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**Examining Health Disparities Among Lesbian, Gay, Bisexual, Transgender, and
Queer/Questioning Adults in Davidson County, Tennessee**

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Abstract

Background: Lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ) individuals experience increased risks for health disparities and discrimination compared to non-LGBTQ individuals, yet there is limited research in southern populations. **Purpose:** The purpose of this scholarly project was to examine if LGBTQ individuals had increased health disparities compared to non-LGBTQ individuals in Davidson County, Tennessee (TN). **Methods:** A quasi-experimental design ($N = 1,704$) used the 2019 Nashville Community Health and Well-being Survey for analysis. **Results:** Findings suggested LGBTQ individuals had increased odds of not having health insurance ($p = .009$, adjusted odds: 6.84), poor mental health ($p = .007$, adjusted odds: .384), receiving mental health treatment ($p = .017$, adjusted odds: .377), and HIV high risk activities ($p = .002$, adjusted odds .182). The confidence to determine high quality from low quality health resources on the internet ($p = .018$) and using information from the Internet to make health decisions ($p = .015$) was lower among non-LGBTQ individuals. Non-LGBTQ individuals found people more caring and sympathetic to people with mental illness than LGBTQ individuals ($p = .001$). **Conclusion:** Additional research is warranted to explore health disparities, discrimination, and LGBTQ status among a larger sample of LGBTQ individuals in the South, with both urban and rural participants. Further research can provide valuable information on the current state of health disparities of LGBTQ individuals, which can then be applied to health outcome improvement efforts by researchers, public health officials, and healthcare providers, leading to an overall improvement in health and well-being.

Keywords: LGBTQ, Nashville, Tennessee, health disparities, mental health, physical health, lifestyle, health and well-being

Examining Health Disparities Among Lesbian, Gay, Bisexual, Transgender, and Queer/Questioning Adults in Davidson County, Tennessee

In the United States (U.S.), 4.5% of adults aged 18 years and older identify as a sexual minority, such as lesbian, gay, bisexual, transgender, or queer/questioning (LGBTQ) (LGBT Demographic Data Interactive, 2019). While acceptance of sexual minority individuals is slowly improving, LGBTQ individuals, compared to non-LGBTQ individuals, remain at an increased risk for health disparities and discrimination. Healthy People 2020 defines a health disparity as a difference in health caused by social, economic, and/or environmental disadvantage (Secretary's Advisory Committee on National Health Promotion and Disease Prevention, 2020).

Sexual minorities suffer from disproportionately high rates of mental health disorders and are at an increased risk for substance use disorders, which includes tobacco, alcohol, and illicit drug use (Rice et al., 2019). Additionally, when comparing uninsured rates, LGBTQ individuals had an uninsured rate of 18% whereas non-LGBTQ individuals had an uninsured rate of 12% (LGBT Demographic Data Interactive, 2019). LGBTQ individuals having a higher uninsured rate suggests a decrease in healthcare access and utilization, hindering overall health and well-being. The impaired health and well-being of sexual minority individuals further enforces mental and physical health disparities experienced by the LGBTQ population (Gonzales et al., 2016; Rice et al., 2019).

Problem Statement

Research has shown LGBTQ adults face significant health disparities compared to non-LGBTQ individuals, which is likely a consequence of minority stress from interpersonal and structural discrimination (Gonzales et al., 2016; Meyer, 2003). While research of health disparities within LGBTQ and non-LGBTQ populations was conducted in other states and

countries, limited research is available specific to Tennessee (TN) and Davidson County. The ability to generalize current research on sexual minority status and health disparities across populations is limited, as previous studies have mostly occurred in the northeastern or western regions of the U.S. and in other countries (Gorman et al., 2015; Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gap and Opportunities, 2011). Additional research with southern LGBTQ populations is necessary, as the South accounts for over one-third of the U.S. population and is more likely to have higher poverty, uninsured, diabetes, and obesity rates and overall poorer health status compared to other regions (Artiga & Damico, 2016). According to the Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gap and Opportunities (2011), further research regarding demographic and descriptive information, healthcare access and utilization, mental health, and physical health would be beneficial for LGBTQ individuals, as well as for heterosexual and cisgender individuals. Examining the relationships between health disparities and sexual minority status in Davidson County may lead to identification of current gaps in health among LGBTQ and non-LGBTQ individuals and provide the foundation for quality improvement health equity efforts for all individuals living in Davidson County (Bränström & Pachankis, 2018; Coulter et al., 2018; Kerr et al., 2015; Rice et al., 2019).

Purpose

The purpose of the Doctor of Nursing Practice scholarly project was to examine if LGBTQ individuals had increased health disparities compared to non-LGBTQ individuals in a sample of individuals living in Davidson County, TN. The scholarly project also sought to identify any statistically significant health disparities, which could influence future healthcare

quality improvement efforts by healthcare providers, legislators, and other public health officials in Davidson County.

Research Question and Hypotheses

The following research question guided the scholarly project: Do LGBTQ individuals have an increased rate of health disparities compared to non-LGBTQ individuals in Davidson County, TN? Based on current evidence, the project leader hypothesized that some statistically significant relationships between variables would be identified. The project leader predicted LGBTQ individuals were more likely to experience lifestyle and mental health disparities than non-LGBTQ individuals. The project leader also predicted no statistically significant relationships among health insurance, health literacy, and physical health conditions related to sexual minority status.

Review of Evidence

While the literature related to health disparities often references differences among racial or ethnic groups, disparities can occur in a variety of groups. Gender, sexual minority status, age, socioeconomic status, education, and geographic location are only some examples of the health disparities that can affect the physical and mental health of individuals (National Academies of Sciences, Engineering, and Medicine, 2017). A literature search of health disparities based on sexual minority status was conducted to provide an overview of the most current evidence.

Healthcare Access and Utilization

Healthcare access was described as essential to health promotion, disease management and prevention, and health equity (Office of Disease Prevention and Health Promotion, 2020). Healthy People 2020 identified three components of healthcare access, which can lead to poorer health outcomes if disparities are present: insurance coverage, health services, and timeliness of

care (Office of Disease Prevention and Health Promotion, 2020). When analyzing insurance coverage, sexual minority individuals were nearly twice as likely to be uninsured, compared to others (Charlton et al., 2018; Lunn et al., 2017; Nguyen et al., 2018). Between 2014 and 2017, one study found uninsured rates among heterosexual individuals to be 12.8%, whereas uninsured rates within the LGBTQ population were 13.2% (Nguyen et al., 2018). Furthermore, Charlton et al. (2018) suggested bisexual women were most likely to be uninsured, with an uninsured rate of 13.8% compared to heterosexual women at 3.9%.

In addition to healthcare access, healthcare utilization also influenced public health disparities. Previous research presented mixed results when comparing non-LGBTQ and LGBTQ individuals' rates of routine healthcare visits within the past year. Some authors found non-LGBTQ and LGBTQ individuals reporting similar rates of having seen their healthcare provider for a routine healthcare visit within the past year (Charlton et al., 2018; Nguyen et al., 2018). In contrast, other authors determined that gay males were more likely to have a consistent primary care provider compared to heterosexual males, and thus were more likely to have routine healthcare visits (Gorman et al., 2015; Lunn et al., 2017). Furthermore, Dahlhamer et al. (2016) reported increased rates of gay men, compared to heterosexual men (17% vs. 11.7%), not receiving healthcare within the past year. Lesbian individuals were found to be significantly less likely to have a consistent primary care provider than heterosexual women (Dahlhamer et al., 2016; Lunn et al., 2017). Across all sexual orientations and gender identities, bisexual individuals had the lowest rates of routine healthcare visits and most trouble finding a healthcare provider (Dahlhamer et al., 2016; Gorman et al., 2015).

Geographic Location

The Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gap and Opportunities (2011) reported that geographic location was one of four critical domains that can significantly influence sexual minority health disparities. Previous research on LGBTQ health disparities in the U.S. was limited geographically, as most studies focused on northeastern and western states (Gorman et al., 2015). Farmer et al. (2016) found that geographic location was a significant influential factor on health indicators between LGBTQ and heterosexual individuals. Differences in health indicators between rural LGBTQ individuals and rural heterosexual individuals were less prevalent than nonrural individuals (Farmer et al., 2016). In contrast, the Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gap and Opportunities (2011) presented that rural LGBTQ individuals living in a community with a smaller LGBTQ population may have less access to healthcare providers and less support resources, which can lead to poorer health outcomes. In general, southern states reported higher health disparities, such as increased rates of current cigarette smokers, increased physical inactivity, and decreased rates of regular health care (Austin & Irwin, 2010). The nine states that were in the highest third of socioeconomic and health behavior risk factors and diagnosed diabetes were all located in the South (López-DeFede & Stewart, 2019). Moreover, hypertension prevalence was generally higher in southern states and lower in western states (Fang, Gillespie, Ayala, & Loustalot, 2018).

A finding in a Swank et al. (2012) study theorized that rural areas had communities that honor “traditional values,” whereas nonrural communities embraced more progressive and diverse ethics and values. Nonrural communities adapted to learning and increasing acceptance of a wider range of morals and behaviors, thus normalizing practices that may be deemed

unconventional in more rural areas (Swank et al., 2012). Although the South has both rural and nonrural areas, Southern LGBTQ individuals reported higher levels of recent and lifetime discrimination and less association with the LGBTQ community, suggesting the South was a harder location for LGBTQ individuals to live compared to other regions in the U.S. (Swank et al., 2012).

Physical Health

Physical health outcomes were influential to the mental health and overall health and well-being of LGBTQ and non-LGBTQ individuals. Previous studies found that cardiovascular health and other physical health outcomes were affected by chronic stress experienced within the LGBTQ population (Hoy-Ellis & Fredriksen-Goldsen, 2016; Rice et al., 2019). Gonzales et al. (2016) found that lesbian and bisexual individuals had elevated rates of poor or fair physical health and multiple chronic health conditions, whereas Ward et al. (2015) found no difference in physical health or the likelihood of having multiple chronic conditions based on sexual minority status.

In 2018, the leading cause of death across all ages in the U.S. was heart disease (Centers for Disease Control and Prevention [CDC], 2020b). A systematic review found elevated cardiovascular disease (CVD) in three studies among LGBTQ women and one additional study among gay men younger than 40 years old, but the remaining research showed no statistically significant differences in CVD between LGBTQ and non-LGBTQ individuals (Caceres et al., 2017). In addition to the systematic review, Rice et al. (2019) found an increased risk of having CVD among sexual minority individuals, specifically in the mid-40s to early 50s age range, compared to heterosexual individuals. Hypertension (HTN) was the most prevalent chronic condition amid adults across all sexual orientations (Ward et al., 2015). Finally, younger lesbian

and bisexual women were two times more likely than heterosexual women to have type II diabetes, but the likelihood of having type II diabetes was similar across all sexual orientations as age increased (Corliss et al., 2018). CVD, HTN, and diabetes are chronic conditions that are influenced by factors such as healthcare access and utilization, physical inactivity, and substance use, which can lead to poorer health outcomes if left untreated.

