# Unaccompanied Homelessness Among LGBTQ+ Youth in Minnesota - Examining Protective Mediation by Caring Relationships with Parents and Other Adults

Abigail M. Fink, MPH, University of Minnesota, Master of Public Health in Maternal & Child Health Program

## Abstract

**Background**: LGBTQ+ adolescents face increased risk of unaccompanied homelessness in the U.S. This study compared the odds of unaccompanied homelessness among LGBTQ+ youth to heterosexual and cisgender youth and assessed the potential protective effects of caring relationships with parents and other adults.

**Methods**: This cross-sectional analysis used self-reported data from the 2019 Minnesota Student Survey of 54,947 9th and 11th graders. 12-month history of unaccompanied homelessness was dichotomized as yes or no. LGBTQ+ identity was coded LGBTQ+ or heterosexual and cisgender. Caring relationships with parents and other adults was dichotomized as high caring and low caring. Covariates included race, sex, free/reduced-price lunch eligibility, grade, and region. Multivariable logistic regression and mediation analysis were used to regress the odds of unaccompanied homelessness on LGBTQ+ identity and assess potential protective effects of caring relationships with parents and other adults.

**Results**: The adjusted odds of unaccompanied homelessness among LGBTQ+ youth were 2.41 (95% CI: 1.95, 2.97) times those among heterosexual and cisgender youth (p-value < 0.0001). LGBTQ+ youth had significantly lower odds of homelessness if they reported caring relationships with parents (OR=0.12) or other adults (OR=0.29).

**Conclusion**: LGBTQ+ youth may be over twice as likely to experience unaccompanied homelessness compared to cisgender and heterosexual youth and caring relationships with parents and other adults may be protective factors. Further research on protective factors for unaccompanied homelessness among LGBTQ+ youth is needed to inform planning, policy, and intervention efforts addressing this persistent public health issue.

## Introduction

Homelessness is a significant and persistent public health issue affecting young people across the U.S. with severe consequences for short- and long-term health and well-being. Point-in-time estimates from 2019 counted 3,976 unaccompanied youth (i.e., those experiencing homelessness without an adult family member or guardian) under 18 experiencing homelessness in the U.S. [1]. The COVID-19 pandemic has further exacerbated this public health crisis, creating additional barriers for young people experiencing unaccompanied homelessness as they navigate the tensions of protecting themselves from infection while also finding a safe place to stay at night [2]. Throughout the U.S., LGBTQ+ adolescents are among those most at risk of experiencing unaccompanied homelessness [3, 4]. According to national estimates from 2018, the risk of unaccompanied homelessness among LGBTQ+ youth was 2.2 times the risk among heterosexual and cisgender youth [5]. This trend is consistent in Minnesota, where LGBTQ+ youth make up 23% of all youth experiencing homelessness while only 4% of Minnesotans identify as LGBTQ+, and the odds of unaccompanied homelessness among transgender/gender diverse youth is 3.2 times the odds among cisgender youth [6, 7].

