

ABSTRACT

Title of Dissertation: SOCIAL AND ENVIRONMENTAL
BARRIERS TO HEALTHCARE ACCESS
AND UTILIZATION FOR LESBIAN, GAY,
AND BISEXUAL PEOPLE IN CALIFORNIA.

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Sexual minorities, lesbian, gay and bisexual people, are exposed to chronic stigmatization and heteronormativity in their daily lives and when they access health care. There are no genetic differences between sexual minorities and their heterosexual counterparts; the literature demonstrates that chronic stress related to being a minority, experiences associated with accessing care in a system that assumes one is heterosexual, exposure to negative attitudes from others, and internalized negative attitudes regarding one's sexuality impact health outcomes and healthcare access and utilization. While there are known barriers to healthcare access the literature does not examine how multiple social identities influence healthcare access in sexual minorities. Intersectionality posits that the interconnected nature of social identities creates an overlapping and interdependent system of disadvantage. This study had three aims: 1) To examine differences in healthcare access at the intersections of urbanicity, race/ethnicity, and sexual identity; 2) examine differences

in healthcare access at the intersections of sexual identity, gender, and income; and 3) determine whether non-identifying sexual minorities have disparate access to healthcare compared to identifying sexual minorities.

Using 2014-2017 California Health Interview Survey data combined with the supplemental sexual orientation special use research file, I examined the relationship between healthcare access and utilization outcomes and the intersections between sexual identity, urbanicity, gender, income, and sexual identity disclosures. Using known evidence of barriers to healthcare access as dependent variables I used predictive modeling to estimate odds ratios of experiencing barriers to healthcare access using adjusted logistic regressions. The results of my dissertation produced evidence that for sexual minorities in California, sexual identity is associated with varying levels of healthcare access when examined within the context of other social identities. That is, there are differences in access and utilization amongst sexual minorities based on income and gender, and within subgroups of sexual minorities, especially in female and bisexual subgroups. Urban and rural environment did not determine healthcare access in sexual minorities and there was not enough data to confidently estimate differences in access between urban and rural sexual minorities of color. Study findings demonstrate that the female gender has more disadvantages to healthcare access than advantages regardless of income and sexual identity. They also demonstrated that income does not fully mitigate access barriers in sexual minority women. Lastly, findings from the study demonstrate that the non-identifying sexual minority identity is associated with less access to healthcare, specifically in men.

Findings from this dissertation contributes to the knowledge of how disparities in healthcare access and utilization continue to persist in the sexual minority population despite increased access to healthcare coverage. This dissertation suggests that other factors uniquely related to being female and bisexual are salient for accessing healthcare for sexual minorities. It is essential that researchers, policy makers, and healthcare providers and staff provide more data on sexual minorities, create curated policy to support the most vulnerable sexual minorities, and engage in culturally sensitive training to eliminate barriers to healthcare access for sexual minorities to eliminate healthcare access disparities.

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AND UTILIZATION FOR LESBIAN, GAY, AND BISEXUAL PEOPLE IN
CALIFORNIA.

by

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Dedication

For my mother, Musau Marie-Claire Akré. She always said her children would be doctors. Look mama we made it!

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I would like to acknowledge and thank my fiancée, Kimberly Cones, for supporting me through this entire process. You have been my rock, my cook, and my copy editor. You were everything I needed you to be and more. I would not have been able to do this without you.

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Table of Contents

Dedication	ii
Acknowledgements	iii
Table of Contents	iv
Chapter 1: Introduction and Literature Review	1
Introduction	1
Literature Review	2
Disparities in Healthcare for Sexual Minorities	2
Urban and Rural Access to Healthcare for Sexual and Racial Ethnic Minorities	3
Access to Healthcare and Income for Sexual Minorities	5
Gender and Access to Healthcare for Sexual Minorities	6
Affirming Sexual Identity and Healthcare Access	7
Theoretical Framework	9
Dissertation Aims and Hypothesis	11
Chapter 2: Disparities in Healthcare Access and Utilization at the Intersections of Urbanicity, Sexual Identity and Race.	13
Introduction	13
Study Objective	16
Data	16
Study Sample	18
Measures	19
Data Analysis	21
Results	22
Discussion	25
Limitations	28
Conclusion	29
Chapter 2 Tables	31
Table 2.1	31
Table 2.2	32
Table 2.3	33
Table 2.4	34
Chapter 3: Disparities in Healthcare Access and Utilization at the Intersections of Sexual Identity, Gender, and Income.	39
Introduction	39
Study Objective	41
Data	42
Study Sample	42
Measures	43
Data Analysis	46
Results	47
Discussion	52
Limitations	54
Conclusion	55
Chapter 3 Tables	56

Table 3.1	56
Table 3.2	57
Table 3.3	59
Table 3.4	63
Chapter 4: Disparities in Healthcare Access and Utilization at the Intersections of Sexual-Identity and Sexual-Identity Disclosure.	68
Introduction.....	68
Study Objective.....	70
Data	71
Study Sample	72
Measures	72
Data Analysis	74
Results.....	75
Discussion	78
Limitations	80
Conclusion	81
Chapter 4 Tables	82
Table 4.1	82
Table 4.2	83
Table 4.3	85
Table 4.4	89
Chapter 5: Conclusion.....	95
Discussion	95
Limitations	97
Conclusion	99
Bibliography	101

Chapter 1: Introduction and Literature Review

Introduction

The goal of this dissertation was to examine how different environments and social identities impact healthcare access disparities in sexual minorities. Historically and contemporarily sexual minorities, that is lesbian, gay, and bisexual people, have, and continue to have, had limited access to healthcare. Variations in access can be based on many factors including sexual orientation identity or behavior, race/ethnicity, gender, among many other reasons. I examine disparities in healthcare access between heterosexuals and sexual minorities while simultaneously exploring how these disparities may differ when geography and social position attributed to different social identities are considered. This topic is significant because despite advancements in societal acceptance and unprecedented access to health insurance coverage sexual minorities still experience barriers to healthcare. Access to comprehensive, quality health care services is important for promoting health, preventing disease and premature death, and achieving health equity.¹ Sexual minorities have multiple social identities working simultaneously with their sexual identity. By examining how healthcare is experienced by sexual minorities within the context of their other social identities' researchers can identify when privileges or disadvantages occur to better understand what is driving the disparities that are demonstrated in the literature. The literature review details what is known about how urban and rural, racial and ethnic, income, poverty, gender, and sexual orientation identification can influence healthcare access. In the first study in the dissertation, I examine healthcare access in sexual minorities based on urbanicity and race. In the

second study in the dissertation, I examine healthcare access for sexual minorities based on income and gender. The last study of the dissertation examines healthcare access at the intersection of sexual identity and sexual behavior to determine if identifying as a sexual minority influences healthcare access. I conclude this dissertation with a discussion of the significance the findings have for policy, research and practice.

Literature Review

Disparities in Healthcare for Sexual Minorities

Sexual minorities—lesbian, gay, and bisexual people—historically, experience greater barriers to health services, lower access and utilization of health services, and poorer mental and physical health outcomes than their heterosexual counterparts.²⁻⁸ In 2011 the Institute of Medicine funded by the National Institutes of Health conducted an in-depth analysis of the health and well-being of lesbian, gay, bisexual and transgender (LGBT) persons in the United States. The study's finding described how the marginalization of LGBT people in the health care system results in poor health outcomes and disparities in this population.⁹ Since then, the National Institutes of Health designated sexual and gender minorities, which includes LGBT persons as well as those whose sexual orientation, gender identity and expressions, or reproductive development varies from traditional, societal, cultural, or physiological norms, as health disparity population for NIH research¹⁰. Health disparities, disparities in health insurance coverage, access to and utilization of health services in the LGBT community when compared to their heterosexual counterparts are widely documented in the literature.^{9,11} There are many barriers that prevent

LGBT people from accessing and using care. These barriers include (but are not limited to) (1) not having a regular place or person where they receive care, (2) inadequate health coverage, (3) delaying care for various reasons and (4) difficulty affording care.^{12,13} The Patient Protection and Affordable Care Act (ACA) reduced barriers to health coverage, through subsidies and Medicaid expansions, and decreased the proportion of LGBT persons who did not have health insurance¹⁴, but insurance coverage does not account for the entirety of disparities in health care access and utilization within this population.¹⁵

Urban and Rural Access to Healthcare for Sexual and Racial Ethnic Minorities

Studies on lesbian, gay and bisexual (LGB) patients report that fear of discrimination and negative experiences contribute to delaying or avoiding care.¹⁶ A common assertion is that LGBT people living in urban areas, due to their high concentrations of LGBT people, fare better than those living in rural ones but there is little empirical evidence to support this. Some studies report that LGBT peoples' wellbeing is better in rural settings where they have greater opportunities to live a "normal life" while others report that they have greater access to culturally competent care in urban settings.¹⁷⁻¹⁹

Literature examining urban and rural difference in health access and utilization as it relates to sexual orientation is limited in quantity and scope despite there being between 2.9 and 3.8 million people living in rural America.²⁰ The knowledge that exists about rural adult sexual minorities comes from small surveys and qualitative studies²¹ that compare urban and rural differences in resilience, social support, and overall well-being, rather than larger studies that examine healthcare

access and use,^{22,23} Studies comparing health outcomes of urban and rural sexual minorities demonstrate that: rural sexual and gender minorities (SGM) have a higher proportion of the population that smokes than their urban counterparts,²⁴⁻²⁷ rural bisexual women and rural gay men have higher odds of HIV risk,²⁸ rural sexual minorities have lower rates of health insurance,²⁶ rural sexual minorities have higher rates of binge drinking,^{26,27} and the well-being of urban and rural SGM is essentially the same.²⁹ In all of the aforementioned studies, only one used a nationally representative health survey,¹⁸ although only 10 states were included in the analysis, and only three studies controlled for known covariates and examined difference across sexual orientations.^{26,28,29} There was one study that measured differences in access to care for urban and rural lesbian women. It used a convenience sample from the internet and did not control for known covariates within the model. The study demonstrated that access to health care between the two sub-populations varied based on the types of services sought.³⁰

People of color in rural areas have poorer access to medical care, are less likely to have health insurance, and have fewer physicians compared to urban and rural non-Hispanic and Whites (White).^{31,32} A study conducted by Caldwell and colleagues reported that non-Hispanic Blacks (Black) in rural areas had lower odds of cholesterol and cancer screenings when compared to urban black people, demonstrating that rurality has a moderating effect even within a population.³³ There is burgeoning evidence that the intersection of rurality and race has an impact on healthcare access and utilization, yet reporting on racial/ethnic health care disparities

is usually conducted at the national level or specifically in urban areas, thus mask the nuances of these disparate outcomes.

The research that exist on the urban and rural differences sexual minorities and gender minorities emphasizes health risk factors, illicit drug and alcohol use and wellbeing and it produced mixed results that does not all researchers to infer much about the characteristics of these settings and how they impact health access and use.²¹ There are implications for health care access and use based of urbanicity of residence, but no large scale appropriately sampled quantitative analysis has been conducted to date.

Access to Healthcare and Income for Sexual Minorities

Access to health insurance does not guarantee access to critical and necessary healthcare.^{34,35} Record levels of access to healthcare insurance for sexual minorities after the passage of the Patient Protection and Affordable Care Act (ACA)³ has not eliminated disparities in healthcare access and utilization, especially within racial/ethnic and gender minority subgroups.^{8,11,13,36,37} The literature demonstrates that socioeconomic status contributes to disparities in healthcare access and utilization among minority populations in the United States^{35,38,39} because access to financial resources removes barriers to care, including the out-of-pocket cost of care, transportation, provider availability, child care, among other barriers.^{34,35} While the literature examines the combination of factors that comprise socioeconomic status, there is little information about how poverty, the state of being extremely poor, directly affects access and utilization of health services.^{34,38} Sexual minorities

experience poverty at higher rates than heterosexuals, potentially putting them at greater risk for decreased access to healthcare.⁴⁰

LGBT people are at increased risk for economic insecurity due to housing discrimination, employment discrimination, and historical barriers to access financial benefits (e.g., taxes) that are afforded to heterosexual married couples.^{9,41,42} Sexual minorities have historically experienced discrimination that has prevented them from having the economic stability that would facilitate optimal healthcare access and utilization. A study from the Pew Research Center found that 21 percent of LGBT people surveyed said that an employer treated them “unfairly” (2013). Another study estimated that between 25 percent and 66 percent of the sexual minorities experience workplace discrimination including termination, ostracism, diminished mobility, and even violence.⁴³ In addition to workplace discrimination, sexual minorities experience more economic instability than their heterosexual counterparts. The Gallup Daily Tracking Survey, a nationally representative survey, demonstrated that LGBT people are more likely to report that they do not have money to feed themselves or their family, pay for necessary or preventative healthcare, and pay for housing or shelter.⁴⁰ The same survey demonstrated that same-sex couples are more likely to be in poverty than different-sex couples, and bisexual adults are more likely to be low-income than heterosexual adults.

Gender and Access to Healthcare for Sexual Minorities

Female sexual minorities are exposed to structural level and individual level barriers to care because they are both gender and sexual minorities.¹² Prior to the Patient Protection and Affordable Care Act (ACA) and the passing of the 2015

Marriage Equality Act, they were vulnerable to uninsurance due limited access to employer sponsored insurance from employers or not being eligible to gain coverage through their partners employers because of non-recognition of same-sex partnerships.⁴⁴ In addition to being less likely to have health insurance, sexual minority women are more likley to delay health care and not have a usual source of care.⁴⁵⁻⁴⁷

Sexual minority women also demonstrate evidence of barriers to preventative healthcare services. The research shows that lesbian women have an increased risk for not receiving essential preventative screenings such as Pap smears, cervical cancer screenings, and mammograms.^{46,48,49} Lesbian and bisexual women are exposed to the same risk factors that heterosexual women experience that contribute to not receiving necessary preventative health services such as usual source of care, health insurance access, age, income, and education. They also experience barriers that are unique to their sexual minority identity such as fear of discrimination, limited access to health services and providers who understand their healthcare needs, and feelings of marginalization as a results of experiencing heterosexual assumptions, inappropriate questioning or services, and refusal of services.⁵⁰

Affirming Sexual Identity and Healthcare Access

Sexual orientation is comprised of three dimensions—identity, behavior, and attraction.⁵¹⁻⁵⁴ Most population-based health surveys use sexual identity, i.e., identifying as a sexual minority and considers themselves a part of the Lesbian, Gay, Bisexual and Transgender (LGBT) community, as a measure of sexual orientation.⁴⁵ While this is the most commonly used measure, it does not capture every dimension

of sexual orientation, and may unintentionally exclude people from the analysis who have similar experiences as sexual minorities and potentially face additional vulnerabilities, because they do not identify as being a sexual minority.^{51,55,56}

Sexual behavior (i.e., the sex of sex partners) is another dimension of sexual orientation used in earlier studies of sexuality, sexual behavior, and other health topics. Sexual behavior is another way to identify sexual minorities that do not identify as sexual minorities in population-based surveys.⁵⁷ Using sexual behavior to identify individuals who may have similar social or healthcare experiences as sexual minorities but do not identify as sexual minorities can elucidate the salience of identifying with a minority community. Previous research on the adaptation to stigma posits that identifying with the oppressed population and participating in the community is the first step in mitigating the effects of stigma.^{58,59} Furthermore, studies demonstrate that engaging with the sexual minority community and developing a positive identity as a member of the group helps buffer against the impact of discrimination and is essential to adapting to stigma.^{60,61} These interpersonal affiliations increase social support and provide access to resources and accurate information regarding a person's sexual orientation, which could potentially increase access to healthcare. Examining sexual behavior is essential in population health surveys, because it will increase the robustness and precision of the analysis of the sexual minority population and examine the untested assumptions of the role that identifying as a sexual minority serves in perpetuating healthcare access disparities in sexual minorities.

Sexual minorities experience healthcare in a heteronormative environment. This means that anyone who has a sexual identity or behaviors that deviate from their heterosexual counterparts may perceive or experience negative attitudes and behaviors towards them in a healthcare setting.^{62,63} Multiple studies describe the negative occurrences experienced by sexual minorities when accessing healthcare.^{62,64} The fear of being “othered,” or discriminated against, can be a barrier to accessing care; further, the actual experiences of discrimination leave sexual minority patients in a chasm where they are unable to receive optimal, appropriate, and competent care.⁶⁵⁻⁶⁷ Regardless of whether one identifies as a sexual minority, or has a different self-identification, sexual minorities are all exposed to chronic minority stress, the major mechanism hypothesized to cause physical and mental health disparities in sexual minorities.⁶⁷⁻⁷¹

Theoretical Framework

The study employed the Anderson’s Behavioral Model of Health Services Use Including Contextual and Individual Characteristics as the conceptual framework.⁷² This is the most recent iteration of the popular health behavior model that is widely accepted and regularly used to conceptualize the relationship between individuals, medical, and environmental factors on health care use and health outcomes. This behavioral model expands on previous iterations by emphasizing the importance of the circumstances, environments and the context that health care is accessed.⁷² In this model contextual characteristics, like provider and community characteristics are measured at the aggregate level rather than individually. Individual characteristics are still divided into predisposing, enabling and need factors that are essential in

determining use of health services.⁷³ Predisposing factors include individual demographic characteristics that are biological imperatives such as age and sex, social factors such as education and ethnicity, and mental factors such as health beliefs or attitudes.⁷³ Enabling factors are characterized by elements of financing and organizations, such as health insurance and income, that aid in the utilization of services.⁷³ Need factors are an amalgamation of perceived need for health services (i.e. ones' own perception of their general health and illness symptoms) and evaluated need (i.e. professional assessment or objective measurement of health status).⁷³ This study will use the known contextual and individual predisposing, enabling and need factors in the data set as control variables in each of the adjusted models.

In addition to employing the Andersen model these studies use an intersectional perspective to inform our analysis. Intersectionality is a theoretical framework or perspective used to examine how numerous social identities (e.g. race, sex, or sexual orientation) converge on an individual level contributing to experiences of oppression or privilege on a macro social-structural level.⁷⁴⁻⁷⁸ Social identities are multidimensional and intersecting; each intersecting with macro-level structural factors (e.g. poverty, racism and sexism) in ways that either reveal or facilitate health inequities and disparities.⁷⁸ Intersectionality theory posits that social categories are interdependent and mutually constitutive.^{76,77,79} That is, one identity alone does not account for disparate outcomes that minorities, whatever minority they may be, experience. It is essential that as public health researchers and policy makers examine the impacts of national health policy and account for how multiple social identities intersect and contribute to the unequal outcomes are observed. Public health

researchers acknowledges that social identities have a significant role in health outcomes, commonly by controlling for these variable in statistical models, but the nature of intersectionality makes it difficult to analyze multiple identities quantitatively due to its inability to meet the criteria for assumptions necessary for modeling.⁸⁰ Additionally, when analyzing multiple categories within one group the statistical power decreases and sampling error increases. This makes it difficult to make inferences based on the sample populations. Although these populations are difficult to analyze there is tremendous value in analyzing these social identities.

Dissertation Aims and Hypothesis

The aim of the first study is to examine the differences in healthcare access at each intersection of urbanicity, race/ethnicity and sexual identity. I hypothesize that when controlling for known covariates that influence healthcare access and utilization rural sexual minorities of color will experience the lowest level of access to healthcare when compared to urban white heterosexuals.

The aim of the second study was to examine the differences in healthcare access between sexual minorities and non-sexual minorities at the intersections of sexual identity, gender, and income. I hypothesized that sexual minorities with multiple socially disadvantaged identities (i.e. low-income or female) would experience less access to healthcare compared to high-income male heterosexuals.

The aim for the third and final study was to determine whether identifying as a sexual minority was salient in accessing healthcare for sexual minorities. I hypothesized that individuals who engaged in sexual behavior with people the same

gender but identified as being heterosexual would experience more barriers to healthcare access than sexual minorities.

Chapter 2: Disparities in Healthcare Access and Utilization at the Intersections of Urbanicity, Sexual Identity and Race.

