



## Neighborhood cohesion and psychological distress across race and sexual orientation

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### ABSTRACT

**Introduction:** We investigate the association neighborhood cohesion, as source of social support, has with psychological distress among white, Black, and Latinx lesbian, gay, and bisexual (LGB) individuals, compared to heterosexual individuals in the United States.

**Method:** We estimate zero-order multinomial logistic regression models to assess the likelihood of moderate and severe psychological distress among respondents.

**Result:** In the models accounting for neighborhood cohesion and all other covariates, white, Black, and Latinx lesbian, gay, and bisexual individuals are more likely to meet the criteria for moderate and severe psychological distress than non-LGB people.

**Conclusion:** Neighborhood cohesion has differing impact on psychological distress outcomes by racial/ethnic-sexual orientation groups, but in general provides a greater magnitude of protection against moderate psychological distress for non-LGB groups and a greater magnitude of protection against severe psychological distress for LGB groups.

### 1. Introduction

Public acceptance of lesbian, gay, and bisexual (LGB) individuals has changed drastically in recent years, yet mental health trends among lesbian, gay, and bisexual people are worrisome (Russell & Fish, 2016). Racism and homophobia diminish the health of people of color and LGB individuals through discrimination, stigmatization, and minority stress (Andersen et al., 2015; Eliason & Fogel, 2015; Frost et al., 2015; Hatzenbuehler, 2009; Krieger, 2020; Lick et al., 2013; Meyer, 2003; Riley, 2017; Walch et al., 2016; Williams et al., 2019).

Neighborhood context shapes mental health by facilitating emotional support via social networks as well as resources and information that facilitate optimal health (Diez Roux, 2001; Echeverría et al., 2008; Elliott et al., 2014; Hong et al., 2014; Kawachi & Berkman, 2001; E. S.; Kim et al., 2013). Specifically, neighborhood social cohesion measures how connected one feels to neighbors, how trusting one is of their neighborhood social network, and the level of shared values and norms among neighborhood residents (Granovetter, 1973;

Henning-Smith & Gonzales, 2017; Sampson et al., 1997). Henning-Smith and Gonzales (Henning-Smith & Gonzales, 2017) argue LGB individuals perceive less neighborhood cohesion compared to their heterosexual counterparts; however, the impact neighborhood cohesion has on the mental health of sexual minorities is largely understudied, particularly along racial lines. It remains unestablished whether neighborhood cohesion has a similar impact on LGB and non-LGB individuals, or whether it influences unequal mental health outcomes by race and sexual orientation. We address this gap by investigating the effects of neighborhood cohesion on moderate and severe psychological distress among LGB individuals who identify as white, Black, or Latinx.

#### 1.1. Lesbian, gay, and bisexual mental health

Since the 1980s, when evidence of poor mental health among sexual minorities first emerged (Gibson, n.d.), public opinion of the lesbian, gay, bisexual, transgender, queer, and other (LGBTQ+) community has dramatically shifted (Russell & Fish, 2016). In 2013, 92% of LGB adults

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surveyed viewed Americans as more accepting of the LGBTQ + community compared to the previous decade (Pew Research Center, 2013). Additionally, in 2019, 61% of adults surveyed reported they support same-sex marriage, compared to only 35% reporting support in 2001 (Pew Research Center, 2019). Despite these improvements, LGB individuals still experience significant levels of discrimination. More than one-third of LGBTQ Americans report experiencing discrimination in the past year; with 51% experiencing harassment or discrimination in public spaces, 36% in the workplace, 21% at school, 20% in an apartment community; and 15% in interactions with law enforcement (Mahowald et al., 2020). Other common stressors among LGB individuals are rejection, victimization, loss of financial security or employment, housing discrimination, and internalized homophobia and biphobia (Meyer, 2003; Russell & Fish, 2016). Mental health issues LGB individuals face are best understood under the minority stress framework, which posits that chronic stressors and the unique experiences of a stigmatized identity act as social determinants of poor mental health outcomes (Aneshensel, 1992; Meyer, 1995, 2003; Meyer & Frost, 2013).

Consequently, it is unsurprising that LGB individuals are at higher risk of depression, mood disorders, anxiety disorders, post-traumatic stress disorder, alcohol use, suicidality, and psychiatric comorbidity (Borgogna et al., 2019; Bränström & Pachankis, 2018; Cochran et al., 2003; Gilman et al., 2001; Goldstein et al., 2016; Gonzales et al., 2016; Gonzales & Henning-Smith, 2017; Hatzenbuehler, 2009; Kerridge et al., 2017; Lee et al., 2020; Parent et al., 2019; Plöderl & Tremblay, 2015; Remafedi et al., 1998; Rice et al., 2019; Weissman et al., 2021). Although there is a growing body of literature on the mental health of Black and Latinx LGB communities and an increasing understanding of intersectionality in LGB health research, existing work has several limitations, including small and/or non-representative samples. Additionally, early work on LGB health frequently focused on one racial/ethnic group or one sexual orientation and lacked a comparative component (Bowleg et al., 2003; Garrett-Walker & Longmire-Avital, 2018; Hughes & Matthews, 2004; Lassiter et al., 2019; Lassiter & Poteat, 2020; Walker & Longmire-Avital, 2015; Wilton et al., 2018). We recognize the significance and foundational value of this research to the study of LGB mental health. However, these studies do not provide a broader, comparative picture across race/ethnicity and sexual orientations (including whiteness and heterosexuality), which is the aim of our study. In sum, we are concerned with the effects of interlocking marginalizing identities and how they potentially reinforce health inequalities vis-à-vis those without marginalizing identities (Browne & Misra, 2003; Collins, 2000; Combahee River Collective, 1995; Crenshaw, 1991).

