HEALTH DISPARITIES AMONG SEXUAL MINORITIES: TRENDS OF HEALTH CARE AND PREVALENCE OF DISEASE IN LGB INDIVIDUALS

Cesar Villarreal, M.S.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

August 2018

APPROVED:

Charles A. Guarnaccia, Major Professor
Mark Vosvick, Committee Member
C. Edward Watkins, Committee Member
Vicki Campbell, Chair of the Department of Psychology
David Holdeman, Dean of the College of Liberal Arts and Social Sciences
Victor Prybutok, Dean of the Toulouse Graduate School

Villarreal, Cesar. *Health Disparities among Sexual Minorities: Trends of Health Care and Prevalence of Disease in LGB Individuals*. Doctor of Philosophy (Health Psychology and Behavioral Medicine), August 2018, 105 pp., 10 tables, 9 appendices, references, 71 titles.

The primary focus of the current study was to identify health disparities between sexual minority subgroups by examining differences of health indicators in lesbians, gay men, and bisexual individuals, and compare these to their heterosexual counterparts. Data was drawn from the National Health and Nutrition Examination Survey (NHANES), and variables examined in sexual minorities were related to health care access and utilization, risky health behaviors, and overall disease prevalence and outcomes. Findings suggest there are still some current health disparities in terms of insurance coverage, access to medical care, substance use, and prevalence of certain health conditions. However, a trend analysis conducted to examine three NHANES panels, suggests a mild improvement in some of these areas. Further findings, discussion, limitations of the study, current implications, and future directions are addressed.

TABLE OF CONTENTS

Page

LIST OF TABLES v

CHAPTER 1. INTRODUCTION 1

Sexual Minorities 2

Defining Sexual Minorities 4

Sexual Minorities and Health 6

Minority Stress 8

CHAPTER 2. BACKGROUND 11

Health Disparities 11

Health Disparities in Sexual Minorities 14

Subgroup Findings 15

Males 16

Females 18

Challenges in Sexual Minority Research 19

Summary 22

The Current Study 22

Study Aims 23

Study Aim 1: Health Care Access 23

Study Aim 2: Risky Health Behaviors 24

Study Aim 3: Health Conditions and Health Status Indicators 24

Study Aim 4: Trends Over Time 25

CHAPTER 3. METHOD 26

Participants and Study Design 26

Materials and Procedure 26

Demographic Variables 28

Health Conditions and Health Status Variables 29

Risky Health Behavior Variables 30

Health Care Utilization Variables 31

Analytic Strategy 31

Preparation of Data 31

Descriptive Statistics 32
Analytical Method 32

CHAPTER 4. RESULTS 37
Description of the Sample 37
Analyses 38
Study Aim 1 Results: Health Care Access 38
Study Aim 2 Results: Risky Health Behaviors 40
Study Aim 3 Results: Health Conditions and Health Status Indicators 41
Study Aim 4 Results: Trends Over Time 43

CHAPTER 5. DISCUSSION 45
Implications 48
Limitations 48
Conclusion 50

APPENDIX A. DEMOGRAPHICS INFORMATION – DMQ – SP 65

APPENDIX B. SEXUAL BEHAVIOR – (SXQ) 70

APPENDIX C. DIABETES – DIQ 72

APPENDIX D. MEDICAL CONDITIONS – MCQ 76

APPENDIX E. PHYSICAL FUNCTIONING - PFQ 83

APPENDIX F. ALCOHOL USE – ALQ 87

APPENDIX G. DRUG USE – DUQ 90

APPENDIX H. TOBACCO – SMQ 94

APPENDIX I. HEALTH INSURANCE – HIQ 98

REFERENCES 100

LIST OF TABLES

Page

Table 1. Characteristics of the Sample 52

Table 2. Likelihood of Health Insurance Coverage: Males 55

Table 3. Likelihood of Health Insurance Coverage: Females 55

Table 4. Likelihood of Having Regular Access to Care: Males 56

Table 5. Likelihood of Having Regular Access to Care: Females 57

Table 6. Self-Reported Sexual Orientation and Risky Health Behaviors: Males 58

Table 7. Self-Reported Sexual Orientation and Risky Health Behaviors: Females 58

Table 8. Self-Reported Sexual Orientation and Health Outcomes: Males 59

Table 9. Self-Reported Sexual Orientation and Health Outcomes: Females 60

Table 10. Trends Over Time from NHANES Panels 61

CHAPTER 1

INTRODUCTION

The study of health disparities has been at the frontline of research over the last few decades. Investigating health disparities allows us to better understand minority groups' experiences in relation to health outcomes, and to have a clearer picture regarding the needs of these groups. The Health Care Fairness Act of 2000 House Resolution defines populations with health disparities as those with significant differences in disease incidence, morbidity, mortality, and survival rates, when compared to the general population (2000). Several sociodemographic factors have been associated with health disparities, such as race/ethnicity, socio-economic status, living and working conditions, and cultural, social, and environmental variables (U.S. Department of Health and Human Services, 2010). Furthermore, substantial evidence demonstrates that these factors play a role in health disparities across minority groups.

Despite the great contributions in literature in terms of health disparities in certain sociodemographic groups, disparities among sexual minorities remain an understudied aspect of the health disparities field. Although the association between sexual minorities and poor health outcomes has been previously established, far less is known about the subgroups that comprise this minority group (i.e., lesbians, gay men, and bisexuals; LGB), and their independent disease prevalence and health risks. Furthermore, there is a lack of consensus in the adequate way to measure health disparities, particularly in sexual minorities. Thus, the present study will examine sexual minority health by examining a variety of health indicators in LGB individuals. Chapter I of this document presents an overview of sexual minority health as a way to provide a framework for the current project.

Sexual Minorities

To better understand sexual minorities, one might benefit from conceptualizing the term "sexual identity" as a term under the larger umbrella of human sexuality. Throughout the years, the way people understand sexual identity, particularly variation and diversity within it, has been mainly established through societal norms. Therefore, culture plays an essential role in the understanding of sexuality. One's sexual identity refers to individuals' inherent emotional, spiritual, romantic, or sexual attraction to other people. Fassinger and Arsenau (2007) argue that sexual minority individuals are defined by a combination of gender identity, cultural identity and sexual orientation, as well as unique individual differences. Thus, despite common beliefs, one's sexual identity is not exclusively defined by one's sexual orientation. Each person's identity is shaped by an interaction of multiple characteristics and influences.

Generally, it is understood that the majority of people identify as 'heterosexual' or 'straight,' which means feeling these types of attraction are towards members of the opposite sex. Sexual minorities are a group usually comprised of individuals who are not exclusively attracted to the opposite sex. For example, gay men feel attraction towards other men, lesbians feel attraction to women, and bisexual individuals, who are attracted towards both (American Psychological Association, 2015). These three subgroups, LGB, have been the most widely studied in literature, and will be the focus of the current project.

Another set of concepts that are important to understand relate to gender, which is also an umbrella term due to its complex diversity. Gender is defined by the American Psychological Association (APA) as "the attitudes, feelings, and behaviors that a given culture associates with a person's biological sex," (APA, 2015). The word 'gender' differs from 'sex,' which simply refers to one's anatomy or biological characteristics that is usually assigned at birth (Blackless et

al., 2000). Gender identity is an individual's concept of self as a man or a woman, or something else (APA, 2015). Simply put, gender identity is how people perceive and call themselves in terms of gender. Most commonly, individuals' gender identity corresponds to their biological sex, which is referred to as "cisgender." However, as mentioned before, there are many variations within gender, outside of just man or woman, and sometimes people identify with neither, or both.

Gender minorities are those whose gender identity is incompatible with their assigned biological sex, most commonly referred to as "transgender," (T). Transgender is another umbrella term; it not only describes individuals who experience this mismatch between sex and gender identity, but also individuals who may not conform to societal norms on dichotomous gender, (Meier & Labuski, 2013). Gender minorities are often placed in the same category as sexual minorities (i.e. LGBT) by society, despite the fact that gender and sexual identities are separate constructs. Moreover, transgender individuals have been largely underrepresented in scientific literature, and are often lumped together with sexual minorities. Due to methodology and measurement factors, transgender individuals are not included in this project.

Nonetheless, understanding the differences and interactions between gender and sexual minorities is vital, contextual information for the current study. One relevant example is that gender and sexual minorities share similar issues related to minority stress, which occur as a result of experiences of marginalization, discrimination, lack of equal rights, and multiple forms of stigma (Herek, Chopp, & Stroll; 2007). This experienced minority stress provides a pathway of risk for gender and sexual minorities, and throughout history, has fueled health disparities in all societies (Bada Math & Seshadri, 2013). Furthermore, this pathway of risk is not only experienced by gender and sexual minorities. Members of all minority groups experience this

minority stress. The term *intersectionality,* which was initially developed by feminist and race/ethnicity researchers, refers to the implications and consequences of multiple categories of minority group membership (McCall, 2005). Thus, for those individuals who identify with multiple minority statuses, the experience marginalization, stigma, and discrimination can potentially increase. Before understanding the specifics on how minority stress has an impact on sexual minority health, we first must further review relevant concepts and definitions regarding sexual minority groups, and how these represent significant issues for health disparities research.

Defining Sexual Minorities

One common difficulty that researchers face when examining the experience of sexual minorities, relates to the complex, and ever-changing terminology used. As the U.S., and other societies, become more accepting and inclusive of sexual minorities, specific words or terms have changed throughout the years. Arguably, one of the most salient issues in research is adequately and appropriately defining "sexual minorities." Throughout history, terminology regarding sexuality has changed in both positive and negative ways. Same-sex sexuality has been viewed under a negative perspective by societies, and sexual minority individuals have been subjected to drastic discrimination, legal sanctions, overt acts of violence, and even harmful psychiatric and medical treatments. In fact, until 1973, 'homosexuality' was considered a psychiatric disorder diagnosis under the Diagnostic and Statistical Manual of Mental Disorders (DSM). Nonetheless, stigma and discrimination have persisted over time, not only within societies and cultures, but also within the legal systems. Even though there have been considerable advances in recent history, such as the highly-publicized supreme court ruling in

favor of legalization of same-sex marriage in 2015 (Liptak, 2015), discrimination against sexual minorities continues to persist.

One important aspect regarding terminology is the use of the words “homosexuality” or “homosexual.” Historically, these terms have been commonly used to refer to sexual minorities, both in casual or academic contexts. However, due to its negative associations with anti-gay movements, this term has been recently placed in the list of offensive terms by the Gay and Lesbian Alliance Against Defamation (GLAAD), and its use is no longer appropriate in research (GLAAD, 2014). Throughout this text, the term sexual minority and LGB (lesbians, gay men, and bisexuals) will be used interchangeably, as these are identified as acceptable by the American Psychological Association (APA).

Research often uses multiple terms interchangeably to refer to sexual minorities. Such terms range from “sexuality” to “sexual orientation” and beyond. Worthington and Mohr (2002) differentiate between several important terms such as sexual identity (i.e., recognition and acceptance of sexuality of the self), sexual orientation (i.e., a manifestation of sexuality), and sexual orientation identity (i.e., conscious claiming of those predispositions). Understandably, there has been a lack of clarity and uniformity across research studies that focus on sexual minorities. This lack of consensus and agreement on terminology makes it difficult to understand what exactly is being measured, and how to generalize such results or what their implications are (Morandi et al., 2009).

Additional complication to the conceptualization of sexual minorities is the interaction between gender and sexuality. Historically, there have been various misconceptions regarding gender identity in sexual minorities, which generally stereotype sexual minorities as having a desire to be of the opposite gender. However, gender identity (i.e., cisgender, transgender,

androgynous, genderqueer, gender nonconforming, etc.) is simply defined as the "innate, deeply-felt psychological identification as a man, woman, or something else, which may or may not correspond to the person's external body or assigned sex at birth" (Fenway Health, 2010), and has been proposed to be unrelated to sexual orientation (see Appendix A for a more comprehensive glossary of terms).

Understanding these different terms can be challenging, particularly for those who have had little exposure to information related to sexual minorities. Several studies have recommended the use of spectrums to better understand gender and sexuality (Keener, 2015). For example, a diagram developed by Killerman (2015), the "Genderbread Person," provides a visual representation of the multidimensional aspects of gender, including gender identity, gender expression, biological sex, and sexual attraction, and romantic attraction, are each depicted under unique, different spectrums, that comprise human gender and sexual identity (2015). Even through gender identity will not be investigated in the current study, given the limitations in measurement of the utilized data, it is still of great importance to keep these distinctions in mind.

Sexual Minorities and Health

In a recent gender and sexual demography report by Gary T. Gates (2017), he states that the number of LGBT individuals in the United States (U.S.), as of 2016, is approximately 10 million adults, or 4.1% of the U.S. population. This report suggests a 1.75 million increase of self-identified LGBT individuals, when compared to previous years. Interestingly, not only has the number of LGBT increased, but a notable finding was that LGBT identification increased the most within women, and Asian-American, and Hispanic individuals (Gates, 2017). Thus, as the

number of self-identified gender and sexual minorities increase, so does the need to better understand their health.

As mentioned above, researches have been addressing health disparity issues in minority groups for several decades. Despite the great advances in this field, sexual minorities have been vastly underrepresented. The notion that sexual minorities (lesbian, gay, and bisexual; LGB) are a population with unique health care concerns has been increasingly been the focus of research over the past few decades (Meyer & Northridge, 2007). Nonetheless, compared to other sociodemographic variables, far less has been studied in these groups regarding health disparities. In fact, the Institute of Medicine's (IOM's) report from 2011 reported there is a limited amount of health data that focuses on the LGBT population, and identified a need to prioritize health disparities research on this minority group in the US (Cahill & Makadon, 2014).

Despite the fact that research focusing on sexual minorities has been produced for decades, the Institute of Medicine also noted several critical challenges in this past research. For example, one salient issue is that most of these studies have focused on disparities concerning mental health issues, and limited investigations have focused on overall physical health (Conron, Mimiaga, & Landers, 2010). In fact, in a meta-analysis conducted in 2002, the author reports that of nearly four million research studies regarding physical health from 1990 to 1999, only approximately 0.1% focus on sexual minorities (Boehmer, 2002). Almost two decades later, the need for empirical studies addressing health disparities in sexual minority groups remains relevant.

Another challenge with most empirical literature that focuses on sexual minority health in the U.S., is that most of these studies have been conducted using "convenience samples," meaning data that has been collected from nonprobability samples, or local studies. As a result,

these studies have limited generalizability to the overall population (Conron et al., 2010). Only in recent years has sexual minority assessment been added to population probability based public health surveys; thus, there has been a recent increase in research regarding sexual minority health. However, in order to better inform these public health needs, looking at the health of sexual minorities through nationally representative data surveys is of great importance.

The U.S. Department of Health and Human Services' Healthy People 2020 identified several research goals for the upcoming years. One of these identified goals is to find ways to improve the health of the LGBT population and to completely eliminate existing health disparities in this group (Healthy People 2020 Report, 2008). Indeed, published literature on sexual minorities has considerably increased in recent decades; however, major gaps continue to prevail in literature with a specific focus on health disparities. Therefore, the importance of investigating health disparities in sexual minorities is clear, and there is currently a need to enrich this field's literature, and to promote and advocate for further research.

Minority Stress

Identifying as part of a minority, such as one's sexual orientation or gender identity, can significantly impact health-related behaviors. But, how is such connection made between sexual orientation and health disparities? And, furthermore, why may sexual minorities be at risk for increased health concerns? To answer these questions, the following section will focus on established theories that explain the pathway between minority status and health-related risks, with a specific focus on the group of interest: sexual minorities.

One of the most widely recognized theoretical frameworks that has been used to understand health risks among minority groups is the Minority Stress Model (Meyer, 2003).