Mental Health

Mental health was defined as the emotional, psychological, and social well-being that affects an individual's thinking, feeling, and behavior (CDC, 2018). The CDC (2000) classified frequent poor mental health as 14 or more days within the past 30 days that mental health was not good. Previous research found that while social stigma and other health disparities were positively associated with psychological distress, a decrease in mental health disparities was noted if LGBTQ individuals had supportive networks and communities (Rice et al., 2019; Saeri et al., 2018; Verrelli et al., 2019). However, internalized, interpersonal, and structural stigma influenced mental health disparities in LGBTQ individuals, furthering the health disparity gap these individuals encountered compared to heterosexual and cisgender individuals (Meyer, 2003).

Previous research showed that LGBTQ individuals had a higher risk of co-occurring health disparities with mental health issues than heterosexual and cisgender individuals (Bränström & Pachankis, 2018). Gay and bisexual men were reported as high risk for major depression, bipolar disorder, generalized anxiety disorder, suicide attempts, and completion of suicide compared to heterosexual men (CDC, 2016). Bostwick et al. (2010) found depression among lesbians and gay men to be 1.5 to three times that of heterosexual individuals, with even higher rates among bisexual individuals. Additionally, sexual minority individuals suffered

anxiety disorders at two to three times the rate of heterosexual and cisgender individuals (Bolton & Sareen, 2011). Furthermore, identification and improvement of mental health status has been essential in decreasing the risk of suicide. Lyons et al. (2019) found that lesbian and gay individuals had more mental health problems, disclosed their intent to commit suicide, higher levels of current depression, and had more previous suicide attempts than heterosexual individuals.

Minority stress added to the difficulty of LGBTQ individuals adapting and functioning in daily situations, thus sexual minorities were more likely to report lower levels of well-being and life satisfaction compared to heterosexual individuals (Perales, 2016; Swank et al., 2012). Perales (2016) suggested negative self-reported well-being was related to LGBTQ status and further explained that no statistically significant difference in subjective well-being was found between LGBTQ subpopulations. Gorman et al. (2015) reported that the lowest average life satisfaction levels were among bisexual individuals, especially men, but similar rates of life satisfaction between heterosexual and lesbian women and heterosexual and gay men. Additionally, sexual minority life satisfaction varied across cities and countries due to structural stigma among economic, social, and personal environments across different geographic locations (Pachankis & Bränström, 2018).

Lifestyle

Sexual minorities had a higher prevalence rate of smoking cigarettes, electronic cigarettes, marijuana, hookah, and cigars than heterosexual individuals (Bränström & Pachankis, 2018; Kerr et al., 2015; Max et al., 2016; Rice et al., 2019). Previous research found lesbian individuals' smoking prevalence was 1.8 times greater than heterosexual women and gay individuals' smoking prevalence to be 1.1 times higher than heterosexual men (Max et al., 2016).

Additionally, bisexual individuals had the greatest risk of being a current smoker compared to lesbian, gay, and heterosexual individuals (Max et al., 2016). Because LGBTQ individuals had an increased prevalence of smoking, increased long-term physical and mental health side effects are possible, thus adding to health disparities experienced by this population (U.S. Department of Health and Human Services, 2016).

LGBTQ individuals also had a greater risk of alcohol use disorders than heterosexual and cisgender individuals (Bränström & Pachankis, 2018; Coulter et al., 2018; Meyer, 2003; Rice et al., 2019). One study found a significant prevalence of high-risk alcohol use among LGBTQ individuals, with no difference in prevalence between gay men and lesbian women (Bränström & Pachankis, 2018). Coulter et al. (2018) found lesbian women were 2.00-2.17 times more likely to have an alcohol use disorder than heterosexual women and a smaller risk of alcohol dependence for sexual minority men than lesbian women. Gay individuals had a higher probability of alcohol use disorder and 3.38 times the risk of being moderate drinkers compared to heterosexual and cisgender individuals (Coulter et al., 2018).

Additionally, an increased risk of illicit drug use and drug use disorder was found among LGBTQ individuals compared to heterosexual individuals (Kerr et al., 2015; Rice et al., 2019). In a study comparing LGBTQ and heterosexual college students, LGBTQ students were at an increased risk of nonmedical use of prescription drugs (Kerr et al., 2015). Kerr et al. (2015) also found lesbian and bisexual women more likely than heterosexual women to use marijuana, sedatives, hallucinogens, and other non-specified illegal drugs. Bisexuality was associated with a higher risk of substance use compared to other sexual minorities, heterosexual, and cisgender individuals (Kerr et al., 2015; Shadick et al., 2016). Because sexual minorities had a higher

prevalence rate of smoking, alcohol use, and illicit drug use, LGBTQ individuals were at an increased risk of furthering negative health outcomes.

Furthermore, previous research suggested physical activity is an important aspect of physical health and overall well-being across all sexual orientations and gender identities (Austin & Irwin, 2010). Individuals who reported increased levels of physical inactivity had twice the likelihood of depression (Austin & Irwin, 2010). Austin and Irwin (2010) found only 17.7% of southern lesbian individuals reported no physical activity, compared to 29.9% and 27.0% of southern heterosexual and non-southern individuals. Another study by VanKim et al. (2017) found lesbian individuals had increased physical activity levels, particularly aerobic activity, compared to heterosexual individuals, but aerobic activity levels decreased faster during middle adulthood among lesbian individuals compared to heterosexual women. The same authors also found that while lesbian individuals reported increased physical activity levels, they also reported more sedentary lifestyle behaviors than heterosexual women, which can increase the likelihood of diabetes, CVD, and mortality (VanKim et al., 2017).

Human immunodeficiency virus (HIV) disproportionately affects LGBT individuals (National Academies of Sciences, Engineering, and Medicine, 2017). In 2016, over 1,140,400 individuals had an HIV diagnosis in the U.S. and over half were gay and bisexual men (CDC, 2017). In 2018, men who have sex with men accounted for 69% and transgender individuals accounted for 2% of the 37,968 new HIV diagnoses in the U.S., where 41% of transgender HIV diagnoses occurred in the South (CDC, 2020a). Increased HIV risk behaviors and barriers to HIV prevention services have been related to homophobia, stigma, and lack of healthcare access (CDC, 2017). Risk behaviors and lack of HIV healthcare services have led to increased infection

rates, lack of HIV testing, and underestimation of personal risk, which can increase the odds of HIV transmission and treatment delay (CDC, 2020a).

Theoretical Framework

To better understand the challenges facing sexual minorities, Meyer's (2003) minority stress model was developed from the concept of social stress: the idea that situations in an individual's environment and personal events cause stress, which leads to lasting mental and physical effects. According to Meyer (2003), who emulated Dohrenwend's stress model, the social structures and norms of a minority group are usually not reflected in the dominant culture, which leads to internal and environmental conflict. Stress from sexual minority status being at odds with underlying social and cultural structures adds to general life stressors, thus can further impact health outcomes of LGBTQ individuals (Meyer, 2003). The minority stress model is expressed through nine key constructs: circumstances in the environment, minority status, general stressors, minority stress processes (distal), minority identity, minority stress processes (proximal), characteristics of minority identity, coping and social support (community and individual), and mental health outcomes (Meyer, 2003).

Circumstances in the environment and the close relationship with an individual's minority status determine the individual's initial exposure to stress and coping resources, possible exposure to general stressors, and minority stress processes (Meyer, 2003). Minority status leads to recognizing one's minority identity, which can then strengthen or weaken the characteristics of minority identity and coping and social support efforts (Meyer 2003). Additionally, the cumulation of the previously mentioned stressors can lead to negative or positive health outcomes (Meyer, 2003). Refer to Appendix B for a visual representation of the minority stress model.

Application

The minority stress model provided the theoretical foundation for the scholarly project and guided variable selection through the use of the model's key constructs. The scholarly project examined the relationships between physical health, mental health, and lifestyle variables based on six of the model's constructs. Proximal and distal minority stress processes were not evaluated in the current scholarly project, but have been widely described throughout the literature as discrimination in healthcare, the workplace, and daily life, and as individuals expecting rejection and discrimination based on their sexual minority status (Nashville Pride, 2019; Pachankis & Bränström, 2018; Perales, 2016; Human Rights Campaign Foundation, 2020). Additionally, characteristics of minority identity was not evaluated in the current scholarly project.

Circumstances in the environment include advantages and disadvantages related to factors of socioeconomic status, such as annual household income, education level, and employment status (Meyer, 2003). While minority status can also be classified under circumstances in the environment, Meyer created a separate construct in the minority stress model to show the importance of the category, since resources within racial, ethnic, and gender subpopulations can influence adverse health effects of minority stress (Meyer, 2003; Saeri et al., 2018; Verrelli et al., 2019). The construct of minority identity was defined as sexual minority status and measured in the scholarly project by LGBTQ status (Meyer, 2003). General stressors, such as chronic health conditions and tobacco use, affect all individuals, regardless of sexual minority status. Coping, social support, and mental health outcomes are constructs that also affect both LGBTQ and non-LGBTQ individuals. Improving coping, social support, and mental

health outcomes can lead to improvements in mental health, physical health, and overall well-being.

Each construct of the minority stress model can influence another construct, thus possibly influencing other areas of health and well-being. Based on the minority stress model, an increase in stress processes related to an individual's health, well-being, and LGBTQ status and a decrease in coping and social support is associated with negative health outcomes, and therefore an increase in health disparities. By analyzing health and well-being variables across the minority stress model's constructs, increased knowledge on current health disparities and future health equity efforts was presented.

Project Design

The current scholarly project used a quasi-experimental design to evaluate if LGBTQ individuals have increased health disparities compared to non-LGBTQ individuals in a sample of individuals living in Davidson County, TN, using the 2019 Nashville Community Health and Well-being Survey. The secondary dataset used in the scholarly project was obtained from the NashvilleHealth organization and included a total of 1,805 questionnaires acquired from adults living in Davidson County, TN (Retzer & Johnson, 2019b).