Studies examining unaccompanied homelessness among LGBTQ+ youth have considered a variety of family, school, and community-level risk and protective factors.
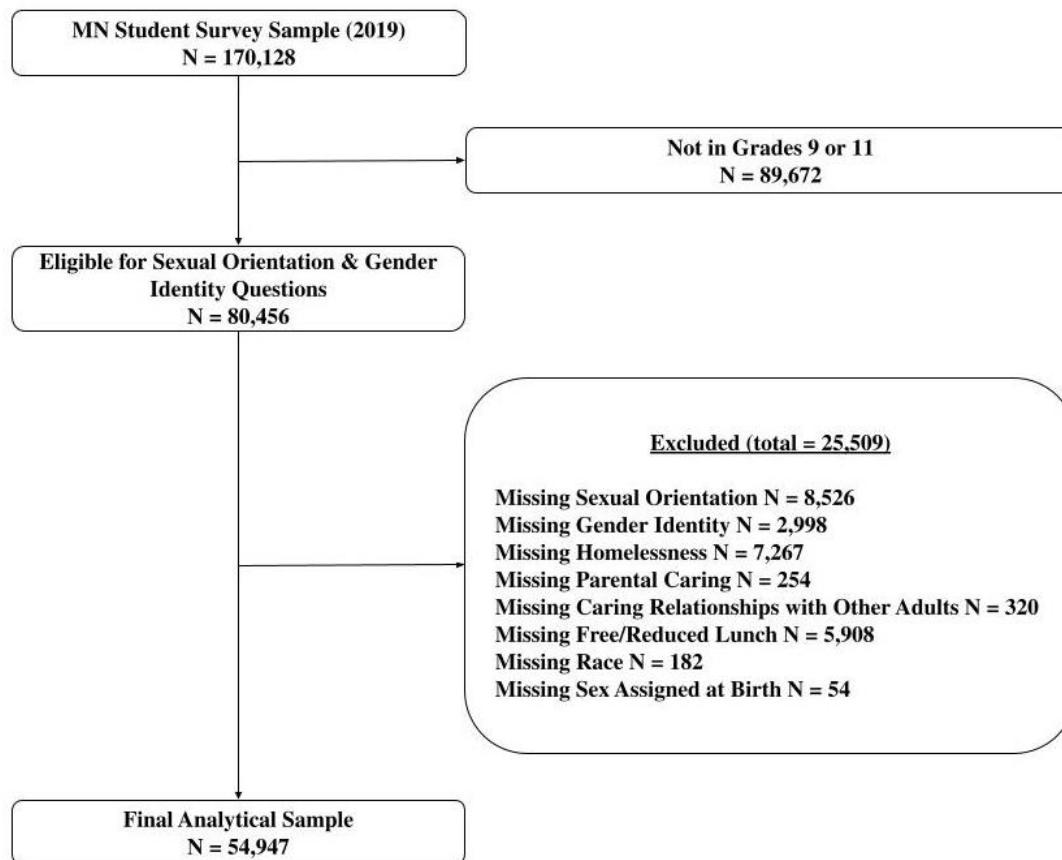
**Figure 1:** *Participant Exclusion Flow Diagram*

Qualitative and cross-sectional studies of LGBTQ+ youth who are experiencing homelessness report that many LGBTQ+ youth had low parental support and caring, including that their parents rejected them or kicked them out of their homes because of their sexual orientation or gender identity [8-11]. In addition to familial relationships, studies have found that supportive school environments protect against substance use and poor mental outcomes among LGBTQ+ youth experiencing unaccompanied homelessness [11-13]. These findings suggest that an important link exists between the school and community environments and psychosocial outcomes among LGBTQ+ youth experiencing homelessness.

While cross-sectional studies have documented a strong association between LGBTQ+ identity and elevated risk of unaccompanied homelessness, the protective effects of having supportive and caring relationships with adults is less well researched [3, 5-7]. Existing research suggests that parental caring may be protective against unaccompanied homelessness for LGBTQ+ youth, but the strength of this association is not well documented [8-11]. Furthermore, though there is evidence of an important link between school and community environments and a range of psychosocial outcomes among LGBTQ+ youth

experiencing homelessness, studies have not yet examined whether having supportive and caring relationships with adults at school and in the community is protective against experiencing unaccompanied homelessness in the first place, particularly in cases where parental caring is absent [11-13]. This study addresses gaps in the existing literature by examining the association between LGBTQ+ identity and unaccompanied homelessness among Minnesotan youth and assessing whether having caring relationships with parents and other adults reduces the risk for unaccompanied homelessness among this group of adolescents.

To this end, we used state-wide cross-sectional data to compare homelessness outcomes among LGBTQ+ youth to those among heterosexual and cisgender youth. Additionally, we considered whether having caring relationships with parents and other adults was protective against unaccompanied homelessness among LGBTQ+ youth. We hypothesized that the adjusted odds of unaccompanied homelessness would be elevated among LGBTQ+ youth in Minnesota when compared to heterosexual and cisgender youth and that the presence of caring relationships with parents and other adults would attenuate this association.

## Methods

### Study Design: Minnesota Student Survey Dataset

This study used Minnesota Student Survey (MSS) data from 2019 to examine the association between LGBTQ+ identity and unaccompanied homelessness among 9th and 11th grade students in Minnesota and the potential protective effects of having caring relationships with parents and other adults. Every three years, the MSS collects cross-sectional data using anonymous online questionnaires completed by students that are provided to all public, private, charter, and tribal schools in the state that opt into the survey [14]. In 2019, over 81% of Minnesota schools opted to participate [14]. All 5th, 8th, 9th, and 11th grade students at participating schools were invited to complete the survey, though some school districts chose to survey additional grades [14]. Analysis of MSS data for our study was approved by the University of Minnesota Institutional Review Board.