Some evidence suggests that Black and Latinx LGB individuals do not experience more mental health disorders (as defined by the DSM-IV) than white LGB individuals (Williams, 2001) likely due to the lower prevalence of mental disorders among Black and Latinx individuals generally. Although Black individuals experience higher levels of discrimination and lower access to socioeconomic (SES) resources, research suggests that Black Americans have equal or lower rates of mood, anxiety, and substance abuse disorders compared to whites (Barnes & Bates, 2017; Blazr et al., 1994; Erving & Thomas, 2018). This Black-White paradox (Williams, 2001) in mental health is attributed to the protective effect of social ties among Black Americans (Mouzon, 2014). Similarly, the literature suggests that Latinx individuals, particularly those who are foreign-born, have better mental health outcomes than their US-born counterparts and non-Latinx whites, despite experiencing heightened risk factors (Alegría et al., 2008; Harker, 2001; Ortega et al., 2000; Vega & Rumbaut, 1991). However, some studies have challenged the assertion of these advantages in mental health when considering sexual orientation. Black and Latinx LGB individuals are more likely to report a serious suicide attempt (Kiecolt et al., 2008) relative to white LGB people, and lesbian and bisexual women are more likely to report depression symptomatology when compared to non-LGB women (Cochran & Mays, 2000; Hirokazu; Yoshikawa et al., 2004).

Discrimination due to the overlap of racism, xenophobia, and

homophobia can independently contribute to distress, anxiety, depressed mood, and suicidal ideation (Díaz et al., 2001). Thus, experiences of LGB Black and Latinx individuals might differ significantly from those of LGB white individuals. Evidence suggests LGB people of color are aware of limited educational, residential, and economic opportunities and are conscious of racism as a source of stress (Meyer et al., 2011). LGB people of color describe feeling disconnected between their racial and ethnic identities and sometimes even from the broader LGBTQ + community and cite their own culture's homophobia as an issue that exclusively affects LGB people of color basis (Ghabrial, 2017). They report experiencing stress related to experiences like financial woes and coming out and anxiety on a regular basis (Ghabrial, 2017). LGB people of color are also subject to microaggressions such as others' disapproval, being reduced to universal stereotypes regarding their sexuality, tokenization and exoticization, body policing, and intrusive questioning about their sexual practices (Weber et al., 2018). Additionally, LGB people of color face racial, sexual orientation, and mental illness discrimination when in mental health treatment contexts (Charles, 2013; Delphin-Rittmon et al., 2013; L.; Gonzales et al., 2015; Holley et al., n.d.; Kidd et al., 2011; Stromwall et al., 2011).

Interlocking modes of domination (Browne & Misra, 2003; Collins, 2000; Combahee River Collective, 1995; Crenshaw, 1991) reinforce health disparities in the context of race/ethnicity, gender, and sexual orientation. Literature concerning intersectionality and LGB health has provided mixed results. One body of work finds that with multiple marginalization, for example being LGB *and* a person of color, comes greater risk for adverse health outcomes (Cochran & Mays, 1994; Díaz et al., 2001; H.-J.; Kim & Fredriksen-Goldsen, 2012; Mereish & Bradford, 2014; Meyer et al., 2008; Park et al., 2022). Another body of work suggests a theory of resilience, where LGB people of color have lower risk compared to LGB white individuals because of support networks in communities of color (Balsam, 2004; Bostwick et al., 2014; Lytle et al., 2015). Finally, an additional body of literature supports either the multiple marginalization or the theory of resilience, depending on race/ethnicity-sexual orientation-gender groupings (Lehavot et al., 2019; López et al., 2021; Platt et al., 2018; Rodríguez-Seijas et al., 2019). For example, among a sample of women veterans, white heterosexual women report the lowest levels of psychological distress and heterosexual women of color report the highest (Lehavot et al., 2019). In the same sample, white LGB women report greater levels of adverse mental health than heterosexual white women; however, heterosexual women of color report similar or worse mental health compared to LGB women of color (Lehavot et al., 2019). In a nationally representative population-based study, gay men of color were more likely to experience psychological distress compared to gay white men; however, gay and lesbian white women and gay and lesbian women of color had similar psychological distress profiles (Platt et al., 2018).

## 1.2. Social support and neighborhood cohesion

Social support is instrumental for LGB individuals because they often rely on members of their community (i.e., fictive kin or chosen families), for social support more than they rely on family members (Frost et al., 2016; Weston, 1997). Social support, broadly defined as resources provided by others (Cohen & Syme, 1985), serves three distinct purposes: it leads one to believe they are loved and cared for, it creates the belief that one is valued, and it creates a sense of belonging to a group. This perception of belonging and being valued and cared for has significant associations with health (Cobb, 1976). Among bisexual individuals, low levels of perceived social support are associated with depression, poor life satisfaction, and internalized biphobia (Sheets & Mohr, 2009). Perceived support is associated with health, wellbeing, and life satisfaction among lesbian and gay adults (Dominguez-Fuentes et al., 2012; Lauby et al., 2012). Furthermore, social support and supportive environments have a positive impact on the health, wellbeing, and educational outcomes of LGB youth (Detrie & Lease, 2007;

Hatzenbuehler et al., 2014; Ryan et al., 2009; Toomey et al., 2011). However, compared to LGB whites, LGB people of color receive fewer dimensions of social support (Frost et al., 2016), which highlights the need to examine the impact of social support on health among this population.