Introduction

Sexual minorities—lesbian, gay, and bisexual people—historically, experience greater barriers to health services, lower access and utilization of health services, and poorer mental and physical health outcomes than their heterosexual counterparts.²⁻⁸ Estimates as recent as 2017 demonstrate that the percentage of lesbian, gay, bisexual, and transgender (LGBT) people in the United States increased to 4.5 percent of the total population, up from 4.1 percent the previous year.⁸¹ Despite there being more than 14 million reported LGBT people in the nation, there is limited research, knowledge, and understanding of how disparities exist and persist in access to and utilization of health care in this population, or how social identity may contribute to these disparate outcomes.⁸² Previous studies on health outcomes in sexual minorities primarily focused on convenience samples that tended to have more urban, educated, white, and male respondents.⁸³ This practice has created an urban, affluent bias in the understanding of the health experiences of sexual minorities, because it excludes the experiences of rural, poor, gender minorities and sexual minorities of color from analyses. The 2011 Institute of Medicine report on the health and well-being of sexual and gender minorities emphasized the importance that geographic location may have on health and health disparities, but current research does not provide insight as to how or to what extent this may impact sexual minorities.⁹

Nearly 20 percent (19.3%) of the U.S. population resides in a nonmetropolitan or rural area, and 65 percent of the nation's counties are considered rural.^{84,85}

Research demonstrates that rural populations tend to be older, poorer, and more likely to be obese. Additionally, they have higher rates injury, smoking, uninsurance, suicide and opioid misuse.⁸⁶⁻⁸⁸ Rural populations have a lesser access to health care providers, especially specialists like neurologists, anesthesiologists, and psychiatrists,⁸⁹ and residents must travel further distances to reach health care resources.⁸⁵ In a national survey of health outcomes conducted by the Agency for Healthcare Research and Quality, people in rural areas received better scores in 23 percent of the patient safety measures, the same scores as the urban population in affordable care measures, and scored the same in 39 percent of access to care measures, when compared to large fringe metropolitan areas, despite poorer access, poorer health, and less utilization of healthcare.⁸⁹ National health organizations monitor rural health outcomes on an annual basis, yet few studies examine how access and utilization differ across race/ethnicity and rurality, and even analysis how sexual orientation may impact those outcomes.

People of color in rural areas have poorer access to medical care, are less likely to have health insurance, and have fewer physicians compared to urban and rural non-Hispanic and Whites (White).^{31,32} A study conducted by Caldwell and colleagues reported that non-Hispanic Blacks (Black) in rural areas had lower odds of cholesterol and cancer screenings when compared to urban black people, demonstrating that rurality has a moderating effect even within a population.³³ There is burgeoning evidence that the intersection of rurality and race has an impact on healthcare access and utilization, yet reporting on racial/ethnic health care disparities

is usually conducted at the national level or specifically in urban areas, thus mask the nuances of these disparate outcomes.

Literature examining urban and rural difference in health access and utilization as it relates to sexual orientation is limited in quantity and scope despite there being between 2.9 and 3.8 million people living in rural America.²⁰ The knowledge that exists about rural adult sexual minorities comes from small surveys and qualitative studies²¹ that compare urban and rural differences in resilience, social support, and overall well-being, rather than larger studies that examine healthcare access and use.^{22,23} Studies comparing health outcomes of urban and rural sexual minorities demonstrate that: rural sexual and gender minorities (SGM) have a higher proportion of the population that smokes than their urban counterparts,²⁴⁻²⁷ rural bisexual women and rural gay men have higher odds of HIV risk,²⁸ rural sexual minorities have lower rates of health insurance,²⁶ rural sexual minorities have higher rates of binge drinking,^{26,27} and the well-being of urban and rural SGM is essentially the same.²⁹ In all of the aforementioned studies, only one used a nationally representative health survey,¹⁸ although only 10 states were included in the analysis, and only three studies controlled for known covariates and examined difference across sexual orientations.^{26,28,29} There was one study that measured differences in access to care for urban and rural lesbian women. It used a convenience sample from the internet and did not control for known covariates within the model. The study demonstrated that access to health care between the two sub-populations varied based on the types of services sought.³⁰

Study Objective

Although the previously referenced studies demonstrate disparities in access to healthcare between urban and rural populations, research on differences among sexual minorities and among sexual and racial/ethnic minorities in rural populations does not exist in the literature. This present study aims to address the gaps by simultaneously comparing access and utilization measures across urban and rural residences as well as racial and sexual identities. Employing an approach driven by intersectionality,^{75,76,78,79,90,91} this study tests whether individuals with multiple historically disadvantaged social identities experience poorer access and utilization outcomes (i.e., rural, sexual minority, person of color) when compared to their straight, white, and urban counterparts.

Data

Pooled data from the 2014 through 2017 Adult California Health Interview Survey (CHIS) was used for this analysis. The CHIS is a population-based telephone survey delivered to noninstitutionalized adults who resided in a household in California during the time that the survey was administered.⁹² CHIS is the largest state-based health survey and one of the largest health surveys in the nation.⁹² Conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Public Health and Department of Health Care Services, CHIS collects extensive information on health status, health conditions, health insurance coverage, health services access, and many other health-related details.⁹² CHIS employs a dual-frame, multi-stage sample design that captures landline only, cell phone only, and combined landline and cell phone households. The Random Digit Dialing (RDD) sample includes approximately 50 percent landline and 50

percent cellular phone interviews.^{92,93} The sampling objectives of CHIS are two-fold: 1) provide estimates for the California population based on counties and clusters of counties with small populations; 2) provide estimates for the California population that is representative of racial and ethnic groups, including small subgroups.⁹² To achieve this goal, the 58 counties in California were grouped into 44 geographic sampling strata; 14 sub-strata comprising the two most populated counties (Los Angeles and San Diego) were created.⁹³ Most of the strata (39 out of 44) consisted of a single county with no sub-strata. The RDD sample included a sufficient number of telephone numbers from each strata and sub-strata to provide health estimates for adults at the local level.⁹³ Residential telephone numbers were selected within each geographic stratum in which, if the household allowed, one adult (a person aged 18 and over) and/or one adolescent (person between the ages of 12-17) and/or one child (a person under the age of 12) was selected randomly to participate in an interview.⁹³ Adults and adolescents were interviewed directly and an adult, who was assumed to have intimate knowledge about the child, completed the interview for the child by proxy.

Cell phone stratification closely resembles the landline stratification in strata name similarity, though they slightly different geographic areas are represented.⁹³ Interviews were administered using RTI's computer assisted telephone interviewing system (CATI). The average adult interview took approximately 41 minutes to complete, the average adolescent interview took 22 minutes, and the average child interview took 19 minutes.^{92,93}

Study Sample

Information on sexual identity and sexual behavior is included in the 2014-2017 adult CHIS survey through a special use research file (SURF). The sexual orientation SURF included both information on sexual and gender identity, as well as information on sexual behavior, which was combined with the CHIS public use file (PUF). Respondents were asked, “Do you think of yourself as straight or heterosexual, as gay/lesbian or homosexual, or bisexual?” Responses were coded in the following categories: heterosexual or straight; gay, lesbian, or homosexual; bisexual; not sexual, celibate, none; other; refused; don’t know; proxy skipped. Previous research demonstrates the effectiveness of asking about sexual identity in this manner and it is used in national health surveys including the National Health Interview Survey and the Behavioral Risk Factors Surveillance Survey.⁹⁴ A total of 82,758 adults completed the CHIS between 2014 and 2017. Of the respondents who answered the sexual identity question, 72,527 (87.63%) self-identified as straight, 1,817 (2.20%) self-identified as homosexual, and 1,671 (2.02%) self-identified as being bisexual. Additionally, 906 (1.1%) self-identified as celibate/not sexual, 98 (.12%) self-identified as other, for 5,351 (6.5%) the question was not applicable, and for 421 (.5%) respondents their proxy skipped the question. The focus of this study is on self-identified straight, gay or lesbian, and bisexual groups., Respondents who had ambiguous answers to the sexual identity question (i.e., not sexual, celibate, none; other; refused) and those with missing sexual identity data (i.e., missing in error, do not know, refused, or proxy skipped) were excluded from the analysis. Additionally, respondents missing data on any of the study variables were excluded from the analysis. The final study sample included 71,750 respondents: 68,450 self-identified

as straight and 3,300 self-identified as gay, lesbian, or bisexual. Of these, 391 interviews were completed by proxies on the behalf of the respondent and the remaining were completed by the respondents themselves.

Measures

Outcome variables measured respondents' healthcare access and healthcare utilization. All dependent variables were dichotomous measures. The first dichotomous dependent variable measures indicated respondents' current health insurance status (yes, no). The second dichotomous dependent variable assesses whether the respondent visited a doctor in the past 12 months (yes, no). The third dependent variable measures whether the respondent had a preventative care visit in the past year (yes, no). The fourth dependent variable measures whether the respondent delayed medical care in the past year (yes, no). The fifth dichotomous dependent variable measures whether the respondent delayed a prescription in the past 12 months (yes, no). The sixth dichotomous dependent variable measures whether the respondent delayed care in the past year and never received the necessary care, or had forgone care (yes, no). The seventh dependent variable measures whether the respondent visited the emergency room (ER) in the last year (yes, no). The eighth dependent variable measures whether the respondent was not accepted as a new patient by a doctor in the past year (yes, no).

Urban/rural designation is measured at the block group level (urban, suburban, second city, and town/rural). The classification of the urban/rural variable is based on population density of specific geographic areas paired with the surrounding areas to provide a contextual density as established by the Neilson-Claritas (Claritas) data.

The per person per square mile density score was converted into centiles and translated onto a 0 to 99 scale.⁹⁵ Areas designated as urban have the highest population score based on the density centiles with a score that ranges from 75 to 99.⁹⁵ Areas designated as suburban surround urban areas, and have a density score between 40 and 90.⁹⁵ Areas designated as second cities have a density centile score between 40 and 90, and are typically satellite cities surrounding major metropolitan areas.⁹⁵ Areas designated as town/rural include exurbs, farming communities, and various rural areas with density scores that range between 0 and 40.⁹⁵

To examine the relative importance and the magnitude urbanicity, sexual identity and race/ethnicity have as it relates to disparate health care access and utilization, this study will compare the access and utilization outcomes of 12 geographic-sexual-racial groups (i.e., urban rural, white non-white, straight homosexual/bisexual). This method of analysis is used in other health studies that build off intersectionality to test whether those who identify with multiple socially disadvantaged positions have poorer outcomes, as compared to their single identifying counterparts.⁹⁶⁻⁹⁸

Individual characteristics of respondents that are known to impact health care utilization were captured in the models consistent with the Aday-Anderson Behavioral model⁹⁹ and a previous study that examined urban/rural health outcomes across race/ethnicity.³³ Adjusted models included categorical variables representing predisposing factors including age (18-44, 45-64, 65-84, 85+), sex (male, female), and employment (employed full time, not employed full time). The following variables were individual characteristics of respondents that are known to enable

access to health care: education (high school/no formal education, some college, Bachelor's degree, Graduate degree), and marital status (married, not married). Lastly, the model controlled for healthcare need by including the number of diagnoses for multiple chronic conditions (none, one chronic condition, two or more chronic conditions). Income (0-399% federal poverty level (FPL), 400% and above FPL), and citizenship (United States (US) citizen, non-US citizen) were included in the model as potential confounders. The analysis included the administered survey year (2014, 2015, 2016, and 2017) in each model to control for differences between survey years.

Data Analysis

The analysis employed jackknife replicate weights to estimate robust standard errors to ensure that estimates were representative of the California population. A paired jackknife replication method was employed to compute variance in CHIS to ensure continuity across the various survey years. The replicate weights were constructed to capture variability in adjustments to address sampling and subsampling for nonresponse and to limit bias associated with nonresponse and coverage.⁹³ Essentially, the weight sums for the replicates and full sample estimate the size of the California population save rounding or deviations from the full-sample calibration model.⁹³ All analysis employed the replication estimates, identified linear weights, and requested the appropriate jackknife variance estimates using the SVY command in Stata 16.1 MP.^{100,101}

We calculated weighted observed proportions using chi-squared tests to provide descriptive statistics for the sample population and observed proportions for

each outcome by rurality and sexual identity. We used logistic regressions, reporting odds ratios for the access and utilization outcomes while controlling for known covariates. To examine the relevance and magnitude of each social identity (urbanicity, sexual identity, and race) and how identifying with each may contribute to disparate outcomes, we compared outcomes across each group and compared them to a reference group of respondents who lived in urban settings, self-identified as straight, and were white (urban/straight/white). We fit the following models with the dummy variables representing the various dimensions of urbanity, sexual identity, and race/ethnicity:

$$Y_i = \beta_0 + \beta_1 X_{i(Urbanicity)} + \beta_2 X_{i(Sexual\ Identity)} + \beta_3 X_{i(Race)} + \beta_4 X_{i(Urbanicity*Sexual\ Identity*Race)} + \beta_5 X_{i(Covariates)} + \varepsilon$$

Estimates were considered statistically significant if the p-value was less than 0.05. We reported P-value and confidence intervals.

Results

Table 2.1 describes the CHIS sample by urbanicity and rurality. Sexual identity is virtually identical for each subgroup across urban and rural statuses. The rural population is less diverse, the proportion of the urban population being white was .63 compared to .39 of the proportion in the rural population. The proportion of U.S. citizens in the rural population was .88 compared to .83 in the urban population. The urban population tended to be younger, more likely to be unmarried, and had more education than the rural population. While the urban population had a higher proportion of full-time employment, income levels were the same between the urban and rural populations. The proportion for health characteristics for urban population

versus the rural population were similar with both groups having nearly equivalent ratings of general health status and rates of multiple chronic condition diagnoses.

Table 2.2 describes the estimated proportions for the outcomes in the CHIS population by urbanicity and sexual identity. Rural gay and lesbian people have the highest rate of health insurance coverage. Urban straight people have the highest estimated proportion of not seeing a doctor in the past year (.20). Rural straight individuals have the highest proportion of not receiving preventative care in the past year (.29), followed by rural bisexual people and urban straight people (.28). Urban bisexual people had the highest proportion of delayed medical care in the past year (.23), as well as delaying filling of prescriptions (.26). Rural bisexual people had the highest estimated proportion of emergency room visits in the past year (.38). Urban bisexual people have the highest estimated proportion of forgone care in the past year and not being accepted as a new patient in the past year (.12 and .06, respectively).

Table 2.3 describes the number of respondents in each urbanicity, sexual identity, and race/ethnicity group. There were 28,517 (39.74%) respondents in the urban, straight, white group, and there were 890 (1.24%) urban, homosexual, whites in the sample. There were 644 (0.90%) urban, bisexual, whites in the sample, and there were 24,270 (33.83%) urban straight non-white respondents in the sample. The group for urban homosexual, non-whites had 541 (0.75%) respondents, and the urban bisexual non-white group had 90 (0.87%) respondents. There were 11,823 (16.48%) rural straight white, 217 (0.30%) rural homosexual white, and 229 (0.32%) rural bisexual white respondents in the sample. There were 3,840 (5.35%) rural straight

non-white, 68 (0.09%) rural homosexual non-white, and 90 (0.13%) rural bisexual non-white respondents in the sample.

Table 2.4 describes the results from the ordered logistic regression analysis for the outcomes with odds ratios. After adjusting for known demographic and socioeconomic factors and when compared to urban heterosexual whites, urban homosexual whites had increased odds of delaying filling a prescription (AOR=1.780, $p<0.01$, 95% CI [.186-2.67]) and decreased odds of being uninsured (AOR=.438, $p<0.05$, 95% CI [.194-.985]), not having a doctor appointment in the past 12 months (AOR=.370, $p<0.05$, 95% CI [.227-.603]), and not receiving preventative care in the past 12 months (AOR=.543, $p<0.01$, 95% CI [.366-.806]). Compared to urban heterosexual whites, urban bisexual whites had increased odds of delaying medical care (AOR=1.610, $p<0.05$, 95% CI [1.064-2.435]) and delaying filling a prescription in the past 12 months (AOR=1.928, $p<0.01$, 95% CI [1.224-3.039]). Urban heterosexual non-whites have increased odds of uninsurance (AOR=1.264, $p<0.05$, 95% CI [1.008-1.585]), and not having a doctor's appointment in the past 12 months (AOR=1.128, $p<0.05$, 95% CI [1.021-1.246]). The same group had decreased odds of not receiving preventative care (AOR=.862, $p<0.01$, 95% CI [.783-.950]), delaying medical care (AOR=.637, $p<0.01$, 95% CI [.561-.724]), delaying filling a prescription (AOR=.729, $p<0.01$, 95% CI [.621-.857]), foregoing care (AOR=.635, $p<0.01$, 95% CI [.562-.719]), and not being accepted as a new patient (AOR=.703, $p<0.01$, 95% CI [.544-.908]), all within the past 12 months, when compared to the reference group. Compared to the reference group, urban homosexual non-whites had decreased odds of not receiving preventative care

(AOR=.676, $p<0.05$, 95% CI [.459-.996]). The result for delaying medical within the last 12 months was approaching significance (AOR=.648, $p<0.10$, 95% CI [.410-1.026]). Urban bisexual non-whites had decreased odds of not receiving preventative care within the past 12 months (AOR=.611, $p<0.05$, 95% CI [.409-.913]) compared to urban heterosexual whites. Rural heterosexual whites had increased odds of not having a doctor's appointment (AOR=1.162, $p<0.05$, 95% CI [.979-1.379]) and not being accepted as a new patient (AOR=1.533, $p<0.01$, 95% CI [1.180-1.992]) when compared to their urban counterparts. Rural bisexual whites had decreased odds of uninsurance (AOR=.393, $p<0.05$, 95% CI [.144-1.069]) and ER visits within the past year (AOR=1.956, $p<0.05$, 95% CI [1.135-3.371]) when compared to urban heterosexual non-whites. The findings for increased odds of delayed care were approaching significance (AOR=2.107, $p<0.10$, 95% CI [.973-4.562]). Rural heterosexual non-whites had increased odds of uninsurance compared to their urban white counterparts (AOR=1.329, $p<0.05$, 95% CI [.951-1.856]). None of the outcomes for rural homosexual and bisexual non-white respondents were statistically significant when compared to the reference group.

Discussion

Population and health services research on health disparities based on urbanicity, rurality, race/ethnicity, and sexual identity have never examined how these social identities intersect and affect healthcare access and utilization of healthcare outcomes. The purpose of this study is to analyze multiple social inequalities to determine if urban and rural experiences in health care access and utilization operate in the same way for sexual minorities and for sexual minorities of

color. The study findings demonstrate that access and utilization to healthcare services vary across urbanicity, sexual identity, and race. Each dimension of urbanicity, sexual identity, and race/ethnicity demonstrated a different level of limitation in healthcare access and use. Furthermore, we could not attribute one singular identity to as driving the differences in access. Rather, access and use varied in relevance and magnitude across each group. This study confirmed the non-additive perspective of intersectionality by demonstrating that multiple social identities interact, rather than compound, to create multiple dimensions of experiences for sexual minorities and people of color.^{78,90,102}

The findings of the study were consistent with the literature demonstrating that there are poorer access and utilization outcomes in straight rural respondents when compared to urban respondents. The study also demonstrated similar findings showing that non-white respondents have less access to health insurance than their white counterparts regardless of urban or rural status.^{89,103} Both urban and rural homosexual whites delayed filling prescriptions, had ER visits, and experienced physicians who were more likely to not accept them as new patients. Urban white homosexuals had higher odds of delaying medical care and forgoing needed care as well. While both groups had lower odds of uninsurance, the study demonstrates that there is still a barrier in place that is preventing white gays/lesbians from accessing and using healthcare regardless of urbanicity. The low rates of uninsurance in homosexual, bisexual, and female respondents may be attributed to the fact that bisexuals and women have higher rates of being insured by Medicaid in California. Additional other studies demonstrate that homosexual men have more healthcare

coverage and access care more frequently than heterosexual men³⁶. Contrary to previous literature that commonly represents urban settings as being more beneficial to sexual minorities,¹⁸ this study demonstrates that barriers to healthcare access and use exist in both urban and rural sexual minorities.

The findings in the study demonstrate that urban homosexuals who are not white have higher rates of uninsurance, but the difference was small, and the finding was not statistically significant. Additionally, the study reported that they had increased likelihood of ER visits, though these findings also were not statistically significant. Similar small and not statistically significant results were gleaned from rural homosexual non-whites. The study found that they only had an increased likelihood of not having a doctor's appointment in the last year and had lower odds of all other outcomes. None of the findings for this group were statistically significant. The cell size was small relative to other groups and could be the cause of spurious findings in smaller subgroups. This study's finding does not demonstrate the absence of a disparity in these groups; it merely demonstrates that the data was insufficient to report conclusive findings.