### Sample Population

Our analysis included 9th and 11th grade students with complete responses for the survey questions used to develop our exposure, outcome, and covariates of interest. As only 9th and 11th grade students were asked to report their sexual orientation and gender identity, 89,526 5th, 8th, and 10th grade students were excluded from our analysis. An additional 25,509 students were excluded as they did not answer one or more of the survey questions regarding sexual orientation, gender identity, homelessness, race, parental caring, caring from other adults, age, sex assigned at birth, and free/reduced price lunch eligibility. Of the total survey population of 170,128 students who participated in the MSS in 2019, our final analytic sample included 54,947 respondents.

### Measures

#### Exposure

LGBTQ+ Identity. Self-reported LGBTQ+ identity was determined using responses to survey questions regarding sexual orientation and gender identity. Self-reported sexual orientation was assessed by asking students "how do you describe yourself" and providing a range of identities to select from [14]. To ensure our study was adequately powered for the statistical procedures we conducted, we analyzed sexual orientation as a binary variable with levels for heterosexual and LGB+. The LGB+ group represented a diverse set of sexual orientations and included students who answered that they identify as gay, lesbian, bisexual, queer, pansexual, or questioning/not sure. Gender identity was assessed by asking students "are you transgender, genderqueer, or genderfluid" [14]. Students who responded "yes" were considered transgender/gender diverse (TGD), while students who answered no or unsure were considered cisgender. We analyzed LGBTQ+ identity as a binary variable, with all students who identified as heterosexual and cisgender categorized as not-LGBTQ+ and all students who identified as LGB+ and/or TGD categorized as LGBTQ+.

#### Outcome

Unaccompanied homelessness. Self-reported unaccompanied homelessness was assessed by asking participants if they had "stayed in a shelter, somewhere not intended as a place to live, or someone else's home because [they] had no other place to stay" in the last 12 months and was analyzed as a binary variable [14]. Students who answered yes and selected that they had stayed without an adult family member were identified as having experienced unaccompanied homelessness. Some students reported experiencing both unaccompanied and accompanied (i.e. with an adult family member) homelessness in the last 12 months. To remain consistent with previous studies of unaccompanied homelessness using MSS data, we included these students in the unaccompanied group [7].

#### Mediating Variables

Parental Caring. Self-reported parental caring was measured by asking students "how much do you feel your parents care about you" and was analyzed as a binary variable with students who responded "Not at All", "A Little", or "Some" grouped together as having low parental caring and students who responded "Quite a Bit" and "Very Much" grouped together as having high parental caring [14].

Caring Relationships with Other Adults. Self-reported caring relationships with other adults (i.e. apart from parents) was determined using responses to survey questions regarding how much students felt their adult relatives, teachers/other adults at school, and adults in their community care about them. For each relationship group, students who responded "Not at All", "A Little", or "Some" were grouped together as having low caring, while students who responded "Quite a Bit" and "Very Much" were grouped together as having high caring. A composite variable was created to measure how many types of caring relationships with adults apart from parents each student had. This composite variable was used to create a binary variable where all students with at least one type of caring relationship with other adults were grouped together while

**Table 1:** *Prevalence of Unaccompanied Homelessness by LGBTQ+ Identity & Selected Covariates[a].*
[Created by author using data from the 2019 MSS]

[a]*Percentages are represented as the proportion of the total by column.*
*\*Denotes sociodemographic characteristics for which the prevalence of unaccompanied homelessness differed significantly for at least one level (chi-square p-value < 0.01)*