A substantial body of research supports the relationship between community-level social cohesion and health (Browning et al., 2003; Kawachi & Berkman, 2000; Lochner et al., 2003). Social cohesion is “the extent of connectedness and solidarity among groups in society” (Kawachi & Berkman, 2000). The literature dealing with this psychosocial resource employs various constructs in terms of measurement, including collective efficacy, social capital, and civic participation (Berkman et al., 2014; Lochner et al., 2003; Macinko & Starfield, 2001; Sampson et al., 1997). Neighborhood cohesion, a feeling of connectedness to one’s own neighborhood, is associated with numerous health outcomes (Granovetter, 1973; Henning-Smith & Gonzales, 2017; Sampson et al., 1997). Neighborhood cohesion facilitates the development of social networks that provide emotional, informational, and instrumental support, including the sharing of health information (Diez Roux, 2001; Echeverría et al., 2008; Elliott et al., 2014; Hong et al., 2014; Kawachi & Berkman, 2000, 2001; E. S.; Kim et al., 2013). Higher neighborhood cohesion decreases the risk of poor mental health outcomes, smoking and alcohol consumption, and stroke. Neighborhood interactions are important for LGB individuals as experiences of stigmatization, discrimination, and minority stress are a major pathway for poor mental health outcomes (Hatzenbuehler, 2009; Henning-Smith & Gonzales, 2017; Meyer, 2003). Compared to non-LGB individuals, LGB individuals are less likely to say they live in a close-knit neighborhood, that they can count on and trust their neighbors, and less likely to say that their neighbors help each other out (Henning-Smith & Gonzales, 2017). Neighborhood cohesion has important implications for health and wellbeing and the literature thus far has not addressed how it affects the mental health of sexual minorities, especially along racial lines. Our study aims to address this gap.

## 2. Data and methods

We use the IPUMS Health Surveys, a harmonized version of the National Health Interview Survey (NHIS) (Blewett et al., 2019). NHIS is a cross-sectional household survey that measures physical and mental health outcomes, as well as social and demographic variables. We utilized six years of data from 2013 to 2018 to increase the size of our LGB sample. Of the 568,494 respondents in those six waves of data, 4,920 identify as lesbian, gay or bisexual. Due to the use of secondary data, this study was granted exempt status from the Institutional Review Board at the first author’s institution. Data are weighted to address complex survey design.

### 2.1. Key variables

**Psychological Distress.** Our outcome variable is psychological distress, a composite measure known as the Kessler 6 (K6) (Kessler et al., 1994, 2002, 2003). The six variables ask individuals how often they have felt that everything is an effort, felt hopeless, nervous, restless, sad and/or worthless, during the past 30 days. The attributes range from none of the time (0) to all the time (4). Responses are summed to measure nonspecific psychological distress with scores ranging from 0 to 24. Individuals scoring 13 or greater are likely to be experiencing severe psychological distress (Kessler et al., 2003) while individuals scoring between 5 and 12 meet the criteria for moderate psychological distress (Prochaska et al., 2012). Thus, we categorize distress in three ways, 1) *Less than Moderate Distress* (score of 4 or less); 2) *Moderate Distress* (score of 5–12); and 3) *Severe Distress* (score of 13 or over).

**Explanatory Variables.** We identify individuals into mutually exclusive racial and ethnic groups by sexual orientation (referred to as racial/ethnic-sexual orientation groups). The NHIS has included a sexual

orientation question since 2013. It asks respondents, “Which of the following best represents how you think of yourself?” The attributes to this variable are, lesbian or gay; straight, that is, not lesbian or gay; bisexual; something else; I don’t know the answer; and refused. The study’s subsample includes those who identified as lesbian or gay, bisexual, and straight. To assess race and ethnicity, the NHIS asks two questions. The race question reads, “What race or races do you consider yourself to be?” Respondents can select more than one of the sixteen available categories. For ethnicity, the question is, “Do you consider yourself to be Hispanic or Latino?”, and respondents can answer yes, no, or unknown. For our subsample, we selected those who identified as white and non-Latino, Black and non-Latino, and Latino. Because of limited sample size of LGB Asian and LGB American Indian/Alaska Native individuals, we do not include Asian or American Indian/Alaska Native adults in our analysis. Thus, our subsample is comprised of six self-identified racial/ethnic-sexual orientation groups: heterosexual (non-LGB) non-Latinx (NL) white adults (N = 115,784), NL Black adults (N = 22,061) and Latinx adults (N = 26,036) as well as self-identified lesbian, gay, or bisexual, NL white adults (N = 3,293), LGB NL Black adults (N = 577) and LGB Latinx adults (N = 691). There is some evidence that suggests that Latinx and Black survey respondents have higher non-response rates for self-identified sexual orientation questions than NL whites (H. J. Kim & Fredriksen-Goldsen, 2013). Hence, Black and LGB respondents may be undercounted. Additionally, because NHIS does not measure gender identity, we are unable to identify transgender individuals for this analysis. It is important to note that we do not suggest sexual orientation and race categories themselves determine the health outcomes of LGB populations and people of color. Instead, we conceptualize these categories as “markers” used to identify individuals at risk for exposure to racism, homophobia, and biphobia which are created, maintained, and reproduced by social structures (Ford & Airhihenbuwa, 2011; Poteat, 2021; Zuberi & Bonilla-Silva, 2008).