Clinical Setting

The scholarly project's clinical setting was in urban Davidson County, TN, which includes the city of Nashville. Historically, Davidson County, TN, has been a politically liberal county located within a conservative state (Tennessee Secretary of State, 2020). Although an increase in acceptance of LGBTQ individuals across all partisan groups has been noted, individuals who identify as liberal were more likely than individuals who identify as conservative to accept sexual minorities (Pew Research Center, 2017). Conversely, the Nashville

and Middle Tennessee LGBTQIA+ Community Visioning Project found that LGBTQ individuals do not feel fully accepted in the Nashville community after conducting 70 small group conversations, 10 World Cafe sessions, and surveying 1,236 individuals (Nashville Pride, 2019). In addition to the more liberal nature of Davidson County, TN, Nashville is also considered a healthcare hub, with more than 500 healthcare company operations and 270,000 healthcare related jobs (Nashville Health Care Council, 2018).

Project Population

As of July 1, 2019, Davidson County had a population of 694,144, with 72.8% of individuals aged over 18 (U.S. Census Bureau, 2019). The racial and ethnic classifications of Davidson County were as follows: 65.5% White, 27.4% Black, 0.5% American Indian and Alaska Native, 4% Asian, 0.1% Native Hawaiian and other Pacific Islander, 2.5% two or more races, and 10.4% Hispanic or Latino (U.S. Census Bureau, 2019). Between 2014 and 2018, 277,903 households in Davidson County had a median household income of \$56,507 (U.S. Census Bureau, 2019). In TN, 3.5% of adults aged 18 years and older identified as LGBTQ (LGBT Demographic Data Interactive, 2019).

For the 2019 Nashville Community Health and Well-being Survey, a total of 1,805 surveys were collected between October 2018 to April 2019 (Retzer & Johnson, 2019b). Eligibility for the survey included individuals older than 18 years old, who resided in Davidson County between October 2018 and April 2019, and understood English or Spanish written materials. The scholarly project inclusion criteria included individuals older than 18 years old who responded to survey questions concerning demographic information, physical health, mental health, and lifestyle. Exclusion criteria for the scholarly project included individuals younger than 18 years old and who did not answer questions regarding sexual minority status.

Sampling Strategy

Disproportionate stratified random sampling of housing units in Davidson County, based on ethnicity and geographic location, was used for the 2019 Nashville Community Health and Well-being Survey and the current scholarly project (Retzer & Johnson, 2019b). Over-sampling of Black and Hispanic households and three geographic zones within Davidson County was required to attain adequate sampling representation. Because the 2019 Nashville Community Health and Well-being Survey acquired only a random sample of households, the survey specified that an adult over 18 years old from the household with the next birthday was to complete the survey. To ensure the sample was most closely representative of the adult population of Davidson County, the 2019 Nashville Community Health and Well-being Survey's final sample was weighted by selection and post-stratification. The current scholarly project was also weighted for appropriate sample representation.

Data Collection Instruments and Process

A data use agreement for the use of the 2019 Nashville Community Health and Well-being Survey was approved by the NashvilleHealth organization. The deidentified dataset was then electronically sent to the primary researcher and was stored as a password protected file on a password protected computer. An exempt application was reviewed and approved by the Belmont University Institutional Review Board (IRB) in May 2020.

Nashville Community Health and Well-being Survey

By using the U.S. Post Office Delivery Sequence File, a random sample of 12,283 households, based on racial-ethnic composition and geographic zone, were selected to receive the 2019 Nashville Community Health and Well-being Survey (Retzer & Johnson, 2019b). The households received mailed invitations between late-October and December 2018 with

instructions to complete the survey online. The invitations also included \$1 and the promise of an additional \$10 for those individuals who completed the survey. Two reminder postcards were sent followed by a paper questionnaire and a pre-addressed postage-paid return envelope in January 2019 to all nonresponding households. The survey closed in April 2019 with a total of 1,805 questionnaires obtained, 1,284 electronically and 521 by mail, with a response rate of 15.8%.

The 2019 Nashville Community Health and Well-being Survey design was created through the collaborative efforts of the Metro Nashville Public Health Department (MPHD), University of Illinois at Chicago Survey Research Laboratory's Questionnaire Review Committee (QRC), and NashvilleHealth members (Retzer & Johnson, 2019b). Greater than 300 items from previous Behavioral Risk Factor Surveillance System (BRFSS) questionnaires, the Pregnancy Risk Assessment Monitoring System (PRAMS) survey, the National Immunization Survey and National Survey on Drug Use & Health (NSDUH), and state-added questions were identified as potential survey questions. The final survey included a total of 133 questions, with 83 questions asked to all respondents and 50 questions only asked depending on prior question responses.

The primary researcher for the scholarly project completed and submitted a data use agreement to the NashvilleHealth organization. Upon approval, NashvilleHealth provided access to the deidentified 2019 Nashville Community Health and Well-being Survey dataset. The primary researcher utilized Meyer's minority stress model as a guide for variable selection for analysis. The survey questions included in this project are displayed in Table A1 and Table A2.

Demographic Information

Demographic data were collected on age, race, ethnicity, sex at birth, sexual orientation, transgender status, marital status, household size, children in household, education, employment status, health insurance coverage, health literacy, annual household income, had a cell/smart phone, used the internet in the past 30 days, and Davidson County zone (Retzer & Johnson, 2019a). For the purpose of the scholarly project, age, race, ethnicity, marital status, education, health insurance coverage, annual household income, sex at birth, sexual minority status, employment status, and Davidson County zone were included in data analysis (see Table A1).

Physical Health, Mental Health, and Lifestyle

The 2019 Nashville Community Health and Well-being Survey collected physical health information on diabetes, HTN, heart conditions, respiratory conditions, and healthcare utilization in Davidson County, TN (Retzer & Johnson, 2019a). The scholarly project included variables analyzing physical health: diabetes, HTN, and length of time since last routine healthcare visit. Mental health data were collected on poor mental health days, depression, life satisfaction, social and emotional support, mental health treatment, and attitudes regarding mental health (Retzer & Johnson, 2019a). All of the mentioned mental health variables were included in statistical analysis. Lifestyle behavior information was collected in the 2019 Nashville Community Health and Well-being Survey, which included the following: health literacy, personal nutrition, tobacco use, vaping, alcohol use, non-medical use of prescriptions, substance use treatment, HIV testing, HIV high risk activities, firearms, and physical activity (Retzer & Johnson, 2019a). The scholarly project included analysis of health literacy, tobacco use, alcohol use, non-medical use of prescriptions, physical activity, HIV testing, and HIV high risk activities. The survey

questions concerning physical health, mental health, and lifestyle included in the scholarly project are displayed in Table A2.

Data Analysis

After obtaining the dataset from NashvilleHealth, data were exported to IBM Statistical Packages for Social Sciences (SPSS) 27 for data cleaning, recoding, and analysis. After applying the project's inclusion and exclusion criteria to the 2019 Nashville Community Health and Well-being Survey, 101 participants were excluded from the scholarly project, and a total of 1,704 participants ($N = 1,704$) remained in the final sample. Survey question responses from the 2019 Nashville Community Health and Well-being Survey were combined and recoded into new variables based on relevance (see Table A1 and Table A2). Two questions on sexual orientation and transgender status were combined to create a single "LGBTQ status" variable. Three questions on the use of various tobacco products were combined to create a single "current tobacco use" variable. Two questions on alcohol use were combined to create a single "average monthly alcohol use" variable. Finally, Two questions on exercise habits were combined to create a single "exercise" variable. Cross tabulations were conducted to determine cell size for each variable, which led to statistical analysis determination. Adjusted weights for the scholarly project were calculated by using the 2019 Nashville Community Health and Well-being Survey dataset final weights, the number of missing responses for each variable, and the scholarly project's sample size. Adjusted weights were applied to the scholarly project's variables prior to independent *t*-test and logistic regression analyses.

An independent *t*-test was used to compare the monthly average alcohol use between non-LGBTQ and LGBTQ participants. Mann-Whitney U statistical analyses compared mental health opinions and health literacy between non-LGBTQ and LGBTQ participants. Logistic

regression analyses evaluated the odds of the following health disparities among non-LGBTQ compared to LGBTQ participants: health insurance, routine health checkup, diabetes, HTN, life satisfaction, social and emotional support, poor mental health, depression, mental health treatment, illegal prescription use, current tobacco use, HIV testing, HIV high risk activities, and recommended weekly exercise. Odds ratios were adjusted for age, sex at birth, race, ethnicity, marital status, education, employment, household income, Davidson County zone, health insurance, health literacy, routine health checkup, diabetes, HTN, life satisfaction, social and emotional support, poor mental health, depression, current mental health treatment, alcohol use, tobacco use, illegal prescription use, HIV testing, HIV high risk activities, and receiving the amount of recommended weekly exercise. Since the scholarly project examined a large sample size for each of the variables, the Hosmer and Lemeshow Test was not considered for logistic regression analyses. Listwise deletion was utilized for all statistical analyses with missing data. Descriptive statistics were also computed to explore demographics.

Results

Demographic Characteristics

The age range of the sample ($N = 1,704$) was 19 to 94 years old with a mean age of 49.9 years old. A majority of participants identified as female at birth ($n = 1,117$, 65.6%) and 34.4% ($n = 586$) identified as male at birth. The sample was made up of 92.9% ($n = 1,583$) non-LGBTQ individuals and 7.1% ($n = 121$) LGBTQ individuals. A majority of participants self-identified as White ($n = 1,185$, 69.5%) and non-Hispanic ($n = 1,584$, 93.0%) with 23.5% ($n = 406$) of participants reported identifying as Black. Further information regarding demographic characteristics are shown in Appendix C.

Insurance and Health Literacy

Logistic regression analysis indicated that the odds that LGBTQ participants did not have health insurance was 6.84 times the odds of other participants ($p = .009$, adjusted odds ratio: 6.84; 95% CI, 1.61 to 29.1) (Table D1 and Table D2). The confidence to determine high quality from low quality health resources on the internet was lower among non-LGBTQ participants ($Mdn = 3$) than LGBTQ participants ($Mdn = 2$, $U = 73,009$, $p = .018$, $r = 0.060$). The confidence to use information from the Internet to make health decisions was also lower among non-LGBTQ participants compared to LGBTQ participants ($Mdn = 3$, $U = 72,705$, $p = .015$, $r = 0.061$). See Appendix E for complete information regarding all Mann-Whitney U analyses of health literacy.

Physical Health

Logistic regression analyses were conducted for routine health checkup, diabetes, and HTN. The difference in the odds of having a yearly routine health checkup ($p = .974$, adjusted odds ratio: 1.01; 95% CI, .570 to 1.79), having diabetes ($p = .476$, adjusted odds ratio: .691; 95% CI, .249 to 1.91), and having HTN ($p = .411$, adjusted odds ratio: .747; 95% CI, .374 to 1.50) between non-LGBTQ and LGBTQ individuals was not statistically significant. See Table D1 and Table D2 for more information regarding logistic regression analyses.