| | Total population (n=54,917) %(n) | Have not experienced unaccompanied homelessness (n=54,415) % (n) | Have experienced unaccompanied homelessness (n=502) %(n) |
|---|---|---|---|
| **LGBTQ+ Identity, %(n)\*** | | | |
| Heterosexual and cisgender | 88.4 (48,595) | 88.6 (48,227) | 73.3 (368) |
| LGBTQ+ | 11.6 (6,352) | 11.4 (6,218) | 26.7 (134) |
| **Parental Caring, %(n)\*** | | | |
| Low Caring | 11.3 (6,182) | 10.8 (5,895) | 57.2 (287) |
| High Caring | 88.7 (48,765) | 89.2 (48,550) | 42.8 (215) |
| **Caring Relationships with Other Adults, %(n)\*** | | | |
| No Caring Relationships | 17.4 (9,538) | 17.1 (9,293) | 48.8 (245) |
| ≥1 Type of Caring Relationship | 82.6 (45,409) | 82.9 (45,152) | 51.2 (257) |
| **Free/Reduced-Price Lunch, %(n)\*** | | | |
| Not Eligible | 77.0 (42,296) | 77.3 (42,064) | 46.2 (232) |
| Eligible | 23.0 (12,651) | 22.7 (12,381) | 53.8 (270) |
| **Racial Identity, %(n)\*** | | | |
| American Indian or Alaska Native | 1.0 (548) | 1.0 (526) | 4.4 (22) |
| Asian/Asian American | 5.9 (3,239) | 5.9 (3,215) | 4.8 (24) |
| Black, African, or AA | 5.5 (3,005) | 5.4 (2,956) | 9.8 (49) |
| Hispanic or Latino/a | 5.1 (2,799) | 5.1 (2,762) | 7.4 (37) |
| Native Hawaiian/Pacific Islander | 0.1 (69) | 0.1 (67) | 0.4 (2) |
| White | 74.3 (40,817) | 74.5 (40,534) | 56.4 (283) |
| Multiple Races | 8.1 (4,470) | 8.1 (4,385) | 16.9 (85) |
| **Grade, %(n)\*** | | | |
| 9th Grade | 53.2 (29,327) | 53.3 (29,005) | 46.2 (232) |
| 11th Grade | 46.8 (25,710) | 46.7 (25,440) | 53.8 (270) |
| **Sex assigned at birth, %(n)** | | | |
| Male assigned at birth | 47.4 (26,055) | 47.4 (25,833) | 44.2 (222) |
| Assigned Female at birth | 52.6 (29,071) | 52.6 (28,612) | 55.8 (280) |
| **Region, %(n)\*** | | | |
| 7-County Twin Cities Metro Area | 47.1 (25,876) | 47.0 (25,604) | 54.2 (272) |
| Greater Minnesota | 52.9 (29,071) | 53.0 (28,841) | 45.8 (230) |

youth with no caring relationships with other adults were categorized together.

*Covariates*

Self-reported free/reduced price lunch eligibility, race, grade, region, and sex assigned at birth were assessed as potential confounders of the association between LGBTQ+ identity and unaccompanied homelessness. Free/reduced price lunch eligibility was analyzed as a binary variable with levels representing eligible and ineligible status. Self-reported race was coded as a categorical variable with the following options: American Indian or Alaskan Native; Asian or Asian American; Black, African or African American; Hispanic or Latino/a;
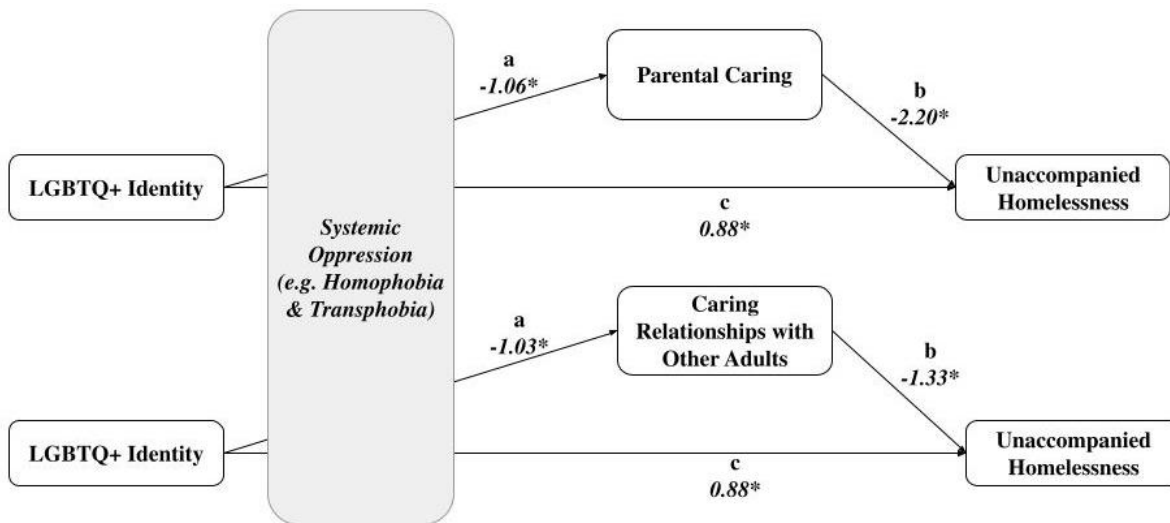
**Figure 2:** *Mediation Analysis Models[a,b].* [Created by author using data from the 2019 MSS]
***Denotes significant associations (p <0.0001)*
[a]*All models adjusted for grade, race, region, sex assigned at birth, and free/reduced price lunch eligibility.*
[b]*Arrows shown in the models are not intended to be causal, but rather show hypothesized associations. We do not conceptualize that LGBTQ+ identity causes unaccompanied homelessness by way of parental caring/caring relationships with other adults. Rather, we hypothesize that systemic oppression in the form of homophobia and transphobia shows up in LGBTQ+ youths' relationships with parents and other adults, and that it is this homophobia and/or transphobia that is the root, unmeasured cause of unaccompanied homelessness.*