The results of the study demonstrate that bisexual urban and rural whites experience barriers to access and utilization differently from their heterosexual and homosexual counterparts. Both urban and rural white bisexuals experience access and use barriers related to delaying filling prescriptions, ER visits, and physicians not accepting them as new patients. Urban and rural non-white bisexuals demonstrated an increased likelihood of delaying care and visiting the ER. Furthermore, bisexual rural non-whites experience increased odds of uninsurance, delaying filling

prescriptions, and physicians not accepting them as new patients. The additional access and utilization barriers demonstrate that rurality may contribute to poorer health outcomes for non-white bisexuals in a way that it does not for urban non-white bisexuals and white rural bisexuals. The findings from this study establishes that bisexual sexual minorities experience access and utilization barriers uniquely, compared to other sexual minorities. Researchers can identify differences when they disaggregate sexual identity and analyze the appropriate subgroups.

The study did not find that race/ethnicity differences in healthcare access at the between white and non-white sexual minorities in urban and rural environments. While literature demonstrates difference in access for rural minorities³³ is likely that the sample size was not large enough to confidently identify health difference within those subgroups. It is possible that with additional data, with larger sample sizes, that differences among these group can be identified.

Limitations

There are several limitations related to this study. First, the data included respondents that lived in an eligible residence for the sample design (i.e., household, apartments, mobile homes with less than nine unrelated person).⁹² This means that the sample does not include sexual minorities living in group quarters such as group homes, homeless shelters, assisted living and long-term care facilities, shared communities, or communal houses. Sexual minorities experience higher rates of poverty and homelessness when compared to their heterosexual counterparts.¹⁰⁴ This coverage error excludes the most vulnerable members of the population from the analysis. Second, while the sample size for sexual minorities is larger and more

encompassing the most studies on sexual minorities, the overall sample sizes especially for some groups (e.g., rural sexual minorities) were less than 100 respondents, reducing the statistical power for the analysis of the groups. Thus, many of the estimated odds ratios were approaching statistical significance but the width of the confidence intervals was too large to confidently state that these groups were more or less healthy than others. Additionally, for this analysis, self-reported sexual identity was used to identify sexual minority participants. This method emphasizes sexual identity and does not consider the two other dimensions of sexual orientation: sexual behavior and sexual attraction.¹⁰⁵ Previous studies posit that behavior, identity and attraction intersect to impact health outcome,^{106,107}; thus findings from this study do not account for the unique experiences of people who do not identify as sexual minorities. Lastly, this study is restricted to a binary definition of gender, preventing the analysis from addressing the health concerns of transgender people and other gender populations.

Conclusion

Findings from this study have implications for research, policy, and healthcare practice. More data needs to be collected on each dimension of sexual orientation. Additionally, the sampling frame should include homeless and some institutionalized populations. Methods for sampling the homeless have been applied in other health studies.¹⁰⁸ When analyzing healthcare access and utilization, we need to examine the context in which care is experienced. Deeper analysis into why healthcare is foregone or delayed, the nature of the healthcare interaction, and details about barriers experienced before, during and after the healthcare encounter are essential to better

understand what is driving the variation in access and utilization. Health services and population health researchers should conduct research that dispels the myth of gay affluence⁴¹ by conducting research that includes representative samples of both urban and rural sexual minorities, is inclusive of sexual minorities of color, and examines differences within the subgroups of these populations. Research should also go beyond the first generation of research that merely demonstrate that disparities in healthcare access and utilization exist.¹⁰⁹ Structural and affordability barriers to care need to be examined in order to proceed to the next generation of research, which will yield a better understanding and explanation of the contextual factors contributing to barriers hindering access and utilization of health services in sexual minorities¹⁰⁹.

Despite the limitations of this study, it advances the understanding of the relationship between healthcare access and utilization among different urban/rural, sexual identity, and racial/ethnic identities. It posits that unidimensional analyses miss the nuances of how social position and power contribute to health outcomes. Particularly, it highlights that sexual minorities of color, especially bisexual ones, may be exposed to several types of barriers to care at unequal levels. Future data collection should oversample for the most marginalized populations to get adequate representation so that future research can examine these differences and present more conclusive findings.

Chapter 2 Tables

Table 2.1

Table 2.1 Estimated Proportions of Population Characteristics by Urbanicity			
	Urban	Rural	Total
Sexual Identity			
Heterosexual	0.95	0.96	0.95
Homosexual	0.02	0.02	0.02
Bisexual	0.03	0.03	0.03
Race/Ethnicity			
White	0.39	0.63	0.42
Black	0.06	0.02	0.06
Latino	0.36	0.28	0.35
AI/AN	0.00	0.01	0.00
Asian	0.16	0.04	0.14
Other/NH/PI/2+	0.02	0.02	0.02
Gender			
Female	0.51	0.51	0.51
Male	0.49	0.49	0.49
Age Categories			
18-44	0.50	0.40	0.49
45-64	0.33	0.36	0.33
65-84	0.15	0.22	0.16
85+	0.02	0.02	0.02
Health Insurance Status			
Insured	0.89	0.90	0.89
Not Insured	0.11	0.10	0.11
Education Level			
High School/No Formal Education	0.39	0.41	0.39
Some College	0.23	0.26	0.24
Bachelor's Degree	0.34	0.29	0.33
Graduate Degree	0.04	0.03	0.04
Marital Status			
Not currently married	0.52	0.43	0.51
Married	0.48	0.57	0.49
Employment Status			
Not Employed Full-time	0.44	0.50	0.45
Employed Full-time	0.56	0.50	0.55
Income Status			
0-399% FPL	0.50	0.50	0.50
400%+ FPL	0.50	0.50	0.50

Citizenship Status			
non-US Citizen	0.17	0.12	0.16
US Citizen	0.83	0.88	0.84
Chronic Conditions Diagnosis			
No Chronic Conditions	0.002	0.002	0.002
One Chronic Condition	0.80	0.78	0.80
2+ Chronic Conditions	0.20	0.21	0.20
General Health Status			
Excellent/Very Good/Good	0.79	0.79	0.79
Fair/Poor	0.21	0.21	0.21
Source: 2014-2017 California Health Interview Survey. Weighted estimates.			

Table 2.2

Table 2.2 Estimated Proportions for Outcomes by Urban/Rural Status and Sexual Identity						
	Urban			Rural		
	Heterosexual	Homosexual	Bisexual	Heterosexual	Homosexual	Bisexual
Insurance Status						
Insured	0.89	0.92	0.90	0.90	0.94	0.91
Not Insured	0.11	0.08	0.10	0.10	0.06	0.09
No Doctor's Visit in Past Yr.						
Yes Visit	0.80	0.87	0.83	0.81	0.85	0.85
No Visit	0.20	0.13	0.17	0.19	0.15	0.15
No Preventative Care Visit in Past Yr.						
Yes Visit	0.72	0.77	0.73	0.71	0.79	0.72
No Visit	0.28	0.23	0.27	0.29	0.21	0.28
Delayed Medical Care in Past Yr.						
No	0.87	0.84	0.77	0.86	0.89	0.80
Yes	0.13	0.16	0.23	0.14	0.11	0.20
Delayed Prescription in Past Yr.						
No	0.90	0.85	0.80	0.89	0.90	0.74
Yes	0.10	0.15	0.20	0.11	0.10	0.26
ER Visit in the Past Yr.						
No	0.80	0.74	0.70	0.78	0.79	0.62
Yes	0.20	0.26	0.30	0.22	0.21	0.38
Forgone Care in Past Yr.						
No	0.92	0.91	0.88	0.91	0.93	0.89
Yes	0.08	0.09	0.12	0.09	0.07	0.11
Not accepted as New Patient in Past 12m						
Yes accepted	0.97	0.95	0.94	0.95	0.94	0.90

Not accepted	0.04	0.05	0.06	0.05	0.06	0.10
Source: 2014-2017 California Health Interview Survey. Weighted estimates.						

Table 2.3

Table 2.3 Urbanicity, Sexual Identity, and Race/Ethnicity Count.		
	Count	Percent
Urban Heterosexual White	28,517	39.74
Urban Homosexual White	890	1.24
Urban Bisexual White	644	0.9
Urban Heterosexual non-White	24,270	33.83
Urban Homosexual non-White	541	0.75
Urban Bisexual non-White	90	0.87
Rural Heterosexual White	11,823	16.48
Rural Homosexual White	217	0.3
Rural Bisexual White	229	0.32
Rural Heterosexual non-White	3,840	5.35
Rural Homosexual non-White	68	0.09
Rural Bisexual non-White	90	0.13
	71,750	100
Source: 2014-2017 California Health Interview Survey Data		

Table 2.4

Table 2.4 Adjusted Logistic Regression for Outcomes at the Intersections of Urbanicity, Sexual Identity, and Race/Ethnicity.									
		Uninsured	Doc appt in past yr.	Preventat ive care in past yr.	Delayed care in past yr.	Delayed Rx in Past yr.	ER visit in past yr.	Foregone care in past yr.	Not accepted as new patient, past yr.
		OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)
Group	n								
	=71,750								
Urban Heterosexual White	28,517	1 (Reference)							
Urban Homosexual White	890	0.438** (0.194 - 0.985)	0.370*** (0.227 - 0.603)	0.543*** (0.366 - 0.806)	1.263 (0.842 - 1.897)	1.780*** (1.186 - 2.670)	1.295 (0.823 - 2.038)	1.243 (0.760 - 2.035)	1.527 (0.743 - 3.138)
Urban Bisexual White	644	0.903 (0.380 - 2.146)	0.809 (0.511 - 1.279)	1.045 (0.701 - 1.557)	1.610** (1.064 - 2.435)	1.928*** (1.224 - 3.039)	1.255 (0.883 - 1.785)	1.405 (0.910 - 2.169)	1.401 (0.803 - 2.445)
Urban Heterosexual non-White	24,270	1.264** (1.008 - 1.585)	1.128** (1.021 - 1.246)	0.862*** (0.783 - 0.950)	0.637*** (0.561 - 0.724)	0.729*** (0.621 - 0.857)	0.959 (0.854 - 1.075)	0.635*** (0.562 - 0.719)	0.703*** (0.544 - 0.908)
Urban Homosexual non-White	541	1.010 (0.484 - 2.110)	0.786 (0.340 - 1.818)	0.676** (0.459 - 0.996)	0.648* (0.410 - 1.026)	1.003 (0.620 - 1.621)	1.256 (0.792 - 1.990)	0.648 (0.366 - 1.148)	0.697 (0.360 - 1.349)
	621	0.963	0.848	0.611**	0.880	1.314	1.390	0.643	0.859

Urban Bisexual non-White		(0.450 - 2.063)	(0.574 - 1.254)	(0.409 - 0.913)	(0.501 - 1.546)	(0.768 - 2.250)	(0.902 - 2.141)	(0.341 - 1.209)	(0.387 - 1.905)
Rural Heterosexual White	11,823	1.198 (0.893 - 1.608)	1.162* (0.979 - 1.379)	1.109 (0.939 - 1.311)	1.091 (0.915 - 1.300)	0.972 (0.798 - 1.185)	1.112 (0.957 - 1.292)	1.118 (0.897 - 1.394)	1.533*** (1.180 - 1.992)
Rural Homosexual White	217	0.725 (0.271 - 1.940)	0.485 (0.141 - 1.668)	0.581 (0.241 - 1.403)	0.901 (0.372 - 2.185)	1.334 (0.339 - 5.247)	1.049 (0.460 - 2.390)	1.019 (0.388 - 2.680)	2.624 (0.560 - 12.29)
Rural Bisexual White	229	0.393* (0.144 - 1.069)	0.619 (0.214 - 1.791)	0.834 (0.397 - 1.750)	0.595 (0.284 - 1.249)	2.107* (0.973 - 4.562)	1.956** (1.135 - 3.371)	0.686 (0.266 - 1.768)	1.728 (0.662 - 4.513)
Rural Heterosexual non-White	3,840	1.329* (0.951 - 1.856)	1.147 (0.928 - 1.418)	0.951 (0.778 - 1.161)	0.770* (0.565 - 1.051)	0.919 (0.672 - 1.256)	0.959 (0.737 - 1.247)	0.826 (0.584 - 1.167)	0.895 (0.580 - 1.381)
Rural Homosexual non-White	68	0.427 (0.0830 - 2.199)	1.270 (0.258 - 6.258)	0.792 (0.177 - 3.543)	0.366 (0.102 - 1.309)	0.339 (0.0649 - 1.771)	0.755 (0.115 - 4.965)	0.341 (0.0673 - 1.728)	0.202 (0.00826 - 4.933)
Rural Bisexual non-White	90	1.731 (0.294 - 10.20)	0.931 (0.304 - 2.850)	0.977 (0.296 - 3.223)	1.292 (0.327 - 5.099)	1.833 (0.490 - 6.851)	1.120 (0.316 - 3.970)	0.551 (0.166 - 1.834)	1.662 (0.247 - 11.19)
Gender									
Male					1 (Reference)				
Female		0.551*** (0.461 - 0.658)	0.506*** (0.463 - 0.553)	0.609*** (0.552 - 0.672)	1.453*** (1.269 - 1.664)	1.474*** (1.294 - 1.679)	1.051 (0.941 - 1.174)	1.465*** (1.265 - 1.696)	1.545*** (1.286 - 1.857)
Income level									
High-income		1 (Reference)							
Low income		2.038***	1.414***	1.270***	1.291***	1.274***	1.166***	1.398***	1.377**

Age 18-44 45-64 64-84 85+	(1.680 - 2.471)	(1.283 - 1.559)	(1.116 - 1.445)	(1.147 - 1.452)	(1.119 - 1.452)	(1.057 - 1.287)	(1.189 - 1.642)	(1.038 - 1.826)
	1 (Reference)							
	0.852* (0.718 - 1.012)	0.645*** (0.583 - 0.715)	0.689*** (0.626 - 0.757)	0.936 (0.820 - 1.068)	1.119 (0.957 - 1.309)	0.912 (0.817 - 1.019)	0.950 (0.822 - 1.099)	0.922 (0.750 - 1.133)
	0.0698*** (0.0444 - 0.110)	0.354*** (0.275 - 0.455)	0.338*** (0.286 - 0.400)	0.328*** (0.276 - 0.389)	0.672*** (0.557 - 0.812)	0.892 (0.772 - 1.030)	0.347*** (0.276 - 0.436)	0.351*** (0.277 - 0.446)
	0.0797** (0.00727 - 0.873)	0.425*** (0.253 - 0.713)	0.243*** (0.159 - 0.370)	0.176*** (0.0986 - 0.313)	0.400*** (0.248 - 0.645)	1.207 (0.949 - 1.536)	0.145*** (0.0688 - 0.306)	0.220*** (0.123 - 0.394)
Education Level								
High School/No formal Education								
Some College	1 (Reference)							
	0.834** (0.706 - 0.984)	0.795*** (0.705 - 0.896)	0.918 (0.824 - 1.023)	1.356*** (1.165 - 1.578)	1.305*** (1.108 - 1.538)	1.295*** (1.166 - 1.438)	1.273** (1.053 - 1.538)	1.333** (1.061 - 1.676)
Bachelor's Degree	0.576*** (0.482 - 0.690)	0.797*** (0.710 - 0.895)	0.938 (0.840 - 1.048)	1.384*** (1.174 - 1.631)	1.244** (1.053 - 1.469)	1.001 (0.907 - 1.105)	1.245** (1.042 - 1.488)	1.569*** (1.201 - 2.048)
Graduate Degree	0.430*** (0.238 - 0.778)	0.679** (0.498 - 0.925)	0.951 (0.738 - 1.226)	1.540*** (1.131 - 2.096)	1.577** (1.057 - 2.353)	0.989 (0.719 - 1.360)	1.527** (1.016 - 2.293)	2.311*** (1.242 - 4.298)
Marital Status								
Not Married								
Married	0.563*** (0.489 - 0.649)	0.829*** (0.753 - 0.913)	0.865*** (0.782 - 0.957)	0.809*** (0.717 - 0.913)	0.836** (0.727 - 0.961)	0.785*** (0.715 - 0.861)	0.850** (0.731 - 0.988)	0.743*** (0.603 - 0.916)
Employment Status								

Not employed full-time				1 (Reference)				
Employed full-time	0.954	1.123**	1.223***	1.023	1.088	0.891**	1.073	0.828*
	(0.815 -	(1.005 -	(1.099 -	(0.888 -	(0.957 -	(0.811 -	(0.897 -	(0.677 -
	1.117)	1.256)	1.361)	1.180)	1.238)	0.980)	1.282)	1.013)
Citizenship								
non-US Citizen				1 (Reference)				
US Citizen	0.333***	0.600***	0.642***	1.295**	1.256**	1.409***	1.222	1.207
	(0.290 -	(0.518 -	(0.558 -	(1.039 -	(1.029 -	(1.207 -	(0.947 -	(0.883 -
	0.382)	0.694)	0.739)	1.615)	1.533)	1.646)	1.578)	1.648)
Chronic Disease Diagnosis								
No Chronic Conditions				1 (Reference)				
1 Chronic Condition	3.959**	1.227	1.049	0.420**	0.226***	0.169***	0.476	0.437*
	(1.282 -	(0.241 -	(0.384 -	(0.189 -	(0.111 -	(0.0623 -	(0.181 -	(0.166 -
	12.22)	6.260)	2.864)	0.932)	0.461)	0.461)	1.252)	1.150)
2+ Chronic Conditions	3.245*	0.898	0.965	0.681	0.362***	0.279**	0.711	0.654
	(0.989 -	(0.174 -	(0.345 -	(0.320 -	(0.180 -	(0.102 -	(0.283 -	(0.245 -
	10.65)	4.642)	2.703)	1.450)	0.728)	0.762)	1.785)	1.744)
Health Status								
Excellent/Very				1 (Reference)				
Good/Good								
Fair/Poor	1.215***	0.743***	0.823***	1.910***	2.302***	2.003***	1.783***	1.586***
	(1.052 -	(0.664 -	(0.732 -	(1.700 -	(2.017 -	(1.808 -	(1.551 -	(1.281 -
	1.403)	0.831)	0.924)	2.147)	2.627)	2.219)	2.049)	1.963)
Survey Year								
2014				1 (Reference)				
2015	0.623***	0.919	0.839***	1.001	1.076	1.278***	1.016	1.864***
	(0.541 -	(0.802 -	(0.760 -	(0.884 -	(0.934 -	(1.148 -	(0.867 -	(1.466 -
	0.718)	1.054)	0.926)	1.134)	1.240)	1.423)	1.189)	2.368)
2016	0.578***	0.889	0.824***	0.860*	1.001	1.257***	0.861	1.509***

2017	(0.476 - 0.701) 0.606***	(0.768 - 1.028) 0.860**	(0.729 - 0.931) 0.822**	(0.727 - 1.018) 0.918	(0.839 - 1.194) 1.001	(1.109 - 1.424) 1.213***	(0.706 - 1.049) 0.994	(1.144 - 1.992) 1.510***
	(0.511 - 0.718)	(0.748 - 0.990)	(0.696 - 0.970)	(0.789 - 1.069)	(0.800 - 1.254)	(1.072 - 1.373)	(0.837 - 1.181)	(1.191 - 1.915)
Constant	0.146*** (0.0454 - 0.468)	0.606 (0.117 - 3.132)	1.058 (0.380 - 2.942)	0.210*** (0.0895 - 0.494)	0.212*** (0.0979 - 0.458)	0.754 (0.269 - 2.111)	0.111*** (0.0391 - 0.313)	0.0350*** (0.0128 - 0.0954)
Observations (n)	71,750	71,750	71,750	71,750	71,750	71,750	71,750	71,750
Source: 2014-2017 CHIS Data. ***p<0.01 ** p<0.05 *p<0.10. Model controls for gender, income, age, education, marital status, employment status, citizenship, chronic disease diagnosis, health status and year of survey.								

Chapter 3: Disparities in Healthcare Access and Utilization at the Intersections of Sexual Identity, Gender, and Income.