Mental Health

A Mann-Whitney U test indicated no evidence for a difference in attitudes of mental health treatment between non-LGBTQ participants ($Mdn = 1$) and LGBTQ participants ($Mdn = 1$, $U = 94,620$, $p = .954$, $r = -.001$) (Appendix E). Another Mann-Whitney U test indicated that non-LGBTQ participants ($Mdn = 3$) agreed more with the statement “people are generally caring and sympathetic to people with mental illness” than LGBTQ participants ($Mdn = 4$, $U = 68,056$,

$p = .001$, $r = -.085$) (Appendix E). The odds that non-LGBTQ participants had 15 or more poor mental health days per month was .384 times the odds of other participants ($p = .007$, adjusted odds ratio: .384; 95% CI, .191 to .771). Additionally, the odds that non-LGBTQ individuals received mental health treatment was .377 times the odds of LGBTQ participants ($p = .017$, adjusted odds ratio: .377; 95% CI, .170 to .837). However, the difference in the odds of life satisfaction ($p = .322$, adjusted odds ratio: .592; 95% CI, .210 to 1.67), social and emotional support ($p = .066$, adjusted odds ratio: 1.73; 95% CI, .965 to 3.10), and depression ($p = .439$, adjusted odds ratio: 1.31; 95% CI, .664 to 2.57) between non-LGBTQ and LGBTQ participants was not statistically significant. See Table D1 and Table D2 for further information on logistic regression analyses.

Lifestyle

Although there is evidence for a higher average consumption of alcoholic drinks among LGBTQ participants ($M = 23.6$, $SD = 37.6$) compared to non-LGBTQ participants ($M = 18.0$, $SD = 32.4$), the results were not significant ($t(1582) = 1.94$, $p = .053$, $d = -.169$; 95% CI, -11.2 to .076) (Table F1 and Table F2). Logistic regression analyses were completed for the following lifestyle variables: illegal prescription use, current tobacco use, HIV testing, HIV high risk activities, and receiving the amount of recommended weekly exercise. The difference in odds of illegal prescription use ($p = .069$, adjusted odds ratio: .124; 95% CI, .013 to 1.17), current tobacco use ($p = .199$, adjusted odds ratio: 1.68; 95% CI, .763 to 3.68), HIV testing ($p = .117$, adjusted odds ratio: .655; 95% CI, .387 to 1.11), and receiving the amount of recommended weekly exercise ($p = .161$, adjusted odds ratio: .683; 95% CI, .400 to 1.16) between non-LGBTQ and LGBTQ participants was not statistically significant (Table D1 and Table D2). However, the odds that non-LGBTQ individuals engaged in HIV high risk activities was .182 times the odds of

other participants ($p = .002$, adjusted odds ratio: .182; 95% CI, .064 to .521) (Table D1 and Table D2).

Discussion

The purpose of this scholarly project was to examine if LGBTQ individuals had increased health disparities compared to non-LGBTQ individuals in a sample located in Davidson County, TN. The findings from this scholarly project both supported and rejected the following hypotheses: LGBTQ individuals were more likely to experience lifestyle and mental health disparities than non-LGBTQ individuals, and no statistically significant relationships were found among demographic information and physical health conditions related to sexual minority status.

Insurance and Health Literacy

The results of the scholarly project displayed strong evidence that an individual's sexual minority status influenced one's odds of having health insurance. The odds of LGBTQ individuals not having health insurance was 6.84 times that of other participants ($p = .009$, adjusted odds ratio: 6.84). These results not only supported previous research, but have increased odds compared to earlier studies. Research conducted by Charlton et al. (2018), Lunn et al. (2017), and Nguyen et al. (2018) found that sexual minority individuals were almost twice as likely to be uninsured, compared to heterosexual individuals. Another study examining the Nashville and Middle Tennessee LGBTQ population found that many participants expressed that they did not have the proper health insurance to seek competent and comprehensive LGBTQ care (Nashville Pride, 2019). Because LGBTQ individuals had lower odds of having health insurance, the ability to access healthcare could have been limited, and thus resulted in worse health outcomes and increased health disparities.

Overall, sexual minority status' influence on health literacy presented mixed results. The confidence to find helpful health resources and answer health questions using the Internet were not statistically significant between LGBTQ and non-LGBTQ participants, which supported previous research. However, the confidence to determine high quality from low quality health resources on the internet was lower among non-LGBTQ individuals ($Mdn = 3$) than LGBTQ individuals ($Mdn = 2, p = .018$). Also, the confidence in using information from the Internet to make health decisions was lower among non-LGBTQ participants compared to LGBTQ individuals ($Mdn = 3, p = .015$). Eliason et al. (2018) suggested that having a higher socioeconomic status and urban location may lead to a greater access of healthcare resources. Despite the current scholarly project not evaluating age and socioeconomic status' influence on health literacy, the findings of the scholarly project offered some evidence that sexual minority status may be a factor in health literacy determination, but further research is recommended to explore this relationship.

Physical Health

LGBTQ participants were not found to have higher odds of diabetes or HTN compared to non-LGBTQ participants. This finding added to an ongoing debate concerning sexual minority status and physical health outcomes. Some studies found that physical health outcomes were affected by chronic stress experienced by LGBTQ individuals, and thus resulted in worse physical health outcomes (Hoy-Ellis & Fredriksen-Goldsen, 2016; Rice et al., 2019). Corliss et al. (2018) found that younger lesbian and bisexual women were more likely than heterosexual women to have type II diabetes, but the difference in likelihood decreased with age. Limited research found higher odds of CVD among LGBTQ individuals, but much of the research showed no significant difference in CVD prevalence between LGBTQ and heterosexual

individuals (Caceres et al., 2017). Existing evidence on LGBTQ status influence on diabetes and HTN is limited. The results of the scholarly project suggested that a diagnosis of diabetes and HTN may be less closely correlated with sexual minority status, but instead related to other influential factors of chronic health conditions, such as healthcare access and utilization, genetics, and socioeconomic status.

The difference in the odds of having a yearly health checkup between non-LGBTQ and LGBTQ participants was not statistically significant, which added to the conflicting results from previous research. Charlton et al. (2018) and Nguyen et al. (2018) reported similar rates of individuals having seen a healthcare provider within the past year. However, other authors found LGB individuals less likely to receive healthcare within the past year (Dahlhamer et al., 2016; Gorman et al., 2015; Lunn et al., 2017). Additionally, some research found gay men more likely to have a consistent primary care provider, and thus were more likely to have had a routine healthcare visit (Gorman et al., 2015; Lunn et al., 2017). LGBTQ individuals expected discrimination in a healthcare setting and had lower odds of having health insurance, therefore could be less likely to receive consistent healthcare (Nashville Pride, 2019). Since LGBTQ participants had higher odds of not having health insurance yet no statistically significant difference in odds of yearly health checkups, it is possible that participants accessed free community healthcare resources. While the scholarly project added to the ongoing debate of previous research, other influential factors not studied could be more closely related to receiving consistent healthcare and physical health outcomes than sexual minority status.

Mental Health

LGBTQ participants had similar odds of higher life satisfaction compared to non-LGBTQ participants, which added to the differing results of prior research. The project's

findings supported Gorman et al.'s (2015) study, which found similar rates of life satisfaction among heterosexual and lesbian individuals. However, the same study found life satisfaction rates among heterosexual individuals slightly higher than gay individuals (Gorman et al., 2015). Conversely, some evidence indicated that sexual minorities were more likely to have lower levels of life satisfaction (Perales, 2016; Swank et al., 2012). Pachankis & Bränström (2018) noted that LGBTQ life satisfaction varied across regions based on structural stigma among economic, social, and personal environments, which may have been influential in the current scholarly project's results. Although not statistically significant, some evidence suggested LGBTQ individuals may have increased odds of inadequate social and emotional support ($p = .066$, adjusted odds ratio: 1.73). Previous research acknowledged that adequate social and emotional support along with sexual minority status influences health disparities (Meyer, 2003; Rice et al., 2019; Saeri et al., 2018; Verrelli et al., 2019). A Nashville Pride (2019) study found 50% of individuals expressed the need for increased LGBTQ life visibility in Nashville; however, individuals could also name resources and supports in the Nashville community, affirming Nashville's efforts to improve equity for LGBTQ individuals.

The scholarly project produced mixed results surrounding mental health disparities. The findings suggested that LGBTQ participants had greater odds of poor mental health, supporting prior research ($p = .007$, adjusted odds ratio: .384). Furthermore, the odds that non-LGBTQ participants received mental health treatment was .377 times the odds of other participants ($p = .017$, adjusted odds ratio: .377). LGBTQ individuals had a higher risk of internalized, interpersonal, and structural stigma and co-occurring health disparities with mental health issues than heterosexual individuals (Bränström & Pachankis, 2018; Meyer, 2003). In contrast, results from the project implied that LGBTQ and non-LGBTQ participants did not have a difference in

odds of having depression. Previously, LGBTQ individuals were found to have a higher risk of major depression (Bostwick et al., 2010; CDC, 2016). The scholarly project's findings could be related to a lack of healthcare access and utilization, societal stigma surrounding mental health, or healthcare providers missing diagnoses because they were not appropriately screening patients.

Findings about personal attitudes on mental health varied. Non-LGBTQ participants ($Mdn = 3$) agreed more with the statement "people are generally caring and sympathetic to people with mental illness" than LGBTQ individuals ($Mdn = 4$). Meyer's (2003) minority stress model acknowledged that past negative experiences may influence LGBTQ individuals' response to any statement regarding their perception of how others treat them. However, both groups strongly agreed that "treatment can help people with mental illness lead normal lives," which may be associated with recent increased destigmatizing of mental health illnesses and mental health care.

Lifestyle

The results of this scholarly project demonstrated that while not statistically significant, there was fairly strong evidence that LGBTQ participants ($M = 23.6$) had a higher average monthly alcohol intake compared to non-LGBTQ participants ($M = 18.0$, $p = .053$). The difference in means was consistent with past research, which found that LGBTQ individuals had an increased prevalence of high-risk alcohol use and alcohol use disorder (Bränström & Pachankis, 2018; Coulter et al., 2018). Although not statistically significant, there was evidence that the odds of LGBTQ participants not engaging in illegal prescription drug use was lower than that of non-LGBTQ participants ($p = .069$, adjusted odds ratio: .124). Since the project's findings were not statistically significant, they are in contrast to previous research that showed LGBTQ

individuals at an increased risk of illicit drug use, drug use disorder, and nonmedical use of prescription drugs compared to non-LGBTQ individuals (Kerr et al., 2015; Rice et al., 2019). An explanation for these findings may be that individuals answered the survey question based on socially acceptable alcohol intake and prescription use. Another explanation for these findings may be that this particular sample did not engage in as much illegal prescription drug use.