Native Hawaiian or Other Pacific Islander; or White. Race should be considered a proxy measure for oppression stemming from structural and interpersonal/individual racism. As such, differences by race should be interpreted as the impact of racism, not as outcomes determined by an individual's behaviors and choices based on their race. Students were able to select more than one category, and students who selected two or more categories were coded as "Multiple races" in our analysis. Grade, sex assigned at birth, and region were all coded as binary variables with levels for 9th and 11th, male and female, and 7-County Twin Cities Metro Area or Greater Minnesota, respectively.

**Statistical analysis**

SAS version 9.4 and R version 4.0.4 were used for all statistical analysis of these cross-sectional survey data. Summary statistics including means, standard deviations, frequency counts, and proportions were calculated using the MEANS, UNIVARIATE, and FREQUENCY procedures in SAS. Summary statistics were calculated for the overall population and by strata of the unaccompanied homelessness outcome variable.

The PROC LOGISTIC and the mediation package for R were used to develop multivariable generalized logistic regression models to regress the odds of unaccompanied homelessness outcome on LGBTQ+ identity and to assess mediation by parental caring and caring relationships with other adults. First, PROC LOGISTIC was used to fit crude and adjusted logistic regression models to examine the association between LGBTQ+ identity and homelessness. Next, mediation analysis was conducted based on recommended epidemiologic methods for binary outcome variables to decompose the overall association between LGBTQ+ identity and unaccompanied homelessness into direct and indirect effects by assessing mediation by (1) parental caring and (2) caring relationships with other adults [15-16]. Multivariable logistic regression was used to model the exposure-mediator, mediator-outcome, total effect, and mediator adjusted effect relationships. For models that were suggestive of mediation, the mediation package for R developed by Tingley and colleagues was then used to determine the mediated effect and the percentage mediated [17]. Odds ratios, 95% confidence intervals, and p-values were reported for crude and adjusted logistic regression models, based on chi-square statistics. For each mediation analysis model, we reported β-coefficient estimates, 95% confidence intervals, standard errors, and p-values for the exposure-mediator, mediator-outcome, total effect, mediated effect, and percentage mediated. Bootstrapped estimates of 95% confidence intervals and standard errors were used to

**Table 2:** *Crude & Adjusted Multivariable Logistic Regression Models.*
[Created by author using data from the 2019 MSS]
*ᵃAdjusted model controlled for grade, race, region, sex assigned at birth, and free/reduced price lunch eligibility*

| | β Estimate | Odds Ratio (95% CI) | SE | p-Value |
|---|---|---|---|---|
| **Crude Model** | | | | |
| LGBTQ+ | 1.04 | 2.82 (2.31, 3.45) | 0.10 | <0.0001 |
| **Adjusted Model**ᵃ | | | | |
| LGBTQ+ | 0.88 | 2.41 (1.95, 2.97) | 0.11 | <0.0001 |

reduce bias for estimates of the proportion mediated [18]. Based on existing literature and data availability, potential confounding by the sociodemographic variables of grade, race, region, sex assigned at birth, and free/reduced price lunch eligibility was assessed [7]. Adjusted logistic regression models and mediation analysis models controlled for all five of these potential confounders.

### Results

#### General Characteristics

The final analytic sample included 54,947 students with 53.2% (n=29,327) 9th graders and 47.1% (n=25,876) residing in the 7-County Twin Cities Metro Area. Among students in the sample, 11.6% (n=6,352) identified as LGBTQ+ and 0.9% (n=502) reported experiencing unaccompanied homelessness in the preceding 12 months (Table 1). Youth who had experienced unaccompanied homelessness were also more likely to report low parental caring (57.2%) or no caring relationships with other adults (48.8%), compared to 11.3% and 17.4% among the overall study population. Although the majority of the population (74.3%) identified as White, White students only represented 56.4% of students who had experienced unaccompanied homelessness. Students identifying as Black/African American, American Indian or Alaskan Native, Hispanic or Latino/a, and multiracial were systematically overrepresented among those who had experienced unaccompanied homelessness.