Meyer defines “minority stress” as the experience of stress that individuals from marginalized groups experience due to the stigma surrounding their categorization as a minority (Meyer, 2003). Meyer’s model, initially developed for understanding psychological distress in gay men, is based on the premise that gay individuals experience chronic stress that stems from living in a heterosexist society. Thus, as a result from this “victimization,” stigmatized individuals from a minority group tend to develop maladaptive responses that may lead to psychological distress.

Additionally, people in a minority status tend to be more exposed to negative life events, which only increases their stigmatization. These negative experiences may be psychosocial or environmental in nature and may take the form of heterosexism, homonegativity, and/or overt harassment (Kelleher, 2005). Furthermore, discrimination towards members of minority groups may not only be at an interpersonal level (i.e., directly experiencing discrimination), but also at the institutional (i.e., when institutional policies have an effect on access to services and medical health) and internalized (i.e., internalization of discriminatory attitudes by members of minority groups) levels (Brondolo, Gallo, & Meyers, 2009).

Most research investigating minority stress in sexual minorities has focused on psychological distress and mental health issues, and few published studies examine this pathway in terms of physical health. Nonetheless, a number of studies have found associations between exposure of social stigma and health disparities in sexual minorities (Lick et al., 2013). For example, in a study by Frost and colleagues (2015), LGB adults who reported experiencing some form of minority stress also reported more physical health problems and poorer overall health, when compared to those who had fewer minority stress experiences.

Taken together, in light of the existing evidence, it seems apparent that there are established connections between being a member of a sexual minority and negative health

outcomes. The pathway for risk may either follow the minority stress model proposed by Meyer, or it may be due to negative life events due to homonegativity, harassment, or other forms of discrimination. Ultimately, the argument is that as sexual minorities experience difficult social events due to their minority status, their psychological status, health behaviors, and overall functioning is affected, which compromises their physical health.

The following section, Chapter II, will focus on providing a background context regarding the health disparities research field, and a broad description of sexual minorities from a "health disparities" perspective. The first section focuses on providing an overview on health disparities research, which provides information on its history, and illustrates the importance of continuing research on this field. The following section provides a review of existing literature that focuses specifically on health disparities in sexual minorities, as well as some of the most salient findings. Following this, there will be a brief discussion on current challenges of sexual minority research. Finally, the current study and research aims are described.

CHAPTER 2

BACKGROUND

Health Disparities

Health is influenced by various factors, such as health status, disease risk, access to medical care, access to treatment, genetics, psychosocial factors, and even individual factors. Research that focuses on health has the challenging task to keep track on how these factors may impact the health of a population. However, the task is not that simple. Research must also identify how these variables may interact with each other, how they may affect different populations differently, and especially, how move forward to improve the health experience of individuals. Health disparities research attempts to accomplish all of the above by investigating minority populations in relation to majority groups, and even to other minority groups.

Historically, minority demographic groups that face social, economic, and environmental hardships, are often at a disadvantage to experience health inequities in the United States. The World Health Organization (WHO) identified multiple "social health determinants" that are mostly responsible for these disparities, such as race, ethnicity, age, gender, sexual orientation, and disability, for example. Thus, there has been long-standing need to increase the number of empirical research that addresses issues related to health disparities in minority groups.

The elimination of health disparities has been a long-standing focus of research for decades, and important headways have been accomplished throughout the years. Healthy People, a national foundation that aims to provide science-based objectives to improve the health of U.S. Americans, has consistently focused on health disparities research. In the year 2000, one of the main goals of Healthy People was to reduce health disparities. However, as decades pass and

important progress is made, its current goal for the year 2020 is to completely eliminate, not just reduce, heath disparities (Healthy People 2020 Report, 2008).

According to Carter-Pokras and Baquet (2002), the term "health disparity" has been subjected to criticisms, as it appears to be widely utilized solely in the United States, whereas other countries prefer to use terms such as "inequality" or "inequity." Margaret Whitehead, one of the pioneers of the health disparities research field, describes differences in health as "not only unnecessary and avoidable but, in addition, are considered unfair and unjust," (Whitehead, 1990).

Currently, Healthy People 2020 defines a health disparity as:

> …a particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; or other characteristics historically linked to discrimination or exclusion. (Healthy People 2020 Report, 2008)

Despite differences regarding its true definition, most investigations focusing on health disparities across different populations agree on broad aspects of its definition. For example, the notion that health disparities are "avoidable," "unjust," and "unfair," seem to encompass most definitions. Similarly, most researchers agree that when one group of the population appears to have a clear advantage over another one, there is a health disparity or "inequity" in health (Braveman, 2005). Adequately defining this construct influences the way it is measured, which in turn has an impact on the quality of available research.

Although adequately defining health disparities is of great importance, the true challenge, however, lies within its measurement. A range of methods have been utilized to measure inequality in health research; nonetheless, the most common is to compare disadvantaged groups

to more advantaged groups using certain indicators of health (Braveman, 2005). These "indicators of health" (i.e. access to care, health behaviors, etc.) vary from study to study, and the applicability of each is dependent on the specific populations being studied.

According to Carter-Pokras and Baquet (2002), to measure health disparities a researcher must follow certain guidelines, such as identifying the populations that will be compared and choosing a reference group to compare against. Then, most importantly, selecting those aspects of health to be measured and examining the relative difference between health statuses. When comparing the health of one group (reference group) with the health of other groups, a measure of inequality between them is provided. Furthermore, they indicate that inequality varies by type of measure, absolute or relative, and specify that absolute rates are generally a better measurement because they reflect the actual size of the disparity (Carter-Pokras & Baquet, 2002). Thus, it is not only important to think about which populations are being examined, but to also carefully consider which variables, or health indicators, are to be compared.

Typically, among health disparities research in the United States, attention has been mainly focused on examining health disparities using sociodemographic variables such as race/ethnicity, education level, socioeconomic status (SES), marital status, occupation, income, or other demographic measurements (Andersen & Miller, 2005). Often, the difficulties of reliably and consistently measuring demographics play a detrimental role in the methodological measurement of health disparities (Shavers, 2007). Although there is no standard demographic measure to be used in research, existing measures normally do not include adequate assessment of sexual orientation or gender identity, at least not until recent years. Thus, there is less available research that can be examined for the purposes of investigating sexual minorities and health.

Health Disparities in Sexual Minorities

Empirical research regarding sexual minority issues has largely focused on mental health issues, and aside from sexual health, little attention has been given to other health-related issues. However, recent political events have increased an interest on LGB individuals' experiences. Thus, the number of scholarly publications addressing health disparities in sexual minorities has been increasing in recent years. Nonetheless, there is still a need to continue understanding the experience of sexual minorities, particularly in terms of health-related issues and disparities (Lick, Durso, & Johnson, 2013). The following section summarizes some of the most relevant findings regarding sexual minority health.

A great number of studies indicate that sexual minorities are at a higher risk for health disparities, which can range from poor health behaviors to a higher prevalence of disease. Some studies revealed that members of sexual minorities have lower self-rated health, when compared to their heterosexual counterparts (Frost et al., 2011). Sexual minorities also report a higher number of various acute and chronic illnesses, which significantly impair their ability to engage in certain activities (Friederiksen-Goldsen, Kim, & Barkan, 2012). For example, LGB individuals have more eating and dieting problems (Lock & Steiner, 1999), more lifetime diagnoses of asthma (Heck & Jackobson, 2006), and are more likely to have severe headaches, intestinal problems, and urinary problems (Sandford, Bakker, Schellevis, & Vanwesenbeeck, 2006). Additionally, they report more limitations on physical activity (Conron, Mimiaga, & Landers, 2010), and they are at a higher risk for having an early onset and a higher prevalence of a disability status (Frederiksen-Goldsen et al., 2012).

Moreover, health-related issues that affect sexual minorities also extend to structural and institutional aspects. A National Health Statistics Report by Ward and colleagues (2014)

indicates that compared to those who identify as straight, LGB individuals were less likely to have a usual place to go for medical care, and in some cases, were less likely to seek medical health care when needed. Sexual minorities are less likely to have medical insurance (Lick et al., 2013), which may result in poorly managed health conditions.

Additionally, even if LGB individuals have medical insurance, there are still multiple barriers that keep them from seeking medical care. Several studies have found that sexual minorities often face prejudice and discrimination from health care providers (Petroll & Mosack., 2011), which in turn prevents them from seeking health care. Furthermore, as a way to avoid stigmatization, they have a tendency to conceal their sexual minority status (Cochran, 2001), which may prevent health care professionals from providing adequate care.

Subgroup Findings

While the above-mentioned findings address sexual minorities as a group, other studies have concentrated on finding health disparities in specific subgroups of this minority group. Overall, most studies focus on gay males, lesbians, and bisexuals, and compare certain health status indicators to straight individuals. Moreover, many of the studies that focus on sexual minorities, have reported results specific for gay men and lesbian women, and far less research examines the experience of self-identified bisexual men and women. Unfortunately, there is still very limited research on or other members under the sexual minority umbrella term.

Previous research indicates that male and female individuals who identify as bisexual may be at a higher risk of experiencing minority stress than other sexual minority subgroups (Smalley et al., 2016). The reasoning behind this is that bisexual individuals experience stigmatization not only from the heterosexual population, but also from the LGBT community,

which places them at risk for experiencing increased psychological distress. Moreover, health disparities research in the bisexual subgroup can be somewhat mixed as there are multiple contradictions across studies. There are several reasons that could possibly account for these differences. Most studies have a considerably small sample size of bisexual respondents, when compared to other subgroups and heterosexual individuals. Additionally, most samples have a much higher number of bisexual women than bisexual men, which makes comparisons between other subgroups challenging. Ultimately, inclusion of these subgroups is vital for the understanding sexual minority health.

While the importance of expanding the literature on these subgroups is evident, the focus of the current study will be on LGB individuals given the nature of the data that will be utilized. The following section describes some of the most salient findings regarding health disparities in sexual minority men and women, specifically regarding health care access and utilization, disease prevalence, and risk behaviors, as these are the overall variables of interest for the current study.

Males

The study of health disparities of sexual minority men, specifically gay men, was the focus of research for decades following the 1980's HIV/AIDS epidemic. Although HIV/AIDS infection will not be an outcome of interest in this study, it is important to mention as it provides some historical context. Studies focusing on gay men's health regarding HIV-related issues were among the first ever to focus on the health of a sexual minority. For years, the Center for Disease Control (CDC) has reported male-to-male sexual contact as the number one category of transmission, and in 2014, there were over 29,400 estimated diagnoses of HIV infection, with the

most common method of transmission for all men being due to male-to-male sexual contact (CDC, 2014). Other studies suggest that sexual minority continue to have higher prevalence of unprotected sexual relations and other forms of sexual risk-taking behaviors (Dutton, Koenig, & Fennie, 2008; Jones & Hoyler, 2006; Mayer et al., 2008; Stevens & Hall, 2001).

Beyond sexual behavior related health risks, sexual minority men experience health disparities in many other ways. Multiple studies have reported findings specifically towards gay men, separately from an overall LGB sample. In fact, there is far less research that reports health disparities of bisexual men, and some studies even indicate they are no different, or have fewer health conditions, than heterosexual men (Sandfort et al., 2006, 2009). A scope of the literature indicates that sexual minority are at a high risk for negative and risky health behaviors and have higher prevalence of certain diseases. In terms of risk behaviors, sexual minority men are at a higher risk for consumption of alcohol (Drabble, Midanik, & Trocki, 2005; Greenwood & Gruskin, 2007; Kann et al., 2011; King et al., 2008), and tobacco, marijuana, and other drug use (e.g., Balsam, Beadnell, & Riggs, 2012; McKay, 2011; Mollon, 2012; Trocki, Drabble, & Midanik, 2009). In terms of health conditions and prevalence, gay and bisexual men have been found to report more severe headaches (Cochran & Mays, 2007), have higher rates of anal cancer unrelated to HIV diagnosis (Koblin et al., 1996), and report more acute physical complaints and chronic conditions than straight men (Sandfort, Bakker, Schellevis, & Vanwesenbeeck, 2009). Specifically, sexual minority men have higher rates of diabetes, hypertension, and other physical disabilities (Wallace, Cochran, Durazo, & Ford, 2011), as well as have elevated levels of cholesterol, blood pressure, glucose, respiratory problems, and poor nutrition and dietary habits (GLMA, 2011; Wang et al., 2007).

Fewer studies have focused on examining health care access and patterns of health care utilization in sexual minorities. Studies suggest that the lack of engagement of sexual minorities with the medical system is arguably one of the most significant health risk factors for sexual minority men and women (Bonvicini & Perlin, 2003; Johnson, Mimiaga, & Bradford, 2008). Gay and bisexual men have been found to be less likely to have medical insurance coverage, or to seek out health care when needed (GLMA, 2011; Hernandez & Fultz, 2006; Institute of Medicine [IOM] Committee on Lesbian, Gay, Bisexual, and Transgender Health Issues and Research Gaps and Opportunities, 2011; Mayer et al., 2008). However, findings regarding access to care and insurance continue to yield mixed results (Conron et al., 2010).

Females

Much like with the gay subgroup in sexual minority men, there have been multiple studies that report health disparities of lesbian women independently from an overall LGB sample. Overall, studies have found bisexual individuals to be at a higher risk for risky health behaviors, such as substance abuse issues, including smoking, illegal drug use, and binge drinking (Conron et al., 2010; Drabble, Midanik, & Trocki, 2005; King et al., 2008; Smalley et al., 2016). In terms of prevalence of disease, findings suggest that lesbian women are more likely to have breast cancer (Brandenburg, Matthews, Johnson, & Hughes, 2007; Case et al., 2004), to have higher rates of heart disease (Diamant & Wold, 2003), have higher prevalence of obesity and diabetes (Bohemer, Bowen, & Bauer, 2007), and a greater risk for hypertension and CVD (Conron, Mimiaga, & Landers, 2010). Older lesbian females are more at risk for experiencing poor health and having higher rates of physical disability (Cochran & Mays, 2007; Wallace et al., 2011).

Similarly, multiple studies report health disparities in bisexual women, and results suggest this appears to be a subgroup with a high risk for negative health outcomes. According to the literature, bisexual women are more likely to report poor physical health and have higher rates of heart disease (Diamant & Wold, 2003), a higher risk for breast cancer (Case et al., 2004), a greater likelihood of digestive problems, chronic fatigue, and poor overall health (Sandfort et al, 2006), higher rates of respiratory and hypertensive issues (Sandfort et al., 2009), and higher rates of obesity and diabetes (Boehmer, Bowen, & Bower, 2007). In addition, sexual minority women have been associated with greater barriers to health care and having medical insurance, when compared to heterosexual women, and even sexual minority men (Heck et al., 2006).

Taken together, research suggests that sexual minority men and women have an increased likelihood of engaging in risk behaviors, when compared to straight individuals. In terms of disease prevalence, studies have found a sexual minority status to be associated with several negative health outcomes. Finally, poor rates of utilization, low access to health care, and decreased likelihood of having insurance, have all been linked to sexual minorities. Despite these findings, significant methodological limitations of existing studies continue to exist, which limit their interpretation and generalization. Thus, the next section reviews current issues or challenges, as well as substantial gaps in the literature, regarding differences in health risks between sexual minority groups.

Challenges in Sexual Minority Research

Research focusing on sexual minorities and health has grown considerably, particularly after LGBT civil rights have become a topic of sociopolitical attention. Conducting high-quality research on any field can be quite challenging. However, as with the study of other groups of

interest, there are ample conceptual and methodological challenges within this research field. The following section will highlight those which are relevant to the current study; first, the issue of defining sexual minorities; second, appropriate ways to use measures for sexual minorities; third, differentiating between subgroups when conducting research studies; and fourth, current gaps in the literature due to methodological concerns.