Inconsistent with prior literature, the difference in odds of current tobacco use between LGBTQ and non-LGBTQ participants was not significant. Previous studies found sexual minorities had a higher prevalence rate of smoking and tobacco use than heterosexual individuals (Bränström & Pachankis, 2018; Kerr et al., 2015; Max et al., 2016; Rice et al., 2019). Max et al. (2016) found that lesbian individuals' smoking prevalence was 1.8 times greater and gay individuals' smoking prevalence was 1.1 times greater than heterosexual individuals. The difference in odds of performing at least 150 minutes of exercise per week between LGBTQ and non-LGBTQ participants was also not statistically significant, which added to the body of inconsistent results. The project's findings contradicted research by Austin and Irwin (2010) and VanKim et al. (2017), which showed that lesbian individuals had increased levels of physical activity compared to heterosexual individuals. The same VanKim et al. (2017) study found that activity levels decreased faster during middle adulthood among lesbian individuals compared to heterosexual individuals.

The difference in odds of receiving HIV testing was not statistically significant between LGBTQ and non-LGBTQ participants. However, the odds that non-LGBTQ individuals engaged in HIV high risk activities was .182 times that of other participants, supporting previous research ($p = .002$, adjusted odds ratio: .182). HIV disproportionately affects the LGBTQ population, as over half of people with HIV in the U.S. are gay and bisexual men (National Academies of

Sciences, Engineering, and Medicine, 2017; CDC, 2017). Prior research found that social and economic factors increased risk behaviors, limited HIV prevention services, and added to a lack of awareness of HIV status (CDC, 2020a; CDC, 2017). An unknown HIV status and lack of healthcare access can continue to perpetuate increased risk behaviors and limited HIV prevention services among LGBTQ individuals (CDC, 2020a).

Implications for Practice

While the scholarly project suggested that LGBTQ individuals only experienced health disparities within certain variables compared to non-LGBTQ individuals, most previous studies demonstrated that LGBTQ individuals experience increased health disparities overall. The current project addressed the gap in literature regarding health disparities among southern LGBTQ individuals. This project identified current health disparities in Davidson County, which can offer healthcare providers, legislators, and other public health officials information as to which areas should be of focus for future healthcare improvement efforts. Not only are the results beneficial to LGBTQ individuals, but they are also meaningful for the entire Davidson County population. By being aware of the factors that influence healthcare access and utilization, mental and physical health, and lifestyle choices, changes can be made in healthcare practices, policies, and education based on current research findings, which will optimize health outcomes and quality, patient-centered care.

The information presented in the scholarly project supported evidence that LGBTQ individuals are more supported and may have better health outcomes in metropolitan Nashville compared to other cities in the South. The results warrant the following questions: are LGBTQ individuals in Nashville adequately represented in the sample and are these results generalizable to other southeastern regions? Future research studies with a larger LGBTQ population in both

urban and rural areas of Tennessee and the South are needed to further compare and contrast results from other large-scale studies across the U.S. regions. Moreover, a broader dataset, reformatted survey questions, and the integration of questions on sexual minority status discrimination may lead to a more holistic understanding of health disparities among LGBTQ individuals living in the South.

Although additional research is necessary to gain a comprehensive understanding of LGBTQ individuals' health outcomes, immediate action at the healthcare level can begin to improve LGBTQ health disparities. Healthcare environments can incorporate LGBTQ-friendly health practices, such as displaying brochures and educational materials about LGBTQ health concerns, visibly posting a nondiscrimination statement, and customizing health forms and electronic records with inclusive, gender neutral language for self-identification (American Medical Association, 2021; The Joint Commission, 2011). Furthermore, providers can clarify a patient's preferred names and pronoun identifiers and normalize open, straightforward discussions with patients to improve the patient-provider relationship (Rice, 2019). While implementing changes in practice may improve LGBTQ health outcomes, health provider attitudes and lack of cultural education can contribute to LGBTQ health inequities (Rowe et al., 2017). The integration of LGBTQ health education in undergraduate and postgraduate education can increase sexual minority health knowledge, thus leading to improved LGBTQ healthcare (Sekoni et al., 2017). Increasing providers' self-assessment of personal attitudes and biases toward LGBTQ patients and improving cultural competencies through ongoing trainings can also improve LGBTQ health and well-being (Rowe et al., 2017). Finally, making free or reduced-cost health resources more widely known to LGBTQ individuals at a community level can increase healthcare access and decrease negative health outcomes.

Strengths and Limitations

The scholarly project had several strengths. The project added to the literature gap regarding examination of health disparities and their relationship to sexual orientation and gender identity among individuals living in the South. The credibility of the survey responses were increased because the survey utilized questions generated from previously validated questionnaires (Retzer & Johnson, 2019b). A large sample size ($N = 1,704$) presented more accurate statistical values and more reliable results. Finally, the integration of Meyer's (2003) minority stress model provided a strong theoretical framework for the project's variable selection.

Although the scholarly project had multiple strengths, several limitations were also acknowledged. By using a secondary dataset, the primary researcher could not determine what survey questions were included and how questions were formatted, thus the results are specific to the dataset analyzed. Survey questions asked in a different manner might have yielded more accurate findings, as the current questions did not comprehensively cover mental health and lifestyle decisions. Questions regarding sexual orientation and gender identity discrimination were not asked in the original survey, thus were unable to be examined. Since over 55% of LGB individuals and over 70% of transgender individuals believe they would experience discrimination in healthcare because of their identity, inclusion of discrimination questions based on sexual orientation and gender identity would have been beneficial to this scholarly project (Human Rights Campaign Foundation, 2020). Additionally, self-reported information may not completely reflect an individual's health outcomes. Future studies on LGBTQ health outcomes should also include objective data to determine to what extent disparities exist.

While the scholarly project had a sample size of 1,704, only 121 individuals identified as LGBTQ, compared to 1,583 non-LGBTQ individuals, thus generalizability to the Davidson County LGBTQ population is limited. Generalizability of results to other southern areas may also be limited due to the more liberal and urban environment of Davidson County, TN, which could provide more resources and support for LGBTQ individuals. Moreover, the 2019 Nashville Community Health and Well-being Survey only had a response rate of 15.8%. Sampling bias was possible in that individuals with better health outcomes may have been more likely to complete the 2019 Nashville Community Health and Well-being Survey. Since survey participants were not required to answer all questions, a nonresponse bias was possible and fluctuates across variables. Response bias was possible in that individuals may not have responded to survey questions based on their current health status and instead provided a perceived, socially acceptable response.

Conclusion

This scholarly project provided insight regarding the difference in health disparities between LGBTQ and non-LGBTQ individuals in Davidson County. The project also contributed to closing the research gap concerning health disparities among LGBTQ individuals in the South. While some current findings aligned with previous research supporting that LGBTQ individuals were more likely to experience health disparities than non-LGBTQ individuals, a majority of the project's results either differed or added to the inconsistent body of literature surrounding differences in health disparities based on sexual minority status. Further research should include a larger LGBTQ population, a combination of urban and rural individuals, and sexual minority status discrimination-specific content. Additional research can provide valuable information on the southern LGBTQ population's current state of health disparities. This information can offer a

more personalized direction for health outcome improvement efforts by researchers, public health officials, and healthcare providers, thus leading to an overall improvement in health and well-being.

References

- American Medical Association. (2021). *Creating an LGBTQ-friendly practice*. <https://www.ama-assn.org/delivering-care/population-care/creating-lgbtq-friendly-practice>
- Artiga, S., & Damico, A. (2016). *Health and health coverage in the south: A data update* [Issue Brief]. The Kaiser Family Foundation, Commission on Medicaid and the Uninsured. [https://www.kff.org/disparities-policy/issue-brief/health-and-health-coverage-in-the-south-a-data-update/#:~:text=Health%20Needs%20in%20the%20South&text=Overall%2C%20one%20in%20five%20\(20,the%20West%20\(Figure%204\).&text=Higher%20rates%20of%20diabetes%20and,\(Figures%205%20and%206\)](https://www.kff.org/disparities-policy/issue-brief/health-and-health-coverage-in-the-south-a-data-update/#:~:text=Health%20Needs%20in%20the%20South&text=Overall%2C%20one%20in%20five%20(20,the%20West%20(Figure%204).&text=Higher%20rates%20of%20diabetes%20and,(Figures%205%20and%206))
- Austin, E., & Irwin J. (2010). Health behaviors and health care utilization of southern lesbians. *Women's Health Issues, 20*(3), 178-184. <https://doi.org/10.1016/j.whi.2010.01.002>
- Bolton, S., & Sareen, J. (2011). Sexual orientation and its relation to mental disorders and suicide attempts: Findings from a nationally representative sample. *Canadian Journal of Psychiatry, 56*(1), 35-43. <https://doi.org/10.1177/070674371105600107>
- Bostwick, W., Boyd, C., Hughes, T., & McCabe, S. (2010). Dimensions of sexual orientation and the prevalence of mood and anxiety disorders in the United States. *American Journal of Public Health, 100*(3), 468-475. <https://doi.org/10.2105/AJPH.2008.152942>
- Bränström, R., & Pachankis, J. (2018). Sexual orientation disparities in the co-occurrence of substance use and psychological distress: A national population-based study (2008–2015). *Social Psychiatry and Psychiatric Epidemiology, 53*(4), 403-412. <https://doi.org/10.1007/s00127-018-1491-4>

- Caceres, B., Brody, A., Luscombe, R., Primiano, J., Marusca, P., Sitts, E., & Chyun, D. (2017). A systematic review of cardiovascular disease in sexual minorities. *American Journal of Public Health, 107*(4), e13–e21. <https://doi.org/10.2105/AJPH.2016.303630>
- Centers for Disease Control and Prevention. (2000). *Measuring healthy days: Population assessment of health-related quality of life*. United States Department of Health and Human Services. <https://www.cdc.gov/hrqol/pdfs/mhd.pdf>
- Centers for Disease Control and Prevention. (2016). *Mental health*. <https://www.cdc.gov/msmhealth/mental-health.htm>
- Centers for Disease Control and Prevention. (2017). *HIV among gay and bisexual men*. United States Department of Health and Human Services. <https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/cdc-msm-508.pdf>
- Centers for Disease Control and Prevention. (2018). *Learn about mental health*. <https://www.cdc.gov/mentalhealth/learn/index.htm>
- Centers for Disease Control and Prevention. (2020a). *HIV surveillance report, 2018 (updated); vol. 31*. United States Department of Health and Human Services. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2018-updated-vol-31.pdf>.
- Centers for Disease Control and Prevention. (2020b). *Leading causes of death reports, 1981-2018*. <https://webappa.cdc.gov/sasweb/ncipc/leadcause.html>
- Charlton, B., Gordon, A., Reisner, S., Sarda, V., Samnaliev, M., & Austin, S. (2018). Sexual orientation-related disparities in employment, health insurance, healthcare access and health-related quality of life: A cohort study of US male and female adolescents and young adults. *BMJ Open 8*(6), e020418. <https://doi.org/10.1136/bmjopen-2017-020418>

Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gap and Opportunities. (2011). *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. Institute of Medicine.