Introduction

Access to health insurance does not guarantee access to critical and necessary healthcare.^{34,35} Record levels of access to healthcare insurance for sexual minorities after the passage of the Patient Protection and Affordable Care Act (ACA)³ has not eliminated disparities in healthcare access and utilization, especially within racial/ethnic and gender minority subgroups.^{8,11,13,36,37} The literature demonstrates that socioeconomic status contributes to disparities in healthcare access and utilization among minority populations in the United States^{35,38,39} because access to financial resources removes barriers to care, including the out-of-pocket cost of care, transportation, provider availability, child care, among other barriers.^{34,35} While the literature examines the combination of factors that comprise socioeconomic status, there is little information about how poverty, the state of being extremely poor, directly affects access and utilization of health services.^{34,38} Sexual minorities experience poverty at higher rates than heterosexuals, potentially putting them at greater risk for decreased access to healthcare.⁴⁰

Despite changes in society, lesbian, gay, bisexual, and transgender (LGBT) people still face disproportionate risks to their economic and social well-being.^{40,110} Likely due to social stigma that leaves them vulnerable to individual and systemic discrimination, LGBT people are at increased risk for economic insecurity due to housing discrimination, employment discrimination, and historical barriers to access financial benefits (e.g., taxes) that are afforded to heterosexual married couples.^{9,41,42}

Sexual minorities have historically experienced discrimination that has prevented them from having the economic stability that would facilitate optimal healthcare access and utilization. A study from the Pew Research Center found that 21 percent of LGBT people surveyed said that an employer treated them “unfairly” (2013). Another study estimated that between 25 percent and 66 percent of the sexual minorities (lesbian, gay, and bisexual) experience workplace discrimination including termination, ostracism, diminished mobility, and even violence.⁴³ In addition to workplace discrimination, sexual minorities experience more economic instability than their heterosexual counterparts. The Gallup Daily Tracking Survey, a nationally representative survey, demonstrated that LGBT people are more likely to report that they do not have money to feed themselves or their family, pay for necessary or preventative healthcare, and pay for housing or shelter.⁴⁰ The same survey demonstrated that same-sex couples are more likely to be in poverty than different-sex couples, and bisexual adults are more likely to be low-income than heterosexual adults.

Lesbian and bisexual women are exposed to heterosexism and sexism simultaneously, which can lead to increased vulnerability to poorer health and healthcare access. Women, in general, experience income inequality, and sexual minority women experience income inequality at greater rates than non-sexual minority women.^{40-42,111,112} Sexual minority women face heterosexism, sexism, and income inequality that may contribute to disparate access to care. The literature demonstrates differential access to healthcare between men and women, as well as between men and women sexual minorities.^{5,12,36,113-116} However, notwithstanding the

known relationships between income inequality and gender, little is known about how these identities intersect to impact healthcare access and utilization for sexual minority women.

Based on existing knowledge, there is limited information available on how sexual orientation, impoverished, and gender identities interact to impact healthcare access and utilization. Furthermore, the literature does not demonstrate a hierarchy, if one exists, of salience between these disadvantaged social positions.

Study Objective

By including an intersectional perspective to the quantitative analysis, this study seeks to add a depth of understanding to the literature that provides evidence for how sexual minorities, women, and people living in poverty access and use healthcare at multiple intersections of these socially disadvantaged identities. I hypothesize that sexual minorities with multiple disadvantaged social identities will experience more barriers to healthcare access. Intersectionality is a theoretical framework or perspective used to examine how numerous social identities (e.g., gender, sex, or sexual orientation) converge on an individual level, contributing to experiences of oppression or privilege on a macro social-structural level.⁷⁴⁻⁷⁸ Social identities are multidimensional and intersecting; each intersects with macro-level structural factors (e.g., poverty, heterosexism, and sexism) in ways that either reveal or exacerbate health inequities and disparities.⁷⁸ Intersectionality theory posits that social categories are interdependent and mutually constitutive.^{76,77,79} That is, one identity alone does not account for disparate outcomes that minority's experience. It is essential that

health services research account for how multiple social identities intersect and contribute to the unequal outcomes observed.

Data

The data was obtained through the 2014 – 2017 California Health Interview Survey (CHIS), a state representative population-based survey. The CHIS is a telephone survey of noninstitutionalized adults who reside in a household in California during the time that the survey was administered.⁹² The sample was identified through Random Digit Dialing (RDD) of both land line and cellular phones.⁹² Confidential data on the sexual identity of respondents was made available through a special use research file (SURF). The sexual orientation SURF, which includes data for both respondents' sexual and gender identity, and sexual behavior, was combined with the CHIS public use file (PUF). To identify sexual identity, respondents answered the following question: "Do you think of yourself as straight or heterosexual, as gay/lesbian or homosexual, or bisexual?" Responses were coded in the following categories: heterosexual or straight; gay, lesbian, or homosexual; bisexual; not sexual, celibate, none; other; refused; don't know; proxy skipped. Previous research demonstrates the effectiveness of asking about sexual identity using this method,^{57,117} which is also used in national health surveys including the National Health Interview Survey and the Behavioral Risk Factors Surveillance Survey.⁹⁴

Study Sample

A total of 82,758 adults completed the CHIS between 2014 and 2017. Of the respondents who answered the sexual orientation question, 72,527 (87.63%) self-identified as heterosexual, 1,817 (2.20%) self-identified as being

gay/lesbian/homosexual, and 1,671 (2.02%) self-identified as being bisexual. Additionally, 906 (1.1%) self-identified as celibate/not sexual, 98 (.12%) self-identified as other, for 5,351 (6.5%) the question was not applicable, and for 421 (.5%) respondents their proxy skipped the question. The focus of this study is on the self-identified heterosexual, gay or lesbian and bisexual groups. Respondents who had ambiguous responses to the sexual orientation question (i.e., not sexual, celibate, none; other; refused) and with missing sexual orientation data (i.e., missing in error, do not know, refused, proxy skipped) were excluded from the analysis. Additionally, we excluded respondents with missing data on any of the study variables. The final study sample included 71,750 respondents, 68,450 of whom self-identified as heterosexual, 1,716 (2.39%) of whom self-identified as homosexual and 1,584 (2.21%) of whom self-identified as bisexual. Of these, proxies completed 391 interviews on behalf of the respondent.

Measures

Dependent Variables

Outcome variables measured respondents' healthcare access and utilization. All dependent variables were dichotomous measures. The first dependent variable measures access by asking whether the respondent currently have health insurance status (yes, no). The second dichotomous dependent variable assesses whether the respondent visited a doctor in the past 12 months (yes, no). The third dependent variable measures whether the respondent had a preventative care visit in the past year (yes, no). The fourth dichotomous dependent variable measures whether the respondent delayed or did not get medical care in the past year (yes, no). The fifth

dichotomous dependent variable measures whether the respondent delay or did not fill a prescription in the past 12 months (yes, no). The sixth dichotomous dependent variable measures whether the respondent had to forego necessary care (yes, no). This variable is a composite variable comprised of two questions. First, respondents answered two questions: did they delay care in the past 12 months, and did they eventually receive the care. If they replied that they did delay care and did not receive care, they were determined to have foregone care. The seventh dichotomous dependent variable measures whether the respondent visited the emergency room (ER) in the last year (yes, no). The eighth dichotomous dependent variable measures whether the respondent was not accepted as a new patient by a doctor in the past year (yes, no).

Covariates

Individual level characteristics of respondents, known to impact health care utilization, were captured in the models and are consistent with the Aday-Anderson Behavioral model⁹⁹ and other studies that explored access to care.^{5,34} Adjusted models include categorical variables presenting predisposing factors including age (18-44, 45-64, 65-84, 85+), and employment (employed full time, not employed full time); enabling factors: usual source of care (yes, no), education (high school/no formal education, some college, Bachelor's degree, Graduate degree), and marital status (married, not married),); and need factors: diagnosis for multiple chronic conditions (none, one chronic condition, two or more chronic condition). We included citizenship status (United States [U.S.] citizen, non-U.S. citizen) as a potential confounder. The year the survey was administered (2014, 2015, 2016, and 2017) was also included in the model to control for differences between survey years.

Independent Variables

We created a binary variable for income level to measure poverty designating a respondent as either low-income or high-income. Eligibility for government subsidies to purchase health care coverage was the threshold for whether a respondent was low-income or not. California is one of the 35 states, as well as the District of Columbia, to expand Medicaid under the ACA.¹¹⁸ Eligibility for advanced premium tax credits to pay for premiums was extended to individuals who earn between 0 and 400 percent of the federal poverty level (FPL).¹¹⁹ For this study, respondents who earned family incomes between 0-399 percent FPL were designated as low-income and respondents that reported family income earnings of greater than or equal to 400 percent FPL were considered high-income. We captured respondents' sexual identity using a self-reported measure. Respondents were either heterosexual, homosexual, or bisexual. We identified gender using a binary indicator created using self-reported sex at birth (male, female).

Interaction terms

To identify the individual and combined relevance of sexual identity and income, we created dummy variables to compare the six dimensions of sexual orientation and income. The dimensions of sexual identity and income level demonstrate the interactions between the two social identities (i.e., heterosexual/high-income, heterosexual/low-income, homosexual/high-income, homosexual/low-income, bisexual/low-income, and bisexual/high-income).

To identify the individual and combined relevance of identity, income, and gender, we created dummy variables to capture the corresponding 12 dimensions. Respondents were assigned to the following groups: high-income/heterosexual/male,

high-income/gay/male, high-income/bisexual/male, high-income/heterosexual/female, high-income/lesbian/female, high-income/bisexual/female, low-income/heterosexual/male, low-income/gay/male, low-income/bisexual/male, low-income/heterosexual/female, low-income/lesbian/female, and low-income/bisexual/female.

Data Analysis

The analysis employed jackknife replicate weights to estimate robust standard errors to ensure that estimates were representative of the California population.¹⁰¹ Each model in the analysis employed the replication estimates, identified linear weights, and requested the appropriate jackknife variance estimates using the SVY command in Stata 16.1 MP.^{92,93,100}

We calculated weighted observed proportions using chi-squared tests to provide descriptive statistics for the sample population and observed proportions for each outcome by income level and sexual orientation. Logistic regressions calculated the odds ratios for the access and utilization outcomes while controlling for known covariates. High-income and heterosexual was the reference group in the sexual identity and income analysis, and high-income heterosexual men was the reference group in the sexual identity and gender analysis. The first model was:

$$Y_i = \beta_0 + \beta_1 X_{i(Income)} + \beta_2 X_{i(Sexual\ Identity)} + \beta_3 X_{i(Income*Sexual\ Identity)} + \beta_4 X_{i(Covariates)} + \epsilon$$

Our second model included dummies that represented the various dimensions of income, sexual identity, and gender simultaneously:

$$Y_i = \beta_0 + \beta_1 X_{i(Income)} + \beta_2 X_{i(Sexual\ Identity)} + \beta_3 X_{i(Gender)} \\ + \beta_3 X_{i(Income*Sexual\ Identity*Gender)} + \beta_4 X_{i(Covariates)} + \varepsilon$$

We considered estimates with a p-value of less than or equal to .05 to be statistically significant. P-values and confidence intervals are reported.

Results

Table 3.1 describes the characteristics of the sample by sexual identity and income level. Bisexuals, regardless of income, had the highest estimated proportion of not having a usual source of care (high-income .18, low-income .25). Low-income respondents tended to be younger, and .80 proportion of the low-income bisexuals were between the ages of 18 and 44. Low-income respondents had less education than high-income respondents, and the highest proportion of having no formal education or the highest level of education being high school was found in low-income heterosexual respondents (.57). Low-income respondents had a lower proportion of marriage and, across sexual identity, homosexual respondents had the lowest proportion of marriage (.85). Low-income respondents had higher proportion of not having full-time employment, and .53 proportion of low-income bisexual respondents reported not having full-time employment. Low-income heterosexual respondents reported the highest proportion of not being a U.S. citizen (.26). Low-income bisexual respondents had the highest estimated proportion of reporting multiple chronic conditions (.35), and .31 proportion of both heterosexual and bisexual low-income respondents reported that their health status was fair/poor.

Table 3.2 describes the estimated proportions for the outcome measures by sexual identity and income level. Low-income respondents had the proportion of uninsurance, and heterosexual low-income respondents had the highest proportion of uninsured among each group (.17). Low-income respondents had higher proportions of not seeing a doctor in the past year, and low-income heterosexual respondents had the highest proportion of not reported not seeing a doctor in the past 12 months (.24). Low-income homosexual respondents had the highest estimated proportion of no preventative care (.32), and low-income respondents, regardless of sexual orientation, had lower proportions of receiving preventative care. While higher than low-income respondents, a proportion of .26 of heterosexual and bisexual respondents who were high-income reported not receiving preventative care in the last 12 months. While low-income bisexual respondents had the highest proportion of delayed medical care and delayed prescriptions (.25, .22), high-income bisexual respondents had the second highest proportion among each group in the same outcome categories (.19 and .18, respectively). Low-income bisexual respondents had the highest proportion of ER use (.37), forgone care (.14), and not being accepted as new patient by a provider (.8).

Table 3.3 describes the adjusted logistic regressions reporting odds ratios for the access and utilization outcomes. We examined the relevance and magnitude of income level and sexual identity first. We ran separate models for each outcome variable while controlling for the following known covariates: usual source of care, gender, age, education level, marital status, employment status, U.S. citizenship, chronic disease diagnosis, and self-reported health status and survey year. The reference group for the analysis was high-income heterosexuals. When compared to

their heterosexual counterparts, high-income homosexual respondents had increased odds of delaying care in the past 12 months (AOR =1.683, $p<0.01$, 95% CI [1.145-2.473]), decreased odds of being uninsured (AOR =.546, $p<.05$, 95% CI [.299-.999]), a lower rate of not having a doctor's appointment (AOR =.454, $p<0.01$, 95% CI [.281-.735]), and not receiving preventative care (AOR =.528, $p<0.01$, 95% CI [.370-.754]). High-income bisexuals had decreased odds of not receiving a doctor's appointment (AOR =.559, $p<0.05$, 95% CI [.341-.915]) and increased odds of delayed prescriptions in the past 12 months (AOR= 2.037, $p<0.01$, 95% CI [1.243-3.336]) compared to the reference group. Low-income heterosexual respondents had increased odds of being uninsured (AOR=1.845, $p<0.01$, 95% CI [1.521-2.239]), not having a doctor's appointment (AOR=1.226, $p<0.01$, 95% CI [1.096-.371]), delayed care (AOR =1.194, $p<0.01$, 95% CI [1.058-1.349]), delayed prescription (AOR=1.269, $p<0.01$, 95% CI [1.126-1.431]), having an ER visit (AOR =1.174, $p<0.01$, 95% CI [1.075-1.281]), and forgone care (AOR =1.260, $p<0.01$, 95% CI [1.076-1.476]). Low-income homosexuals had increased odds of delayed prescriptions (AOR =1.640, $p<0.05$, 95% CI [1.001-2.687]) and foregone care (AOR =1.486, $p<0.05$, 95% CI [.979-2.256]). Low-income bisexuals had increased odds for delayed care (AOR =1.793, $p<0.05$, 95% CI [1.106-2.905]), delayed prescriptions (AOR =2.390, $p<0.01$, 95% CI [1.619-3.527]), ER visits (AOR=1.874, $p<0.01$, 95% CI [1.280-2.745]), forgone care (AOR =1.562, $p<0.05$, 95% CI [.952-2.562]), and not accepted as a new patient (AOR=1.733, $p<0.05$, 95% CI [1.061-2.831]), when compared to high-income heterosexuals.

Table 3.4 describes odds ratios for access and utilization outcomes for sexual identity, income level, and gender groups. When compared to the reference group of high-income heterosexual men, high-income gay men have increased odds of delayed prescriptions (AOR=2.219, $p<0.01$, 95% CI [1.322-3.724]), and decreased odds of being uninsured (AOR=.527, $p<0.10$, 95% CI [.246-1.126]), not having a doctor's appointment (AOR=.348, $p<0.01$, 95% CI [.203-.559]), and not receiving preventative care (AOR=.434, $p<0.01$, 95% CI [.262-.719]). High-income, bisexual men have decreased odds of not having a doctor's appointment (AOR=.463, $p<0.05$, 95% CI [.229-.938]) compared to the reference group. Low-income, heterosexual men, when compared to the reference group, have increased odds of uninsurance (AOR=1.991, $p<0.01$, 95% CI [1.642-2.415]), no doctor's appointment (AOR=1.261, $p<0.01$, 95% CI [1.108-1.434]), no preventative care (AOR=1.158, $p<0.05$, 95% CI [1.001-1.341]), delayed medical care (AOR=1.192, $p<0.10$, 95% CI [.990-1.436]), delayed prescriptions (AOR=1.326, $p<0.01$, 95% CI [1.103-1.592]), and foregone care (AOR=1.217, $p<0.10$, 95% CI [.974-1.521]) when compared to their wealthier counterparts. Low-income bisexual men had increased odds of delayed care (AOR=2.016, $p<0.10$, 95% CI [.893-4.551]) and delayed prescriptions (AOR=2.407, $p<0.05$, 95% CI [1.118-5.181]) compared to high-income heterosexual men. High-income heterosexual women had decreased odds of uninsurance (AOR=.710, $p<0.05$, 95% CI [.511-.985]), no doctor's appointment (AOR=.566, $p<0.01$, 95% CI [.493-.649]), and no preventative care (AOR=.693, $p<0.01$, 95% CI [.605-.794]) but had increased odds of delayed care (AOR=1.472, $p<0.01$, 95% CI [1.199-1.807]), delayed prescriptions (AOR=1.486, $p<0.01$, 95% CI [1.229-1.796]), forgone care

(AOR=1.480, $p<0.01$, 95% CI [1.206-1.817]), and not being accepted as a new patient (AOR=1.630, $p<0.01$, 95% CI [1.147-2.315]), when compared to their male counterparts. Compared to the reference group, high-income lesbian women had decreased odds of no doctor's appointment (AOR=.493, $p<0.10$, 95% CI [.222-1.095]) and no preventative care (AOR=.582, $p<0.10$, 95% CI [.317-1.067]), and they had increased odds of delayed care (AOR=1.802, $p<0.10$, 95% CI [.995-3.401]) and forgone care (AOR=1.916, $p<0.10$, 95% CI [.949-3.871]). Compared to high-income heterosexual men, high-income bisexual women had decreased odds of no doctor's appointment (AOR=.388, $p<0.01$, 95% CI [.209-.721]) and increased odds of delayed care (AOR=2.409, $p<0.01$, 95% CI [1.629-3.562]), delayed prescriptions (AOR=3.421, $p<0.01$, 95% CI [1.910-6.129]), foregone care (AOR=1.667, $p<0.05$, 95% CI [1.018-2.729]), and not being accepted as a patient (AOR=2.082, $p<0.10$, 95% CI [1.018-4.434]). Low-income heterosexual women had decreased odds of no doctor's appointment (AOR=.715, $p<0.01$, 95% CI [.604-.847]) and no preventative care (AOR=.741, $p<0.01$, 95% CI [.631-.872]) when compared to their wealthier male counterparts. They had increased odds of uninsurance (AOR=1.211, $p<0.10$, 95% CI [.968-1.514]), delayed care (AOR=1.712, $p<0.01$, 95% CI [1.457-2.013]), delayed prescription (AOR=1.765, $p<0.01$, 95% CI [1.479-2.107]), ER visits (AOR=1.158, $p<0.05$, 95% CI [1.030-1.302]), forgone care (AOR=1.864, $p<0.01$, 95% CI [1.544-2.249]), and not being accepted as a new patient (AOR=1.948, $p<0.01$, 95% CI [1.410-2.689]) when compared to the same group. Low-income lesbian women had increased odds of delayed care (AOR=2.086, $p<0.05$, 95% CI [1.053-4.133]), delayed prescriptions (AOR=2.839, $p<0.05$, 95% CI [1.150-7.010]),

forgone care (AOR=2.324, $p<0.05$, 95% CI [1.077-5.016]), and not being accepted as a new patient (AOR=2.602, $p<0.10$, 95% CI [1.442-4.811]), compared to the reference group. Low-income bisexual women had decreased odds of no doctor's appointment (AOR=.517, $p<0.01$, 95% CI [.321-.833]) and increased odds of delayed care (AOR=2.475, $p<0.01$, 95% CI [1.574-3.893]), delayed prescription (AOR=3.426, $p<0.01$, 95% CI [2.239-5.242]), ER visits (AOR=2.142, $p<0.01$, 95% CI [1.352-3.395]), forgone care (AOR=2.306, $p<0.01$, 95% CI [1.395-3.811]), and not being accepted as a new patient (AOR=2.634, $p<0.01$, 95% CI [1.442-4.811]), compared to high-income heterosexual men.