Throughout the years, there have been a number of measures of sexual orientation that have been utilized in research. Perhaps one of the most widely accepted measures is the Kinsey Scale, which was famously developed in the 1950's (Kinsey et al., 1948, 1953). Other popular methods of measuring sexual orientation include the Klein Sexual Orientation Grid (Klein, 1993), The Sexual Orientation and Identity Scale (Worthington & Moreno, 2005), or simple measures that ask for self-identification from a variety of options (i.e. gay male, lesbian, bisexual).

Moradi and colleagues (2009) report that the most widely used method for assessing sexual orientation in research is requesting self-identification from participants. However, most ways of measuring sexual orientation have been criticized by research on the basis of limitations of terminology, and no clear consensus has been provided on the most efficient way to assess this construct (Moradi et al., 2009). This not only poses a clear challenge in effectively studying this population, but also in being able to use and apply research findings to sexual minorities.

An additional barrier in researching sexual minorities lies in the different subgroups under this umbrella term. Frequently, subgroups within the LGBT Community are combined for research purposes, as it facilitates investigators to gather data and conduct analyses. Fassinger and Arsenau (2007) state that the grouping itself of sexual minorities into these four categories is problematic, as human sexuality is best understood in terms of a continuum, rather than specific

categories. Moreover, they argue that even though there are similarities in terms of shared experiences among sexual minority groups (i.e., lesbians, gay males, bisexuals), a distinction should be made for each subgroup within the "umbrella" (e.g., LGBTQQ; lesbian, gay, bisexual, transgender, queer, and questioning) in terms of research.

According to Smalley et al. (2016), minority groups within the LGBT community face many "group-specific health-related risks" that can specifically impact the prevalence and outcome of health conditions. Unfortunately, due to small sample sizes, subgroups within sexual minorities are often combined into one group. For example, a recent meta-analysis by Kaestle and Ivory (2012) revealed that approximately 82% of the studies focusing on sexual minorities and health combined bisexuals with gay and lesbian participants. Thus, unique vulnerabilities of this group, and important health-related differences between all subgroups are likely going unnoticed.

Additionally, there are further methodological limitations to existing research studies. Most of the published studies regarding health disparities in sexual minorities tend to have smaller sample sizes, are restricted to specific geographical locations, or are conducted with restricted samples (Smalley, Warren, & Barefoot, 2016). Moreover, most studies are conducted using a cross-sectional design and there is a relative lack of longitudinal research, likely due to the various challenges involved in conducting such studies with sexual minority populations. These issues, and especially the above noted convenience sample issue, make it difficult for studies to be more broadly applied to the general population, which is a considerable weakness in terms of health disparities research.

Taken together, the above-mention conceptual and methodological issues, as well many other factors influence the feasibility and quality of sexual minority research. As a result, there

are substantial gaps in the literature and an obvious need for research that clearly conceptualizes and assesses sexual minorities, takes into account subgroup differences, and provides information over time, rather than in a cross-sectional fashion. Adopting these guidelines for research on sexual minorities and health disparities is likely to aid their interpretation and generalization.

Summary

The previous review of the literature suggests there is a lack of consensus on adequately assessing or measuring health disparities. Prior studies in this field have encountered difficulties in identifying adequate health indicators that can best predict health disparities among certain groups. Furthermore, attention in this field has historically been focused on identifying disparities using sociodemographic variables such as gender, race/ethnicity, SES, and others, and little effort has been given to the study of disparities in sexual minorities.

Moreover, research on health disparities and sexual minorities clearly indicates there are significant subgroup differences across multiple indicators of health. Gay men, lesbians, and bisexual men and women all seem to have differences in chronic health conditions, health care utilization trends, and risky health-related behaviors. Thus, examination of health disparities should not stop at assessing the discrepancies between sexual minorities and straight individuals. Instead, identifying unique disparities within the LGB subgroups is crucial.

The Current Study

The current study focused on exploring health disparities of sexual minorities from a large national health survey. The primary focus is to identify health disparities between sexual

minority subgroups by examining differences of health indicators in lesbians, gay men, and bisexual individuals, and compare these to their heterosexual counterparts. Furthermore, the current study attempts to examine trends over time by analyzing the data over three different NHANES population survey panels, and compares these results to identify potential patterns that persist over time. The findings from this study will contribute to the gaps in the literature by investigating health disparities among sexual minority subgroups and identifying trends over time.

Study Aims

As stated, there is a significant lack of research in the field of health disparities that specifically focus on sexual minorities. Furthermore, even fewer studies identify unique disparities between sexual minority subgroups, which limits our understanding of each individual group and their particular health risks. Thus, the current study examines sexual minority status health patterns in overall health care access, risk of negative health-related behaviors, and overall health outcomes. The current study had the following research questions, which are listed here in reverse order of importance:

Study Aim 1: Health Care Access

The tertiary aim sought to examine prevalence estimates for health care access and utilization among LGB individuals. The items selected for this aim were drawn from the NHANES Access to Care, Insurance, and Medical History questionnaires.

- Hypothesis 1: Straight men and women will be more likely to have access to insurance, when compared to sexual minority men and women.

- Hypothesis 2: Similarly, straight individuals will be more likely to have a usual place where they receive medical advice and care, when compared to sexual minority men and women.

Study Aim 2: Risky Health Behaviors

A secondary aim was to examine the experience LGB health-related behavior indicators, in terms of substance use, as a way to better understand health risks. Items utilized for this aim were drawn from the NHANES Tobacco, Alcohol, and Drug Use questionnaires.

- Hypothesis 3: Sexual minority men and women will report higher rates of smoking, alcohol drinking, and drug use, when compared to straight individuals.
- Hypothesis 4: Rates of substance use will be higher in both bisexual men and women, when compared to the other groups.

Study Aim 3: Health Conditions and Health Status Indicators

The primary aim of the current study was to broadly examine health disparities among LGB individuals by using specific physical health and medical history items drawn from the NHANES Medical Conditions and Physical Functioning surveys. The variables selected from these questionnaires are related to overall health outcomes, based one questions that ask whether respondents have been diagnosed of condition by a medical doctor (e.g., diabetes, overweight, coronary heart disease, history of stroke and heart attack, cancer). Additionally, exploratory variables related to their experience in health care (e.g. overnight stay at hospital or receiving mental health services), and the impact of conditions in their lives (e.g. work and overall life limitations due to health) were selected for analysis.

- Hypothesis 5: Sexual minority women, in particular lesbians, will have higher incidence self-reported history of diabetes and overweight, when compared to their heterosexual counterparts.

- Hypothesis 6: Sexual minority men and women, particularly men, will have higher incidence self-reported history of hypertensive conditions, when compared to their heterosexual counterparts.

- Hypothesis 7: Sexual minority men and women will be more likely than straight individuals to have used mental health services.

- Exploratory Aim: Due to little research in this area, self-reported limitations in work and overall life due to health and physical conditions were explored to examine patterns and potential disparities based on sexual minority status.

Study Aim 4: Trends Over Time

The final aim of the current study was to estimate health disparities trends over time. To accomplish this aim, the above-mentioned variables were examined using three NHANES panels (2011-2012, 2013-2014, and 2015-2016). This was done to better understand sexual minority health and potential changes over this period.

CHAPTER 3

METHOD

Participants and Study Design

Data for the current study was drawn from the National Health and Nutrition Examination Survey (NHANES). NHANES is a major program of the National Center of Health Statistic (NCHS) that began in the 1960s and has been conducted as a series of population probability surveys that assess the health and nutritional status of children and adults on the United States. Since 1999, NHANES surveys have been conducted continuously, and survey data has been released in panels every two years. The survey includes interviews, demographic information, health-related questionnaires, and laboratory test results administered by medical personnel.

NHANES includes sexual orientation questions in the sexual behaviors survey, which is only administered to adults between the ages of 18 to 59. This represents a limitation, since individuals outside of this age range have no other way to report their sexual orientation, or any of their sexual health behaviors. Thus, for the purposes of this study, participants selected will be limited to this age group to make the study sample consistent across the rest of the measures that will be utilized. The current study compared data across three sequential panels and utilized the NHANES data from three separate panels: 2009-2010, 2011-2012, and 2013-2014.

Materials and Procedure

As a part of the Centers for Disease Control (CDC), NHANES is a program designed to assess the health of individuals in the United States. After a sampling process is applied using a pre-established computer algorithm, random individuals from the general population are selected

to be given the opportunity to participate in the survey. Once they are selected and they have agreed to participate, a representative from NHANES makes an appointment with them in their household in order to complete the questionnaires. The household questionnaire collects information on topics such as demographics, food consumption, and overall health behaviors, while the sample person questionnaire collects information on medical history, health insurance, and dietary behavior.

Additionally, there are surveys that are recorded electronically using computerized questionnaire forms, which include information on substance use, sexual behavior, health status, depression, physical activity, and reproductive health. Subsequently, participants get a free health examination in mobile examination centers placed in convenient locations. Exams received are based on gender and age, and include blood pressure testing, height and weight testing, oral health screening, and laboratory testing of blood and urine.

The questionnaires described below are the ones selected for the current study. To ease understanding of these, they are organized in four categories for the purposes of this project: Demographic Variables Health Conditions and Health Status Variables, Risky Health Behaviors Variables, and Health Care Utilization Variables. Moreover, these four categories mimic the study aims described above. Each of the NHANES questionnaires comprises multiple items; for the current analyses, selected health-related indicators from each questionnaire were examined (see Appendix I for full questionnaires). The selection of each individual item from these questionnaires was informed by the review of health disparities research literature. Several studies that have used similar population-based surveys suggest the practice of selecting specific items, or health-related indicators, as a way to make better inferences regarding health care disparities (Andersen, 1995; Kilbourne et al., 2006; Ward et al., 2014). For example, as seen

below, the item selected from the Health Insurance Questionnaire (HIQ) was, “Are you covered by health insurance or some other kind of health care plan?” Thus, specific health-related indicators from each questionnaire were selected using these similar criteria.

Although the attached questionnaires have small variations from panel to panel to potentially improve measurement, variables are generally held constant to allow comparisons from one panel to the next. The below questionnaires are the ones utilized for the current analysis; the full version of each questionnaire can be found in Appendices A-L.

Demographic Variables

Demographics Questionnaire

The Demographics Questionnaire (DMQ; Appendix A) includes information regarding age, gender, race/ethnicity, country of birth, education level, occupation, and marital status.

Sexual Behavior Questionnaire

The Sexual Behavior Questionnaire (SXQ; Appendix B) is administered to participants via audio-computer-assisted personal self-interview. This questionnaire assesses the sexual behavior of participants 18-59 years of age. One of the items from this questionnaire assesses sexual orientation by asking, “which one of the following best represents how you think of yourself?”, and provides a list of options for participants to choose from (i.e., lesbian, gay, straight, bisexual, something else, I don’t know the answer, refused, don’t know). This was used to measure sexual orientation and to separate results among sexual minority subgroups.

Health Conditions and Health Status Variables

Diabetes Questionnaire

The Diabetes Questionnaire (DIQ; Appendix C) is administered to participants via the sample person questionnaire, and it is designed to assess diabetes issues in respondents. The item selected from this questionnaire will: “Have you ever been told by your doctor you have diabetes or sugar diabetes?” This DIQ item served as a health indicator variable.

Medical Conditions Questionnaire

The Medical Conditions Questionnaire (MCQ; Appendix D) is administered to participants via the sample person questionnaire. This questionnaire asks participants about their medical history regarding past diagnoses. A sample item of this questionnaire is: “Has a doctor or other health professional ever told you that you have asthma (az-ma)?” Several HUQ items were selected based on previous research, and these will serve as health indicator variables.

Physical Functioning Questionnaire

The Physical Functioning Questionnaire (PFQ; Appendix E) is administered to participants via the sample person questionnaire, and it is designed to measure participant’s level of physical impairment. An item selected from this questionnaire will be: “Do you have an impairment or health problem that limits your ability to walk, run, or play?” The PAQ served as a health indicator variable.

Risky Health Behavior Variables

Alcohol Use Questionnaire

The Alcohol Use Questionnaire (ALQ; Appendix F) is administered to participants via audio computer-assisted personal self-interview. This questionnaire assesses alcohol use in adults. An item selected from this questionnaire will be: “In any one year, have you had at least 12 drinks of any type of alcoholic beverage?” The ALQ was used as a health indicator variable.

Drug Use Questionnaire

Similar to the ALQ, the Drug Use Questionnaire (DUQ; Appendix G) is administered to participants via audio computer-assisted personal self-interview. This questionnaire assesses drug use in adults. A sample item of this questionnaire is: “During the past 30 days, on how many days did you use cocaine, in any form?” Selected DUQ items were used as health indicator variables.

Tobacco Use Questionnaire

The Tobacco Use Questionnaire (SMQ; Appendix H) is administered to participants via audio computer-assisted personal self-interview. This questionnaire measures tobacco uses in adults. A sample item of this questionnaire is: “During the past 5 days, including today, did you smoke cigarettes, pipes, cigars, little cigars or cigarillos, water pipes, hookahs, or e-cigarettes?” This SMQ item was used as a health indicator variable.

Health Care Utilization Variables

Health Insurance Questionnaire

The Health Insurance Questionnaire (HIQ; Appendix I) is administered to participants via the sample person questionnaire, and it is designed to assess issues related to health insurance coverage in respondents. The item selected from this questionnaire as a health indicator variable is: “Are you covered by health insurance or some other kind of health care plan?”

Hospital Utilization and Access to Care

The Health Insurance Questionnaire (HIQ) is administered to participants via sample person questionnaire. As the name implies, this measure was designed to get information of participants’ patterns of health care utilization and access to medical services. The item selected from this questionnaire was: “Is there a place that you usually go when you are sick or you need advice about your health?” This HIQ item served as a health indicator variable.

Analytic Strategy

Preparation of Data

Before beginning the analyses, the data was prepared; the process of preparation is described in detail in this section. The first step was identification and location of variables within the NHANES archives. Variables are released and stored in different data files. Once located, individual data files for all the questionnaires described above were downloaded, converted to fit the Statistical Package for the Social Sciences (SPSS), and merged into one master file for easier utilization. SPSS was used for all of the analytic procedures.

Then, following the suggestions from the NHANES Guidelines for Statistical Analyses, sample weights were used to produce estimates appropriately adjusted for survey non-responses. The reason to make this adjustment is because NHANES assigned sample weights to each person based on the complex sampling strategy of the survey. Assigning sample weights allowed the analyses to achieve estimates that could approximate the entire sampling frame for the population. This strategy also accounts for nonresponses, oversampling of some of the subgroups, and sampling error. Finally, the data distribution was checked for normality. NHANES is a large, representative sample of the U.S. population, and most variables from this sample are expected to be normally distributed. Nonetheless, it is still important to understand the distribution in order to determine the appropriate use of tests during the analyses.

Descriptive Statistics

Descriptive statistics and frequencies were calculated in order to obtain an understanding of the characteristics of this particular sample. For the purpose of having a better overview of the sample, descriptive analyses were run separately for each panel (e.g. NHANES panels 2011-2012, 2013-2014, and 2015-2016). Sexual orientation was divided into three categories: Straight/heterosexual, gay/lesbian, and bisexual. Participants who selected “don’t know” or “refused” in the sexual orientation item were coded as missing data. All analyses were conducted stratified by gender. Sociodemographic variables examined included race/ethnicity, age, education, annual family income, and marital status.

Analytical Method

Following the identification of characteristics of the current sample, several analytical

strategies were conducted to examine the variables and the proposed hypotheses. Descriptive statistics results indicated a low number of sexual minority participants, with some minor variation per panel. Thus, to increase power of analyses of study aims 1, 2, and 3, the three panels were combined into a larger dataset, and a variable to identify the NHANES panels was added.

Study Aim 1: Health Care Access. The first aim sought to examine prevalence estimates for health care access and utilization among LGB individuals. The items selected for this aim was drawn from the NHANES Access to Care, Insurance, and Medical History questionnaires.