**Neighborhood Cohesion** was constructed from four Likert-scale items (Henning-Smith & Gonzales, 2017; Murillo et al., 2016; Yi et al., 2016). These items asked respondents how much they agree that their neighborhood is close-knit, that they can count on neighbors, that neighbors can be trusted, and that neighbors help each other out. We dichotomize each item and create a summed score with a range from 0 to 4.

**Controls.** In each model, we control for *Time in Neighborhood* (less than one year, 1–3 years, 4–10 years, 11–20 years and 20+ years). Sociodemographic control variables include *Gender* (coded 0 for male and 1 for female), *Age* (continuous), *Marital Status* (coded 0 for unmarried and 1 for married or living with a partner) and *Region* (Northeast, North Central/Midwest, South and West). For SES measures, we include *Educational Attainment* (less than high school, high school graduate, some college and bachelor’s degree and above; bachelor’s degree and above is the reference group in all models) and *Employment* (coded 0 for unemployed and 1 for employed).

### 2.2. Analytic techniques

We use descriptive statistics to characterize the study sample and estimate the prevalence of moderate and severe psychological distress by racial/ethnic-sexual orientation group. We then estimate zero-order multinomial logistic regression models for psychological distress. We first test the relationship between racial/ethnic-sexual orientation groups and psychological distress. Next, we add neighborhood cohesion to the model, and finally, we add all other control variables: time in neighborhood, gender, age, marital status, education attainment, employment status, and region. We use non-LGB, non-Latinx white as the reference group in these models for several reasons. First, because this subgroup is the largest, because non-LGB NL whites have the highest average rating of neighborhood cohesion, and because this subgroup has the lowest prevalence of moderate and severe psychological distress, we compare other groups to non-LGB NL whites. Second, as supported through the minority stress framework, chronic stressors and the unique

experiences related to a stigmatized identity act as social determinants of mental health outcomes for non-LGB people of color and LGB people (Andersen et al., 2015; Aneshensel, 1992; Díaz et al., 2001; Eliason & Fogel, 2015; Frost et al., 2015; Hatzenbuehler, 2009; Lick et al., 2013; Meyer, 1995, 2003; Meyer & Frost, 2013; Walch et al., 2016). We conducted the analysis using Stata 17 (StataCorp, 2021).

### 3. Results

#### 3.1. Descriptive statistics

Table 1 displays the weighted distributions and means by race and sexual orientation. All LGB groups have a higher proportion of respondents in moderate and severe distress compared to non-LGB groups. The LGB white group has the highest proportion of respondents in moderate distress (28.7%), while the LGB Black and LGB Latinx groups have the highest proportions of respondents meeting the criteria for severe distress (9.4% and 8.3%). Non-LGB individuals have higher average neighborhood cohesion than their LGB counterparts. Among LGB individuals, the LGB white group has the highest rated neighborhood cohesion (3.0). LGB individuals are more likely to have resided in

their neighborhoods for less than one year and 1–3 years. Non-LGB individuals have longer neighborhood tenures. Women are almost equally represented in all groups, except for the LGB Black group (60.7%). LGB individuals are also younger than non-LGB individuals, the youngest being LGB Black and Latinx individuals (35.7 and 35.5 years old). Non-LGB individuals are married or living with a partner in higher proportions. LGB and non-LGB Black individuals have the lowest proportion of marriage or living with a partner. White individuals reported higher levels of education, with the highest proportions of college-educated respondents found in both non-LGB white and LGB white groups. The proportion of respondents employed and unemployed are slightly higher for all LGB groups in the sample compared to non-LGB groups, and the proportion of respondents not in the labor force is higher among non-LGB groups compared to LGB groups.

#### 3.2. Psychological distress

Table 2 displays the results of multinomial logistic models expressed as relative risk ratios (RR). For each comparison, moderate psychological distress compared to less than moderate distress, and severe psychological distress compared to less than moderate distress, we first

**Table 1**

Weighted descriptive statistics of sample respondents by race, ethnicity, and sexual orientation across independent and control variables (N = 162,044).