Building a foundation for better understanding. Institute of Medicine.

https://www.ncbi.nlm.nih.gov/books/NBK64806/pdf/Bookshelf_NBK64806.pdf

Corliss, H., VanKim, N., Jun, H.-J., Austin, S., Hong, B., Wang, M., & Hu, F. (2018). Risk of type 2 diabetes among lesbian, bisexual, and heterosexual women: Findings from the nurses' health study II. *Diabetes Care*, *41*(7), 1448–1454. <https://doi.org/10.2337/dc17-2656>

Coulter, R., Jun, H.-J., Calzo, J., Truong, N., Mair, C., Markovic, N., Charlton, B., Silvestre, A., Stall, R. & Corliss, H. (2018). Sexual-orientation differences in alcohol use trajectories and disorders in emerging adulthood: Results from a longitudinal cohort study in the United States. *Addiction*, *113*(9), 1619-1632. <https://doi.org/10.1111/add.14251>

Dahlhamer, J., Galinsky, A., Joestl, S., & Ward, B. (2016). Barriers to health care among adults identifying as sexual minorities: A US national study. *American Journal of Public Health*, *106*(6), 1116–1122. <https://doi.org/10.2105/ajph.2016.303049>

Eliason, M. J., Robinson, P., & Balsam, K. (2018). Development of an LGB-specific health literacy scale. *Health Communication*, *33*(12), 1531–1538.

<https://doi.org/10.1080/10410236.2017.1372052>

Fang, J., Gillespie, C., Ayala, C., & Loustalot, F. (2018). Prevalence of self-reported hypertension and antihypertensive medication use among adults aged ≥ 18 years - United States, 2011-2015. *MMWR. Morbidity and Mortality Weekly Report*, *67*(7), 219–224.

<https://doi.org/10.15585/mmwr.mm6707a4>

- Farmer, G., Blosnich, J., Jabson, J., & Matthews, D. (2016). Gay acres: Sexual orientation differences in health indicators among rural and nonrural individuals. *Journal of Rural Health, 32*(3), 321–331. <https://doi.org/10.1111/jrh.12161>
- Gonzales, G., Przedworski, J., & Henning-Smith, C. (2016). Comparison of health and health risk factors between lesbian, gay, and bisexual adults and heterosexual adults in the United States results from the national health interview survey. *JAMA Internal Medicine, 176*(9), 1344-1351. <https://doi.org/10.1001/jamainternmed.2016.3432>
- Gorman, B., Denney, J., Dowdy, H., & Medeiros, R. (2015). A new piece of the puzzle: Sexual orientation, gender, and physical health status. *Demography, 52*(4), 1357–1382. <https://doi.org/10.1007/s13524-015-0406-1>
- Hoy-Ellis, C. & Fredriksen-Goldsen, K. (2016). Lesbian, gay, & bisexual older adults: Linking internal minority stressors, chronic health conditions, and depression. *Aging & Mental Health, 20*(11), 1119-1130. <https://doi.org/10.1080/13607863.2016.1168362>
- Human Rights Campaign Foundation. (2020). *Healthcare equality index 2020: Promoting equitable and inclusive care for lesbian, gay, bisexual, transgender, & queer patients and their families*. Human Rights Campaign Foundation. <https://hrc-prod-requests.s3-us-west-2.amazonaws.com/resources/HEI-2020-FinalReport.pdf?mtime=20200830220806&focal=none>
- Kerr, D., Ding, K., Burke, A., & Ott-Walter, K. (2015). An alcohol, tobacco, and other drug use comparison of lesbian, bisexual, and heterosexual undergraduate women. *Substance Use & Misuse, 50*(3), 340-349. <https://doi.org/10.3109/10826084.2014.980954>
- LGBT Demographic Data Interactive. (January 2019). Los Angeles, CA: The Williams Institute, UCLA School of Law

- López-DeFede, A., & Stewart, J. (2019). Diagnosed diabetes prevalence and risk factor rankings, by state, 2014-2016: A ring map visualization. *Preventing Chronic Disease, 16*, E44. <https://doi.org/10.5888/pcd16.180470>
- Lunn, M., Cui, W., Zack, M., Thompson, W., Blank, M., & Yehia, B. (2017). Sociodemographic characteristics and health outcomes among lesbian, gay, and bisexual U.S. adults using healthy people 2020 leading health indicators. *LGBT Health, 4*(4), 283–294. <https://doi.org/10.1089/lgbt.2016.0087>
- Lyons, B., Walters, M., Jack, S., Petrosky, E., Blair, J., & Ivey-Stephenson, A. (2019). Suicides among lesbian and gay male individuals: Findings from the national violent death reporting system. *American Journal of Preventive Medicine, 56*(4), 512–521. <https://doi.org/10.1016/j.amepre.2018.11.012>
- Max, W., Stark, B., Sung, H., & Offen, N. (2016). Sexual identity disparities in smoking and secondhand smoke exposure in California: 2003-2013. *American Journal of Public Health, 106*(6), 1136-1142. <https://doi.org/10.2105/AJPH.2016.303071>
- Meyer, I. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674-697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Nashville Health Care Council. (2018). *Nashville health care sector research: Industry Impact and Contribution, National Facilities, International Presence*. Nashville Area Chamber of Commerce. <https://healthcarecouncil.com/wp-content/uploads/2018/09/EXECUTIVE-SUMMARY-2018-Nashville-Health-Care-Sector-Research.pdf>
- Nashville Pride. (2019). *The Nashville and middle Tennessee LGBTQIA+ community visioning project*. Nashville Pride. <https://www.nashvillepride.org/cvp>

National Academies of Sciences, Engineering, and Medicine. (2017). *Communities in action: Pathways to health equity*. The National Academies Press.

<https://doi.org/10.17226/24624>

Nguyen, K., Trivedi, A., & Shireman, T. (2018). Lesbian, gay, and bisexual adults report continued problems affording care despite coverage gains. *Health Affairs*, 37(8), 1306–1312. <https://doi.org/10.1377/hlthaff.2018.0281>

Office of Disease Prevention and Health Promotion. (2020). *Access to health services*.

<https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services>

Pachankis, J., & Bränström, R. (2018). Hidden from happiness: Structural stigma, sexual orientation concealment, and life satisfaction across 28 countries. *Journal of Consulting and Clinical Psychology*, 86(5), 403–415. <https://doi.org/10.1037/ccp0000299>

Perales, F. (2016). The costs of being “different”: Sexual identity and subjective wellbeing over the life course. *Social Indicators Research*, 127(2), 827–849.

<https://doi.org/10.1007/s11205-015-0974-x>

Pew Research Center. (2017). *The partisan divide on political values grows even wider*.

<https://www.pewresearch.org/politics/2017/10/05/the-partisan-divide-on-political-values-grows-even-wider/>

Retzer, K., & Johnson, T. (2019a). *Nashville community health + well-being survey: Analytical report*. University of Illinois at Chicago Survey Research Laboratory.

https://nashvillehealth.org/wp-content/uploads/2019/09/Nashville-Study_Analytical-Report_final_8-6-19.pdf

Retzer, K., & Johnson, T. (2019b). *Nashville community health + well-being survey:*

Methodology report. University of Illinois at Chicago Survey Research Laboratory.

https://nashvillehealth.org/wp-content/upload/2020/01/Nashville-Study_Methodology-Report_final_6-3-19.pdf

- Rice, C., Vasilenko, S., Fish, J., & Lanza, S. (2019). Sexual minority health disparities: An examination of age-related trends across adulthood in a national cross-sectional sample. *Annals of Epidemiology, 31*, 20-25. <https://doi.org/10.1016/j.annepidem.2019.01.001>
- Rice, D. (2019). LGBTQ: The communities within a community. *Clinical Journal of Oncology Nursing, 23*(6), 668–671. <https://doi.org/10.1188/19.CJON.668-671>
- Rowe, D., Ng, Y., O'Keefe, L., & Crawford, D. (2017). Providers' Attitudes and Knowledge of Lesbian, Gay, Bisexual, and Transgender Health. *Federal practitioner : for the health care professionals of the VA, DoD, and PHS, 34*(11), 28–34.
- Saeri, A., Cruwys, T., Barlow, F., Stronge, S., & Sibley, C. (2018). Social connectedness improves public mental health: Investigating bidirectional relationships in the New Zealand attitudes and values survey. *Australian and New Zealand Journal of Psychiatry, 52*, 365–374. <https://doi.org/10.1177/0004867417723990>
- Secretary's Advisory Committee on National Health Promotion and Disease Prevention. (2020). *Phase I report: Recommendations for the framework and format of healthy people 2020*. United States Department of Health and Human Services. http://www.healthypeople.gov/sites/default/files/PhaseI_0.pdf
- Sekoni, A., Gale, N., Manga-Atangana, B., Bhadhuri, A., & Jolly, K. (2017). The effects of educational curricula and training on LGBT-specific health issues for healthcare students and professionals: A mixed-method systematic review. *Journal of the International AIDS Society, 20*(1), 21624. <https://doi.org/10.7448/IAS.20.1.21624>

- Shadick, R., Dagirmanjian, F., Trub, L., & Dawson, H. (2016). Sexual orientation and first-year college students' nonmedical use of prescription drugs. *Journal of American College Health, 64*(4), 292-299. <https://doi.org/10.1080/07448481.2015.1117469>
- Swank, E., Frost, D., & Fahs, B. (2012). Rural location and exposure to minority stress among sexual minorities in the United States. *Psychology & Sexuality, 3*(3), 226-243. <https://doi.org/10.1080/19419899.2012.700026>
- Tennessee Secretary of State. (2020). *Election results*. <https://sos.tn.gov/elections/results>
- The Joint Commission. *Advancing effective communication, cultural competence, and patient- and family- centered care for the lesbian, gay, bisexual, and transgender (LGBT) community: A field guide*. Oak Brook, IL, Oct. 2011. [LGBTFieldGuide.pdf](#).
- United States Department of Health and Human Services. (2016). *Cigarette use among youth and young adults: A report of the surgeon general*. United States Department of Health and Human Services. https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf
- United States Census Bureau. (2019). *QuickFacts: Davidson County, Tennessee*. <https://www.census.gov/quickfacts/davidsoncountytennessee>
- VanKim, N., Austin, S., Jun, H.-J., & Corliss, H. (2017). Physical activity and sedentary behaviors among lesbian, bisexual, and heterosexual women: Findings from the nurses' health study II. *Journal of Women's Health (15409996), 26*(10), 1077–1085. <https://doi.org/10.1089/jwh.2017.6389>
- Verrelli, S., White, F., Harvey, L., & Pulciani, M. (2019). Minority stress, social support, and the mental health of lesbian, gay, and bisexual Australians during the Australian marriage

law postal survey. *Australian Psychologist*, 54(4), 336–346.