Hierarchical binomial logistic regression analyses were conducted to explore health care and utilization disparities among the LGB subgroups. A logistic regression is a statistical method that is used to assess the likelihood of a disease of a specific health condition as a function of a given risk factor. A binomial logistic regression is used to explore the associations between one dichotomous dependent variable and two or more continuous, ordinal, or categorical independent variables. Results from this statistical analysis indicate the extent to which the dependent variable will affect the odds of the outcome variables.

In addition, this analysis was conducted separately for men and women to compare sexual minority with heterosexual participants for each health condition. A dummy-coded variable representing gender was entered as a predictor variable, with males acting as the reference group. A second dummy-coded variable representing sexual orientation was entered as a predictor variable, with straight individuals acting as the reference group. Sociodemographic variables of age and race/ethnicity were controlled for by being added as confounding variables, since they could potentially influence the associations that are being investigated.

Study Aim 2: Risky Health Behaviors. A secondary aim examined the experience LGB health-related behavior indicators, in terms of substance use, as a way to better understand health risks. Items utilized for this aim were drawn from the NHANES Tobacco, Alcohol, and Drug Use questionnaires.

In order to test the second aim, Logistic Odds Ratios were conducted between the sexual minority categories and the outcome variables selected to measure risky health behaviors (e.g. Alcohol, tobacco, and drug use behaviors). Logistic Odd Ratios were conducted for all categories of sexual orientation (i.e., Straight, Gay/Lesbian, Bisexual), and were stratified by gender for better clarification. Initially, the analyses included race/ethnicity as another category of examination, as a way to assess intersectionality and provide a clearer picture of prevalence. However, due to the low number of participants per category, the race/ethnicity variable had to be removed to meet the assumption of minimal category membership requirement. Thus, odds ratios were simply adjusted for age and race/ethnicity to control for these variables. All analyses were set at a 95% Confidence Interval, and included a Chi Squared Test to establish the significance of the associations.

Study Aim 3: Health Conditions and Health Status Indicators. The third aim of the current study was to broadly examine health disparities among LGB individuals by using specific physical health and medical history items drawn from the NHANES Medical Conditions and Physical Functioning surveys.

To test this study aim, the same procedure as in Study Aim 2 (see above) was followed. Logistic Odds Ratios were conducted between the sexual minority categories and the outcome variables selected: health conditions (i.e. diabetes, coronary heart disease, overweight, history of stroke and heart attack, and cancer), health care patterns (i.e. overnight stay at hospital or receiving mental health services), and impact in their lives (e.g. limitations due to health). Similar as above, the analyses were conducted for all categories of sexual orientation, and stratified by gender for better clarification. Odds ratios were adjusted for age and race/ethnicity,

and all analyses were set at a 95% Confidence Interval, and included a Chi Squared Test to establish the significance of the associations.

> Study Aim 4: Trends Over Time. The final aim of the current study was to estimate health disparities trends over time. To accomplish this aim, the above-mentioned variables were examined using the three NHANES panels (2011-2012, 2013-2014, and 2015-2016).

Since the current data is sequential and cross-sectional, analyses of potential changes in health disparities among the LGB subgroups was also investigated. As explained, these cross-sectional population surveys are conducted every two years with different samples. Trend estimates were analyzed using Chi-Squared tests and comparing the NHANES 2011-2012, 2013-2014, and 2015-2016 panels. In order to accomplish this analysis, a variable "time of survey" (i.e. NHANES panels) was added into the model, which categorized respondent identification numbers and all the variables to each NHANES Panel. Subsequently, the time variable was entered into the Chi-Squared analysis as the predictor, with the rest of the variables of interest as outcomes. Furthermore, sexual orientation was added into the analysis in levels, allowing for a distribution organized by gender and sexual orientation. These analyses will also allow us to see which subgroup population is at an elevated risk of health disparities based on the chosen health indicator variables by generating odds ratios and comparing their 95% confidence intervals. Results from this analysis will help compare health disparities in the LGB subgroups across three population surveys, and will allow for the analysis of potential changes in disparities and disease prevalence over time.

Given the nature of the current study, particularly the breadth of variables examined, a power analysis was not conducted for several reasons. Only a few peer reviewed studies have examined health disparities in sexual minorities, and there are significant inconsistencies between these. The majority of these only focus on a specific subgroup (e.g., bisexual women)

and compare to the heterosexual population. Additionally, most studies differ regarding the outcome variable utilized. Conversely, other studies have a tendency to report their results using an aggregated LGB group, which may mask important between-group differences in effect sizes. Thus, due to the current limitation in the literature, combining effect sizes for the purposes of a power analysis were judged to not be feasible.

In the current study, the number of self-identified LGB individuals in each of the NHANES separate panels (i.e. 2011-2012, 2013-2014, and 2015-2016), was low. Furthermore, as noted in the NHANES analytic guidelines, analysis by sexual minority subgroup characteristics is limited and may meet the minimum sample size requirements for statistical reliability. Thus, following the NHANES analytic strategies recommendations, as well as by previous studies that examine sexual orientation variables in the NHANES survey, the current study combined data from all three NHANES panels utilized as a way to increase sample size and statistical power in the analyses.

CHAPTER 4

RESULTS

Description of the Sample

Descriptive analyses were conducted to examine the current sample, are reported for the total of all three NHANES panels, since all analyses were conducted using the combined sample. Adults over the age of 60, who comprised 30.81% of the overall sample, were removed from this study because the sexual behaviors questionnaire is not administered to this group; thus, there was no data regarding their sexual identity. The rest of the demographics are reported following this exclusion. Overall, there were 12,436 participants, 51% were female, and 49% male. In terms of self-identified sexual orientation, the sample had 4,774 (96%) straight men, 114 (2.3%) gay men, 74 (1.5%) bisexual men, 4,692 (38%), straight women, 76 (1.5%) gay/lesbian women, and 258 (5.1%) bisexual women.

The sample was 33.8% Non-Hispanic White, 22.8% Non-Hispanic Black, 14.9% Mexican American, 10.6% other Hispanic ethnicity, and 17.9% other race or multi-racial. In terms of marital status, 48% reported being married, 11% living with partner, 26% single or never married, and 9 % were divorced. Income among the sample ranged from $0 to $1,000,000, and most respondents fell below the “over $100,000” category (only 19% reported earning this much); the median household income was $33,476. Not surprisingly, based on the income characteristics, 27% of the sample was a college graduate or above, 32% had at least some college or AA degree, 21% completed high school or GED equivalent, 13% did not graduate high school, and 7% had an education of less than 9th grade. Table 1 illustrates all demographic characteristics stratified by gender and sexual orientation, which allows for a clear picture of the sexual minorities in this sample.

Analyses

Study Aim 1 Results: Health Care Access

Health Insurance

Hierarchical binomial logistic regressions were performed to determine the effects of sexual orientation on the likelihood of having health insurance coverage. To better control for effects of age and race/ethnicity, these variables were entered in the first step; two models were run, one for males and one for females.

Males. The model's overall fit was assessed, and it was found to be adequate with the omnibus test of coefficients ($p<0.005$), and the Hosmer and Lemeshow goodness of fit test ($p=1.000$). The percentage accuracy in classification (PAC) is 71.0, which suggests that the addition of the independent variables improves the overall prediction of cases into their observed categories of the dependent variable. Linearity of variables was assessed via the Box-Tidwell (1962) procedure. A Bonferroni correction was applied using all of the variables in the model resulting in statistical significance being accepted when $p < .00625$ (Tabachnick & Fidell, 2014). When testing for outliers, there was one studentized residual with a value of 2.783 standard deviations, which was kept in the analysis.

The overall logistic regression model was statistically significant, $\chi^2(8) = 274.205$, $p < .0005$. The following blocks were also found to be significant, with the last block having a moderate significance, $\chi^2(2) = 7.969$, $p < .019$. The model explained 70.0% (Nagelkerke R^2) of the variance in having medical insurance. Both age and race/ethnicity were found to be significant predictors (as shown in Tables 2 and 3). In terms of sexual orientation, only the gay male category was found to be significant (Wald = 5.753, $p = 0.016$), and had 1.8 times lower odds of having medical insurance.

Females. The model's overall fit was assessed, and it was found to be adequate with the omnibus test of coefficients (p<0.005); the PAC of 77.5 also suggests that the addition of the independent variables improves the overall prediction of cases into their observed categories of the dependent variable. Linearity of variables was also found to be acceptable in this model, and there were no studentized outliers found.

The overall logistic regression model was statistically significant, $\chi^2(8) = 238.603$, $p <$ .0005. The following blocks were also found to be significant, with the last block having a significance of $\chi^2(2) = 9.519$, $p < .009$. The model explained 71.0% (Nagelkerke R^2) of the variance in having medical insurance. In this case, age was not a significant predictor, and only the Hispanic categories (i.e., Mexican American, and Other – Hispanic) were found to be significant (see Tables 2 and 3). In terms of sexual orientation, only the Bisexual category was found to be significant (Wald = 8.900, $p = 0.003$), suggesting bisexual women had 0.6 times lower odds of having medical insurance.

Regular Access to Care

Hierarchical binomial logistic regressions were performed to determine the likelihood of having a regular place for health care among sexual minorities. As before, two models were run, one for males and one for females, and age and race/ethnicity variables were controlled for.

Males. The overall regression model was statistically significant, $\chi^2(8) = 251.478$, $p <$. 0005.. The model's overall fit was found to be adequate with the omnibus test of coefficients (p<0.005), and the Hosmer and Lemeshow goodness of fit test (p=0.294). The PAC of 71.0 suggested that the addition of the independent variables improves the overall prediction. Linearity of variables was assessed, and statistical significance was accepted. There were 4

studentized residuals with a values over 2.5 SD's, which were kept in the analysis. The first block, including age and race/ethnicity, was found to be significant $\chi^2(6) = 247.323$, $p < .005$; however, when sexual orientation was added, it was not found to be significant $\chi^2(2) = 4.155$, $p < .125$.

Females. This model was found to be adequate with the omnibus test of coefficients ($p<0.005$), the PAC of 77.5 was significant, and linearity of variables was also found to be acceptable; there were also 4 studentized residuals with a values over 2.5 SD's, which were kept in the analysis. The overall logistic regression model was statistically significant, $\chi^2(8) = 220.165$, $p < .0005$. The following blocks were also found to be significant, which the last block having a significance of $\chi^2(2) = 8.005$, $p < .018$. The model explained 74.0% (Nagelkerke R^2) of the variance in the dependent variable. Age and race/ethnicity variables were found to be significant in predicting the outcome (see Tables 4 and 5). In terms of sexual orientation, the lesbian category was found to be significant (Wald = 5.831, $p = 0.016$), suggesting lesbians were 0.5 times more likely than bisexual women to have a regular place to seek health care.

Study Aim 2 Results: Risky Health Behaviors

To examine prevalence of risk behaviors in sexual minorities, logistic odds ratios were conducted between sexual minority categories and the outcome variables selected to measure risky health behaviors (e.g. Alcohol, tobacco, and drug use behaviors). Logistic odd ratios were conducted for all categories of sexual orientation (i.e., straight, gay/lesbian, bisexual), and were stratified by gender for better clarification. Furthermore, odds ratios were adjusted for age, race/ethnicity, and overall household income level, to control for these variables. All analyses were set at a 95% confidence interval, and included a chi squared test to establish the

significance of the associations (see Tables 6 and 8 for complete results for males, and Tables 7 and 9 for complete results for females).

Results for males indicate that gay (OR=3.2; 95% C.I.= 1.9, 5.2) and bisexual (OR=2.5; 95% C.I.= 1.4, 4.4) males were more likely to report lifetime alcohol use. Only straight men had a significant association to binge drinking episodes (OR=3.32; 95% C.I.= 2.9, 3.7). In terms of tobacco use, gay males were more likely to report current smoking habits (OR=1.58; 95% C.I.= 1.02, 2.4), followed by straight men (OR=1.29; 95% C.I.= 1.2, 1.4); no association between current smoking and bisexual men was found. Straight men were more likely to report marijuana use (OR=2.78; 95% C.I.= 2.5, 3.03), followed by bisexual men (OR=2.48; 95% C.I.= 1.5, 3.9); only straight men had significant associations of use of intravenous drugs in their lifetime (OR=2.37; 95% C.I.= 1.8, 3.1).

Results for females in terms of alcohol use indicate that self-identified gay/lesbian women were more likely to report lifetime alcohol use (OR=3.05; 95% C.I.= 1.7, 5.5) and episodes of binge drinking (OR=1.8; 95% C.I.= 1.03, 3.3), followed by bisexual women (lifetime use OR=2.9; 95% C.I.= 2.1, 4.04; binge drinking OR=1.7; 95% C.I.= 1.2, 2.4). Bisexual women were more likely to report current tobacco use (OR=2.01; 95% C.I.= 1.5, 2.6), followed by lesbians (OR=1.97; 95% C.I.= 1.2, 3.2). A similar pattern was seen for marijuana use (OR=3.45; 95% C.I.= 2.7, 4.4) and ever using intravenous drugs (OR=2.93; 95% C.I.= 1.6, 5.3); lesbians had a significant association to marijuana use (OR=2.65; 95% C.I.= 1.6, 4.1), but not for history of intravenous drug use.

Study Aim 3 Results: Health Conditions and Health Status Indicators

Similar to the previous study aim, logistic odds ratios were conducted between sexual

minority categories and the outcome variables in order to examine patterns of health in sexual minorities. As mentioned, the variables selected as health outcomes for this aim were self-reported diagnosed health conditions (i.e. diabetes, coronary heart disease, overweight, history of stroke and heart attack, cancer), health care patterns (i.e. overnight stay at hospital or receiving mental health services), and impact in their lives (e.g. limitations due to health). Logistic odds ratios were conducted for all categories of sexual orientation (i.e., straight, gay/lesbian, bisexual), and were stratified by gender for better clarification. Furthermore, odds ratios were adjusted for age, race/ethnicity, and overall household income level, to control for these variables. All analyses were set at a 95% confidence interval, and included a chi squared test to establish the significance of the associations (see Table 8 for complete results for males, and Table 9 for complete results for females).

Results for males showed almost no significance for gay and bisexual men, with the exception a higher likelihood of mental health service utilization (OR=1.91; 95% C.I.= 1.15, 3.1), and (OR=1.97; 95% C.I.= 1.05, 3.6), respectively. In addition, results indicate that straight males were more likely to report a diagnosis of coronary heart disease (OR=1.47; 95% C.I.= 1.03, 2.1), when compared to sexual minorities. In contrast, when compared to gay and bisexual men, straight men were less likely to report having history of cancer diagnosis (OR=0.6; 95% C.I.=0.4, 0.7), being told they are overweight (OR=0.71; 95% C.I.= 0.6, 0.7), staying overnight in a hospital in the last year (OR=0.47; 95% C.I.= 0.4, 0.5) and reporting less limitations at work due to health concerns (OR=0.78; 95% C.I.= 0.6, 0.8).

Results for females suggest that, when compared to straight and bisexual women, lesbian women had a higher incidence of experiencing a stroke (OR=4.08; 95% C.I.= 1.4, 11.0), to using mental health care services (OR=2.95; 95% C.I.= 1.7, 5.0), and to report more limitations at

work due to health issues (OR=2.57; 95% C.I.= 1.5, 4.4). In contrast, bisexual women were more likely to report limitations in other areas of life due to health issues (OR=3.01; 95% C.I.= 1.7, 5.3). Both bisexual (OR=1.72; 95% C.I.= 1.2, 2.4) and straight (OR=1.74; 95% C.I.= 1.5, 1.9) women had a higher incidence to have an overnight stay at the hospital in the last year. Lastly, Straight women were more likely to report a history of cancer diagnosis (OR=1.68; 95% C.I.= 1.3, 2.0), when compared to sexual minority women.