Chi-square tests revealed that the unaccompanied homelessness outcome was significantly associated with sociodemographic characteristics of grade, free/reduced-price lunch eligibility, racial identity, and region (p-value < 0.01). Free/reduced-price lunch eligibility, racial identity, sex assigned at birth, and region were significantly associated with the exposure variable of LGBTQ+ identity (p-value < 0.01). While sex assigned at birth and grade were not significantly associated with both unaccompanied homelessness and LGBTQ+ identity (chi-

square p-value > 0.05), these two measures were included in final models to remain consistent with existing scientific literature and conceptual models assessing unaccompanied homelessness among LGBTQ+ youth using MSS data [7]. Consequently, all adjusted models controlled for grade, free/reduced-price lunch eligibility, racial identity, region, and sex assigned at birth as potential confounders of the association between LGBTQ+ identity and unaccompanied homelessness.

#### Association between LGBTQ+ identity and unaccompanied homelessness

A crude logistic regression model was fit to assess the unadjusted association between LGBTQ+ identity and unaccompanied homelessness within our study population. In the crude model, compared with heterosexual and cisgender youth, LGBTQ+ youth had 2.82 (95% CI: 2.31-3.45) the odds of having experienced unaccompanied homelessness within the last 12 months (Table 2).

After adjusting for sociodemographic characteristics, LGBTQ+ youth had 2.41 (95% CI: 1.95-2.97) times the odds of having experienced unaccompanied homelessness in the preceding 12 months compared to heterosexual and cisgender youth (Table 2).

#### Mediation by parental caring and caring relationships with other adults

Multivariable logistic regression models were fit to assess whether the association between LGBTQ+ identity and unaccompanied homelessness outcome was in part mediated by parental caring. Individual multivariable logistic regression models were used to consider the association between LGBTQ+ identity and parental caring (pathway a), parental caring and unaccompanied homelessness status (pathway b), LGBTQ+ identity and unaccompanied homelessness status (pathway c), and the

**Table 3:** *Mediation of the Association Between LGBTQ+ Identity and Homelessness[a]. [Created by author using data from the 2019 MSS]*

[a]*Mediation analysis controlled for grade, race, region, sex assigned at birth, and free/reduced price lunch eligibility*
[b]*Bootstrapped 95% confidence intervals are presented for estimates of the proportion mediated*

| Parental Caring | | | | |
|---|---|---|---|---|
| **Effect** | **β Estimate** | **Odds Ratio (95% CI)** | **SE** | **p-Value** |
| **a** (LGBTQ+ identity -> high parental caring) | -1.06 | 0.35 (0.32, 0.37) | 0.03 | <0.0001 |
| **b** (high parental caring -> unaccompanied homelessness) | -2.20 | 0.11 (0.09, 0.13) | 0.09 | <0.0001 |
| **c** (total effect) | 0.88 | 2.41 (1.95, 2.97) | 0.11 | <0.0001 |
| **ab** (parental caring adjusted effect) | 0.45 | 1.57 (1.26, 1.95) | 0.11 | <0.0001 |
| Proportion mediated (95% CI)[b] = 51.96% (41.93%, 69.00%) | | | | <0.0001 |
| **At Least 1 Type of Caring Relationship with Other Adults** | | | | |
| **Effect** | **β Estimate** | **Odds Ratio (95% CI)** | **SE** | **p-Value** |
| **a** (LGBTQ+ identity -> ≥1 caring relationship with other adults) | -1.03 | 0.36 (0.34, 0.38) | 0.03 | <0.0001 |
| **b** (≥1 caring relationship with other adults -> unaccompanied homelessness) | -1.33 | 0.27 (0.22, 0.32) | 0.09 | <0.0001 |
| **c** (total effect) | 0.88 | 2.41 (1.95, 2.97) | 0.11 | <0.0001 |
| **ab** (≥1 caring relationship with other adults adjusted effect) | 0.63 | 1.87 (1.51, 2.33) | 0.11 | <0.0001 |
| Proportion mediated (95% CI)[b] = 31.75% (23.72%, 43.00%) | | | | <0.0001 |

association between LGBTQ+ identity and unaccompanied homelessness adjusted for parental caring (pathway ab) (Figure 2). Full results are presented in Table 3. Parental caring was negatively associated with LGBTQ+ identity (pathway a) and positively associated with unaccompanied homelessness (pathway b). Comparing the OR from the total effect model (2.41; 95% CI: 1.95-2.97) to the mediator adjusted effect model (1.57; 95% CI: 1.26-1.95) suggests that high parental caring partially buffers the association between LGBTQ+ identity and unaccompanied homelessness. The proportion of the total effect mediated by high parental caring was 52%.