	NL White (N = 115,784)	NL Black (N = 22,061)	Latinx (N = 26,036)	LGB NL White (N = 3,293)	LGB Black (N = 577)	LGB Latinx (N = 691)
Less than Moderate Distress	80.0%	79.4%	79.4%	63.8%	64.0%	63.4%
Moderate Distress	16.7%	17.4%	16.9%	28.7%	26.6%	28.2%
Severe Distress	3.3%	3.3%	3.7%	7.6%	9.4%	8.3%
Neighborhood Cohesion (Range 0–4)	3.3	2.9	2.8	3.0	2.4	2.7
Time in Neighborhood						
Less than 1 year	11.6%	15.7%	14.0%	20.7%	28.8%	24.8%
1–3 years	18.9%	23.6%	24.7%	25.0%	32.1%	28.5%
4–10 years	23.8%	25.8%	29.7%	26.1%	19.0%	25.1%
11–20 years	20.2%	16.8%	18.9%	16.5%	11.6%	14.5%
20+ years	25.4%	18.1%	12.8%	11.8%	8.5%	7.1%
Female	51.3%	54.8%	49.9%	54.3%	60.7%	51.3%
Age (Range 18–85+)	49.7	45.0	41.3	41.2	35.7	35.5
Married/Living with Partner	64.7%	41.4%	60.6%	48.0%	24.3%	40.8%
Educational Attainment						
Less than High School	8.0%	14.6%	31.2%	5.7%	13.3%	18.2%
High School	24.7%	30.0%	26.9%	18.2%	26.9%	23.7%
Some College	31.8%	33.5%	27.1%	32.4%	39.2%	32.7%
Bachelor's and More	35.6%	21.9%	14.8%	43.8%	20.6%	25.5%
Employment Status						
Employed	61.33%	58.60%	65.24%	67.44%	58.90%	69.59%
Unemployed	2.93%	7.79%	4.82%	5.73%	14.02%	7.61%
Not in Labor Force	35.74%	33.60%	29.94%	26.84%	27.08%	22.80%
Region						
Northeast	19.0%	15.9%	13.5%	19.4%	13.4%	14.9%
North Central/Midwest	27.7%	16.7%	9.2%	22.8%	20.7%	11.5%
South	33.8%	59.7%	37.4%	31.6%	55.1%	36.4%
West	19.6%	7.8%	40.0%	26.2%	10.9%	37.2%

Notes: NL indicates non-Latinx; LGB indicates lesbian, gay, and bisexual.



**Table 2**  
Multinomial logistic models of psychological distress expressed in relative risk ratios.

	Moderate Distress Compared to less than Moderate Distress			Severe Distress Compared to less than Moderate Distress		
Racial and Ethnic Group by Sexual Orientation (Ref. White)						
Black	1.04 (0.032)	0.95 (0.030)	0.82*** (0.026)	1.03 (0.061)	0.84** (0.051)	0.60*** (0.038)
Latinx	1.03 (0.027)	0.92** (0.025)	0.77*** (0.023)	1.13* (0.056)	0.90* (0.046)	0.67*** (0.040)
LGB NL White	2.15*** (0.121)	2.05*** (0.117)	1.90*** (0.111)	2.86*** (0.258)	2.59*** (0.237)	2.69*** (0.267)
LGB NL Black	2.07*** (0.294)	1.76*** (0.261)	1.32 (0.195)	3.83*** (0.827)	2.75*** (0.632)	1.67* (0.404)
LGB Latinx	2.17*** (0.275)	1.92*** (0.251)	1.58*** (0.216)	3.32*** (0.699)	2.59*** (0.572)	2.11*** (0.477)
Neighborhood Cohesion						
		0.82*** (0.006)	0.85*** (0.006)		0.69*** (0.009)	0.73*** (0.009)
Time in Neighborhood (Ref. less than one year)						
1–3 years			0.86*** (0.027)			0.97 (0.060)
4–10 years			0.87*** (0.029)			0.99 (0.063)
11–20 years			0.76*** (0.027)			0.80** (0.057)
20+ years			0.75*** (0.028)			0.70*** (0.053)
Female			1.31*** (0.026)			1.39*** (0.056)
Age			0.99*** (0.001)			0.99*** (0.001)
Married/Living with Partner			0.80*** (0.016)			0.65*** (0.026)
Education (Ref. Bachelor's degree and above)						
Less than HS			1.58*** (0.052)			3.71*** (0.254)
High School			1.33*** (0.035)			2.63*** (0.158)
Some College			1.31*** (0.034)			2.25*** (0.140)
Employment Status (Ref. Unemployed)						
Employed			0.53*** (0.024)			0.23*** (0.018)
Not in Labor Force			0.73*** (0.033)			0.78*** (0.060)
Region (Ref. Northeast)						
North Central/Midwest			1.05 (0.034)			1.15* (0.084)
South			0.97 (0.030)			1.19** (0.079)
West			1.14*** (0.040)			1.19* (0.087)

Notes: N = 158,320. Standard Errors in parentheses. \*\*\*p < .001, \*\*p < .01, \*p < .05. NL indicates non-Latinx; LGB indicates lesbian, gay, and bisexual.

show baseline models by race and sexual orientation. Our second models include neighborhood cohesion, and third models account for all covariates. We conduct a final fourth model including interaction terms for racial/ethnic-sexual orientation groups and neighborhood cohesion (shown in predicted probability figures below). In the three baseline models, except for Latinx respondents for severe psychological distress (RR = 1.13, p > .05), non-LGB Black and Latinx respondents are not significantly different from non-LGB white individuals, the reference group for all models.

After controlling for neighborhood cohesion in the second models, all non-LGB groups are significantly less likely to be psychologically distressed with the exception of Black individuals for moderate distress compared to less than moderate distress. For LGB groups, once we account for neighborhood cohesion, they all remain significantly more likely to be moderately and severely distressed, although to a lesser extent. Though the association of race and sexual orientation is lower in these models, neighborhood cohesion has the lowest association among the LGB white group, for whom the inclusion of this variable slightly reduces the association of the main independent variable.