Discussion

In this state-based study of healthcare access and utilization barriers at the intersections of sexual identity, income, and gender produced, four key findings emerged. First, every dimension of sexual identity and income, as well as sexual identity, income, and gender, had at least one statistically significant outcome that demonstrated evidence of limited access to healthcare. Albeit, these barriers existed in different dimensions of access for each group. This finding is evidence that it is not just one aspect of identity driving disparities to access and utilization. Rather, this study supports the literature on intersectionality that posits that multiple disadvantaged identities are not additive, but instead they intersect and that each identity experiences different privileges and disadvantages as the dimensions of access shift.^{74,78,79,90,91,120} The remaining findings demonstrate the nature of the relationship between these multiple intersecting identities. Low-income bisexuals experienced the most barriers to access compared to high-income heterosexuals. A

previous study provided evidence that bisexual people have the most physical health disparities compared to heterosexual and homosexual people;⁷ the findings from this study provide evidence that this disparity may be partially driven by limited access to healthcare services.

Except for low-income gay men, every intersection of income, sexual identity, and gender identity demonstrated evidence of having limited access to healthcare services. Low-income gay men had increased odds of limited access in six out of the eight access measures, but none of the estimates were statistically significant. Low-income bisexual women had statistically significant and increased odds for the most outcome measures, and they had the highest likelihood of limited access and use in each outcome when compared to high-income heterosexual men. Low-income bisexual men had increased likelihood of limited access in two out of the eight outcomes measures, while low-income bisexual women had increased likelihood of limited access for five out of the eight outcomes. This may be evidence that the intersection of gender and bisexuality is a salient factor in the access to care disparities being experienced by bisexual people. Additional evidence to support the argument that gender is fueling this disparity is that women had increased likelihood of experiencing barriers to access when compared to high-income heterosexual men across all sexual identities and income levels. While the magnitude of the effect varied across sexual identity and income level, women had more increased likelihood of access barriers than their male counterparts when compared to the same reference group.

Limitations

There are limitations to consider for this study. First, this study centered sexual identity, and sexual minorities are a difficult population to capture in population-based surveys. Research in this area is difficult for many reasons including social stigma, measurement error, small samples sizes, and the lack of administrative data collected on the population.⁴⁰ Despite pooling multiple years of data, the sexual minority sample size was significantly smaller than the heterosexual population, reducing the statistical power of the analysis. We should consider findings with a strong magnitude that approached statistical significance with careful consideration. Second, this study examined multiple intersecting identities, identifying and analyzing the various dimensions that can exist for different individuals. When analyzing multiple categories within a group that are typically hard to capture (i.e., sexual minorities) the statistical power decreases and sampling error increases. This makes it difficult to make inferences based on the sample populations. Despite these populations being difficult to analyze, there is tremendous value in analyzing these social identities. Public health researchers acknowledge that social identities have a significant role in health outcomes, commonly by controlling for these variables in statistical models.¹²¹ However, the nature of intersectionality makes it difficult to analyze multiple identities quantitatively due to its inability to meet the criteria for assumptions necessary for modeling.⁸⁰ Third, the study employed eligibility of ACA subsidies as an indicator of wealth. The eligibility criteria is based on an averaged federal poverty level but there is a lot of variability in affordability based on geography, and other factors, that may make affordability of healthcare unpredictable regardless of income.¹²² Future studies could look at income with more

granularity to better understand the variation in outcomes. Lastly, sexual orientation consists of three dimensions (i.e., identity, behavior, and attraction) that vary across the life course.^{57,123} This study only examined sexual identity and does not account for sexual behavior or sexual attraction. That means that individuals who have sex with same-sex partners, and people who are physically attracted to the same sex but do not identify as being lesbian, gay, or bisexual were not included in the analysis. The literature demonstrates that there are health and health behavioral difference between individuals who identify as sexual minorities and those who do not.^{53,71} Future studies should examine the salience of sexual identity as it pertains to healthcare access and utilization.

Conclusion

This study demonstrates that the intersection between sexual identity and gender is the salient combination of identities that may be fueling disparities in healthcare access. Barriers to access are due to various factors including cost, access to insurance, availability of services, and competence of care, among many other factors. This study provides new evidence about the relevance of income and health insurance in healthcare access, adding knowledge that suggests that other factors outside of affordability and health insurance access are contributing to the disparities in health experienced by lesbian and bisexual women. Future studies should delve deeper into access to healthcare barriers in sexual minorities and women to increase understanding of access barriers for women and bisexual women.

Chapter 3 Tables

Table 3.1

Table 3.1 Estimated Proportions for Sample Characteristics by Sexual Identity and Income level.						
	High-Income			Low-Income		
	Heterosexual	Homosexual	Bisexual	Heterosexual	Homosexual	Bisexual
Usual Source of Care						
No	0.10	0.08	0.18	0.21	0.24	0.25
Yes	0.90	0.92	0.82	0.79	0.76	0.75
Age						
18-44	0.45	0.47	0.73	0.54	0.59	0.80
45-64	0.38	0.42	0.23	0.31	0.28	0.13
65-84	0.15	0.11	0.03	0.13	0.12	0.06
85+	0.01	0.00	0.01	0.01	0.01	0.00
Race/Ethnicity						
White	71.25	72.25	68.02	43.60	51.34	45.82
Black	4.12	3.33	3.02	5.94	5.35	6.30
Latino	12.24	15.82	17.35	37.32	31.81	32.57
AI/AN	0.58	0.37	0.90	1.21	0.79	1.95
Asian	9.49	5.09	6.49	9.09	6.14	6.73
Other/NH/PI/2+	2.32	3.15	4.22	2.84	4.57	6.62
Education Level						
High School/No Formal Education	0.21	0.18	0.23	0.57	0.45	0.44
Some College	0.23	0.20	0.23	0.25	0.32	0.35
Bachelor's Degree	0.50	0.52	0.45	0.17	0.22	0.21
Graduate Degree	0.06	0.10	0.09	0.01	0.01	0.01
Marital Status						
Not currently married	0.40	0.73	0.70	0.60	0.85	0.84
Married	0.60	0.27	0.30	0.40	0.15	0.16
Employment Status						
Not Employed Full-time	0.35	0.27	0.35	0.52	0.50	0.53
Employed Full-time	0.65	0.73	0.65	0.48	0.50	0.47
Citizenship						
non-US Citizen	0.07	0.04	0.04	0.26	0.21	0.10
US Citizen	0.93	0.96	0.96	0.74	0.79	0.90
Multiple Chronic Condition Diagnosis						
No Chronic Conditions	0.0007	0.0014	0.0069	0.0024	0.0022	0.0013
One Chronic Condition	0.80	0.77	0.71	0.81	0.68	0.64
2+ Chronic Conditions	0.20	0.23	0.28	0.19	0.32	0.35
Health Status						

Excellent/Very Good/Good	0.89	0.91	0.88	0.69	0.70	0.69
Fair/Poor	0.11	0.09	0.12	0.31	0.30	0.31
Survey Year						
2014	0.22	0.24	0.19	0.24	0.19	0.18
2015	0.25	0.24	0.22	0.26	0.36	0.24
2016	0.26	0.23	0.27	0.26	0.22	0.26
2017	0.28	0.29	0.32	0.24	0.23	0.32
Source: 2014-2017 CHIS. Weighted estimates.						

Table 3.2

Table 3.2 Estimated proportion of outcomes by sexual orientation and income level.						
	High-income			Low-Income		
	Heterosexual	Homosexual	Bisexual	Heterosexual	Homosexual	Bisexual
Insurance Status						
Insured	0.95	0.97	0.92	0.83	0.86	0.89
Not Insured	0.05	0.03	0.08	0.17	0.14	0.11
No Doctor's Visit in Past Yr.						
Yes Visit	0.84	0.91	0.88	0.76	0.79	0.80
No Visit	0.16	0.09	0.12	0.24	0.21	0.20
No Preventative Care Visit in Past Yr.						
Yes Visit	0.74	0.83	0.74	0.69	0.68	0.72
No Visit	0.26	0.17	0.26	0.31	0.32	0.28
Delayed Medical Care in Past Yr.						
No	0.88	0.86	0.81	0.86	0.83	0.75
Yes	0.12	0.14	0.19	0.14	0.17	0.25
Delayed Prescription in Past Yr.						
No	0.91	0.86	0.82	0.88	0.84	0.78
Yes	0.09	0.14	0.18	0.12	0.16	0.22
ER Visit in the Past Yr.						
No	0.82	0.77	0.77	0.77	0.69	0.63
Yes	0.18	0.23	0.23	0.23	0.31	0.37
Forgone care in Past Yr.						
No	0.93	0.92	0.92	0.91	0.89	0.86
Yes	0.07	0.08	0.09	0.09	0.12	0.14
Not accepted as New Patient in Past Yr.						
Yes accepted	0.97	0.96	0.95	0.96	0.93	0.93

Not accepted	0.03	0.04	0.05	0.04	0.07	0.08
Source: 2014-2017 CHIS. Weighted estimates.						

Table 3.3

Table 3.3 Adjusted Logistic Regressions for Outcomes Reporting Odds Ratios by Income and Sexual Identity.									
		Uninsured	Doc appt, past 12m	Preventative care, past 12m	Delayed care, past 12m	Delayed Rx, past 12m	ER visit, past 12m	Forgone care, past 12m	Not accepted as a new patient, past 12m
		OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)
Income X Sexual Identity	n=71, 750								
High-Income Heterosexual	37,960	1 (Reference)							
High-Income Homosexual	1,081	0.546** (0.299 - 0.999)	0.454*** (0.281 - 0.735)	0.528*** (0.370 - 0.754)	1.128 (0.755 - 1.686)	1.683*** (1.145 - 2.473)	1.246 (0.919 - 1.689)	1.054 (0.597 - 1.860)	1.200 (0.643 - 2.240)
High-Income Bisexual	663	1.121 (0.461 - 2.726)	0.559** (0.341 - 0.915)	0.829 (0.556 - 1.238)	1.335 (0.936 - 1.905)	2.037*** (1.243 - 3.336)	1.163 (0.798 - 1.694)	0.948 (0.608 - 1.479)	1.243 (0.640 - 2.413)
Low-Income Heterosexual	30,490	1.845*** (1.521 - 2.239)	1.226*** (1.096 - 1.371)	1.095 (0.950 - 1.263)	1.194*** (1.058 - 1.349)	1.269*** (1.126 - 1.431)	1.174*** (1.075 - 1.281)	1.260*** (1.076 - 1.476)	1.252 (0.946 - 1.657)
Low-Income Homosexual	635	1.377 (0.589 - 3.218)	0.906 (0.391 - 2.095)	1.047 (0.671 - 1.633)	1.294 (0.851 - 1.967)	1.640** (1.001 - 2.687)	1.448 (0.850 - 2.468)	1.486* (0.979 - 2.256)	1.685 (0.829 - 3.421)
Low-Income Bisexual	921	1.043	0.946	0.829	1.793**	2.390***	1.874***	1.562*	1.733**

	(0.516 - 2.107)	(0.648 - 1.382)	(0.604 - 1.138)	(1.106 - 2.905)	(1.619 - 3.527)	(1.280 - 2.745)	(0.952 - 2.562)	(1.061 - 2.831)
Gender								
Male				1 (Reference)				
Female	0.655*** (0.553 - 0.775)	0.576*** (0.521 - 0.638)	0.678*** (0.618 - 0.745)	1.461*** (1.279 - 1.668)	1.427*** (1.250 - 1.628)	1.014 (0.910 - 1.130)	1.520*** (1.316 - 1.755)	1.573*** (1.304 - 1.898)
Usual Source of Care								
Yes								
No	0.264*** (0.228 - 0.306)	0.220*** (0.193 - 0.250)	0.252*** (0.220 - 0.287)	0.830** (0.703 - 0.980)	1.405*** (1.140 - 1.732)	1.617*** (1.417 - 1.845)	0.624*** (0.523 - 0.745)	0.762** (0.615 - 0.944)
Age								
18-44				1 (Reference)				
45-64	0.943 (0.788 - 1.128)	0.708*** (0.637 - 0.788)	0.771*** (0.701 - 0.848)	1.018 (0.894 - 1.159)	1.144* (0.980 - 1.336)	0.890** (0.799 - 0.991)	1.061 (0.917 - 1.227)	1.016 (0.829 - 1.245)
64-84	0.0845*** (0.0524 - 0.136)	0.424*** (0.340 - 0.528)	0.417*** (0.360 - 0.483)	0.388*** (0.327 - 0.459)	0.719*** (0.596 - 0.866)	0.869** (0.759 - 0.994)	0.426*** (0.336 - 0.540)	0.413*** (0.332 - 0.514)
85+	0.1000* (0.00908 - 1.100)	0.500** (0.277 - 0.903)	0.299*** (0.185 - 0.483)	0.223*** (0.128 - 0.387)	0.451*** (0.281 - 0.725)	1.193 (0.931 - 1.529)	0.191*** (0.0920 - 0.397)	0.270*** (0.155 - 0.471)
Education Level								
High School/No formal Education				1 (Reference)				
Some College	0.852* (0.717 - 1.012)	0.820*** (0.727 - 0.924)	0.975 (0.873 - 1.090)	1.415*** (1.215 - 1.648)	1.325*** (1.131 - 1.551)	1.276*** (1.154 - 1.411)	1.345*** (1.107 - 1.635)	1.383*** (1.102 - 1.737)
Bachelor's Degree	0.551***	0.789***	0.975	1.455***	1.276***	0.990	1.320***	1.612***

Graduate Degree	(0.465 - 0.655) 0.443** (0.237 - 0.828)	(0.701 - 0.887) 0.708** (0.515 - 0.974)	(0.869 - 1.094) 1.037 (0.799 - 1.346)	(1.238 - 1.712) 1.661*** (1.226 - 2.250)	(1.090 - 1.493) 1.621** (1.092 - 2.406)	(0.899 - 1.089) 0.970 (0.706 - 1.333)	(1.111 - 1.569) 1.685** (1.130 - 2.512)	(1.237 - 2.100) 2.440*** (1.318 - 4.518)
Marital Status								
Not Married	1 (Reference)							
Married	0.639*** (0.547 - 0.745)	0.963 (0.867 - 1.071)	0.982 (0.873 - 1.105)	0.832*** (0.736 - 0.942)	0.824*** (0.719 - 0.946)	0.760*** (0.693 - 0.834)	0.896 (0.770 - 1.042)	0.775** (0.628 - 0.957)
Employment Status								
Not employed full-time	1 (Reference)							
Employed full-time	0.960 (0.809 - 1.140)	1.139** (1.011 - 1.283)	1.236*** (1.107 - 1.379)	1.002 (0.868 - 1.156)	1.071 (0.941 - 1.219)	0.886** (0.807 - 0.972)	1.050 (0.880 - 1.254)	0.806** (0.658 - 0.988)
Citizenship								
non-US Citizen	1 (Reference)							
US Citizen	0.358*** (0.313 - 0.411)	0.695*** (0.602 - 0.804)	0.783*** (0.686 - 0.893)	1.481*** (1.200 - 1.828)	1.299*** (1.072 - 1.574)	1.351*** (1.140 - 1.601)	1.453*** (1.140 - 1.853)	1.404** (1.029 - 1.915)
Chronic Disease Diagnosis								
No Chronic Conditions	1 (Reference)							
1 Chronic Condition	3.821** (1.205 - 12.11)	1.179 (0.270 - 5.154)	0.967 (0.404 - 2.311)	0.396** (0.179 - 0.877)	0.224*** (0.110 - 0.458)	0.170*** (0.0645 - 0.447)	0.433* (0.164 - 1.141)	0.414* (0.158 - 1.084)
2+ Chronic Conditions	3.177* (0.933 - 10.82)	0.862 (0.195 - 3.817)	0.914 (0.372 - 2.248)	0.659 (0.308 - 1.408)	0.365*** (0.181 - 0.737)	0.279** (0.106 - 0.737)	0.668 (0.264 - 1.690)	0.636 (0.239 - 1.689)
Health Status								

Excellent/Very Good/Good Fair/Poor				1 (Reference)				
	1.305*** (1.124 - 1.516)	0.760*** (0.679 - 0.850)	0.829*** (0.738 - 0.931)	1.851*** (1.650 - 2.076)	2.238*** (1.953 - 2.565)	1.993*** (1.800 - 2.208)	1.740*** (1.516 - 1.997)	1.559*** (1.248 - 1.948)
Survey Year								
2014				1 (Reference)				
2015	0.623*** (0.537 - 0.724)	0.925 (0.806 - 1.062)	0.832*** (0.754 - 0.918)	0.995 (0.878 - 1.127)	1.060 (0.922 - 1.219)	1.266*** (1.139 - 1.409)	1.011 (0.863 - 1.185)	1.853*** (1.456 - 2.358)
2016	0.563*** (0.463 - 0.686)	0.872* (0.750 - 1.013)	0.802*** (0.708 - 0.909)	0.849* (0.718 - 1.003)	0.985 (0.827 - 1.172)	1.247*** (1.100 - 1.414)	0.849 (0.696 - 1.037)	1.491*** (1.128 - 1.973)
2017	0.599*** (0.502 - 0.715)	0.869* (0.746 - 1.011)	0.813** (0.677 - 0.976)	0.892 (0.768 - 1.036)	0.971 (0.772 - 1.220)	1.196*** (1.050 - 1.361)	0.967 (0.813 - 1.149)	1.473*** (1.162 - 1.867)
Constant	0.402 (0.119 - 1.361)	1.767 (0.397 - 7.861)	2.439* (0.988 - 6.023)	0.180*** (0.0784 - 0.412)	0.135*** (0.0601 - 0.303)	0.544 (0.196 - 1.511)	0.115*** (0.0406 - 0.327)	0.0343*** (0.0130 - 0.0903)
Observations (n)	71,750	71,750	71,750	71,750	71,750	71,750	71,750	71,750
Source: 2014-2017 CHIS Data. ***p<0.01 ** p<0.05 *p<0.10. Model controls for gender, income, age, education, marital status, employment status, citizenship, chronic disease diagnosis, health status and year of survey.								

