	(0.0096)	(0.0039)	(0.0157)	(0.0267)
No SOGI known	0.0387***	0.0179*	-0.0112***	0.0459***	-0.0224
	(0.0087)	(0.0091)	(0.0032)	(0.0131)	(0.0194)
N	42,967	47,445	46,787	46,787	29,706
Mean: Cis/Het	0.0877	0.0605	0.9473	0.1423	0.7183
Peer effect if LGBTQ	-0.0037	-0.0006	0.0004	0.0021	-0.0052
	(0.0040)	(0.0027)	(0.0008)	(0.0042)	(0.0055)
Peer effect if Uncertain	-0.0055	-0.0008	0.0003	-0.0041	0.0034
	(0.0036)	(0.0018)	(0.0007)	(0.0027)	(0.0042)

Note: This table mimics Table 6, replacing the true percent LGBTQ with the placebo percent LGBTQ (the percent LGBTQ in the *subsequent* 9th-grade cohort). The sample is the same as Appendix Table D2. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table D5: Placebo test: Linear peer effects specification: 9th-grade SOGI (replicating main results in sample with placebo variable)

	LGBTQ	Uncertain	Cis/Het	Question Non-response
	(1)	(2)	(3)	(4)
Peer effects:				
% LGBTQ	-0.0011	-0.0010	0.0022	-0.0019
	(0.0011)	(0.0016)	(0.0016)	(0.0012)
% LGBTQ × LGBTQ	0.0095	-0.0011	-0.0084	-0.0013
	(0.0072)	(0.0051)	(0.0075)	(0.0018)
% LGBTQ × Uncertain	-0.0028	0.0060	-0.0032	0.0026*
	(0.0030)	(0.0048)	(0.0047)	(0.0014)
% LGBTQ × No SOGI	0.0009	0.0013	-0.0022	0.0028*
	(0.0011)	(0.0019)	(0.0022)	(0.0015)
Main effects:				
LGBTQ	0.4404***	0.1034***	-0.5438***	0.0078
	(0.0415)	(0.0312)	(0.0439)	(0.0120)
Uncertain	0.1131***	0.1896***	-0.3027***	-0.0119
	(0.0188)	(0.0271)	(0.0276)	(0.0081)
No SOGI known	0.0439***	0.0315**	-0.0754***	-0.0121
	(0.0073)	(0.0124)	(0.0133)	(0.0093)
N	31,202	31,202	31,202	32,349
Mean: Cis/Het	0.0276	0.0744	0.8980	0.0236
Peer effect if LGBTQ	0.0084	-0.0021	-0.0063	-0.0032
	(0.0072)	(0.0053)	(0.0078)	(0.0023)
Peer effect if Uncertain	-0.0039	0.0049	-0.0010	0.0007
	(0.0033)	(0.0050)	(0.0045)	(0.0018)

Note: This table replicates Table 7 for the sample that has placebo percent LGBTQ variables observed (students in 9th grade in 2017 and 2018), continuing to use the real values of the percent LGBTQ. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

Table D6: Placebo test: Linear peer effects specification: 9th-grade SOGI (placebo independent variable)

	LGBTQ	Uncertain	Cis/Het	Question Non-response
	(1)	(2)	(3)	(4)
Peer effects:				
Placebo % LGBTQ	-0.0012	0.0008	0.0005	0.0002
	(0.0009)	(0.0018)	(0.0018)	(0.0012)
Placebo % LGBTQ × LGBTQ	0.0058	-0.0057	-0.0002	0.0010
	(0.0081)	(0.0058)	(0.0062)	(0.0020)
Placebo % LGBTQ × Uncertain	0.0051	-0.0068	0.0017	0.0012
	(0.0033)	(0.0045)	(0.0042)	(0.0015)
Placebo % LGBTQ × No SOGI	0.0044***	-0.0022	-0.0022	0.0019
	(0.0013)	(0.0016)	(0.0018)	(0.0012)
Main effects:				
LGBTQ	0.4620***	0.1299***	-0.5919***	-0.0052
	(0.0467)	(0.0367)	(0.0396)	(0.0128)
Uncertain	0.0676***	0.2632***	-0.3309***	-0.0042
	(0.0196)	(0.0281)	(0.0267)	(0.0092)
No SOGI known	0.0231**	0.0517***	-0.0749***	-0.0073
	(0.0090)	(0.0106)	(0.0127)	(0.0078)
N	31,202	31,202	31,202	32,349
Mean: Cis/Het	0.0276	0.0744	0.8980	0.0236
Peer effect if LGBTQ	0.0046	-0.0049	0.0003	0.0012
	(0.0081)	(0.0061)	(0.0060)	(0.0026)
Peer effect if Uncertain	0.0038	-0.0060	0.0022	0.0014
	(0.0035)	(0.0046)	(0.0043)	(0.0020)

Note: This table mimics Table 7, replacing the true percent LGBTQ with the placebo percent LGBTQ (the percent LGBTQ in the *subsequent* 9th-grade cohort). The sample is the same as Appendix Table D5. Standard errors are clustered by school. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.