In the third model, controlling for all covariates, heterosexual Black and Latinx individuals are significantly less likely to be moderately and severely distressed. Among LGB groups, white individuals are at higher risk of moderate and severe distress compared to non-LGB, non-Latinx whites (RR = 1.90, p < .001 for moderate distress; RR = 2.69, p < .001 for severe distress). Black individuals are also at higher risk of severe distress (1.67, p < .05) compared to non-LGB, non-Latinx whites. Finally, Latinx respondents are at significantly higher risk for both types of distress (RR = 1.58, p < .001 for moderate distress; 2.11, p < .001 for severe distress) when compared to non-LGB, non-Latinx whites. Neighborhood cohesion overall significantly decreases the likelihood of meeting the criteria for both moderate and severe psychological distress (RR = 0.85, p < .001; RR = 0.73, p < .001) as does time in the neighborhood. Longer neighborhood tenure significantly decreases the likelihood of distress, especially for those in the 11–20 and 20+ years of residence in the neighborhood. Age, being married, and being employed or not in the labor force significantly decrease the likelihood of meeting the criteria for moderate and severe distress. Being a woman and having

less than a bachelor's degree has the opposite relationship. In terms of region, compared to the Northeast, respondents in the West are more likely to be moderately distressed, while those in the other regions are more likely to be severely distressed.

In the final model, after controlling for all covariates and adding interaction terms, we present predicted probabilities of meeting the criteria for moderate distress compared to less than moderate distress (Table 3 and Fig. 1) and severe distress compared to less than moderate distress (Table 4 and Fig. 2).

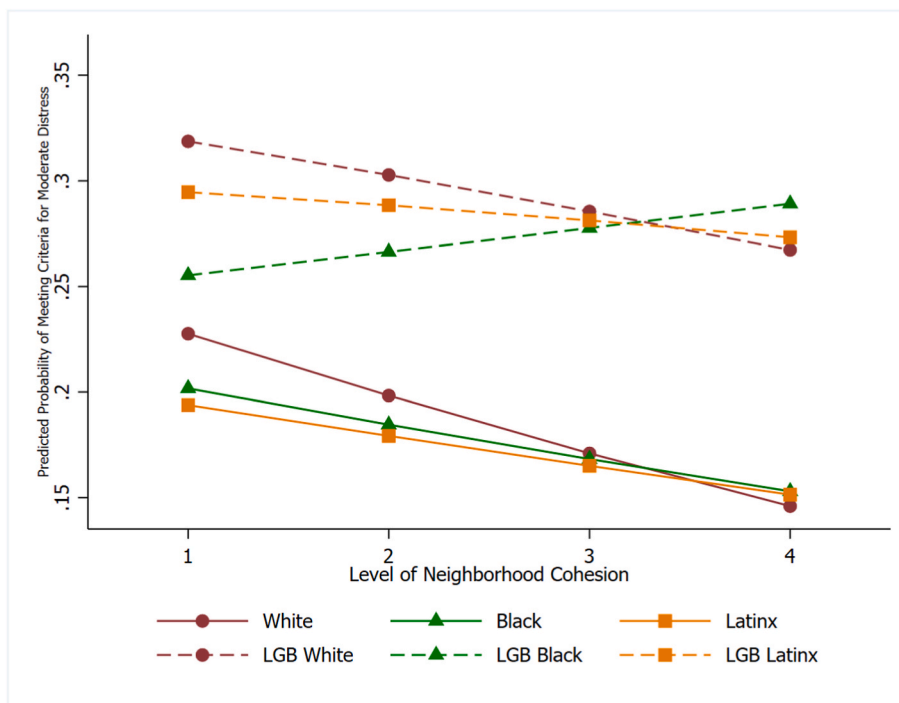
The impact of neighborhood cohesion is not equal across racial/ethnic-sexual orientation groups. Tables 3 and 4 report predicted probabilities for meeting the criteria for moderate and severe psychological distress by racial/ethnic-sexual orientation group, at each level of neighborhood cohesion.

For moderate and severe psychological distress, with equal levels of neighborhood cohesion, each LGB racial/ethnic group is more likely to meet the criteria for moderate distress when compared to their respective non-LGB group. Neighborhood cohesion overall significantly decreases the likelihood of meeting the criteria for both moderate and severe psychological distress for all racial/ethnic-sexual orientation groups, with the exception of moderate distress for LGB Black adults. Quite surprisingly, as levels of neighborhood cohesion increase, the predicted likelihood of meeting the criteria for moderate distress also increases for LGB Black adults, although this association is not significant

**Table 3**  
Predicted probability of meeting the criteria for moderate distress, by level of neighborhood cohesion.

	White	Black	Latinx	LGB White	LGB Black	LGB Latinx
<b>Level of Neighborhood Cohesion</b>						
1	22.76	20.17	19.38	31.87	25.53	29.46
2	19.83	18.46	17.93	30.28	26.64	28.84
3	17.10	16.83	16.51	28.55	27.77	28.12
4	14.60	15.30	15.14	26.73	28.92	27.32

Notes: N = 158,320. Covariates not show are set to their means. NL indicates non-Latinx; LGB indicates lesbian, gay, and bisexual.



**Fig. 1.** Predicted Probabilities of Meeting Criteria for Moderate Distress by Racial/Ethnic-Sexual Orientation Group, by Level of Neighborhood Cohesion. Covariates not show are set to their means. NL indicates non-Latinx; LGB indicates lesbian, gay, and bisexual.

**Table 4**

Predicted probability of meeting the criteria for severe distress, by level of neighborhood cohesion.