Multivariable logistic regression models were also fit to assess whether the association between LGBTQ+ identity and unaccompanied homelessness outcome was in part mediated by having at least 1 type of caring relationship with other adults (Figure 2). Complete results from all four models are presented in Table 3. Having at least one type of caring relationship with other adults was significantly associated with LGBTQ+ identity (pathway a) and unaccompanied homelessness outcome (pathway b). Comparing the OR from the total effect model (2.41; 95%

CI: 1.95-2.97) to the mediator adjusted effect model (1.87; 95% CI: 1.51-2.33) suggests that having at least one type of caring relationship with other adults was protective against unaccompanied homelessness along the pathway from LGBTQ+ identity. The proportion of the total effect mediated by having at least one type of caring relationship with other adults was 31.8%.

### Discussion

**Primary Findings**

This study used 2019 MSS data to assess the association between LGBTQ+ identity and unaccompanied homelessness among 9th and 11th grade students in Minnesota and to characterize the potential protective effects of having caring relationships with parents and other adults. Our results showed that LGBTQ+ youth are over twice as likely as heterosexual and cisgender youth to experience unaccompanied homelessness in Minnesota. Drawing on scholarship regarding the importance of structural oppression as a root cause of health and social

inequities, we conceptualize that this difference can be attributed to structural oppression in the form of homophobia and transphobia experienced by LGBTQ+ youth [19, 20]. Additionally, our findings suggest that but that the presence of such relationships is an important protective factor. LGBTQ+ youth who reported parental caring had 0.12 times the odds of unaccompanied homelessness compared to LGBTQ+ youth who reported low parental caring, while LGBTQ+ youth who reported at least one caring relationship with other adults had 0.29 times the odds of unaccompanied homelessness compared to those who reported no caring relationships with other adults.

Our results corroborate existing research and surveillance indicating that LGBTQ+ youth are at elevated risk for homelessness, providing further support for state and local level public health planning and resource allocation that prioritizes this population in efforts to prevent and respond to unaccompanied homelessness [3-7]. Our findings also align with the limited existing literature documenting the protective effect of caring relationships with adults for preventing unaccompanied homelessness among youth in general and supporting recovery and transition into adulthood following experiences of unaccompanied homelessness [21, 22]. Furthermore, by estimating the strength of the protective effect of parental caring against unaccompanied homelessness, our analysis may provide tentative quantitative support for existing qualitative research demonstrating the importance of parental relationships in the association between LGBTQ+ identity and unaccompanied homelessness and homelessness prevention programs that work to strengthen LGBTQ+ youths' relationships with their parents [8-11]. Finally, our findings suggest that expanding LGBTQ+ youths' support networks to include other adults (e.g. teachers, neighbors, extended family) may warrant further consideration and research as another potential intervention point for policies and programs aimed at preventing unaccompanied homelessness among LGBTQ+ youth.

**Study Strengths and Limitations**

Strengths of our analysis include the use of MSS data to obtain a large, representative sample of adolescents. MSS data has a high response rate, with over 80% of schools across the state opting to participate. Consequently, our r available from MSS allowed us to ensure our analyses were adequately powered to assess our mediation hypotheses.

Nevertheless, our analysis had several limitations. There may be residual confounding by unmeasured or unavailable covariates. While our analysis accounted for potential confounding by region (i.e. Twin Cities metro versus Greater Minnesota), county of residence provides a more nuanced measure of geographic location and may more accurately capture potential confounding by rural versus urban location [23]. Thus, our adjusted estimates may be positively or negatively biased due to residual confounding by county. Additionally, MSS data are cross-sectional and therefore our analysis could not assess causality due to temporal ambiguity. Furthermore, there are well documented challenges associated with obtaining accurate counts of homelessness among young people throughout the U.S [24]. For example, students whose homelessness resulted in being absent from school when the MSS was administered would not have been counted. It is therefore likely that our analysis underestimated the prevalence of unaccompanied homelessness in the state of Minnesota. MSS data only measured unaccompanied homelessness in the last 12 months, without assessing location (e.g. shelter, car, streets) or duration. Thus, our analysis is missing important information concerning how long youth experienced homelessness, repeat versus one-time experiences of homelessness, and where youth stayed during this time.