<https://doi.org/10.1111/ap.12380>

Ward, B., Joestl, S., Galinsky, A., & Dahlhamer, J. (2015). Selected diagnosed chronic conditions by sexual orientation: A national study of US adults, 2013. *Preventing Chronic Disease*, 12, E192. <https://doi.org/10.5888/pcd12.150292>

Appendix A

Table A1

Demographic Questions from the 2019 Nashville Community Health & Well-being Survey

Survey Question	Possible Responses	Project Question (if different)
What year were you born?	Free text. (YYYY)	Which of the following age ranges do you fall into: 18-29, 30-49, 50-64, or 65 and up?
What was your sex at birth?	<ol style="list-style-type: none"> 1. Male 2. Female 	
Which of the following best represents how you think of yourself?	<ol style="list-style-type: none"> 1. Straight, that is, not gay 2. Lesbian or gay 3. Bisexual 4. Other (please specify) 	Do you consider yourself to be LGBTQ?
Do you consider yourself to be transgender?	<ol style="list-style-type: none"> 1. Yes, transgender male to female 2. Yes, transgender female to male 3. Yes, transgender, gender nonconforming 4. No 	Do you consider yourself to be LGBTQ?
Are you...	<ol style="list-style-type: none"> 1. Married 2. Divorced 3. Widowed 4. Separated 5. Single / Never married 6. A member of an unmarried couple 	
Are you Hispanic, Latino/a, or Spanish origin?	<ol style="list-style-type: none"> 1. Yes 2. No 	

Survey Question	Possible Responses	Project Question (if different)
Which of the following groups would you say represents your race?	<ol style="list-style-type: none"> 1. White 2. Black or African American 3. Asian 4. Native Hawaiian or other Pacific Islander 5. American Indian or Alaska Native 6. Some other group (please specify) 	
What is the highest grade or year of school you completed?	<ol style="list-style-type: none"> 1. Never attended school or only kindergarten 2. Grades 1 through 8 (Elementary) 3. Grades 9 through 11 (Some high school) 4. Grades 12 or GED (High school graduate) 5. College 1 year to 3 years (Some college or technical school) 6. College 4 years or more (College graduate) 7. Some graduate education 8. A graduate or professional degree 	
Are you currently... (if more than one, select the category which best describes you.)	<ol style="list-style-type: none"> 1. Employed for wages 2. Self-employed 3. Out of work for 1 year or more 4. Out of work for less than 1 year 5. A homemaker 6. A student 7. Retired 8. Unable to work 	
Is your annual household income from all sources:	<ol style="list-style-type: none"> 1. Less than \$10,000 2. \$10,000 to less than \$15,000 3. \$15,000 to less than \$20,000 	

Survey Question	Possible Responses	Project Question (if different)
What is the primary source of your health care coverage? Is it ...	<ol style="list-style-type: none"> 4. \$20,000 to less than \$25,000 5. \$25,000 to less than \$35,000 6. \$35,000 to less than \$50,000 7. \$50,000 to less than \$60,000 8. \$60,000 to less than \$75,000 9. \$75,000 to less than \$100,000 10. \$100,000 to less than \$125,000 11. \$125,000 to less than \$150,000 12. \$150,000 to less than \$200,000 13. \$200,000 or more 	Do you have health insurance?
What is the ZIP code where you currently live (Please specify)	<ol style="list-style-type: none"> 1. A plan purchased through an employer or union 2. A plan that you or another family member buys on your own 3. Medicare 4. Medicaid or other state program 5. TRICARE (formerly CHAMPUS), VA, or military 6. Alaska Native, Indian Health Service, Tribal Health Services 7. Some other source 8. None (no coverage) 	What Davidson County zone do you live in: East, Nashville Promise Zone, North West, South East, South West?

Table A2*Survey Questions from the 2019 Nashville Community Health & Well-being Survey*

Category	Survey Question	Possible Responses	Project Question (if different)
Health Literacy	How confident are you that you can find helpful health resources on the internet?	<ol style="list-style-type: none"> 1. Extremely confident 2. Very confident 3. Somewhat confident 4. Not very confident 5. Not at all confident 	
Health Literacy	How confident are you that you can use the internet to answer your health questions	<ol style="list-style-type: none"> 1. Extremely confident 2. Very confident 3. Somewhat confident 4. Not very confident 5. Not at all confident 	
Health Literacy	How confident are you that you can tell high quality from low quality health resources on the internet?	<ol style="list-style-type: none"> 1. Extremely confident 2. Very confident 3. Somewhat confident 4. Not very confident 5. Not at all confident 	
Health Literacy	How confident are you in using information from the internet to make health decisions?	<ol style="list-style-type: none"> 1. Extremely confident 2. Very confident 3. Somewhat confident 4. Not very confident 5. Not at all confident 	
Physical Health	About how long has it been since you last visited a doctor for a routine checkup? A routine checkup is a general physical exam, not an exam	<ol style="list-style-type: none"> 1. Within the past year (0 to 12 months ago) 2. Within the past 2 years (12 to 24 months ago) 	Have you visited a doctor for a routine checkup within the past year? A routine checkup is a general physical exam, not an

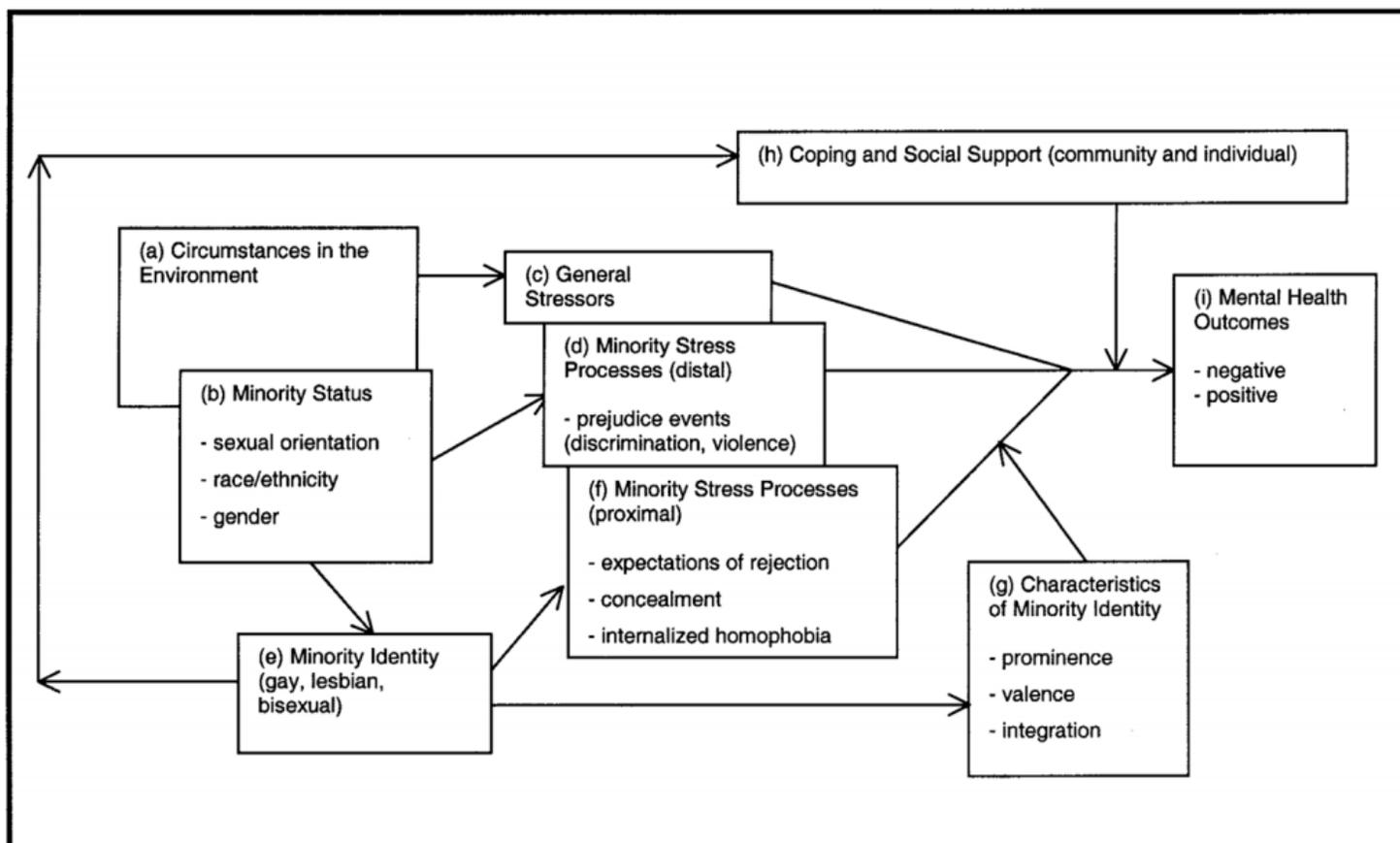
Category	Survey Question	Possible Responses	Project Question (if different)
	for a specific injury, illness, or condition.	<ol style="list-style-type: none"> 3. Within the past 5 years (25 to 60 months ago) 4. More than 5 years ago (61+ months ago) 5. Never 	exam for a specific injury, illness, or condition.
Physical Health	Has a doctor, nurse or other health professional ever told you that you have diabetes?	<ol style="list-style-type: none"> 1. Yes 2. No 	
Physical Health	Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?	<ol style="list-style-type: none"> 1. Yes 2. No 3. Told borderline high or pre-hypertensive 	
Mental Health	Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?	Please specify a number between 0 and 30.	Do you consider yourself to have poor mental health? Poor mental health is considered 14 or more poor mental health days during the past 30 days.
Mental Health	Has a doctor, nurse, or other health profession ever told you that you had any of the following: a depressive disorder, including depression, major depression, dysthymia, or minor depression?	<ol style="list-style-type: none"> 1. Yes 2. No 	
Mental Health	In general, how satisfied or dissatisfied are you with your life?	<ol style="list-style-type: none"> 1. Very satisfied 2. Satisfied 3. Dissatisfied 	In general, are you satisfied with your life?