	White	Black	Latinx	LGB White	LGB Black	LGB Latinx
<b>Level of Neighborhood Cohesion</b>						
1	5.74	4.26	5.17	10.80	10.46	10.97
2	4.31	3.66	4.11	8.72	9.88	9.18
3	3.19	3.13	3.25	6.98	9.31	7.63
4	2.34	2.67	2.56	5.54	8.77	6.31

Notes: N = 158,320. Covariates not show are set to their means. NL indicates non-Latinx; LGB indicates lesbian, gay, and bisexual.

in multinomial models.

For moderate distress, neighborhood cohesion appears to provide a greater magnitude of protection for non-LGB groups in comparison to their respective LGB group. When considering the difference in predicted probabilities between a neighborhood cohesion score of 1 and 4, each non-LGB group sees a larger decrease in predicted probabilities for moderate psychological distress compared to their respective LGB group (a difference of 8.16 for white versus a difference of 5.14 for LGB white; 4.87 for Black versus a 3.39 increase for LGB Black; and a difference of 5.14 for Latinx versus 2.14 for LGB Latinx).

This relationship flips for severe psychological distress. When considering the difference in predicted probabilities between a neighborhood cohesion score of 1 and 4, each LGB group sees a larger decrease in predicted probabilities for severe psychological distress compared to their respective non-LGB group (5.26 for LGB white versus 3.41 for white; 1.69 for LGB Black versus 1.59 for Black; and 4.66 for LGB Latinx compared to 2.61).

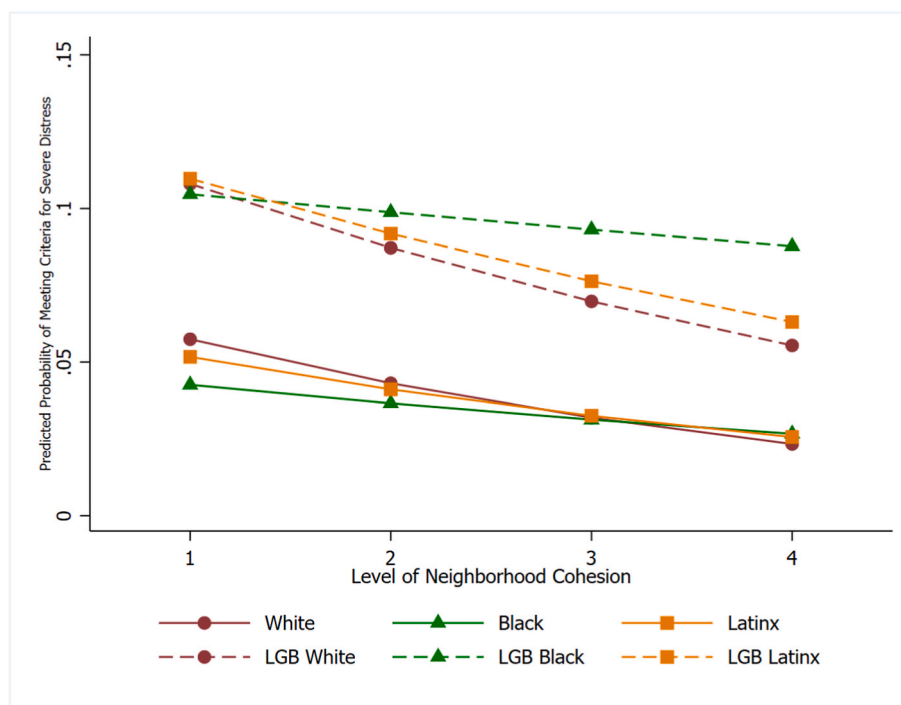
In sum, all LGB groups have higher proportions of respondents in moderate and severe distress than non-LGB groups. Additionally, in regression analyses, all LGB individuals are almost or over two times more likely to meet the criteria for moderate and severe psychological distress than non-LGB, non-Latinx white individuals. Neighborhood cohesion appears to provide a greater magnitude of protection against

moderate psychological distress for non-LGB groups compared to their respective LGB group and a greater magnitude of protection against severe psychological distress for LGB groups compared to their respective non-LGB group.

#### 4. Discussion

We anticipated that LGB Black and Latinx individuals would have a higher likelihood of meeting the criteria for psychological distress than LGB white individuals when compared to non-LGB white individuals because of the multiple minority stressors queer people of color face (Díaz et al., 2001; Hughes et al., 2008; Zamboni & Crawford, 2007). We find little support for this across models. In baseline models, LGB white individuals are more likely to meet the criteria for moderate distress compared to non-LGB white individuals, but LGB people of color are more likely to meet the criteria for severe psychological distress compared to non-LGB white individuals; however, in subsequent models, this association does not hold. In analysis not shown (see Supplementary material), we test the significance of a linear combination of coefficients and see that each LGB group does not significantly differ from the other for severe psychological distress, and only LGB white and LGB Black individuals differ from each other for moderate psychological distress.