Furthermore, our analysis only included LGBTQ+ youth who identified as gay, lesbian, bisexual, queer, pansexual, questioning/not sure, transgender, genderqueer, and/or genderfluid, and was therefore not inclusive of all identities within the LGBTQIA+ community, such as asexual or nonbinary people who don't identify with the labels provided in the survey. Also, while our analysis is generalizable to young people within the state of Minnesota because our results stem from Minnesota specific data, they may not be generalizable to other states and regions. In addition, while our large sample size allowed us to assess potential mediation by parental caring and caring relationships with other adults separately, the numbers of students reporting that they had low parental caring, identified as LGBTQ+, had experienced unaccompanied homelessness, and had at least one caring relationship type with other adults were too low to assess potential interaction between mediators. We were therefore unable to assess whether having at least one caring relationship with a teacher, other adult family member, or adult community member had an even greater protective effect among LGBTQ+ youth who reported low parental caring.

Another important limitation was the use of social identity variables as proxies for measuring systemic oppression. MSS questionnaires did not directly ask youth whether they experienced structural oppression (e.g. transphobia and homophobia). Therefore, in our analysis we made

assumptions about the presence of oppression by using sexual orientation and gender identity as proxy measures for homophobia and transphobia, respectively, and race as a proxy measure for racism. We acknowledge the limitations and harms that these assumptions cause and that by using social identity as a proxy measure for oppression, our analysis is acting in ways that perpetuate and uphold the oppression we seek to expose and eliminate. It is imperative that researchers and public health professionals seek ways to advance trauma-effective methods that directly assess structural oppression going forward. Furthermore, our analysis did not assess the effects of intersecting systems of oppression on unaccompanied homelessness outcomes among LGBTQ+ youth. Future research is needed to better understand how systems of oppression such as racism, xenophobia, ableism, and sexism layer and intersect with homophobia and transphobia to produce unique patterns of risk for unaccompanied homelessness among LGBTQ+ youth.

## Conclusion

Our analysis provided evidence that the odds of unaccompanied homelessness may be significantly greater among LGBTQ+ youth than among heterosexual and cisgender youth in Minnesota. Furthermore, our results suggest that parental caring and caring relationships with other adults may be protective against unaccompanied homelessness among LGBTQ+ youth.

Homelessness disproportionately affects LGBTQ+ youth in Minnesota and throughout the U.S. each year. Adolescence is a critical period in the life course and adverse experiences such as unaccompanied homelessness during this time can have lasting negative consequences for health and well-being [25]. Documenting this association and improving our understanding of protective factors has important implications for public health planning, resource allocation, and program and policy interventions targeted at reducing unaccompanied homelessness among LGBTQ+ youth in Minnesota and other states.

Future longitudinal research is needed to address the temporality limitations within our analysis and determine whether there is a direct causal link between systemic oppression (in the form of homophobia and transphobia) that shows up in LGBTQ+ youths' relationships with parents and other adults and unaccompanied homelessness. Furthermore, future research should assess potential residual confounding by county of residence and potential mediator-mediator interaction between parental caring and caring relationships with other adults.

Additionally, while we found evidence that having at least one type of caring relationship with an adult other than a parent may be protective against unaccompanied homelessness among LGBTQ+ youth, our analysis did not assess the comparative protectiveness of having two or three caring relationships. Future studies should be done to determine whether each additional relationship provides even greater protection, and whether this association is linear or if there is a threshold effect. Such research is needed to better understand how LGBTQ+ youths' support networks influence their risk for homelessness and could inform future policy, school, and community-based public health approaches to homelessness prevention.

## Funding and Conflicts of Interest

## Positionality Statement

The researcher acknowledges that their position, identities, and experiences have influenced the ways in which they approach and conduct their work, including this analysis. To be transparent about the influence of positionality on their work, the researcher is providing information about themself. The author identifies as a White, queer, cisgender woman and was raised in the Midwest.

## Author Contact Information

Abigail Fink: finkx196@umn.edu

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