Table 3.4

Table 3.4. Adjusted Logistic Regressions Reporting Odds Ratios for Outcomes by Income level, Sexual identity, and Gender.									
		Uninsured	Doc appt, past 12m	Preventative care, past 12m	Delayed care, past 12m	Delayed Rx, past 12m	ER visit, past 12m	Forgone care, past 12m	Not accepted as a new patient, past 12m
		OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)
Income x Sexual Identity x Gender									
n=71,750									
High-Income Heterosexual Male	17,270								
1 (Reference)									
High-Income Gay Male	653	0.527* (0.246 - 1.126)	0.348*** (0.203 - 0.599)	0.434*** (0.262 - 0.719)	1.053 (0.606 - 1.830)	2.219*** (1.322 - 3.724)	1.095 (0.722 - 1.660)	0.875 (0.425 - 1.802)	1.368 (0.607 - 3.082)
High-Income Bisexual Male	254	1.123 (0.329 - 3.830)	0.463** (0.229 - 0.938)	0.642 (0.316 - 1.306)	0.727 (0.335 - 1.579)	1.397 (0.568 - 3.434)	0.882 (0.430 - 1.808)	0.542 (0.190 - 1.546)	1.079 (0.258 - 4.508)
Low-Income Heterosexual Male	12,268	1.991*** (1.642 - 2.415)	1.261*** (1.108 - 1.434)	1.158** (1.001 - 1.341)	1.192* (0.990 - 1.436)	1.326*** (1.103 - 1.592)	1.105 (0.960 - 1.273)	1.217* (0.974 - 1.521)	1.285 (0.816 - 2.022)
Low-Income Gay Male	393	1.858 (0.660 - 5.230)	0.977 (0.564 - 1.692)	0.938 (0.595 - 1.480)	1.167 (0.700 - 1.944)	1.383 (0.728 - 2.625)	1.111 (0.660 - 1.870)	1.373 (0.712 - 2.647)	1.722 (0.726 - 4.083)
	298	1.014	1.064	0.769	2.016*	2.407**	1.224	1.529	1.966

Low-Income Bisexual Male		(0.291 - 3.530)	(0.539 - 2.100)	(0.369 - 1.601)	(0.893 - 4.551)	(1.118 - 5.181)	(0.556 - 2.696)	(0.650 - 3.599)	(0.746 - 5.180)
High-Income Heterosexual Female	20,690	0.710** (0.511 - 0.985)	0.566*** (0.493 - 0.649)	0.693*** (0.605 - 0.794)	1.472*** (1.199 - 1.807)	1.486*** (1.229 - 1.796)	0.920 (0.785 - 1.077)	1.480*** (1.206 - 1.817)	1.630*** (1.147 - 2.315)
High-Income Lesbian Female	428	0.460 (0.175 - 1.211)	0.493* (0.222 - 1.095)	0.582* (0.317 - 1.067)	1.802* (0.955 - 3.401)	1.407 (0.729 - 2.715)	1.399 (0.823 - 2.381)	1.916* (0.949 - 3.871)	1.580 (0.544 - 4.593)
High-Income Bisexual Female	409	0.795 (0.328 - 1.926)	0.388*** (0.209 - 0.721)	0.693 (0.423 - 1.137)	2.409*** (1.629 - 3.562)	3.421*** (1.910 - 6.129)	1.275 (0.823 - 1.975)	1.667** (1.018 - 2.729)	2.082* (0.978 - 4.434)
Low-Income Heterosexual Female	18,222	1.211* (0.968 - 1.514)	0.715*** (0.604 - 0.847)	0.741*** (0.631 - 0.872)	1.712*** (1.457 - 2.013)	1.765*** (1.479 - 2.107)	1.158** (1.030 - 1.302)	1.864*** (1.544 - 2.249)	1.948*** (1.410 - 2.689)
Low-Income Lesbian Female	242	0.537 (0.184 - 1.568)	0.473 (0.0391 - 5.719)	0.903 (0.413 - 1.971)	2.086** (1.053 - 4.133)	2.839** (1.150 - 7.010)	1.918 (0.747 - 4.929)	2.324** (1.077 - 5.016)	2.602* (0.895 - 7.564)
Low-Income Bisexual Female	623	0.747 (0.437 - 1.277)	0.517*** (0.321 - 0.833)	0.607 (0.332 - 1.113)	2.475*** (1.574 - 3.893)	3.426*** (2.239 - 5.242)	2.142*** (1.352 - 3.395)	2.306*** (1.395 - 3.811)	2.634*** (1.442 - 4.811)
Usual Source of Care									
Yes					1 (Reference)				
No		0.266*** (0.230 - 0.307)	0.220*** (0.194 - 0.251)	0.252*** (0.221 - 0.288)	0.830** (0.703 - 0.980)	1.410*** (1.142 - 1.741)	1.613*** (1.414 - 1.840)	0.624*** (0.522 - 0.744)	0.764** (0.617 - 0.946)
Age									
18-44					1 (Reference)				
45-64		0.940	0.707***	0.770***	1.020	1.146*	0.895**	1.064	1.016

	(0.785 - 1.124)	(0.635 - 0.787)	(0.699 - 0.847)	(0.896 - 1.161)	(0.981 - 1.338)	(0.803 - 0.998)	(0.919 - 1.231)	(0.829 - 1.246)
64-84	0.0817***	0.406***	0.404***	0.399***	0.739***	0.869**	0.438***	0.422***
	(0.0508 - 0.131)	(0.326 - 0.506)	(0.348 - 0.470)	(0.336 - 0.473)	(0.613 - 0.890)	(0.762 - 0.992)	(0.345 - 0.556)	(0.340 - 0.525)
85+	0.0924*	0.453**	0.279***	0.237***	0.477***	1.189	0.204***	0.284***
	(0.00848 - 1.006)	(0.249 - 0.823)	(0.174 - 0.448)	(0.137 - 0.411)	(0.296 - 0.769)	(0.920 - 1.538)	(0.0981 - 0.423)	(0.162 - 0.498)
Education Level								
High School/No formal Education	1 (Reference)							
Some College	0.855*	0.825***	0.982	1.411***	1.322***	1.277***	1.341***	1.379***
	(0.719 - 1.016)	(0.731 - 0.930)	(0.878 - 1.097)	(1.211 - 1.644)	(1.128 - 1.549)	(1.157 - 1.410)	(1.101 - 1.632)	(1.098 - 1.731)
Bachelor's Degree	0.555***	0.801***	0.986	1.446***	1.263***	0.997	1.313***	1.596***
	(0.467 - 0.658)	(0.712 - 0.901)	(0.877 - 1.108)	(1.229 - 1.701)	(1.079 - 1.479)	(0.907 - 1.095)	(1.103 - 1.563)	(1.224 - 2.080)
Graduate Degree	0.445**	0.721**	1.052	1.649***	1.597**	0.973	1.673**	2.411***
	(0.239 - 0.829)	(0.525 - 0.989)	(0.810 - 1.366)	(1.222 - 2.225)	(1.071 - 2.381)	(0.708 - 1.335)	(1.126 - 2.485)	(1.306 - 4.450)
Marital Status								
Not Married	1 (Reference)							
Married	0.640***	0.969	0.985	0.827***	0.821***	0.760***	0.891	0.772**
	(0.548 - 0.748)	(0.873 - 1.076)	(0.876 - 1.108)	(0.730 - 0.937)	(0.715 - 0.943)	(0.692 - 0.834)	(0.765 - 1.038)	(0.625 - 0.953)
Employment Status								
Not employed full-time	1 (Reference)							
Employed full-time	0.956	1.146**	1.239***	0.997	1.059	0.885**	1.047	0.802**
	(0.803 - 1.137)	(1.020 - 1.288)	(1.112 - 1.381)	(0.865 - 1.149)	(0.930 - 1.206)	(0.806 - 0.971)	(0.877 - 1.249)	(0.654 - 0.983)
Citizenship								

non-US Citizen				1 (Reference)				
US Citizen	0.360*** (0.315 - 0.411)	0.704*** (0.609 - 0.813)	0.788*** (0.690 - 0.901)	1.472*** (1.190 - 1.820)	1.291** (1.064 - 1.565)	1.352*** (1.142 - 1.599)	1.444*** (1.131 - 1.842)	1.392** (1.019 - 1.901)
Chronic Disease								
Diagnosis								
No Chronic Conditions				1 (Reference)				
1 Chronic Condition	3.816** (1.198 - 12.15)	1.186 (0.272 - 5.176)	0.971 (0.405 - 2.327)	0.398** (0.178 - 0.886)	0.225*** (0.111 - 0.456)	0.170*** (0.0654 - 0.443)	0.434* (0.164 - 1.146)	0.414* (0.158 - 1.082)
2+ Chronic Conditions	3.164* (0.924 - 10.83)	0.868 (0.197 - 3.830)	0.918 (0.373 - 2.261)	0.660 (0.307 - 1.419)	0.366*** (0.183 - 0.734)	0.280*** (0.107 - 0.731)	0.668 (0.263 - 1.696)	0.635 (0.239 - 1.685)
Health Status								
Excellent/Very				1 (Reference)				
Good/Good								
Fair/Poor	1.302*** (1.120 - 1.514)	0.756*** (0.675 - 0.845)	0.825*** (0.734 - 0.927)	1.856*** (1.655 - 2.082)	2.241*** (1.957 - 2.567)	1.988*** (1.794 - 2.203)	1.746*** (1.521 - 2.003)	1.565*** (1.251 - 1.958)
Survey Year								
2014				1 (Reference)				
2015	0.619*** (0.534 - 0.719)	0.933 (0.814 - 1.070)	0.838*** (0.760 - 0.925)	0.986 (0.870 - 1.116)	1.046 (0.909 - 1.204)	1.274*** (1.148 - 1.414)	1.004 (0.857 - 1.176)	1.834*** (1.442 - 2.332)
2016	0.561*** (0.461 - 0.683)	0.881* (0.760 - 1.022)	0.808*** (0.713 - 0.916)	0.841** (0.713 - 0.991)	0.971 (0.816 - 1.157)	1.255*** (1.108 - 1.421)	0.843* (0.692 - 1.027)	1.475*** (1.119 - 1.946)
2017	0.599*** (0.502 - 0.715)	0.881 (0.758 - 1.026)	0.822** (0.685 - 0.986)	0.882* (0.759 - 1.024)	0.956 (0.760 - 1.203)	1.202*** (1.055 - 1.371)	0.957 (0.805 - 1.137)	1.454*** (1.147 - 1.844)
Constant	0.386	1.682	2.329*	0.184***	0.137***	0.563	0.120***	0.0349***

	(0.113 - 1.313)	(0.380 - 7.439)	(0.941 - 5.768)	(0.0797 - 0.424)	(0.0612 - 0.305)	(0.203 - 1.560)	(0.0431 - 0.335)	(0.0130 - 0.0934)
Observations (n)	71,750	71,750	71,750	71,750	71,750	71,750	71,750	71,750
Source: 2014-2017 CHIS Data. ***p<0.01 ** p<0.05 *p<0.10. Model controls for gender, income, age, education, marital status, employment status, citizenship, chronic disease diagnosis, health status and year of survey.								

Chapter 4: Disparities in Healthcare Access and Utilization at the Intersections of Sexual-Identity and Sexual-Identity Disclosure.

Introduction

The previous two chapters discuss the impact that urbanicity, gender, and income identities have on sexual minorities' healthcare access. In addition to the privileges and disadvantages associated with those identities, sexual minorities are exposed to chronic stigmatization and heteronormativity in their daily lives and when they access health care. There are no genetic differences between sexual minorities and their heterosexual counterparts, so the disparities in health and health outcomes demonstrated in the literature is the result of the chronic stress related to being a minority, experiences associated with accessing care in a system that assumes one is heterosexual, and exposure to negative attitudes from others and internalized negative attitudes regarding one's sexuality.^{9,54,124} Sexual minorities have an ongoing history of experiencing disparate access to health care compared to their heterosexual counterparts. There is a growing body of literature that examines the difference in healthcare access within sexual minority groups.^{7,12,36,114,115,125} Sexual minorities are more likely to delay or forgo necessary care and have less access to health insurance coverage, while little is known about bisexual healthcare access.^{5,12,14,37,113-116,126} These studies demonstrate that there are disparities between sexual minorities and non-sexual minorities. They also demonstrate that there are health and healthcare access differences based on sexual identity and gender.^{36,114,115,125} While the literature on sexual minority health care access is growing, there are no extant studies on the

impacts of sexual identity, sexual identity disclosure, and identifying as a sexual minority on access to and utilization of healthcare.

Sexual orientation is comprised of three dimensions—identity, behavior, and attraction.⁵¹⁻⁵⁴ Most population-based health surveys use sexual identity, i.e., identifying as a sexual minority and considers themselves a part of the Lesbian, Gay, Bisexual and Transgender (LGBT) community, as a measure of sexual orientation.⁴⁵ While this is the most commonly used measure, it does not capture every dimension of sexual orientation, and may unintentionally exclude people from the analysis who have similar experiences as sexual minorities and potentially face additional vulnerabilities, because they do not identify as being a sexual minority.^{51,55,56}

Sexual behavior (i.e., the sex of sex partners) is another dimension of sexual orientation used in earlier studies of sexuality, sexual behavior, and other health topics. Sexual behavior is another way to identify sexual minorities that do not identify as sexual minorities in population-based surveys.⁵⁷ Using sexual behavior to identify individuals who may have similar social or healthcare experiences as sexual minorities but do not identify as sexual minorities can elucidate the salience of identifying with a minority community. Previous research on the adaptation to stigma posits that identifying with the oppressed population and participating in the community is the first step in mitigating the effects of stigma.^{58,59} Furthermore, studies demonstrate that engaging with the sexual minority community and developing a positive identity as a member of the group helps buffer against the impact of discrimination and is essential to adapting to stigma.^{60,61} These interpersonal affiliations increase social support and provide access to resources and

accurate information regarding a person's sexual orientation, which could potentially increase access to healthcare. Examining sexual behavior is essential in population health surveys, because it will increase the robustness and precision of the analysis of the sexual minority population and examine the untested assumptions of the role that identifying as a sexual minority serves in perpetuating healthcare access disparities in sexual minorities.

Sexual minorities experience healthcare in a heteronormative environment. This means that anyone who has a sexual identity or behaviors that deviate from their heterosexual counterparts may perceive or experience negative attitudes and behaviors towards them in a healthcare setting.^{62,63} Multiple studies describe the negative occurrences experienced by sexual minorities when accessing healthcare.^{62,64} The fear of being "othered," or discriminated against, can be a barrier to accessing care; further, the actual experiences of discrimination leave sexual minority patients in a chasm where they are unable to receive optimal, appropriate, and competent care.⁶⁵⁻⁶⁷ Regardless of whether one identifies as a sexual minority, or has a different self-identification, sexual minorities are all exposed to chronic minority stress, the major mechanism hypothesized to cause physical and mental health disparities in sexual minorities.⁶⁷⁻⁷¹

Study Objective

Research demonstrates that persistent and consistent exposure to stress has negative and physical implications, but the literature does not directly and specifically examine how sexual identity disclosure impacts one's access to care.^{127,128} No state-level studies using representative population-based data examine healthcare access

across sexual identity, while both use sexual identity and sexual behavior as indicators for sexual orientation. Additionally, there are no studies that examine sexual identity disclosure's impacts on healthcare access and utilization.

The aim of this study is to identify if disparities in healthcare access differ across sexual identity, and if disclosure of sexual identity is a salient factor in access to healthcare. This study seeks to examine this relationship as it relates to healthcare access. We hypothesized that there will be differences across different dimensions of sexual identity and sexual identity disclosure. The literature demonstrates that resilience is associated with identifying with a marginalized group. I hypothesize that non-identifying sexual minorities will experience more barriers to healthcare access than their identifying sexual minority counterparts (i.e. homosexuals and bisexuals)

Data

We analyzed 2014 through 2017 data from the California Health Interview Survey (CHIS). Respondents' ages ranged in age from 18 years to 85 years and older and was top coded at 85 years. Confidential data on the sexual identity and sexual behavior of respondents was made available through the sexual orientation special use research file (SURF). The sexual orientation SURF includes information on sexual and gender identity and sexual behavior. It was combined with the CHIS public use file (PUF) for this analysis. Respondents answered the following question: "Do you think of yourself as straight or heterosexual, as gay/lesbian or homosexual, or bisexual?" Responses were coded in the following categories: heterosexual or straight; gay, lesbian, or homosexual; bisexual; not sexual, celibate, none; other; refused; don't know; proxy skipped. Previous research demonstrates the effectiveness

of asking about sexual orientation in this manner, and this and is a reliable method for obtaining sexual identity information,^{57,117} used in national health surveys including the National Health Interview Survey and the Behavioral Risk Factors Surveillance Survey.⁹⁴ To measure sexual behavior, and in accordance with the recommended method for assessing sexual behavior,⁵⁷ respondents were asked the sex of their partners in the past 12 months. The CHIS survey does not collect data on sexual attraction and, thus it is not a focus of this study.

Study Sample

A total of 82,758 adults completed the CHIS between 2014 and 2017. The focus of this study is on the self-identified straight, gay, or lesbian, bisexual groups and non-identifying sexual minorities based on self-reported sexual behavior within the past year. Therefore, respondents who had ambiguous responses to the sexual orientation question (i.e., not sexual, celibate, none; other; refused) and/or those with missing sexual orientation data (i.e., missing in error, do not know, or refused, proxy skipped) were excluded from the analysis. Additionally, we excluded respondents with missing data on any of the study variables. The final study sample included 72,092 (94.84) respondents who self-identified as straight, 1,817 (2.20%) who self-identified as being gay/lesbian/homosexual, 1,671 (2.02%) who self-identified as being bisexual, and 432 (.57%) were identified as non-identifying sexual minorities.

Measures

Outcome variables measured respondents' healthcare access and healthcare utilization. All dependent variables were dichotomous measures. The first dependent variable measures the respondent's current health insurance status (yes, no). The

second dependent variable assesses whether the respondent visited a doctor in the past 12 months (yes, no). The third outcome variable measures whether the respondent had a preventative care visit in the past year (yes, no). The fourth outcome variable measures whether the respondent delayed medical care in the past year (yes, no). The fifth dependent variable measures whether the respondent delayed a prescription in the past 12 months (yes, no). The sixth dichotomous dependent variable measures whether the respondent had to forego necessary care that is they delayed care and did not get it (yes, no). The seventh dependent variable measures whether the respondent visited the emergency room (ER) in the last year (yes, no). The eighth outcome variable measures whether the respondent was not accepted as a new patient by a doctor in the past year (yes, no).

We included individual-level known covariates consistent with the Aday-Anderson Behavioral model⁹⁹ and other studies that explored access to care and health outcomes based on sexual orientation³⁴ in each adjusted model. The following covariates were included in the models: age in years (18-44, 45-64, 65-84, 85+), employment (employed full time, not employed full time), race/ethnicity (White, Black, Latino, American Indian /Alaskan Native [AI/AN], Asian, Other /Non-Hispanic/Pacific Islander [PI] Two or More Races [Other/NH/PI/2+]), usual source of care (yes, no), education (high school/no formal education, some college, Bachelor's degree, Graduate degree), marital status (married, not married), diagnosis for multiple chronic conditions (none, one chronic condition, two or more chronic conditions), citizenship (United States (US)U.S.] citizen, non-U.S. citizen), The administered

survey year (2014, 2015, 2016, 2017), which was included in the model to control for differences between survey years.

Sexual identity was self-reported. Respondents who identified themselves as straight, gay/lesbian, or bisexual were placed in those respective categories. We identified non-identifying sexual minorities through discordance between self-reported sexual identity and self-reported sexual behavior. For example, we designated a male respondent who identified as straight but reported having sex with both men and women as a non-identifying sexual minority. The final categories for sexual orientation were straight, homosexual, bisexual, and non-identifying sexual minority.

Data Analysis

We weighted all analyses using jackknife replicate weights to account for the CHIS sampling design and to estimate robust standard errors to ensure the estimates were representative of the California population.¹⁰¹ Each model in the analysis employed the replication estimates, identified linear weights, and requested the appropriate jackknife variance estimates using the SVY command in Stata 16.1 MP.^{92,93,100}

We calculated weighted observed proportions using chi-squared tests to provide descriptive statistics for the sample population and observed proportions for each outcome by income level and sexual orientation. Logistic regressions reported odds ratios for the access and utilization outcomes while controlling for known covariates. Previous research infers that dimensions of sexuality may be experienced differently between men and women.^{129,130} To estimate differential outcomes by

gender, additional adjusted models estimated the main effects of interaction dummy variables for each dimension of sexual identity and gender. This method is consistent with previous studies that have analyzed the intersectional relationship between multiple identities.^{96,97} The first model estimated model was:

$$Y_i = \beta_0 + \beta_1 X_{i(Sexual\ Identity)} + \beta_2 X_{i(Covariates)} + \epsilon$$

The second model was as follows:

$$Y_i = \beta_0 + \beta_1 X_{i(Sexual\ Identity)} + \beta_2 X_{i(Gender)} + \beta_3 X_{i(Sexual\ Identity*Gender)} + \beta_2 X_{i(Covariates)} + \epsilon$$

Estimates were considered statistically significant if the p-value was less than or equal to 0.05. I reported p-values and confidence intervals.

Results

Table 4.1 describes the estimated proportions of the sample characteristics by sexual orientation identity and behavior. Homosexuals in the sample tended to be male (.64), while the bisexuals in the sample tended to be female (.65). The sample consisted of a majority of people of color (not White) but the largest racial/ethnic group for each sexual orientation category was White (.42). Homosexuals had the highest proportion of high-income family earners (.61), and bisexuals tended to be younger with the proportion of their respondents being between the ages of 18 and 44 being .77. Homosexual respondents tended to be more educated, with a combined proportion of .46 of respondents having either a Bachelor's or graduate degree. Both homosexual and bisexual respondents tended to not currently be married.

Homosexuals were also more likely to have full-time employment. Heterosexual

respondents had a higher percentage on non-U.S. citizens. Homosexual respondents had the highest estimated rate of having a usual source of care. Homosexual respondents had the highest rates of multiple chronic conditions diagnosis, and bisexual respondents were more likely to report their health as fair/poor.