Category	Survey Question	Possible Responses	Project Question (if different)
		4. Very dissatisfied	
Mental Health	How often do you get the social and emotional support you need?	<ol style="list-style-type: none"> 1. Always 2. Usually 3. Sometimes 4. Rarely 5. Never 	Do you get the social and emotional support you need?
Mental Health	Treatment can help people with mental illness lead normal lives.	<ol style="list-style-type: none"> 1. Agree strongly 2. Agree slightly 3. Neither agree nor disagree 4. Disagree slightly 5. Disagree strongly 	
Mental Health	People are generally caring and sympathetic to people with mental illness.	<ol style="list-style-type: none"> 1. Agree strongly 2. Agree slightly 3. Neither agree nor disagree 4. Disagree slightly 5. Disagree strongly 	
Lifestyle	Do you now smoke cigarettes every day, some days, or not at all?	<ol style="list-style-type: none"> 1. Every day 2. Some days 3. Not at all 	Do you currently use cigarettes, chew, snuff, or e-cigarettes?
Lifestyle	Do you currently use chewing tobacco, snuff, or snus every day, some days, or not at all?	<ol style="list-style-type: none"> 1. Every day 2. Some days 3. Not at all 	Do you currently use cigarettes, chew, snuff, or e-cigarettes?
Lifestyle	Do you now use e-cigarettes or other electronic vaping products every day, some days, or not at all?	<ol style="list-style-type: none"> 1. Every day 2. Some days 3. Not at all 	Do you currently use cigarettes, chew, snuff, or e-cigarettes?

Category	Survey Question	Possible Responses	Project Question (if different)
Lifestyle	During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?	<ol style="list-style-type: none"> 1. Days per week (Please specify a number between 1 and 7.) 2. Days per month (Please specify a number between 1 and 30.) 3. No drinks in the past 30 days 	What is the average number of drinks in the past month you have consumed?
Lifestyle	During the past 30 days, on the days when you drank, about how many drinks did you drink on average?	Please specify a number.	What is the average number of drinks in the past month you have consumed?
Lifestyle	In the last 12 months, have you taken any prescription pain relievers or tranquilizers (including Codeine, morphine, Lortab, Vicodin, Tylenol #3, Percocet, OxyContin) when it was not prescribed by a doctor, dentist, nurse practitioner, or other healthcare provider? We only want to know about prescription medication not medication that is available over the counter.	<ol style="list-style-type: none"> 1. Yes 2. No 	
Lifestyle	In a typical week, how many days do you physically exercise?	Please specify a number between 0 and 7.	Do you physically exercise 150 minutes or more each week?
Lifestyle	On the days you exercise, how many minutes or hours do you physically exercise?	<ol style="list-style-type: none"> 1. Minutes (please specify) 2. Hours (please specify) 	Do you physically exercise 150 minutes or more each week?
Lifestyle	Have you ever been tested for HIV? Do not count tests you may have had	<ol style="list-style-type: none"> 1. Yes 2. No 	

Category	Survey Question	Possible Responses	Project Question (if different)
Lifestyle	as part of a blood donation. Include testing fluid from your mouth. Do any of these situations apply to you: you have used intravenous drugs in the past year, you have been treated for a sexually transmitted or venereal disease in the past, you have given or received money or drugs in exchanged for sex in the past year, or you had anal sex without a condom in the past year?	1. Yes, to any of these 2. No, to all of these	

Appendix B

Meyer's Minority Stress Model

Note. From “Prejudice, Social Stress, and Mental Health in Lesbian, Gay, and Bisexual Populations: Conceptual Issues and Research Evidence,” by I. Meyer, 2003, *Psychological Bulletin*, 129(5), p. 679. (<https://doi.org/10.1037/0033-2909.129.5.674>). Copyright 2003 by the American Psychological Association.

Appendix C

Sample Demographic Characteristics (N = 1,704)

Characteristic	<i>n</i>	%
Sex at Birth		
Male	586	34.4
Female	1117	65.6
Sexual Minority Status		
Non-LGBTQ	1583	92.9
LGBTQ	121	7.1
Age (years)		
18-29	236	13.8
30-49	619	36.3
50-64	288	22.8
65 and up	433	25.4
Race		
White	1185	69.5
Black	406	23.5
Asian	45	2.6
Native Hawaiian or Other Pacific Islander	7	0.4
American Indian or Alaska Native	21	1.2
Other	62	3.6
Ethnicity		
Hispanic, Latino/a, or Spanish origin	108	6.3
Not Hispanic, Latino/a, or Spanish origin	1584	93.0
Marital Status		
Married	693	40.7
Divorced	282	16.5
Widowed	104	6.1
Separated	29	1.7
Single/Never married	470	27.6
A member of an unmarried couple	118	6.9
Education		
8 th grade or less	17	1
Some high school	72	4.2
High school graduate	215	12.6
Some college or technical school	367	21.5
College graduate	476	27.9
Some graduate education	113	6.6
A graduate or professional degree	424	24.9

Characteristic	<i>n</i>	%
Employment		
Employed for wages	933	54.8
Self-employed	148	8.7
Out of work for 1 year or more	24	1.4
Out of work for less than 1 year	33	1.9
Homemaker	71	4.2
Student	49	2.9
Retired	332	19.5
Unable to work	85	5.0
Household Income		
Less than \$10,000	111	6.5
\$10,000 to less than \$15,000	80	4.7
\$15,000 to less than \$20,000	63	3.7
\$20,000 to less than \$25,000	98	5.8
\$25,000 to less than \$35,000	169	9.9
\$35,000 to less than \$50,000	247	14.5
\$50,000 to less than \$60,000	141	8.3
\$60,000 to less than \$75,000	179	10.5
\$75,000 to less than \$100,000	186	10.9
\$100,000 to less than \$125,000	110	6.5
\$125,000 to less than \$150,000	78	4.6
\$150,000 to less than \$200,000	83	4.9
\$200,000 or more	77	4.5
Health Insurance		
Employer plan	872	51.2
Plan bought on own	108	6.3
Medicare	381	22.4
Medicaid or other state program	68	4.0
TRICARE, VA, or military	41	2.4
Some other source	69	4.0
None	118	6.9
Davidson County Zone		
East	329	19.3
Nashville Promise Zone	341	20.0
North West	236	13.8
South East	439	24.5
South West	359	21.1

Appendix D

Table D1

Estimates of R Square of Sexual Minority Status and Different Health Outcomes

Variables	Cox & Snell R ²	Nagelkerke R ²
Health Insurance	.344	.738
Routine Health Checkup	.354	.482
Diabetes	.283	.555
Hypertension	.360	.521
Life Satisfaction	.274	.616
Social and Emotional Support	.338	.486
Poor Mental Health	.320	.566
Depression	.358	.540
Mental Health Treatment	.360	.612
Illegal Prescription Use	.229	.716
Current Tobacco Use	.320	.514
HIV Testing	.266	.358
HIV High Risk Activities	.220	.627
Recommended Weekly Exercise	.266	.358

Table D2*Logistic Regression Analysis of Sexual Minority Status and Different Health Outcomes*

Variables	N	Wald	p	Exp(β)	95% CI for Exp(β)	
					LL	UL
Health Insurance	1657	6.80	.009*	6.84	1.61	29.1
Routine Health Checkup	1699	.001	.974	1.01	.570	1.79
Diabetes	1704	.507	.476	.691	.249	1.91
Hypertension	1704	.677	.411	.747	.374	1.50
Life Satisfaction	1698	.980	.322	.592	.210	1.67
Social and Emotional Support	1702	3.39	.066	1.73	.965	3.10
Poor Mental Health	1667	7.24	.007*	.384	.191	.771
Depression	1668	.598	.439	1.31	.664	2.57
Mental Health Treatment	1699	5.74	.017*	.377	.170	.837
Illegal Prescription Use	1696	3.31	.069	.124	.013	1.17
Current Tobacco Use	1681	1.65	.199	1.68	.763	3.68
HIV Testing	1692	2.46	.117	.655	.387	1.11
HIV High Risk Activities	1695	10.1	.002*	.182	.064	.521
Recommended Weekly Exercise	1652	1.97	.161	.683	.400	1.16

Note. All models were controlled for age, sex at birth, race, ethnicity, marital status, education, employment, household income,

Davidson County zone, health insurance, health literacy, routine health checkup, diabetes, HTN, life satisfaction, social and emotional support, poor mental health, depression, current mental health treatment, tobacco use, alcohol use, illegal prescription use, HIV testing, HIV high risk activities, and receiving the amount of recommended weekly exercise.

*p < .05.

Appendix E

Mann-Whitney U Analysis between Mental Health Attitudes and Health Literacy and Sexual Minority Status

	<i>N</i>	Non-LGBTQ		LGBTQ		<i>U</i>	<i>Z</i>	<i>r</i>	<i>p</i>
		<i>Mdn</i>	Range	<i>Mdn</i>	Range				
Mental Health Attitude A	1689	1	4	1	4	94620	-.058	-.001	.954
Mental Health Attitude B	1577	3	4	4	4	68056	-3.38	-.085	.001*
Health Literacy A	1682	2	4	2	4	93865	-.117	.003	.907
Health Literacy B	1575	3	4	3	4	79806	-.920	-.023	.357
Health Literacy C	1572	3	4	2	4	73009	-2.37	-.060	.018*
Health Literacy D	1569	3	4	3	4	72705	-2.43	-.061	.015*

Note. Mental Health Attitude A = Treatment can help people with mental illness lead normal lives. Mental Health Attitude B = People

are generally caring and sympathetic to people with mental illness. Health Literacy A = How confident are you that you can find

helpful health resources on the Internet? Health Literacy B = How confident are you that you can use the Internet to answer your

health questions? Health Literacy C = How confident are you that you can tell high quality from low quality health resources on the

Internet? Health Literacy D = How confident are you in using information from the Internet to make health decisions?

* $p < .05$.

Appendix F

Table F1

Descriptive Statistics of Average Monthly Alcohol Use across Sexual Minority Status

Sexual Minority Status	<i>n</i>	<i>M</i>	<i>SD</i>
Non-LGBTQ	1441	18.0	32.4
LGBTQ	143	23.6	37.6

Table F2

Independent samples t-test Analysis of Average Monthly Alcohol Use and Sexual Minority Status

	Levene's Test for Equality of Variances		<i>t</i>	<i>df</i>	<i>p</i>	<i>d</i>	95% CI	
	<i>F</i>	<i>p</i>					<i>LL</i>	<i>UL</i>
Equal variances assumed	6.4	0.11	-1.94	1582	.053	-.169	-11.2	.076