Study Aim 4 Results: Trends Over Time

As an exploratory analysis, trend estimates over the NHANES 2009-2010, 2011-2012, and 2013-2014 panels was examined. Before analyzing the data, first, the three datasets corresponding to each panel were merged, and a variable "time of survey" (i.e. NHANES panels) computed. The Percentage Changes model was used to look at the differences between each panel. First, cross tabulations were conducted, using the "time of survey" variable as the dependent variable, and other variables of interest as predictors. The sexual orientation dummy-coded variables were added in to the analysis as a distribution of levels, allowing the results to be stratified by both gender and sexual orientation. Counts and percentages were calculated for each variation. Given the complexity of the data, and since most of the variables of interest are dichotomous, Chi-Squared Tests of Associations were selected to test for significance between each association; all expected cell frequencies were greater than five.

Although there was change in all variables across panels, only some associations were found to be significant. There was a significant increase in marriage for gay men ($\chi^2(10) = 16.896$, $p = .007$) and bisexual women ($\chi^2(10) = 18.085$, $p = .05$). A significant decrease in current smoking ($\chi^2(2) = 7.566$, $p = .023$), was seen in lesbian women. Increases in household income

level in bisexual women ($\chi^2(30) = 48.478$, $p = .018$), and more racial/ethnic representation were seen throughout the panels, although only statistically significant for straight women ($\chi^2(8) = 76.927$, $p < .0001$). Finally, an increase in mental health service utilization was seen in sexual minorities, although only statistically significant for bisexual women ($\chi^2(2) = 8.133$, $p = .017$). Table 10 provides a detailed description over the overall totals for each variable, organized by NHANES panel, gender, and sexual orientation.

CHAPTER 5

DISCUSSION

The purpose of the current study was to explore patterns of health disparities in sexual minorities. Particularly, the main interest was to provide relevant information regarding the experiences of subgroups of sexual minorities separately, rather than reporting results of sexual minorities as a whole. In order to accomplish this goal, the current study examined survey data from the National Health and Nutrition Examination Survey (NHANES), which is a national research project that administers surveys to the U.S. population, with the purpose of gathering information regarding health and nutrition. NHANES is administered in waves every two years; the current study utilized data from three of these panels, thus, yielding information regarding sexual minority health from the years of 2011 – 2016.

As described in the literature review section, sexual minorities are at a higher risk to experience physical and mental health-related issues, largely due to their membership to a minority group that experiences social bias, chronic stress that is constantly present in social and cultural contexts. The current study aimed to provide information related to sexual minorities' health care access and health care utilization, prevalence of negative health behaviors, prevalence of specific conditions, and examine how these have changed over time.

In terms of health care access and utilization of services, results of the analyses found no significant association for bisexual men or lesbian women. However, results indicate that gay men are 1.8 times less likely to have medical insurance, when compared to straight and bisexual men, and that bisexual women were 0.6 times less likely to have insurance, when compared to straight and lesbian women. These findings support hypothesis 1, which stated that sexual minorities would be less likely to have medical insurance, for gay men and bisexual women, but

contradict it for bisexual men and lesbians. It is possible that the underrepresentation of bisexual men and lesbian women in this sample had an impact on these findings. Additionally, when assessing whether there were differences in having a regular place to receive health care and health-related advice, lesbian women were found to be 0.5 times less likely to have a regular setting to seek health care, when compared to bisexual women; there were no significant findings when comparing sexual minority men. These findings offer some, but not fully support of hypothesis 2 that sexual minority men and women would be less likely to have a regular place to receive health care, although relate to other studies that report more barriers to health care in sexual minority women, than in sexual minority men (Heck et al., 2006). These findings could possibly suggest more openness and improvement within the health care system to address barriers for sexual minorities (Conron et al., 2010).

Findings regarding negative, risky health behaviors were mostly in accordance to hypotheses in study aim 2, which stated that sexual minority men and women, particularly bisexual individuals, would have high rates of alcohol, tobacco, and drug use. Results indicate that gay men had higher odds ratio to report lifetime alcohol use and tobacco use. Bisexual men were more likely to report lifetime alcohol use and marijuana use. Straight men were associated with higher alcohol use history, binge-drinking episodes, tobacco and marijuana use, and history of intravenous drug use. Lesbian women showed high rates of history of alcohol use, binge drinking, current tobacco use, and history of marijuana use. Finally, bisexual women were associated with the riskiest health behaviors, showing higher rates of history of alcohol use, binge-drinking episodes, current tobacco use, history of marijuana use, and history intravenous drug use. These findings are closely related to substance abuse literature, which suggest high prevalence of alcohol, tobacco, and drug use among sexual minorities.

Despite a higher prevalence of associated disease risk factors among sexual minority men and women, there were no significant associations found in terms of diabetes, coronary heart disease, or history of having a heart attack for either male or female sexual minorities, and only lesbian women were found to have a higher prevalence of ever experiencing a stroke. These findings are surprising particularly for sexual minority women, who have been found to be at a higher risk for diabetes and obesity. Lesbian and bisexual women had higher rates of reporting limitations in their lives due to physical or health-related issues, which agrees with the existing literature (Conron et al., 2010). Even though results for sexual minority men were almost all non-significant, straight men results indicate they are less likely to report a diagnosis of cancer, being overweight, having an overnight stay at the hospital, or experiencing limitations in the workplace due to physical and health-related concerns.

The final aim of the current study was to estimate trends in health disparities over the three NHANES panels utilized for the analysis. As mentioned, changes in percentages can be seen throughout the variables, with certain illnesses and conditions decreasing over the years, an increase in education levels of participants, and even an overall decrease of risky health behaviors. However, since the current analysis only compared data from 3 panels, or 6 years, few statistically significant changes were seen. Results do indicate a significant increase in marriage for gay men and bisexual women, possibly related to recent policy changes that allow same-sex marriages to be recognized by law. A significant decrease in current smoking, and an increase in insurance coverage was seen for lesbian women. Increases in education level, household income level, and more racial/ethnic representation were seen throughout the panels. Finally, an apparent increase in mental health service utilization was seen in sexual minorities, although only statistically significant for bisexual women.

Implications

Findings of this study advances the health disparities literature, by investigating health in sexual minorities, and presenting results for specific sexual minority groups, which is a clear challenge in current health disparities research. By providing information related to subgroups, we can increase our knowledge of sexual minority experiences related to the health care system, and to their own health concerns Another strength of this study is the breadth of health issues that were examined in sexual minorities, which was possible largely due to the nature of the data utilized.

Limitations

There were some limitations to the current study, which are related to a variety of factors. The most important factors to consider are issues related to the survey and the population. First, the data utilized was cross-sectional multi-year panels, so causality cannot be assessed, especially since the same individuals are not longitudinally followed. NHANES has made significant progress over the last decade to improve data collection, such as implementing a computerized method that can be self-administered. This is new process was established as a way to improve issues with response bias and willingness to disclose information that can be sensitive to respondents, such as their sexual histories and disclosure of sexual identities. Additionally, small semantic changes were also implemented to the sexual identity items, starting in NHANES panel 2015-2015. A quality assessment of the sexual behaviors instrument of the NHANES survey (Dahlhamer et al., 2014), suggested these and other modifications on question wording and response categories to the sexual orientation questions, after extensive cognitive and field testing was conducted. For example, the sexual identity question changed

from, “Do you think of yourself as… “to, “Which of the following best represents how you think of yourself?” Additionally, “I don’t know the answer” was added as a response option, instead of “Unsure.” It should be noted that all of these changes were made to improve the quality of the data.

Although these changes certainly represent progress towards better research in sexual minorities, there are still other relevant issues with the questionnaire composition. In particular, the sexual behaviors questionnaire is only administered to adults from the ages of 18 to 59. Given that the largest age group of respondents is adults who are over the age of 60, this represents a major issue in measurement, and an underrepresentation of sexual minority adults. Furthermore, NHANES has complex procedures for data collection, and careful examination of the data and associated codebooks represent challenge to maintain design simplicity, as well as it may increase the chances for error. Since the questions are self-administered, any questions or concerns that respondents may encounter, such as other repose options or even confusing questions, cannot be easily or immediately clarified. To better control for issues like this one, the computer software used to administer the questionnaire was programmed to alert respondents of potential data entry inconsistencies; however, NHANES reports that not every possible inconsistency may be identified. To put this in context, the NHANES data collection is likely superior to most all other social science data collection.

Finally, another limitation of the data is that due to the above-mentioned concerns, the sample size for sexual minorities is limited across panels. This represents a potential challenge, and may not meet minimum sample size criteria for some statistical analyses. One of the few recommended options in certain cases is to combine multiple years of data, or panels, just as it was done for the current study. However, there are still high rates of respondents who select the

‘other’ options as a response, or simply choose not to answer at all. This represents a significant problem when conducting sexual minority subgroup analyses.

Future research might benefit from continuing to investigate health disparities among sexual minority subgroups, and avoid clustering groups. Furthermore, researchers might consider the above-mentioned measurement issues when conducting analyses using large survey datasets, as sexual minorities might be underrepresented due to a variety of reasons. For projects that do not use these type of data, it would be important to carefully consider survey or questionnaire administration options. For instance, consider the benefits of administering over the phone or using computerized software in terms of disclosure, spread, and availability, and the challenges it represents, such as introducing more variability into the study.

Additionally, assessing issues of intersectionality is of great importance, and researches might benefit from considering these when planning their studies in order to increase feasibility. Future studies could also focus on assessing more specific issues related to health care, such as health care providers and staff’s training, issues with inclusion in a variety of settings, and availability of resources and information specific for sexual minorities. Finally, although not assessed in this study, future research might consider assessing more factors related to minority stress, such as the experience of discrimination and stigma, and their impact on sexual minority health.

Conclusion

The current study examined health disparities of sexual minorities from a NHANES, a large national health survey. Findings corroborate the findings of other studies, regarding sexual minority health disparities in health care access and utilization and risky health behaviors.

Furthermore, despite the fact that our findings suggest lower incidence of health-related issues and other conditions compared to previous research, there is still enough evidence to suggest significant differences between sexual minorities and heterosexual individuals' experience of health. This study sheds light on the importance of investigating aspects of health within minority populations, particularly subgroups of minority groups. More importantly, this study highlights challenges and complications when studying sexual minority subgroups, which can hopefully inform and help further research in this field.

Table 1

Characteristics of the Sample

	Male			Total	Female			Total
	Straight	Gay	Bisexual		Straight	Lesbian	Bisexual	
Race/Ethnicity								
Mexican American	699	12	6	717	702	7	22	731
	15%	10%	8.%	14%	15%	9%	9%	15%
Other Hispanic	438	8	6	452	523	7	22	552
	9.2%	7.00%	8.10%	9.10%	11%	9%	9%	11%
Non-Hispanic White	1760	51	38	1849	1658	25	105	1788
	36.90%	44.70%	51.40%	37.30%	35%	33%	40%	35%
Non-Hispanic Black	1056	26	12	1094	1056	26	12	1094
	22.10%	22.80%	16.20%	22.00%	22.10%	22.80%	16.20%	22.00%
Other Race - Including Multi-Racial	821	17	12	850	821	17	12	850
	17.20%	14.90%	16.20%	17.10%	17.20%	14.90%	16.20%	17.10%
Age								
18-25	1130	33	20	1183	1011	26	107	1144
	23.70%	28.90%	27.00%	23.80%	21.50%	34.20%	41.50%	22.80%
26-39	1594	36	23	1653	1453	21	100	1574
	33.40%	31.60%	31.10%	33.30%	31.00%	27.60%	38.80%	31.30%
40-59	2050	45	31	2126	2228	29	51	2308
	42.90%	39.50%	41.90%	42.80%	47.50%	38.20%	19.80%	45.90%
Marital Status								
Single/Never Married	1193	70	28	1291	1029	34	102	1165
	27.30%	64.80%	41.80%	28.40%	23.80%	53.10%	44.20%	25.20%

(table continues)

		Male		Total		Female		Total
	Straight	Gay	Bisexual		Straight	Lesbian	Bisexual	
Married	2208	10	21	1291.00%	2096	5	58	2159
	50.50%	9.30%	31.30%	49.20%	48.50%	7.80%	25.10%	46.80%
Divorced	331	3	9	343.00%	501	5	19	525
	7.60%	2.80%	13.40%	7.50%	11.60%	7.80%	8.20%	11.40%
Separated	116	2	2	120.00%	186	2	10	198
	2.70%	1.90%	3.00%	2.60%	4.30%	3.10%	4.30%	4.30%
Widowed	25	1	0	26.00%	85	0	3	88
	0.60%	0.90%	0.00%	0.60%	2.00%	0.00%	1.30%	1.90%
Cohabitating	500	22	7	529	425	18	39	482
	11.40%	20.40%	10.40%	11.60%	9.80%	28.10%	16.90%	10.40%
Education level								
Less than 9th grade	222	0	3	225	185	1	7	193
	5.10%	0.00%	4.50%	4.90%	4.30%	1.60%	3.00%	4.20%
9-11th grade	623	6	6	635	471	7	29	507
	14.20%	5.60%	9.00%	14.00%	10.90%	10.90%	12.60%	11.00%
High school/GED	1038	21	20	1079	800	12	59	871
	23.70%	19.40%	29.90%	23.70%	18.50%	18.80%	25.50%	18.90%
Some college	1333	41	24	1398	1557	27	90	1674
	30.50%	38.00%	35.80%	30.70%	36.00%	42.20%	39.00%	36.30%
College graduate +	1159	40	14	1213	1309	17	46	1372
	26.50%	37.00%	20.90%	26.70%	30.30%	26.60%	19.90%	29.70%
Annual household income								
$ 0 to $ 4,999	117	2	1	120	120	3	9	132
	2.50%	1.80%	1.40%	2.50%	2.60%	3.90%	3.60%	2.70%

(table continues)

		Male		Total		Female		Total
	Straight	Gay	Bisexual		Straight	Lesbian	Bisexual	
$ 5,000 to $ 9,999	148	9	7	164	202	5	12	219
	3.20%	8.10%	9.60%	3.40%	4.40%	6.60%	4.70%	4.40%
$10,000 to $14,999	238	2	9	249	226	6	19	251
	5.10%	1.80%	12.30%	5.10%	4.90%	7.90%	7.50%	5.10%
$15,000 to $19,999	264	2	4	270	273	6	21	300
	5.60%	1.80%	5.50%	5.50%	5.90%	7.90%	8.30%	6.00%
$20,000 to $24,999	307	9	6	322	334	4	19	357
	6.60%	8.10%	8.20%	6.60%	7.20%	5.30%	7.50%	7.20%
$25,000 to $34,999	473	11	7	491	482	12	30	524
	10.10%	9.90%	9.60%	10.10%	10.40%	15.80%	11.90%	10.60%
$35,000 to $44,999	461	13	4	478	423	10	22	455
	9.80%	11.70%	5.50%	9.80%	9.10%	13.20%	8.70%	9.20%
$45,000 to $54,999	375	5	5	385	369	3	21	393
	8.00%	4.50%	6.80%	7.90%	8.00%	3.90%	8.30%	7.90%
$55,000 to $64,999	260	10	10	280	275	1	20	296
	5.50%	9.00%	13.70%	5.70%	5.90%	1.30%	7.90%	6.00%
$65,000 to $74,999	215	4	1	220	246	6	10	262
	4.60%	3.60%	1.40%	4.50%	5.30%	7.90%	4.00%	5.30%
$75,000 to $99,999	488	10	3	501	454	5	16	475
	10.40%	9.00%	4.10%	10.30%	9.80%	6.60%	6.30%	9.60%
$100,000 and Over	977	29	10	1016	893	9	40	942
	20.80%	26.10%	13.70%	20.90%	19.30%	11.80%	15.80%	19.00%

Table 2

Likelihood of Health Insurance Coverage: Males

Model fit			
Model	χ^2	*df*	*p*
First	274.205	8	<.001
Second	266.236	6	<.001
Final	7.969	2	.019