Table 4.2 describes the estimated proportions for the outcome measures by sexual identity and sexual-identity disclosure. Heterosexual respondents had the highest proportion of uninsurance (.11). Heterosexual respondents had a proportion of .20 and non-identifying sexual minority respondents had a proportion of .19 that reported not having a doctor's appointment. Non-identifying sexual minorities had the highest proportion of not receiving primary care (.33). Bisexual respondent had the highest proportion of delayed medical care (.22) and delayed prescriptions (.20).

Table 4.3 describes the outcomes from the logistic regression for the dependent variables by sexual identity and behavior. Compared to heterosexuals, homosexuals have decreased odds of no doctor's appointment (AOR=.588, $p<0.05$, 95% CI [.354-.0977]) and no preventative care (AOR=.680, $p<0.01$, 95% CI [.514-.899]), and they have increased odds of delayed prescriptions (AOR=1.474, $p<0.01$, 95% CI [1.113-1.953]). Bisexuals had decreased odds of no doctor's appointment (AOR=.689, $p<0.05$, 95% CI [.517-.919]) and no preventative care (AOR=.773, $p<0.05$, 95% CI [.602-.994]); they had increased odds of delayed care that was approaching statistical significance (AOR=1.377, $p<0.10$, 95% CI [.983-1.931]), delayed prescriptions (AOR=1.896, $p<0.01$, 95% CI [1.346-2.672]), and ER visits (AOR=1.412, $p<0.01$, 95% CI [1.091-1.828]) compared to heterosexual respondents. Non-identifying sexual minorities had increased odds of delayed care (AOR=1.592,

$p < 0.10$, 95% CI [.960-2.640]) and foregone care (AOR=1.909, $p < 0.05$, 95% CI [1.030-3.593]) when compared to heterosexual respondents.

Table 4.4 describes the outcomes for the logistic regressions for sexual identity and behaviors by gender. The reference group for these models is heterosexual males. Gay men have decreased odds of no doctor's appointments (AOR=.527, $p < 0.01$, 95% CI [.353-.787]) and no preventative care (AOR=.557, $p < 0.01$, 95% CI [.385-.805]), and increased odds of delayed prescriptions (AOR=1.695, $p < 0.05$, 95% CI [1.128-2.547]) when compared to their heterosexual male counterparts. Bisexual men have decreased odds of no preventative care that was approaching statistical significance (AOR=.646, $p < 0.10$, 95% CI [.388-1.077]) when compared to the reference group. Non-identifying sexual minority men have increased odds of delayed care that was borderline statistically significant (AOR=1.996, $p < 0.10$, 95% CI [.998-.033]) and foregone care that was statistically significant (AOR=2.758, $p < 0.05$, 95% CI [1.279-5.945]) compared to heterosexual men. Compared to heterosexual males, heterosexual women have increased odds of delayed (AOR=1.54, $p < 0.05$, 95% CI [1.065-2.227]) and forgone care that was approaching statistical significance (AOR=1.566, $p < 0.10$, 95% CI [.895-4.110]). Lesbian women had decreased odds of uninsurance (AOR=.393, $p < 0.05$, 95% CI [.159-.972]) and increased odds of delayed care (AOR=1.824, $p < 0.05$, 95% CI [1.005-3.11]). They also had increased odds ER visits (AOR=1.548, $p < 0.10$, 95% CI [.919-2.610,]), and foregone care (AOR=1.918, $p < 0.10$, 95% CI [.895-4.110]) compared to heterosexual men but these findings were borderline statistically significant. Bisexual women have decreased odds of no doctor's appointment

(AOR=.552, $p<0.05$, 95% CI [.322-.945]) and increased odds of delayed care (AOR=2.207, $p<0.01$, 95% CI [1.317-3.698]), delayed prescriptions (AOR=2.207, $p<0.01$, 95% CI [1.353-3.600]), ER visits (AOR=1.650, $p<0.05$, 95% CI [1.091-2.496]), and forgone care (AOR=1.764, $p<0.05$, 95% CI [.982-3.168]) compared to heterosexual men.

Discussion

The purpose of this study was to examine the association between sexual identity, sexual identity disclosure, and access to healthcare services. First, this study is consistent with existing literature that demonstrates disparities in access to healthcare between sexual minorities and heterosexuals.¹³¹ Findings from this study demonstrate that when controlling for known covariates, access to healthcare is experienced disparately within sexual minority subgroups. Bisexuals and non-identifying sexual minorities experience more barriers to access than homosexuals. The study also found that disclosure of sexual identity impacts access to healthcare as well. Our findings are consistent with a previous study that analyzed the difference in health outcomes based on sexual identity and sexual identity disclosure.⁷¹ Contrary to previous studies that demonstrated that gay men in California were more likely to have healthcare coverage than heterosexual men this study demonstrated that lesbian women were less likely to be uninsured.³⁶ This may be because California overall has a low uninsurance rate (7.2%) due to robust healthcare insurance coverage offerings to low-income residents and lesbian women are more likely to be covered by Medicaid than gay men.¹³²

Findings from the study demonstrate that access to healthcare vary across sexual identity, sexual identity disclosure, and gender. Non-identifying sexual minority men had nearly triple (AOR=2.758) the likelihood of foregone care compared to heterosexual men. While every dimension of sexual identity, sexual identity disclosure, and gender, except for non-identifying sexual minority women, demonstrated some level of limited access, the evidence demonstrates that limitations to access are experienced the most in bisexual women. This could be the result of a combination of the impact sexism has on health^{133,134} and the discrimination experienced due to being a sexual minority.^{65-67,110} Furthermore, bisexual women have less contact with their bisexual peers and less access to accurate information regarding their sexual orientation.^{135,136} This coupled with reports that bisexual women have lower levels of community participation compared to lesbian women, could result in less social support and information sharing regarding healthcare resources and needs.¹³⁷ Social support and social capital are resources that are heavily influenced by identity because of the social advantages afforded to certain social identities over others.³⁹ Bisexual sexual identity is associated with negative stereotypes and stigma from both heterosexual and sexual minority groups that could prevent this population full realization of the benefits of being a part of the sexual minority community.¹³⁸⁻¹⁵⁰

Similar to studies that examine the intersectionality of identity's impacts on health outcomes,^{121,151} this study demonstrates the need for specialized outreach for different sexual identities and genders. Furthermore, it is important to address the stigma and overall erasure of bisexuality in sexual minority communities. More

attention should be paid to creating healthcare resources that address the health needs of bisexual men and women, and measures should be taken to be more inclusive of the bisexual population. Healthcare providers and healthcare staff training should address any unconscious bias towards sexual minorities, especially bisexual ones, and efforts to include sexual orientation in medical forms and electronic health records should be taken to encourage multiple confidential and affirming opportunities for disclosure.

Limitations

As with any study, there are limitations that should be considered when determining the generalizability of the results. First, this study used state-based data. While it allowed us to analyze multiple dimensions of sexual orientation and identity, non-disclosure in sexual minorities in California is qualitatively different from the rest of the nation in many ways that impact our outcomes, thus these findings may not be generalizable to the entire U.S. population. Second, discordance between self-report of sexual identity and sexual behavior could be a result of measurement error.⁵⁷ Third, CHIS does not capture sexual attraction, the defining feature of sexual orientation, preventing the analysis from examining non-disclosure of sexual identity from all three dimensions of sexual orientation. Not including sexual attraction excludes asexual people who have same-sex sexual attractions. Fourth, the wording of the sexual behavior question is restrictive. It instructs respondents to only consider sexual partners within the past 12 months, thus not capturing lifetime sexual behavior, and people who are currently celibate but may have had same-sex partners prior to the 12-month timeframe.

Conclusion

Overall, our findings demonstrate that access to healthcare services varies across sexual identity, sexual identity disclosure, and gender. There is no one disadvantaged identity that explains the barriers to access; the intersection of bisexuality and being a woman proved to be the most salient intersection for healthcare access barriers. This study provides more depth into the understanding of sexual minority health disparities by, providing knowledge of how gender, sexual identity, and sexual identity disclosure contributes to known healthcare access disparities. This information is essential for healthcare professionals to develop appropriate systems-level policies to address the healthcare needs of the sexual minority population.

Chapter 4 Tables

Table 4.1

Table 4.1 Estimated Proportions for Sample Characteristics by Sexual Identity and Behavior.					
	Heterosexual	Homosexual	Bisexual	Non-identifying	Total
Gender					
Male	0.49	0.64	0.35	0.57	0.49
Female	0.51	0.37	0.65	0.43	0.51
Race/Ethnicity					
White	0.41	0.50	0.45	0.47	0.42
Black	0.06	0.05	0.05	0.03	0.06
Latino	0.36	0.34	0.33	0.32	0.36
AI/AN	0.00	0.00	0.01	0.01	0.00
Asian	0.15	0.08	0.12	0.14	0.14
Other/NH/PI/2+	0.02	0.03	0.05	0.03	0.02
Income					
400+ % FPL	0.51	0.61	0.42	0.54	0.51
0-399% FPL	0.49	0.39	0.58	0.46	0.49
Age					
18-44	0.50	0.52	0.77	0.56	0.51
45-64	0.35	0.36	0.17	0.34	0.34
65-84	0.14	0.11	0.05	0.10	0.14
85+	0.01	0.00	0.00	0.01	0.01
Education Level					
High School/No Formal Education	0.39	0.28	0.35	0.36	0.38
Some College	0.24	0.25	0.30	0.20	0.24
Bachelor's Degree	0.34	0.40	0.31	0.38	0.34
Graduate Degree	0.04	0.06	0.04	0.06	0.04
Marital Status					
Not currently married	0.50	0.78	0.78	0.57	0.51
Married	0.50	0.22	0.22	0.43	0.49
Employment Status					
Not Employed Full-time	0.44	0.36	0.46	0.37	0.43
Employed Full-time	0.56	0.64	0.54	0.63	0.57
Citizenship					
non-US Citizen	0.16	0.11	0.08	0.12	0.16
US Citizen	0.84	0.89	0.92	0.88	0.84
Usual Source of Care					
No	0.15	0.14	0.22	0.18	0.16

Yes	0.85	0.86	0.78	0.82	0.84
Chronic Conditions Diagnosis					
No Chronic Conditions	0.002	0.002	0.004	0.001	0.002
One Chronic Condition	0.81	0.74	0.67	0.77	0.80
2+ Chronic Conditions	0.19	0.26	0.32	0.23	0.20
Health Status					
Excellent/Very Good/Good	0.79	0.82	0.77	0.82	0.80
Fair/Poor	0.21	0.18	0.23	0.18	0.20
Survey year					
2014	0.23	0.22	0.18	0.03	0.23
2015	0.25	0.29	0.23	0.51	0.25
2016	0.26	0.22	0.26	0.19	0.26
2017	0.26	0.27	0.32	0.27	0.26
Source: 2014-2017 California Health Interview Survey. Weighted estimates.					

Table 4.2

Table 4.2 Outcomes by Sexual Identity and Behavior				
	Heterosexual	Homosexual	Bisexual	Non-identifying
Insurance Status				
Insured	0.89	0.92	0.90	0.90
Not Insured	0.11	0.08	0.10	0.10
No Doctor's Visit in Past Yr.				
Yes Visit	0.80	0.87	0.83	0.81
No Visit	0.20	0.13	0.17	0.19
No Preventative Care Visit in Past Yr.				
Yes Visit	0.72	0.77	0.73	0.67
No Visit	0.28	0.23	0.27	0.33
Delayed Medical Care in Past Yr.				
No	0.87	0.85	0.78	0.80
Yes	0.13	0.15	0.22	0.20
Delayed Rx Care in Past Yr.				
No	0.90	0.85	0.80	0.89
Yes	0.10	0.15	0.20	0.11
Forgone Care in the Past Yr.				
No	0.92	0.91	0.88	0.85
Yes	0.08	0.09	0.12	0.15
ER Visit in the Past Yr.				
No	0.79	0.74	0.69	0.73
Yes	0.21	0.26	0.31	0.27

Not Accepted as a New Patient				
Yes	0.96	0.95	0.93	0.94
No	0.04	0.05	0.07	0.06
Source: 2014-2017 California Health Interview Survey. Weighted Estimates.				

Table 4.3

Table 4.3 Adjusted Logistic Regressions for Outcomes by Sexual Identity and Behavior Reporting Odds Ratios.									
		Uninsured	Doc appt, past 12m	Preventative care, past 12m	Delayed care, past 12m	Delayed Rx, past 12m	ER visit, past 12m	Forgone care, past 12m	Not accepted as a new patient, past 12m
		OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)
Sexual Identity and Behavior	n= 71,750								
Heterosexual	68,034								
					1 (Reference)				
Homosexual	1,716	0.662 (0.380 - 1.156)	0.588** (0.354 - 0.977)	0.680*** (0.514 - 0.899)	1.081 (0.821 - 1.424)	1.474*** (1.113 - 1.953)	1.246 (0.930 - 1.670)	1.072 (0.758 - 1.518)	1.263 (0.785 - 2.033)
Bisexual	1,584	0.718 (0.414 - 1.245)	0.689** (0.517 - 0.919)	0.773** (0.602 - 0.994)	1.377* (0.983 - 1.931)	1.896*** (1.346 - 2.672)	1.412*** (1.091 - 1.828)	1.077 (0.778 - 1.491)	1.281 (0.890 - 1.845)
non- Identifying	416	0.866 (0.408 - 1.839)	0.809 (0.362 - 1.810)	1.144 (0.592 - 2.214)	1.592* (0.960 - 2.640)	1.091 (0.616 - 1.932)	1.391 (0.828 - 2.336)	1.909** (1.030 - 3.539)	1.441 (0.581 - 3.576)
Gender									
Male					1 (Reference)				
Female		0.634***	0.563***	0.675***	1.498***	1.443***	1.025	1.553***	1.610***

	(0.533 - 0.755)	(0.508 - 0.622)	(0.612 - 0.744)	(1.305 - 1.719)	(1.254 - 1.660)	(0.915 - 1.148)	(1.336 - 1.806)	(1.335 - 1.941)
Race/Ethnicity								
White				1 (Reference)				
Black	1.012 (0.707 - 1.450)	0.948 (0.764 - 1.175)	0.630*** (0.514 - 0.772)	0.687** (0.510 - 0.926)	0.857 (0.636 - 1.156)	1.327** (1.017 - 1.731)	0.609*** (0.438 - 0.845)	0.684** (0.474 - 0.987)
Latino	1.420*** (1.118 - 1.804)	1.011 (0.893 - 1.144)	0.823*** (0.742 - 0.913)	0.635*** (0.554 - 0.728)	0.762*** (0.645 - 0.899)	0.955 (0.850 - 1.072)	0.680*** (0.580 - 0.797)	0.588*** (0.410 - 0.844)
American Indian/Alaskan Native	1.621 (0.783 - 3.353)	1.631* (0.954 - 2.789)	1.185 (0.688 - 2.043)	0.977 (0.564 - 1.693)	1.022 (0.634 - 1.647)	1.017 (0.665 - 1.555)	0.924 (0.517 - 1.650)	0.714 (0.280 - 1.817)
Asian	0.789** (0.632 - 0.985)	1.187** (1.019 - 1.383)	0.808*** (0.690 - 0.946)	0.473*** (0.369 - 0.606)	0.510*** (0.382 - 0.681)	0.752*** (0.625 - 0.905)	0.374*** (0.272 - 0.513)	0.621** (0.428 - 0.901)
Other/Native Hawaiian/Pacific Islander/2+	1.226 (0.805 - 1.869)	1.131 (0.847 - 1.511)	0.950 (0.740 - 1.220)	0.876 (0.681 - 1.128)	1.120 (0.810 - 1.550)	1.248* (0.959 - 1.624)	0.881 (0.636 - 1.220)	0.914 (0.570 - 1.464)
Income								
400%+ FPL				1 (Reference)				
0-399% FPL	1.770*** (1.450 - 2.162)	1.265*** (1.135 - 1.410)	1.156** (1.006 - 1.327)	1.266*** (1.121 - 1.431)	1.305*** (1.144 - 1.488)	1.204*** (1.083 - 1.338)	1.336*** (1.130 - 1.580)	1.379** (1.035 - 1.836)
Age								
18-44				1 (Reference)				
45-64	0.948	0.720***	0.759***	0.948	1.091	0.869**	0.988	0.949

	(0.789 - 1.140)	(0.649 - 0.799)	(0.687 - 0.837)	(0.829 - 1.084)	(0.928 - 1.282)	(0.780 - 0.968)	(0.848 - 1.150)	(0.774 - 1.163)
64-84	0.0932***	0.443***	0.425***	0.377***	0.687***	0.855**	0.416***	0.391***
	(0.0579 - 0.150)	(0.346 - 0.568)	(0.359 - 0.502)	(0.314 - 0.453)	(0.564 - 0.836)	(0.738 - 0.991)	(0.323 - 0.536)	(0.309 - 0.496)
85+	0.108**	0.548*	0.294***	0.214***	0.350***	1.071	0.201***	0.233***
	(0.0166 - 0.698)	(0.294 - 1.021)	(0.171 - 0.504)	(0.107 - 0.431)	(0.217 - 0.566)	(0.800 - 1.432)	(0.0876 - 0.459)	(0.121 - 0.448)
Education Level								
High School/No formal Education				1 (Reference)				
Some College	0.913	0.815***	0.965	1.357***	1.279***	1.263***	1.305***	1.309**
	(0.768 - 1.086)	(0.719 - 0.924)	(0.863 - 1.079)	(1.168 - 1.576)	(1.077 - 1.520)	(1.130 - 1.411)	(1.076 - 1.582)	(1.032 - 1.660)
Bachelor's Degree	0.656***	0.774***	0.964	1.419***	1.269***	1.005	1.331***	1.501***
	(0.538 - 0.800)	(0.686 - 0.873)	(0.861 - 1.079)	(1.207 - 1.668)	(1.070 - 1.505)	(0.906 - 1.115)	(1.118 - 1.586)	(1.124 - 2.005)
Graduate Degree	0.552*	0.701**	1.018	1.606***	1.631**	0.993	1.679**	2.242**
	(0.303 - 1.005)	(0.509 - 0.965)	(0.777 - 1.334)	(1.169 - 2.208)	(1.091 - 2.439)	(0.717 - 1.375)	(1.116 - 2.527)	(1.205 - 4.171)
Employment Status								
Full time				1 Reference				
Employment Not Employed								
Full time	0.936	1.141**	1.241***	1.022	1.087	0.892**	1.064	0.837*
	(0.781 - 1.121)	(1.012 - 1.286)	(1.110 - 1.388)	(0.887 - 1.177)	(0.949 - 1.246)	(0.812 - 0.980)	(0.891 - 1.270)	(0.684 - 1.024)
Marital Status								

Not Married				1 (Reference)				
Married	0.636*** (0.539 - 0.749)	0.972 (0.874 - 1.080)	0.984 (0.870 - 1.113)	0.825*** (0.731 - 0.932)	0.834** (0.726 - 0.960)	0.782*** (0.712 - 0.859)	0.885 (0.761 - 1.029)	0.777** (0.628 - 0.961)
Citizenship Status								
US Citizen								
non-US Citizen	0.394*** (0.337 - 0.461)	0.713*** (0.613 - 0.829)	0.759*** (0.658 - 0.877)	1.267** (1.012 - 1.586)	1.174 (0.948 - 1.454)	1.308*** (1.095 - 1.562)	1.277* (0.992 - 1.643)	1.192 (0.853 - 1.666)
Usual Source of Care								
Yes				1 (Reference)				
No	0.265*** (0.228 - 0.309)	0.220*** (0.193 - 0.250)	0.245*** (0.214 - 0.279)	0.799*** (0.678 - 0.941)	1.369*** (1.097 - 1.710)	1.583*** (1.381 - 1.815)	0.604*** (0.507 - 0.719)	0.728*** (0.585 - 0.907)
Chronic Disease Diagnosis								
No Chronic Conditions				1 (Reference)				
1 Chronic Condition	3.655** (1.147 - 11.65)	1.163 (0.266 - 5.082)	0.940 (0.379 - 2.331)	0.421** (0.189 - 0.941)	0.231*** (0.110 - 0.486)	0.183*** (0.0668 - 0.501)	0.458 (0.173 - 1.209)	0.441* (0.167 - 1.161)
2+ Chronic Conditions	3.023* (0.887 - 10.31)	0.866 (0.195 - 3.847)	0.890 (0.349 - 2.266)	0.677 (0.316 - 1.451)	0.367*** (0.176 - 0.764)	0.294** (0.107 - 0.808)	0.676 (0.268 - 1.703)	0.651 (0.243 - 1.745)
Health Status								
Excellent/Very Good/Good				1 (Reference)				
Fair/Poor	1.278***	0.762***	0.834***	1.936***	2.303***	1.999***	1.799***	1.593***

	(1.092 - 1.494)	(0.680 - 0.854)	(0.739 - 0.942)	(1.715 - 2.186)	(1.999 - 2.654)	(1.793 - 2.228)	(1.555 - 2.082)	(1.285 - 1.975)
Survey Year								
2014				1 (Reference)				
2015	0.600*** (0.516 - 0.698)	0.907 (0.781 - 1.052)	0.812*** (0.732 - 0.901)	0.962 (0.849 - 1.090)	1.047 (0.898 - 1.222)	1.286*** (1.147 - 1.442)	0.974 (0.827 - 1.148)	1.849*** (1.445 - 2.365)
2016	0.553*** (0.453 - 0.675)	0.861* (0.737 - 1.004)	0.788*** (0.692 - 0.898)	0.835** (0.703 - 0.991)	0.973 (0.811 - 1.169)	1.275*** (1.118 - 1.453)	0.832* (0.676 - 1.024)	1.508*** (1.127 - 2.019)
2017	0.580*** (0.485 - 0.694)	0.855* (0.730 - 1.001)	0.800** (0.667 - 0.961)	0.884 (0.758 - 1.031)	0.971 (0.766 - 1.231)	1.220*** (1.067 - 1.394)	0.958 (0.802 - 1.144)	1.500*** (1.174 - 1.916)
Constant	0.341* (0.102 - 1.136)	1.688 (0.380 - 7.503)	2.975** (1.147 - 7.718)	0.266*** (0.114 - 0.620)	0.176*** (0.0722 - 0.430)	0.520 (0.179 - 1.513)	0.167*** (0.0583 - 0.479)	0.0493*** (0.0173 - 0.140)
Observations	71,750	71,750	71,750	71,750	71,750	71,750	71,750	71,750
Source: 2014-2017 CHIS Data. ***p<0.01 ** p<0.05 *p<0.10. Model controls for gender, income, age, education, marital status, employment status, citizenship, chronic disease diagnosis, health status and year of survey.								