We further expected neighborhood cohesion to reduce the likelihood of meeting the criteria for psychological distress, and we find support for this across models. After controlling for neighborhood cohesion, all groups in the study were less likely to meet the criteria for psychological distress; however, the magnitude of impact was not equal across groups. Neighborhood cohesion was less impactful for LGB groups on moderate psychological distress but more impactful on severe psychological distress for LGB groups, compared to their respective non-LGB group. Although for LGB Black adults, greater levels of neighborhood cohesion was associated with a higher predicted probability of meeting the criteria for moderate psychological distress, multinomial logistic models show that LGB Black individuals do not significantly differ from non-LGB white individuals on moderate distress. The association observed



**Fig. 2.** Predicted Probabilities of Meeting Criteria for Severe Distress by Racial/Ethnic-Sexual Orientation Group, by Level of Neighborhood Cohesion. Covariates not show are set to their means. NL indicates non-Latinx; LGB indicates lesbian, gay, and bisexual.

for LGB Black individuals on severe psychological distress is significant and follows the association of other LGB groups. Neighborhood cohesion had the second highest magnitude of impact on LGB white individuals for moderate psychological distress, and the greatest magnitude of impact on LGB white individuals for severe psychological distress. This suggests that neighborhood cohesion is especially important for buffering severe psychological distress for LGB people but has less of an association on moderate psychological distress.

Neighborhood cohesion alone falls short in protecting the mental health of LGB people. We suspect that LGB white individuals experience the greatest protective effect from neighborhood cohesion because of the combination of other protective influences they receive with more cohesive neighborhoods. In our sample, LGB white individuals have on average longer tenure in their neighborhoods, are more likely to be married, more likely to be employed, and have higher educational attainment – all significant factors in reducing the likelihood of psychological distress. Thus, we can posit that LGB people of color benefit at a lower magnitude from neighborhood cohesion considering the lack of other protective factors. Although not available through public NHIS data, neighborhood racial composition, socioeconomic status of the neighborhood, and other contextual factors, are likely playing a role among LGB white individuals; in other words, they are likely to be in a more advantageous position than LGB people of color, and neighborhood cohesion is associated with these larger advantages. Again, sexual orientation and race categories themselves do not determine the health outcomes of LGB populations and people of color. As indicated in this discussion of neighborhood cohesion having larger magnitudes of protection for LGB white individuals compared to others, we understand racial/ethnic-sexual orientation categories to be “markers” of exposure to racism, homophobia, biphobia, and the intersections of these modes of domination (Ford & Airhihenbuwa, 2011; Poteat, 2021; Zuberi & Bonilla-Silva, 2008).

Despite these findings, we must note several limitations. The subsample that identifies as lesbian, gay, and bisexual is relatively small, so to preserve statistical power, we group these individuals together. Along similar lines, because the NHIS is secondary data, there may be

respondent bias on the sexual orientation question. However, because individuals may be less likely to disclose their LGB identities, if our findings err from selection bias, they do so in an underestimate of the inequalities presented here. Given that the NHIS only allows for cross-sectional analysis, we are also largely unable to explore causal mechanisms of our variables of interest.

Despite these shortcomings, our findings still indicate that LGB individuals experience greater levels of psychological distress compared to non-LGB people. Although neighborhood cohesion lessens these disparities, it does not lessen them to the same magnitude as non-LGB individuals for moderate psychological distress, nor does it have equal impact by race and ethnicity. Interventions beyond the community or neighborhood level, then, are required to address these disparities. Structural causes of health trends and inequalities (Karas Montez et al., 2021) must be addressed to truly remedy the disparities identified in this analysis.

## 5. Conclusion

Henning-Smith and Gonzales (Henning-Smith & Gonzales, 2017) made a substantial contribution in identifying that LGB individuals experience lower levels of neighborhood cohesion. They argued for the need to better understand why LGB adults feel this way and what the health implications may be (Henning-Smith & Gonzales, 2017). We have answered one of these questions by demonstrating that there is a greater likelihood of meeting the criteria for moderate and severe psychological distress among LGB individuals as well as the differential impact neighborhood cohesion has on psychological distress for LGB groups compared to their non-LGB counterparts. We echo the need for further research to improve our understanding of diminished neighborhood cohesion and other health implications this disparity produces.

The fact that neighborhood cohesion does not equally protect LGB groups from psychological distress suggests the need for interventions to fill the gap. It is likely that this disparity will exist until the stigmatization, discrimination, and minority stress that accompanies being a sexual minority is remedied. Additionally, because neighborhood

cohesion provides a greater magnitude of protection for LGB white individuals than LGB people of color, the stigmatization, discrimination, and minority stress that accompanies being a person of color amplifies these disparities. Efforts to create truly inclusive neighborhoods would be a first step; however, this is not enough. As our analysis shows, when neighborhood cohesion is rated at a maximum score of 4/4, the predicted probabilities of psychological distress among LGB individuals is still more than double that of the non-LGB individuals, and among LGB groups, the predicted probabilities of psychological distress are much higher for LGB Black individuals than others. Greater LGB protections, outside of inclusive neighborhoods, are necessary to address this disparity. City ordinances, state legislation, and federal anti-discrimination protections, truly inclusive health care and access for LGB communities and communities of color, and policies aimed to eliminate other forms of stratification and inequality are essential in diminishing the gap we find in our analysis.

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### Data availability statement

The primary data was collected by the Census Bureau, under a contractual agreement with the National Center for Health Statistics (NCHS), a part of the Centers for Disease Control and Prevention (CDC). The data was harmonized across waves by the IPUMS Health Surveys' team at the University of Minnesota Population Center. Data available at: <https://nhis.ipums.org/nhis/>

### Declaration of competing interest

The authors declare that they have no conflict of interest.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmph.2022.101134>.

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