Hierarchical Binomial Logistic Regression Model (Final Block)								
Variable	*B*	*SE*	*Wald* χ^2	*df*	*p*	*Exp (B)*	*95% C.I.*	
Age			54.097	2	<.001			
Age (1)	-.247	.084	8.711	1	.003	.781	.663	.920
Age (2)	.295	.083	12.755	1	<.001	1.344	1.143	1.580
Race/Ethnicity			209.958	4	<.001			
Race/Ethnicity (1)	-.383	.087	19.587	1	<.001	.682	.575	.808
Race/Ethnicity (2)	-1.170	.094	155.842	1	<.001	.310	.258	.373
Race/Ethnicity (3)	-.762	.112	46.375	1	<.001	.467	.375	.581
Race/Ethnicity (4)	.145	.101	2.042	1	.153	1.156	.948	1.409
Sexual Orientation			7.353	2	.025			
Sexual Orientation (1)	.594	.248	5.753	1	.016	1.812	1.115	2.945
Sexual Orientation (2)	-.310	.254	1.495	1	.221	.733	.446	1.206
Constant	1.157	.081	202.309	1	<.001	3.182		

Table 3

Likelihood of Health Insurance Coverage: Females

Model fit			
Model	χ^2	*df*	*p*
First	238.603	8	<.001
Second	229.084	6	<.001
Final	9.519	2	<.001

(table continues)

Hierarchical Binomial Logistic Regression Model (Final Block)								
Variable	*B*	*SE*	*Wald* χ^2	*df*	*p*	*Exp (B)*	*95% C.I.*	
Age			10.636	2	.005			
Age (1)	-.099	.093	1.127	1	.288	.906	.754	1.087
Age (2)	.161	.090	3.223	1	.073	1.175	.985	1.400
Race/Ethnicity			224.080	4	<.001			
Race/Ethnicity (1)	-.203	.096	4.418	1	.036	.817	.676	.986
Race/Ethnicity (2)	-1.318	.099	177.506	1	<.001	.268	.221	.325
Race/Ethnicity (3)	-.723	.114	40.336	1	<.001	.485	.388	.606
Race/Ethnicity (4)	.033	.119	.079	1	.779	1.034	.819	1.306
Sexual Orientation			9.994	2	.007			
Sexual Orientation (1)	-.314	.269	1.361	1	.243	.731	.431	1.238
Sexual Orientation (2)	-.438	.147	8.900	1	.003	.645	.484	.860
Constant	1.607	.093	298.443	1	.000	4.988		

Table 4

Likelihood of Having Regular Access to Care: Males

Model fit			
Model	χ^2	*df*	*p*
First	251.478	8	<.001
Second	247.323	6	<.001
Final	4.155	2	.125

Hierarchical Binomial Logistic Regression Model (Final Block)								
Variable	*B*	*SE*	*Wald* χ^2	*df*	*p*	*Exp (B)*	*95% C.I.*	
Age			173.779	2	<.001			
Age (1)	.155	.080	3.793	1	.051	1.168	.999	1.365
Age (2)	.973	.082	141.561	1	<.001	2.647	2.255	3.107
Race/Ethnicity			59.743	4	<.001			
Race/Ethnicity (1)	.019	.089	.046	1	.830	1.019	.856	1.213
Race/Ethnicity (2)	-.618	.095	42.367	1	<.001	.539	.447	.649

(table continues)

Variable	*B*	*SE*	*Wald* χ^2	*df*	*p*	*Exp (B)*	*95% C.I.*	
Race/Ethnicity (3)	-.467	.114	16.780	1	<.001	.627	.501	.784
Race/Ethnicity (4)	-.099	.094	1.105	1	.293	.906	.753	1.089
Sexual Orientation			3.853	2	.146			
Sexual Orientation (1)	.464	.236	3.851	1	.050	1.590	1.001	2.526
Sexual Orientation (2)	.023	.266	.007	1	.932	1.023	.607	1.723
Constant	.599	.076	61.354	1	<.001	1.820		

Table 5

Likelihood of Having Regular Access to Care: Females

Model fit			
Model	χ^2	*df*	*p*
First	220.165	8	<.001
Second	212.161	6	<.001
Final	8.005	2	.018

Hierarchical Binomial Logistic Regression Model (Final Block)								
Variable	*B*	*SE*	*Wald* χ^2	*df*	*p*	*Exp (B)*	*95% C.I.*	
Age			96.722	2	<.001			
Age (1)	.308	.097	10.102	1	.001	1.360	1.125	1.644
Age (2)	.959	.100	92.036	1	<.001	2.608	2.144	3.173
Race/Ethnicity			93.952	4	<.001			
Race/Ethnicity (1)	.367	.120	9.385	1	.002	1.444	1.142	1.827
Race/Ethnicity (2)	-.748	.112	44.491	1	<.001	.474	.380	.590
Race/Ethnicity (3)	-.481	.129	13.862	1	<.001	.618	.480	.796
Race/Ethnicity (4)	-.436	.118	13.757	1	<.001	.646	.513	.814
Sexual Orientation			8.634	2	.013			
Sexual Orientation (1)	-.669	.277	5.831	1	.016	.512	.298	.882
Sexual Orientation (2)	-.287	.161	3.171	1	.075	.750	.547	1.029
Constant	1.407	.096	215.680	1	<.001	4.084		

Table 6

Self-Reported Sexual Orientation and Risky Health Behaviors: Males

Behaviors	Straight						Gay						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Alcohol 1/Month	3940	834	1443.535	5.027**	4.608	5.485	95	19	23.105	3.153**	1.924	5.166	59	15	10.416	2.47**	1.4	4.359
Binge Drinking - 5+	876	3898	434.76	3.318**	2.95	3.732	16	98	1.121	1.331	0.782	2.265	13	61	3.341	1.74	0.954	3.175
Smoke - Past 5 days	928	3846	28.305	1.292**	1.175	1.42	28	86	4.434	1.579*	1.028	2.426	18	56	2.688	1.556	0.913	2.652
Marijuana 1/month	1556	3218	548.36	2.781**	2.548	3.035	40	74	12.273	1.972	1.339	2.904	30	44	15.685	2.486*	1.56	3.961
IV Drug - Lifetime	125	4649	39.463	2.369**	1.796	3.125	4	110	2.265	2.128	0.777	5.826	2	72	0.452	1.615	0.394	6.627

Note: CI= Confidence Interval. Odds ratios are adjusted for Age, Race/Ethnicity, and Household Income. ** is significance at the .01 level; * is significance at the .05 level.

Table 7

Self-Reported Sexual Orientation and Risky Health Behaviors: Females

Behaviors	Straight						Lesbian						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Alcohol 1/Month	2994	1698	16.543	1.168**	1.084	1.259	63	13	14.744	3.047**	1.675	5.541	212	46	47.415	2.935**	2.129	4.045
Binge Drinking - 5+	328	4364	121.244	0.488**	0.428	0.555	14	62	4.374	1.845**	1.03	3.304	44	214	10.059	1.694**	1.219	2.355
Smoke - Past 5 days	680	4012	37.705	0.733**	0.664	0.81	22	54	7.474	1.977**	1.201	3.253	75	183	26.29	2.014**	1.533	2.646

(table continues)

Behaviors	Straight						Lesbian						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Marijuana 1/month	850	3842	55.148	0.709**	0.648	0.777	32	44	18.89	2.653**	1.679	4.192	124	134	108.483	3.465**	2.703	4.44
IV Drug - Lifetime	59	4633	8.715	0.636**	0.47	0.861	1	75	0.067	0.771	0.107	5.574	12	246	13.788	2.936**	1.618	5.33

Note: CI= Confidence Interval. Odds ratios are adjusted for Age, Race/Ethnicity, and Household Income. ** is significance at the .01 level; * is significance at the .05 level.

Table 8

Self-Reported Sexual Orientation and Health Outcomes: Males

Behaviors	Straight						Gay						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Diabetes?	347	4427	.001	1.002	0.872	1.151	7	107		0.834	0.387	1.798	6	68	.079	1.128	0.488	2.606
Overweight	1331	3443	67.812**	0.719	0.664	0.778	30	84	1.856	0.748	0.492	1.137	24	50	.001	1.008	0.619	1.643
Coronary Heart Disease	56	4718	4.483*	1.479	1.027	2.13	2	112	.817	1.895	0.463	7.766	1	73	.135	1.446	0.199	10.493
Heart Attack	62	4712	.001	1.005	0.73	1.384	3	111	1.609	2.081	0.654	6.621	1	73	.002	1.045	0.144	7.563
Stroke	55	4719	3.228	0.745	0.54	1.028	0	114	1.623	1.014	1.012	1.016	1	73	.001	0.971	0.134	7.025
Any type of Cancer?	124	4650	21.302**	0.612	0.496	0.755	5	109	.222	1.242	0.504	3.058	1	73	1.065	0.369	0.051	2.658
Overnight Hospital	272	4499	114.439**	0.469	0.408	0.541	8	106	.666	0.741	0.36	1.525	9	65	.771	1.366	0.679	2.751

(table continues)

Behaviors	Straight						Gay						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Mental Health Service	350	4422	25.820**	0.711	0.623	0.812	18	96	6.513	1.914**	1.152	3.178	12	62	4.759**	1.971	1.059	3.668
Limitations - Work	421	4353	14.847**	0.785	0.695	0.888	17	97	2.876	1.561	0.929	2.622	11	63	1.824	1.552	0.816	2.953
Limited in any way?	90	4684	.309	1.079	0.824	1.413	2	112	.001	0.973	0.239	3.965	2	72	.342	1.519	0.37	6.23

Note: CI= Confidence Interval. Odds ratios are adjusted for Age, Race/Ethnicity, and Household Income. ** is significance at the .01 level; * is significance at the .05 level.

Table 9

Self-Reported Sexual Orientation and Health Outcomes: Females

Behaviors	Straight						Gay/Lesbian						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Diabetes?	347	4345	.202	1.032	0.898	1.187	8	68	1.211	1.507	0.722	3.145	13	245	1.932	0.673	0.384	1.181
Overweight	1824	2868	151.193**	1.616	1.497	1.745	36	40	7.996*	1.898	1.208	2.983	111	147	13.986**	1.603	1.249	2.057
Coronary Heart Disease	37	4655	1.874a	0.761	0.515	1.126	0	76	.726	1.01	1.008	1.011	0	258	2.502	1.01	1.008	1.011
Heart Attack	56	4636	.603	0.879	0.634	1.218	2	74	1.070	2.074	0.505	8.522	3	255	.036	0.895	0.284	2.824
Stroke	68	4624	.186	1.07	0.787	1.455	4	72	8.357*	4.008	1.448	11.094	2	256	.729	0.549	0.135	2.223
Any type of Cancer?	222	4470	29.509**	1.683	1.392	2.034	3	73	.032	1.111	0.349	3.538	13	245	1.650	1.446	0.821	2.547

(table continues)

Behaviors	Straight						Gay/Lesbian						Bisexual					
	Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)		Yes	No	χ^2	OR	95% C.I. (L-U)	
Overnight Hospital	573	4118	80.847**	1.741	1.541	1.966	11	65	2.524	1.673	0.881	3.179	38	220	9.560**	1.725	1.216	2.448
Mental Health Service	461	4230	6.52*	1.177	1.039	1.334	17	59	16.746**	2.948	1.713	5.075	61	197	69.216	3.26	2.429	4.374
Limitations - Work	488	4204	.562	1.047	0.929	1.18	17	59	12.549**	2.575	1.496	4.43	30	228	.640	1.17	0.796	1.72
Limited in any way?	83	4609	.044	0.971	0.739	1.277	4	72	5.181*	3.066	1.11	8.465	13	245	15.613**	3.009	1.695	5.344

Note: CI= Confidence Interval. Odds ratios are adjusted for Age, Race/Ethnicity, and Household Income. ** is significance at the .01 level; * is significance at the .05 level.

Table 10

Trends Over Time from NHANES Panels

	Male									Female								
	Straight			Gay			Bisexual			Straight			Gay/Lesbian			Bisexual		
	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016
12 Drinks past year	33.40%	35.10%	31.50%	33.40%	35.10%	31.50%	33.40%	35.10%	31.50%	33.40%	35.10%	31.50%	33.40%	35.10%	31.50%	33.40%	35.10%	31.50%
Binge Drink 5+	32.60%	34.10%	33.30%	32.60%	34.10%	33.30%	32.60%	34.10%	33.30%	32.60%	34.10%	33.30%	32.60%	34.10%	33.30%	32.60%	34.10%	33.30%
Smoked past 5 days	33.40%	37.50%	29.10%	33.40%	37.50%	29.10%	33.40%	37.50%	29.10%	33.40%	37.50%	29.10%	33.40%	37.50%	29.10%	33.40%	37.50%	29.10%
Marijuana 1/Month	32.30%	35.40%	32.30%	32.30%	35.40%	32.30%	32.30%	35.40%	32.30%	32.30%	35.40%	32.30%	32.30%	35.40%	32.30%	32.30%	35.40%	32.30%

(table continues)

	Male									Female								
	Straight			Gay			Bisexual			Straight			Gay/Lesbian			Bisexual		
	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016
Ever Used Needle	30.30%	38.90%	30.80%	30.30%	38.90%	30.80%	30.30%	38.90%	30.80%	30.30%	38.90%	30.80%	30.30%	38.90%	30.80%	30.30%	38.90%	30.80%
Diabetes?	29.90%	34.80%	35.30%	29.90%	34.80%	35.30%	29.90%	34.80%	35.30%	29.90%	34.80%	35.30%	29.90%	34.80%	35.30%	29.90%	34.80%	35.30%
Limited in any way?	29.50%	30.80%	39.70%	29.50%	30.80%	39.70%	29.50%	30.80%	39.70%	29.50%	30.80%	39.70%	29.50%	30.80%	39.70%	29.50%	30.80%	39.70%
Limitations - Work	34.30%	34.90%	30.80%	34.30%	34.90%	30.80%	34.30%	34.90%	30.80%	34.30%	34.90%	30.80%	34.30%	34.90%	30.80%	34.30%	34.90%	30.80%
Any type of Cancer?	31.10%	37.60%	31.30%	31.10%	37.60%	31.30%	31.10%	37.60%	31.30%	31.10%	37.60%	31.30%	31.10%	37.60%	31.30%	31.10%	37.60%	31.30%
Stroke	38.20%	28.90%	32.90%	38.20%	28.90%	32.90%	38.20%	28.90%	32.90%	38.20%	28.90%	32.90%	38.20%	28.90%	32.90%	38.20%	28.90%	32.90%
Heart Attack	28.00%	37.90%	34.20%	28.00%	37.90%	34.20%	28.00%	37.90%	34.20%	28.00%	37.90%	34.20%	28.00%	37.90%	34.20%	28.00%	37.90%	34.20%
Coronary Heart Disease	29.10%	40.20%	30.80%	29.10%	40.20%	30.80%	29.10%	40.20%	30.80%	29.10%	40.20%	30.80%	29.10%	40.20%	30.80%	29.10%	40.20%	30.80%
Overweight	30.00%	34.70%	35.30%	30.00%	34.70%	35.30%	30.00%	34.70%	35.30%	30.00%	34.70%	35.30%	30.00%	34.70%	35.30%	30.00%	34.70%	35.30%
Overnight Hospital	35.10%	34.60%	30.30%	35.10%	34.60%	30.30%	35.10%	34.60%	30.30%	35.10%	34.60%	30.30%	35.10%	34.60%	30.30%	35.10%	34.60%	30.30%
Mental Health Service	30.90%	34.70%	34.40%	30.90%	34.70%	34.40%	30.90%	34.70%	34.40%	30.90%	34.70%	34.40%	30.90%	34.70%	34.40%	30.90%	34.70%	34.40%
Health Insurance	33.30%	34.60%	32.20%	33.30%	34.60%	32.20%	33.30%	34.60%	32.20%	33.30%	34.60%	32.20%	33.30%	34.60%	32.20%	33.30%	34.60%	32.20%
Routine Place	31.40%	34.00%	34.70%	31.40%	34.00%	34.70%	31.40%	34.00%	34.70%	31.40%	34.00%	34.70%	31.40%	34.00%	34.70%	31.40%	34.00%	34.70%