Table 4.4

Table 4.4 Adjusted Logistic Regressions for Outcomes for Sexual identity and Behavior, and Gender Reporting Odds Ratios.								
	Uninsured	Doc appt, past 12m	Preventative care, past 12m	Delayed care, past 12m	Delayed Rx, past 12m	ER Visit, past 12m	Forgone Care, past 12m	Not accepted as a new patient

		OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)	OR (CI)
Sexual Orientation and Behavior	n=71,750								
Heterosexual Male	29,291				1 (Reference)				
Homosexual Male	1,046	0.747 (0.379 - 1.472)	0.527*** (0.353 - 0.787)	0.557*** (0.385 - 0.805)	1.017 (0.704 - 1.470)	1.695** (1.128 - 2.547)	1.066 (0.766 - 1.482)	0.973 (0.596 - 1.586)	1.389 (0.792 - 2.436)
Bisexual Male	552	0.696 (0.274 - 1.768)	0.661 (0.397 - 1.099)	0.646* (0.388 - 1.077)	1.238 (0.672 - 2.279)	1.675 (0.865 - 3.241)	1.002 (0.549 - 1.825)	0.945 (0.480 - 1.860)	1.370 (0.645 - 2.907)
non-Identifying Male	247	1.011 (0.460 - 2.225)	1.043 (0.472 - 2.305)	1.050 (0.532 - 2.073)	1.996* (0.988 - 4.033)	1.115 (0.586 - 2.125)	1.457 (0.775 - 2.739)	2.758** (1.279 - 5.945)	1.880 (0.562 - 6.292)
Heterosexual Female	38,743	0.786 (0.481 - 1.285)	0.778 (0.528 - 1.147)	0.900 (0.644 - 1.258)	1.540** (1.065 - 2.227)	1.112 (0.766 - 1.614)	0.997 (0.792 - 1.256)	1.566* (0.946 - 2.592)	1.244 (0.638 - 2.423)
Homosexual Female	670	0.393** (0.159 - 0.972)	0.589 (0.148 - 2.349)	0.890 (0.506 - 1.567)	1.824** (1.005 - 3.311)	1.323 (0.707 - 2.475)	1.548* (0.919 - 2.610)	1.918* (0.895 - 4.110)	1.385 (0.476 - 4.032)
Bisexual Female	1,032	0.579 (0.292 - 1.148)	0.552** (0.322 - 0.945)	0.776 (0.504 - 1.196)	2.207*** (1.317 - 3.698)	2.207*** (1.353 - 3.600)	1.650** (1.091 - 2.496)	1.764* (0.982 - 3.168)	1.541 (0.690 - 3.444)
non-identifying Female	169	0.470 (0.0654 - 3.377)	0.353 (0.0708 - 1.757)	1.152 (0.308 - 4.313)	1.860 (0.840 - 4.122)	1.183 (0.389 - 3.596)	1.285 (0.551 - 2.996)	1.870 (0.613 - 5.703)	1.361 (0.301 - 6.153)

Race/Ethnicity								
White	1 (Reference)							
Black	1.006 (0.702 - 1.441)	0.951 (0.770 - 1.175)	0.631*** (0.517 - 0.769)	0.697** (0.518 - 0.937)	0.860 (0.641 - 1.152)	1.306** (1.010 - 1.690)	0.615*** (0.445 - 0.851)	0.675** (0.470 - 0.970)
Latino	1.410*** (1.115 - 1.784)	1.009 (0.892 - 1.143)	0.830*** (0.749 - 0.920)	0.640*** (0.559 - 0.733)	0.760*** (0.645 - 0.896)	0.943 (0.843 - 1.054)	0.682*** (0.582 - 0.799)	0.586*** (0.411 - 0.836)
American Indian/Alaskan Native	1.603 (0.778 - 3.302)	1.605* (0.945 - 2.726)	1.180 (0.693 - 2.008)	0.983 (0.566 - 1.707)	1.005 (0.631 - 1.600)	1.017 (0.670 - 1.543)	0.912 (0.514 - 1.616)	0.701 (0.277 - 1.774)
Asian	0.780** (0.626 - 0.972)	1.187** (1.022 - 1.380)	0.815** (0.696 - 0.955)	0.473*** (0.371 - 0.604)	0.504*** (0.377 - 0.674)	0.742*** (0.616 - 0.893)	0.375*** (0.275 - 0.511)	0.616** (0.426 - 0.889)
Other/Native Hawaiian/Pacific Islander/2+	1.209 (0.794 - 1.839)	1.112 (0.835 - 1.480)	0.958 (0.751 - 1.223)	0.880 (0.684 - 1.131)	1.147 (0.830 - 1.584)	1.225 (0.946 - 1.587)	0.876 (0.631 - 1.217)	0.930 (0.583 - 1.484)
Income								
400%+ FPL	1 (Reference)							
0-399% FPL	1.755*** (1.438 - 2.143)	1.275*** (1.146 - 1.419)	1.156** (1.010 - 1.324)	1.272*** (1.128 - 1.434)	1.290*** (1.135 - 1.466)	1.195*** (1.080 - 1.323)	1.337*** (1.137 - 1.572)	1.385** (1.047 - 1.832)
Age								
18-44	1 (Reference)							
45-64	0.949 (0.791 - 1.139)	0.713*** (0.641 - 0.793)	0.756*** (0.684 - 0.836)	0.949 (0.831 - 1.083)	1.087 (0.926 - 1.276)	0.871** (0.781 - 0.970)	0.989 (0.852 - 1.148)	0.947 (0.772 - 1.161)
64-84	0.0787***	0.413***	0.395***	0.356***	0.667***	0.842**	0.392***	0.374***

85+	(0.0478 - 0.129) 0.0897** (0.00810 - 0.994)	(0.328 - 0.522) 0.473** (0.262 - 0.851)	(0.338 - 0.462) 0.272*** (0.167 - 0.442)	(0.299 - 0.424) 0.197*** (0.111 - 0.350)	(0.551 - 0.807) 0.400*** (0.249 - 0.641)	(0.733 - 0.967) 1.146 (0.904 - 1.452)	(0.311 - 0.495) 0.170*** (0.0793 - 0.363)	(0.296 - 0.472) 0.230*** (0.125 - 0.423)
Education Level								
High School/No formal Education					1 (Reference)			
Some College	0.920 (0.770 - 1.098)	0.822*** (0.726 - 0.931)	0.966 (0.864 - 1.079)	1.358*** (1.171 - 1.576)	1.288*** (1.089 - 1.522)	1.274*** (1.146 - 1.417)	1.311*** (1.083 - 1.589)	1.303** (1.029 - 1.649)
Bachelor's Degree	0.660*** (0.543 - 0.803)	0.781*** (0.690 - 0.884)	0.966 (0.863 - 1.080)	1.422*** (1.211 - 1.670)	1.281*** (1.086 - 1.512)	1.019 (0.923 - 1.125)	1.338*** (1.125 - 1.591)	1.498*** (1.126 - 1.994)
Graduate Degree	0.552* (0.304 - 1.002)	0.695** (0.509 - 0.950)	1.020 (0.781 - 1.332)	1.604*** (1.170 - 2.199)	1.632** (1.095 - 2.433)	1.004 (0.731 - 1.380)	1.684** (1.122 - 2.526)	2.217** (1.193 - 4.119)
Employment Status								
Full time Employment					1 Reference			
Not Employed	0.932 (0.786 - 1.105)	1.151** (1.023 - 1.296)	1.246*** (1.118 - 1.389)	1.019 (0.887 - 1.170)	1.083 (0.953 - 1.232)	0.882** (0.801 - 0.971)	1.061 (0.890 - 1.266)	0.832* (0.682 - 1.015)
Marital Status								
Not Married					1 (Reference)			
Married	0.639***	0.968	0.975	0.830***	0.833***	0.776***	0.893	0.776**

Citizenship Status		(0.545 - 0.749)	(0.872 - 1.075)	(0.866 - 1.099)	(0.735 - 0.938)	(0.727 - 0.955)	(0.708 - 0.851)	(0.769 - 1.037)	(0.627 - 0.960)
	US Citizen				1 Reference				
Usual Source of Care	non-US Citizen	0.394*** (0.337 - 0.461)	0.713*** (0.613 - 0.829)	0.759*** (0.658 - 0.877)	1.267** (1.012 - 1.586)	1.174 (0.948 - 1.454)	1.308*** (1.095 - 1.562)	1.277* (0.992 - 1.643)	1.192 (0.853 - 1.666)
	Yes				1 (Reference)				
Chronic Disease Diagnosis	No	0.265*** (0.228 - 0.307)	0.221*** (0.194 - 0.252)	0.249*** (0.218 - 0.285)	0.804** (0.682 - 0.948)	1.372*** (1.107 - 1.701)	1.600*** (1.397 - 1.833)	0.603*** (0.507 - 0.717)	0.742*** (0.596 - 0.923)
	1 Chronic Condition	3.698** (1.170 - 11.69)	1.169 (0.272 - 5.025)	0.958 (0.393 - 2.339)	0.425** (0.191 - 0.944)	0.239*** (0.115 - 0.496)	0.181*** (0.0674 - 0.488)	0.463 (0.176 - 1.222)	0.443* (0.169 - 1.159)
Health Status	2+ Chronic Conditions	3.065* (0.905 - 10.38)	0.864 (0.198 - 3.766)	0.896 (0.358 - 2.242)	0.682 (0.320 - 1.452)	0.376*** (0.183 - 0.773)	0.294** (0.109 - 0.793)	0.685 (0.272 - 1.721)	0.660 (0.248 - 1.752)
	Excellent/Very Good/Good				1 (Reference)				
	Fair/Poor	1.279***	0.753***	0.838***	1.932***	2.305***	2.005***	1.812***	1.610***

	(1.100 - 1.487)	(0.673 - 0.843)	(0.743 - 0.944)	(1.718 - 2.173)	(2.016 - 2.636)	(1.811 - 2.220)	(1.573 - 2.087)	(1.301 - 1.993)
Survey Year								
2014				1 (Reference)				
2015	0.613*** (0.529 - 0.712)	0.935 (0.813 - 1.074)	0.837*** (0.758 - 0.924)	0.988 (0.875 - 1.116)	1.064 (0.925 - 1.225)	1.273*** (1.140 - 1.421)	1.003 (0.857 - 1.173)	1.853*** (1.451 - 2.368)
2016	0.554*** (0.455 - 0.674)	0.880* (0.758 - 1.021)	0.808*** (0.713 - 0.915)	0.847* (0.717 - 1.000)	0.989 (0.829 - 1.181)	1.256*** (1.106 - 1.425)	0.847 (0.694 - 1.033)	1.503*** (1.136 - 1.989)
2017	0.590*** (0.493 - 0.707)	0.881 (0.757 - 1.026)	0.823** (0.690 - 0.982)	0.903 (0.775 - 1.052)	0.986 (0.787 - 1.236)	1.210*** (1.064 - 1.375)	0.976 (0.821 - 1.160)	1.510*** (1.193 - 1.912)
Constant	0.332* (0.100 - 1.102)	1.630 (0.374 - 7.108)	2.861** (1.132 - 7.233)	0.257*** (0.111 - 0.597)	0.170*** (0.0717 - 0.404)	0.548 (0.189 - 1.591)	0.162*** (0.0564 - 0.463)	0.0482*** (0.0171 - 0.136)
Observations	71,750	71,750	71,750	71,750	71,750	71,750	71,750	71,750
Source: 2014-2017 CHIS Data. ***p<0.01 ** p<0.05 *p<0.10. Model controls for gender, income, age, education, marital status, employment status, citizenship, chronic disease diagnosis, health status and year of survey.								

Chapter 5: Conclusion

Discussion

In my first study I hypothesized that sexual minorities of color would experience the most barriers to care but the data demonstrated that, regardless of urbanicity, white bisexuals experienced the most barriers to healthcare access. There were several findings from this study. First, straight non-Whites experienced reduced access to health insurance. Second, urbanicity may impact access to healthcare for white bisexual people. Third, regardless of urbanicity, bisexuals experienced more barriers to healthcare access than their heterosexual and homosexual counterparts. Fourth, no one identity appeared to be driving the healthcare access disparity, each dimension of urbanicity, sexual identity, and race/ethnicity experienced a barrier to access for a dimension of healthcare access. Evidence for racial and ethnic differences was not apparent in the study findings. It is possible that the sample size for sexual minority people of color was too small to glean statistically significant and reliable findings. Findings from the study also demonstrated that in some instances sexual minorities' experienced better access to care than the heterosexual reference group.

In my second study I hypothesized that sexual minorities with multiple disadvantaged social identities would experience the most limitations to accessing healthcare. The hypothesis was correct; study findings demonstrated that low income sexual minority women experienced the most limitations in accessing care. There were several findings from the study. First, low income sexual minority women

experience the most barriers to care, especially low-income bisexual women who experience the most barriers overall. When examining the salience of income, it appears that income is protective for heterosexual women. That is, when a heterosexual woman is high-income versus low-income her likelihood of accessing care is improved. A similar pattern was demonstrated for lesbian and bisexual women, but the effect was much smaller for bisexual women. When examining the salience of gender, regardless of income level or sexual orientation women experience more barriers to care compared to their male counterparts. Lastly, sexual minorities of both genders and income levels experience barriers to accessing care in the form of filling prescriptions.

In my third and final study I hypothesized that non-identifying sexual minorities would experience the most barriers to care and the study demonstrated that while they experience barriers to care the effects are mainly seen in male non-identifying sexual minorities. Additionally, while they experience worse outcomes compared to heterosexuals and homosexuals, they have better outcomes than bisexuals. The study demonstrated that bisexual women experience the most barriers to care.

Prior to this dissertation, there were a number of gaps in the literature regarding sexual minorities' healthcare access. Population and health services research on health disparities based on urbanicity, rurality, race/ethnicity, and sexual identity never examined how these social identities intersect and affect healthcare access and utilization of healthcare outcomes. There had never been a state-based study on healthcare access and utilization barriers at the intersections of sexual

identity, income, and gender. The literature did not examine the association between sexual identity, sexual identity disclosure, and access to healthcare services. This dissertation filled the gaps in the literature.

Limitations

There were a number of limitations in this study. First, we pooled data from 2014 to 2017 and the data collected for 2014 was compiled based of data resulting from the respondents recall from the previous 12 months. While the data is meant to represent a post-ACA policy environment data comes from respondents' experiences in a policy environment where the ACA was not fully implemented in California. The only time that occurs is for 2014 respondents who are answering the interview and recalling a visit or encounter that technically occurred during 2013. Next, while using a state-based data set allowed us to conduct a robust analysis and examine multiple intersecting identities while maintaining statistical power, California's economic and policy is unique and results are not generalizable on a national level. Also, CHIS only collects information on two of the three dimensions of sexual orientation excluding sexual attraction, a critical component of sexual orientation that would improve the accuracy of identifying sexual minorities in the sample population. The data included respondents that lived in an eligible residence for the sample design (i.e., household, apartments, mobile homes with less than nine unrelated person).⁹² This means that the sample does not include sexual minorities living in group quarters such as group homes, homeless shelters, assisted living and long-term care facilities, shared communities, or communal houses. Sexual minorities experience higher rates of poverty and homelessness when compared to their heterosexual counterparts.¹⁰⁴ This

coverage error excludes the most vulnerable members of the population from the analysis. While the sample size for sexual minorities is larger and more encompassing the most studies on sexual minorities, the overall sample sizes, especially for some groups (e.g., rural sexual minorities), were less than 100 respondents, reducing the statistical power for the analysis of the groups. Thus, many of the estimations were approaching statistical significance but the width of the confidence intervals was too large to confidently state that these groups had more or less access than others. The study employed eligibility of ACA subsidies as an indicator of wealth. The eligibility criteria is based on an averaged federal poverty level but there is a lot of variability in affordability based on geography, and other factors, that leave many high-earning Californians economically unstable.¹²² Future studies could look at income with more granularity to better understand the variation in outcomes. Discordance between self-report of sexual identity and sexual behavior could be a result of measurement error.⁵⁷

Third, CHIS does not capture sexual attraction, the defining feature of sexual orientation, preventing the analysis from examining non-disclosure of sexual identity from all three dimensions of sexual orientation. Not including sexual attraction excludes asexual people who have same-sex sexual attractions. Additionally, the wording of the sexual behavior question is restrictive. It instructs respondents to only consider sexual partners within the past 12 months, thus not capturing lifetime sexual behavior, and people who are currently celibate but may have had same-sex partners prior to the 12-month timeframe. Finally, in this study I reported findings with a p-value of 0.10. This is not the standard practice but due to the small sample size did not want to discount finding that suggests that there was a barrier to access being

experienced. Rather than ignore a finding that could be the result of poor statistical power I chose to include these findings.

Conclusion

The purpose of my research was to examine how different environments and social identities impact healthcare access disparities in sexual minorities. This dissertation filled gaps in the literature by producing the first evidence that demonstrates that urban and rural environments are not driving differences in healthcare access for sexual minorities. This dissertation provided evidence of how income and gender interact with sexual identity and how it improves access for some and creates disadvantages for others. Lastly, it provided the first evidence that established the salience of identifying as a sexual minority's impact on healthcare access for men.

Additional research is needed to better understand the influence urbanicity has on sexual minorities of color. Additional data on sexual orientation, like collecting all three dimensions of sexual orientation would strengthen the analysis on sexual identity. These studies demonstrated that bisexuals, low-income bisexuals, and bisexual women have an increased vulnerability to experiencing limited healthcare access. The study's findings demonstrate that there is an emergent need for curated culturally sensitive health promotion geared the most vulnerable sexual minorities. Implicit bias and cultural competence training is needed to address the marginalization and discrimination that serves as a barrier to sexual minorities in accessing care. Furthermore, research should emphasize the health needs of lesbian

and bisexual women so that their specific health needs can be understood and addressed.

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