(table continues)

	Male									Female								
	Straight			Gay			Bisexual			Straight			Gay/Lesbian			Bisexual		
	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016
Age Range																		
18-25	34.70%	35.10%	30.10%	34.70%	35.10%	30.10%	34.70%	35.10%	30.10%	34.70%	35.10%	30.10%	34.70%	35.10%	30.10%	34.70%	35.10%	30.10%
26-39	32.40%	33.00%	34.60%	32.40%	33.00%	34.60%	32.40%	33.00%	34.60%	32.40%	33.00%	34.60%	32.40%	33.00%	34.60%	32.40%	33.00%	34.60%
40-59	32.10%	34.90%	33.00%	32.10%	34.90%	33.00%	32.10%	34.90%	33.00%	32.10%	34.90%	33.00%	32.10%	34.90%	33.00%	32.10%	34.90%	33.00%
Race/Ethnicity																		
NH White	32.20%	39.80%	28.00%	32.20%	39.80%	28.00%	32.20%	39.80%	28.00%	32.20%	39.80%	28.00%	32.20%	39.80%	28.00%	32.20%	39.80%	28.00%
NH Black	37.80%	30.50%	31.60%	37.80%	30.50%	31.60%	37.80%	30.50%	31.60%	37.80%	30.50%	31.60%	37.80%	30.50%	31.60%	37.80%	30.50%	31.60%
Mexican American	25.10%	34.50%	40.40%	25.10%	34.50%	40.40%	25.10%	34.50%	40.40%	25.10%	34.50%	40.40%	25.10%	34.50%	40.40%	25.10%	34.50%	40.40%
Other Hispanic	30.60%	29.40%	40.00%	30.60%	29.40%	40.00%	30.60%	29.40%	40.00%	30.60%	29.40%	40.00%	30.60%	29.40%	40.00%	30.60%	29.40%	40.00%
Other/Mixed	34.90%	31.70%	33.40%	34.90%	31.70%	33.40%	34.90%	31.70%	33.40%	34.90%	31.70%	33.40%	34.90%	31.70%	33.40%	34.90%	31.70%	33.40%
Education																		
>9th grade	29.60%	28.10%	42.30%	29.60%	28.10%	42.30%	29.60%	28.10%	42.30%	29.60%	28.10%	42.30%	29.60%	28.10%	42.30%	29.60%	28.10%	42.30%
9-11th grade	34.50%	35.70%	29.70%	34.50%	35.70%	29.70%	34.50%	35.70%	29.70%	34.50%	35.70%	29.70%	34.50%	35.70%	29.70%	34.50%	35.70%	29.70%
HS/GED	31.50%	35.20%	33.30%	31.50%	35.20%	33.30%	31.50%	35.20%	33.30%	31.50%	35.20%	33.30%	31.50%	35.20%	33.30%	31.50%	35.20%	33.30%
College/AA	32.90%	34.70%	32.40%	32.90%	34.70%	32.40%	32.90%	34.70%	32.40%	32.90%	34.70%	32.40%	32.90%	34.70%	32.40%	32.90%	34.70%	32.40%

(table continues)

	Male									Female								
	Straight			Gay			Bisexual			Straight			Gay/Lesbian			Bisexual		
	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016
Graduate	33.50%	33.20%	33.30%	33.50%	33.20%	33.30%	33.50%	33.20%	33.30%	33.50%	33.20%	33.30%	33.50%	33.20%	33.30%	33.50%	33.20%	33.30%
Marital Status																		
married	31.10%	35.20%	33.70%	31.10%	35.20%	33.70%	31.10%	35.20%	33.70%	31.10%	35.20%	33.70%	31.10%	35.20%	33.70%	31.10%	35.20%	33.70%
widowed	35.50%	29.00%	35.50%	35.50%	29.00%	35.50%	35.50%	29.00%	35.50%	35.50%	29.00%	35.50%	35.50%	29.00%	35.50%	35.50%	29.00%	35.50%
divorced	31.30%	37.90%	30.80%	31.30%	37.90%	30.80%	31.30%	37.90%	30.80%	31.30%	37.90%	30.80%	31.30%	37.90%	30.80%	31.30%	37.90%	30.80%
separated	37.20%	31.60%	31.10%	37.20%	31.60%	31.10%	37.20%	31.60%	31.10%	37.20%	31.60%	31.10%	37.20%	31.60%	31.10%	37.20%	31.60%	31.10%
Singe/NM	36.00%	33.20%	30.80%	36.00%	33.20%	30.80%	36.00%	33.20%	30.80%	36.00%	33.20%	30.80%	36.00%	33.20%	30.80%	36.00%	33.20%	30.80%
living with partner	31.70%	29.50%	38.80%	31.70%	29.50%	38.80%	31.70%	29.50%	38.80%	31.70%	29.50%	38.80%	31.70%	29.50%	38.80%	31.70%	29.50%	38.80%

Note: Percentages reported are all within each variable.

APPENDIX A

DEMOGRAPHICS INFORMATION – DMQ – SP

Target Group: SPs Birth +

DMQ.141 What is the highest grade or level of school {you have/SP has} completed or the highest degree {you have/s/he has} received?.
NEVER ATTENDED/KINDERGARTEN ONLY..... 0
1ST GRADE 1
2ND GRADE..... 2
3RD GRADE..... 3
4TH GRADE..... 4
5TH GRADE..... 5
6TH GRADE..... 6
7TH GRADE..... 7
8TH GRADE..... 8
9TH GRADE..... 9
10TH GRADE..... 10
11TH GRADE..... 11
12TH GRADE, NO DIPLOMA..... 12
HIGH SCHOOL GRADUATE..... 13
GED OR EQUIVALENT..... 14
SOME COLLEGE, NO DEGREE..... 15
ASSOCIATE DEGREE: OCCUPATIONAL, TECHNICAL, OR VOCATIONAL PROGRAM..... 16
ASSOCIATE DEGREE: ACADEMIC PROGRAM..... 17
BACHELOR'S DEGREE (EXAMPLE: BA, AB, BS, BBA)..... 18
MASTER'S DEGREE (EXAMPLE: MA, MS, MEng, MEd, MBA) 19
PROFESSIONAL SCHOOL DEGREE (EXAMPLE: MD, DDS, DVM, JD)..... 20
DOCTORAL DEGREE (EXAMPLE: PhD, EdD) 21
REFUSED 77
DON'T KNOW 99

DMQ.037 {Are you/Is SP} now . . .
going to school, ... 1
between grades, or..... 2
neither? 3
REFUSED 7
DON'T KNOW 9

DMQ.052 {Have you/Has SP} ever served on active duty in the U.S. Armed Forces, military Reserves, or National Guard? (Active duty does not include training for the Reserves or National

Guard, but does include activation, for service in the U.S. or in a foreign country, in support of military or humanitarian operations.)
YES 1
NO..... 2 (DMQ.061)
REFUSED 7 (DMQ.061)
DON'T KNOW 9 (DMQ.061)

DMQ.380 {Are you/Is SP} now married, widowed, divorced, separated, never married or living with a partner?
MARRIED..... 1
WIDOWED 2
DIVORCED..... 3
SEPARATED..... 4
NEVER MARRIED..... 5 (BOX 1D)
LIVING WITH PARTNER 6
REFUSED 77
DON'T KNOW 99
DMQ.241 {Do you/Does SP} consider {yourself/himself/herself} to be Hispanic, Latino, or of Spanish origin?
READ IF NECESSARY: Where {do your/do his/do her} ancestors come from?
Puerto Rican
Cuban/Cuban American
Dominican Republic
Mexican/Mexican American
Central/South American
Other Latin American
Other Hispanic or Latino
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DMQ.253 Please give me the number of the group that represents {your/SP's} Hispanic/Latino or Spanish origin or ancestry. Please select 1 or more of these categories.
PROBE: Where do you/your ancestors come from?
HAND CARD DMQ3
SELECT 1 OR MORE
MEXICAN..... 10
PUERTO RICAN 11
CUBAN..... 12
DOMINICAN REPUBLIC..... 13
CENTRAL AMERICAN:
COSTA RICAN..... 14
GUATEMALAN 15
HONDURAN 16
NICARAGUAN 17

PANAMANIAN 18
SALVADORAN..... 19
OTHER CENTRAL AMERICAN..... 20
SOUTH AMERICAN:
ARGENTINEAN 21
BOLIVIAN..... 22
CHILEAN..... 23
COLOMBIAN..... 24
ECUADORIAN 25
PARAGUAYAN 26
PERUVIAN..... 27
URUGUAYAN 28
VENEZUELAN 29
OTHER SOUTH AMERICAN 30
OTHER HISPANIC OR LATINO:
FILIPINO..... 31
SPANIARD..... 32
SPANISH 33
SPANISH AMERICAN..... 34
HISPANO/HISPANA 35
HISPANIC/LATINO 36
OTHER HISPANIC/LATINO (SPECIFY) 40
CHICANA/CHICANO..... 41
REFUSED 77
DON'T KNOW 99

DMQ.263 Please look at the categories on this card. What race or races {do you/does SP} consider {yourself/himself/herself} to be? Please select one or more.
AMERICAN INDIAN OR ALASKA NATIVE ... 1
ASIAN..... 2
BLACK OR AFRICAN AMERICAN..... 3
NATIVE HAWAIIAN OR PACIFIC ISLANDER . 4
WHITE..... 5
OTHER..... 6
DK 99
RF..... 77

DMQ.350 Please give me the number of the group that represents {your/SP's} Native Hawaiian or Pacific Islander origin or ancestry. Please select one or more of these categories.
HAND CARD DMQ5
PROBE: Where do your ancestors come from?
NATIVE HAWAIIAN..... 1
GUAMANIAN OR CHAMORRO..... 2
SAMOAN..... 3
OTHER PACIFIC ISLANDER..... 4
REFUSED 7

DON’T KNOW 9

DMQ.160 In what month and year did {you/SP} come to the United States to stay?
M/Y
CAPI INSTRUCTION:
HARD EDIT: NOT BEFORE SP’S DATE OF BIRTH AND NOT AFTER CURRENT DATE. IF OUT OF RANGE DISPLAY “DATE OF IMMIGRATION MUST BE AFTER DATE OF BIRTH {DOB YYYY} AND BEFORE TODAY.”
|___|___|
ENTER MONTH NUMBER
REFUSED 7777
DON'T KNOW 9999
|___|___|___|___|
ENTER 4-DIGIT YEAR
REFUSED 777777
DON'T KNOW 999999

DMQ.170 {Are you/Is SP} a citizen of the United States?
[Information about citizenship is being collected by the Centers for Disease Control and Prevention to perform health related research. Providing this information is voluntary and is collected under the authority of the Public Health Service Act. There will be no effect on pending immigration or citizenship petitions.]
HAND CARD DMQ7
YES, BORN IN UNITED STATES 1
YES, BORN IN PUERTO RICO, GUAM,
AMERICAN VIRGIN ISLANDS, OR
OTHER U.S. TERRITORY 2
YES, BORN ABROAD TO AMERICAN
PARENTS..... 3
YES, U.S. CITIZEN BY NATURALIZATION.. 4
NO, NOT A CITIZEN OF THE UNITED
STATES..... 5
REFUSED 7
DON'T KNOW 9

APPENDIX B

SEXUAL BEHAVIOR – (SXQ)

Target Group: Female SPs 14-69 (Audio-CASI)

SXQ.294 Do you think of yourself as . . .
Heterosexual or straight (attracted to men) ... 1
Homosexual or lesbian (attracted to women) 2
Bisexual (attracted to men and women) 3
Something else..... 4
Not sure..... 5
REFUSED 7
DON'T KNOW 9
7/25/12 Questionnaire: MEC

SXQ.292 Do you think of yourself as . . .
Heterosexual or straight (attracted to women). 1
Homosexual or gay (attracted to men) 2
Bisexual (attracted to men and women) 3
Something else..... 4
Not sure..... 5
REFUSED 7
DON'T KNOW 9

APPENDIX C

DIABETES – DIQ

Target Group: SPs 1+
DIQ.010 {Other than during pregnancy, {have you/has SP}/{Have you/Has SP}} ever been told by a doctor or other health professional that {you have/{s/he/SP} has} diabetes or sugar diabetes?
YES 1
NO..... 2 (BOX 4)
BORDERLINE OR PREDIABETES..... 3 (BOX 4)
REFUSED ..... 7 (BOX 4)
DON'T KNOW ..... 9 (BOX 4)

DIQ.160 {Have you/Has SP} ever been told by a doctor or other health professional that {you have/SP has} any of the following: prediabetes, impaired fasting glucose, impaired glucose tolerance, borderline diabetes or that {your/her/his} blood sugar is higher than normal but not high enough to be called diabetes or sugar diabetes?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DIQ.170 {Have you/Has SP} ever been told by a doctor or other health professional that {you have/s/he has} health conditions or a medical or family history that increases {your/his/her} risk for diabetes?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DIQ.172 {Do you/Does SP} feel {you/he/she} could be at risk for diabetes or prediabetes?
YES 1
NO..... 2 (DIQ.180)
REFUSED 7 (DIQ.180)
DON'T KNOW 9 (DIQ.180)

DIQ.175 Why {Do you/Does SP} think {you are/he is/she is} at risk for diabetes or prediabetes?
FAMILY HISTORY..... 10
OVERWEIGHT 11
AGE 12
POOR DIET..... 13
RACE..... . 14
HAD A BABY THAT WEIGHED OVER 9 LBS. AT BIRTH
..... 15
LACK OF PHYSICAL ACTIVITY OR SEDENTARY
LIFESTYLE.....…. 16
HIGH BLOOD PRESSURE..... 17
HIGH BLOOD SUGAR..... 18
HIGH CHOLESTEROL 19

HYPOGLYCEMIC..... 20
EXTREME HUNGER..... 21
TINGLING/NUMBNESS IN HANDS OR FEET..... 22
BLURRED VISION 23
INCREASED FATIGUE 24
ANYONE COULD BE AT RISK 25
DOCTOR WARNING..... 26
OTHER, SPECIFY..... 27
GESTATIONAL DIABETES..... 28
FREQUENT URINATION 29
THIRST..... 30
REFUSAL 77
DON'T KNOW..... 99

DIQ.180 {Have you/Has SP} had a blood test for high blood sugar or diabetes within the past three years?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DIQ.050 {Is SP/Are you} now taking insulin?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DIQ.070 {Is SP/Are you} now taking diabetic pills to lower {{his/her}/your} blood sugar? These are sometimes called oral agents or oral hypoglycemic agents.
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DIQ.230 When was the last time {you/SP} saw a diabetes nurse educator or dietitian or nutritionist for {your/his/her} diabetes? Do not include doctors or other health professionals.
1 YEAR AGO OR LESS 1
MORE THAN 1 YEAR AGO BUT NO MORE THAN 2 YEARS AGO 2
MORE THAN 2 YEARS AGO BUT NO MORE THAN 5 YEARS AGO 3
MORE THAN 5 YEARS AGO..... 4
NEVER..... 5
REFUSED 7
DON'T KNOW 9

DIQ.240 Is there one doctor or other health professional {you usually see/SP usually sees} for {your/his/her} diabetes? Do not include specialists to whom {you have/SP has} been referred such as diabetes educators, dieticians or foot and eye doctors.
YES 1
NO..... 2 (DIQ.260)
REFUSED 7 (DIQ.260)
DON'T KNOW 9 (DIQ.260)

DIQ.275 Glycosylated (GLY-CO-SYL-AT-ED) hemoglobin or the "A one C" test measures your average level of blood sugar for the past 3 months, and usually ranges between 5.0 and 13.9. During the past 12 months, has a doctor or other health professional checked {your/SP's} glycosylated hemoglobin or "A one C"?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

DIQ.280 What was {your/SP's} last "A one C" level?
CAPI INSTRUCTION:
SOFT EDIT FOR ANY NUMBER LESS THAN 5 OR MORE THAN 14.
|___|___| . |___|
ENTER VALUE
REFUSED 7777
DON'T KNOW 9999

DIQ.291 What does {your/SP's} doctor or other health professional say {your/his/her} "A one C" level should be? (Pick the lowest level recommended by {your/his/her} health care professional.)
HAND CARD DIQ3
LESS THAN 6..... 1
LESS THAN 7..... 2
LESS THAN 8..... 3
LESS THAN 9..... 4
LESS THAN 10..... 5
PROVIDER DID NOT SPECIFY GOAL..... 6
REFUSED 77
DON'T KNOW 99

APPENDIX D

MEDICAL CONDITIONS – MCQ

Target Group: SPs 1+

MCQ.010 The following questions are about different medical conditions.
Has a doctor or other health professional ever told {you/SP} that {you have/s/he/SP has} asthma (az-ma)?
YES 1
NO..... 2 (MCQ.053)
REFUSED 7 (MCQ.053)
DON'T KNOW 9 (MCQ.053)

MCQ.035 {Do you/Does SP} still have asthma (az-ma)?
YES 1
NO..... 2 (MCQ.053)
REFUSED 7 (MCQ.053)
DON'T KNOW 9 (MCQ.053)

MCQ.040 During the past 12 months, {have you/has SP} had an episode of asthma (az-ma) or an asthma attack?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

MCQ.050 [During the past 12 months], {have you/has SP} had to visit an emergency room or urgent care center because of asthma (az-ma)?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

AGQ.030 During the past 12 months, {have you/has SP} had an episode of hay fever?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

MCQ.053 During the past 3 months, {have you/has SP} been on treatment for anemia (a-nee-me-a), sometimes called "tired blood" or "low blood"? [Include diet, iron pills, iron shots, transfusions as treatment.]
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

MCQ.070 {Have you/Has SP} ever been told by a doctor or other health care professional that {you/s/he} had psoriasis (sore-eye-asis)?

YES 1
NO..... 2 (MCQ 080)
REFUSED ..... 7 (MCQ 080)
DON'T KNOW ..... 9 (MCQ 080)

MCQ.080 Has a doctor or other health professional ever told {you/SP} that {you were/s/he/SP was} overweight?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

MCQ.084 The next question asks about difficulties in thinking or remembering that can make a big difference in everyday activities. This does not refer to occasionally forgetting your keys or the name of someone you recently met. This refers to things like confusion or memory loss that are happening more often or getting worse. We want to know how these difficulties impact {you/SP}. During the past 12 months, {have you/has she/has he} experienced confusion or memory loss that is happening more often or is getting worse?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

MCQ.082 Has a doctor or other health professional ever told {you/SP} that {you have/s/he/SP has} celiac (sele-ak) disease, also called sprue (sproo)?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

MCQ.092 {Have you/Has SP} ever received a blood transfusion?
YES 1
NO..... 2 (BOX 7)
REFUSED ..... 7 (BOX 7)
DON'T KNOW ..... 9 (BOX 7)

MCQ.160 Has a doctor or other health professional ever told {you/SP} that {you/s/he} . . .
MCQ.170 {Do you/Does SP} still . . . ?

a. had arthritis (ar-thry-tis)?
YES..... 1
NO..... 2 (n)
REFUSED ..... 7 (n)
DON'T KNOW..... 9 (n)

MCQ.195 Which type of arthritis was it?

Osteoarthritis or degenerative arthritis..... 1
Rheumatoid arthritis..... 2
Psoriatic arthritis 3
Other..... 4
REFUSED..... 7
DON'T KNOW..... 9

b. had congestive heart failure?
YES..... 1
NO..... 2 (c)
REFUSED ..... 7 (c)
DON'T KNOW..... 9 (c)

c. had coronary (kor-o-nare-ee) heart disease?
YES..... 1
NO..... 2 (d)
REFUSED ..... 7 (d)
DON'T KNOW..... 9 (d)

d. had angina (an-gī-na), also called angina pectoris?
YES..... 1
NO..... 2 (e)
REFUSED ..... 7 (e)
DON'T KNOW..... 9 (e)

e. had a heart attack (also called myocardial infarction (my-O-car-dee-al in-fark-shun))?
YES..... 1
NO..... 2 (f)
REFUSED ..... 7 (f)
DON'T KNOW..... 9 (f)

f. had a stroke?
YES..... 1
NO..... 2 (g)
REFUSED ..... 7 (g)
DON'T KNOW..... 9 (g)

g. had emphysema (emph-phi-see-ma)?
YES..... 1
NO..... 2 (m)
REFUSED ..... 7 (m)
DON'T KNOW..... 9 (m)

m. had a thyroid (thigh-roid) problem?
YES..... 1
NO..... 2 (k)

REFUSED ..... 7 (k)
DON'T KNOW..... 9 (k)
have a thyroid problem?
YES..... 1
NO..... 2
REFUSED..... 7
DON'T KNOW 9

k. had chronic bronchitis?
YES..... 1
NO..... 2 (l)
REFUSED ..... 7 (l)
DON'T KNOW..... 9 (l)
have chronic bronchitis?
YES..... 1
NO..... 2
REFUSED..... 7
DON'T KNOW 9

l. had any kind of liver condition?
YES.....1
NO.....2 (MCQ.160o)
REFUSED 7 (MCQ.160o)
DON'T KNOW .9 (MCQ.160o)

have this liver condition?
YES..... 1
NO..... 2
REFUSED..... 7
DON'T KNOW 9

MCQ.160o. had COPD?
YES 1
NO..... 2
REFUSED..... 7
DON'T KNOW 9

MCQ.220 {Have you/Has SP} ever been told by a doctor or other health professional that {you/s/he} had cancer or a malignancy (ma-lig-nan-see) of any kind?
YES 1
NO..... 2 (MCQ.300a)
REFUSED 7 (MCQ.300a)
DON'T KNOW 9 (MCQ.300a)

MCQ.230 What kind of cancer was it?
BLADDER..... 10

BLOOD..... 11
BONE 12
BRAIN 13
BREAST..... 14
CERVIX (CERVICAL) 15
COLON..... 16
ESOPHAGUS (ESOPHAGEAL)..... 17
GALLBLADDER..... 18
LEUKEMIA..... 21
LIVER 22
LUNG..... 23
LYMPHOMA/HODGKINS' DISEASE.... 24
MELANOMA 25
MOUTH/TONGUE/LIP 26
NERVOUS SYSTEM..... 27
OVARY (OVARIAN) 28
PANCREAS (PANCREATIC) 29
SKIN (NON-MELANOMA) 32
SKIN (DON'T KNOW WHAT KIND) 33
SOFT TISSUE (MUSCLE OR FAT) 34
STOMACH 35
TESTIS (TESTICULAR) 36
THYROID..... 37
UTERUS (UTERINE)..... 38
OTHER..... 39
MORE THAN 3 KINDS..... 66
KIDNEY..... 19
LARYNX/WINDPIPE..... 20
PROSTATE..... 30
RECTUM (RECTAL) 31
REFUSED..... 77
DON'T KNOW 99

MCQ.365 To lower {your/SP's} risk for certain diseases, during the past 12 months {have you/has s/he} ever been told by a doctor or health professional to:
RESPONSES: YES = 1, NO = 2, REFUSED = 7, DON'T KNOW = 9
a. control {your/his/her} weight or lose weight? ____
b. increase {your/his/her} physical activity or exercise? ____
c. reduce the amount of sodium or salt in {your/his/her} diet? ____
d. reduce the amount of fat or calories in {your/his/her} diet? ____

MCQ.370 To lower {your/his/her} risk for certain diseases, {are you/is s/he} now doing any of the following:
RESPONSES: YES = 1, NO = 2, REFUSED = 7, DON'T KNOW = 9
a. controlling {your/his/her} weight or losing weight? ____
b. increasing {your/his/her} physical activity or exercise? ____

c. reducing the amount of sodium or salt in {your/his/her} diet? ____
d. reducing the amount of fat or calories in {your/his/her} diet? ____

MCQ.380 During the past 7 days, how often {have you/has SP} had trouble remembering where {you/he/she} put things, like {your/his/her} keys or {your/his/her} wallet? Would you say....
Never..... 0
About once 1
Two or three times..... 2
Nearly every day..... 3
Several times a day..... 4
REFUSED 7
DON'T KNOW 9

APPENDIX E

PHYSICAL FUNCTIONING - PFQ

Target Group: SPs 3+

PFQ.020 {Do you/Does SP} have an impairment or health problem that limits {your/his/her} ability to {walk, run or play} {walk or run}?
YES 1
NO..... 2 (BOX 1BB)
REFUSED ..... 7 (BOX 1BB)
DON'T KNOW ..... 9 (BOX 1BB)

PFQ.030 Is this an impairment or health problem that has lasted, or is expected to last 12 months or longer?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

PFQ.033 {Do you/Does SP} have any impairment or health problem that requires {you/him/her} to use special equipment, such as a brace, a wheelchair, or a hearing aid (excluding ordinary eyeglasses or corrective shoes)?
YES 1
NO..... 2 (PFQ.041)
REFUSED 7 (PFQ.041)
DON'T KNOW 9 (PFQ.041)

PFQ.037 What special equipment {do you/does he/does she} use?
BRACE..... 1
WHEELCHAIR..... 2
HEARING AID 3
OTHER (SPECIFY) 4
REFUSED 7
DON'T KNOW 9

PFQ.041 {Do you/Does SP} receive Special Education or Early Intervention Services?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

PFQ.049 The next set of questions is about limitations caused by any long-term physical, mental or emotional problem or illness. Please do not include temporary conditions, such as a cold [or pregnancy].
Does a physical, mental or emotional problem now keep {you/SP} from working at a job or business?
YES 1
NO..... 2
REFUSED 7

DON'T KNOW 9

PFQ.051 {Are you/Is SP} limited in the kind or amount of work {you/s/he} can do because of a physical, mental or emotional problem?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

PFQ.054 Because of a health problem, {do you/does SP} have difficulty walking without using any special equipment?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

PFQ.057 {Are you/Is SP} limited in any way because of difficulty remembering or because {you/s/he} experience{s} periods of confusion?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

PFQ.059 {Are you/Is SP} limited in any way in any activity because of a physical, mental or emotional problem?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

PFQ.061 a-t
The next questions ask about difficulties {you/SP} may have doing certain activities because of a health problem. By "health problem" we mean any long-term physical, mental or emotional problem or illness {not including pregnancy}.
By {yourself/himself/herself} and without using any special equipment, how much difficulty {do you/does SP} have . . .
RESPONSES: NO DIFFICULTY = 1, SOME DIFFICULTY = 2, MUCH DIFFICULTY = 3, UNABLE TO DO = 4, DO NOT DO THIS ACTIVITY = 5, REFUSED = 7, DON'T KNOW = 9.
a. managing {your/his/her} money [such as keeping track of {your/his/her} expenses or paying bills]? ____
b. walking for a quarter of a mile [that is about 2 or 3 blocks]? ____
c. walking up 10 steps without resting? ____
d. stooping, crouching, or kneeling? ____
e. lifting or carrying something as heavy as 10 pounds [like a sack of potatoes or rice]? ____
f. doing chores around the house [like vacuuming, sweeping,

dusting, or straightening up]? ____
g. preparing {your/his/her} own meals? ____
h. walking from one room to another on the same level? ____
i. standing up from an armless straight chair? ____
j. getting in or out of bed? ____
k. eating, like holding a fork, cutting food or drinking from a glass? ____
l. dressing {yourself/himself/herself}, including tying shoes, working zippers, and doing buttons? ____
m. standing or being on {your/his/her} feet for about 2 hours? ____
n. sitting for about 2 hours? ____
o. reaching up over {your/his/her} head? ____
p. using {your/his/her} fingers to grasp or handle small objects? ____
q. going out to things like shopping, movies, or sporting events? ____
r. participating in social activities [visiting friends, attending clubs or meetings or going to parties]? ____
s. doing things to relax at home or for leisure [reading, watching TV, sewing, listening to music]? ____
t. pushing or pulling large objects like a living room chair? ____

APPENDIX F

ALCOHOL USE – ALQ

Target Group: SPs 18+ (CAPI)

ALQ.101 The next questions are about drinking alcoholic beverages. Included are liquor (such as whiskey or gin), beer, wine, wine coolers, and any other type of alcoholic beverage.
In any one year, {have you/has SP} had at least 12 drinks of any type of alcoholic beverage? By a drink, I mean a 12 oz. beer, a 5 oz. glass of wine, or one and a half ounces of liquor.
YES 1 (ALQ.120)
NO..... 2
REFUSED 7
DON'T KNOW 9

ALQ.110 In {your/SP's} entire life, {have you/has he/has she} had at least 12 drinks of any type of alcoholic beverage?
YES 1
NO..... 2 (END OF SECTION)
REFUSED ..... 7 (END OF SECTION)
DON'T KNOW ..... 9 (END OF SECTION)

ALQ.120 Q/U. In the past 12 months, how often did {you/SP} drink any type of alcoholic beverage?
PROBE: How many days per week, per month, or per year did {you/SP} drink?
|___|___|___|
ENTER QUANTITY
REFUSED 777
DON'T KNOW 999
ENTER UNIT
WEEK..... 1
MONTH 2
YEAR 3
REFUSED 7
DON'T KNOW 9
BOX 1

ALQ.130 In the past 12 months, on those days that {you/SP} drank alcoholic beverages, on the average, how many drinks did {you/he/she} have? (By a drink, I mean a 12 oz. beer, a 5 oz. glass of wine, or one and a half ounces of liquor.)
Error Message: "Number of drinks per day cannot be greater than number of drinks in any one year."
|___|___|___|
ENTER # OF DRINKS
REFUSED 777
DON'T KNOW 999

ALQ.14. In the past 12 months, on how many days did {you/SP} have {DISPLAY NUMBER} or more drinks of any alcoholic beverage? PROBE: How many days per week, per month, or per year did {you/SP} have {DISPLAY NUMBER} or more drinks in a single day?

Error Message: “Number of drinks must be less than 3 if SP never had more than 12 drinks per year.”
|___|___|___|
ENTER QUANTITY
REFUSED 777
DON'T KNOW 999
ENTER UNIT
WEEK..... 1
MONTH 2
YEAR 3
REFUSED 7
DON'T KNOW 9

ALQ.151 Was there ever a time or times in {your/SP's} life when {you/he/she} drank {DISPLAY NUMBER} or more drinks of any kind of alcoholic beverage almost every day?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

APPENDIX G

DRUG USE – DUQ

Target Group: SPs 12-69 (Audio-CASI)

DUQ.200 The first questions are about marijuana and hashish. Marijuana is also called pot or grass. Marijuana is usually smoked, either in cigarettes, called joints, or in a pipe. It is sometimes cooked in food. Hashish is a form of marijuana that is also called "hash." It is usually smoked in a pipe. Another form of hashish is hash oil.
Have you ever, even once, used marijuana or hashish?
Yes 1
No..... 2 (DUQ.240)
REFUSED 7 (DUQ.240)
DON'T KNOW 9 (DUQ.240)

DUQ.211 Have you ever smoked marijuana or hashish at least once a month for more than one year?
Yes 1
No..... 2 (DUQ.220G)
REFUSED 7 (DUQ.220G)
DON'T KNOW 9 (DUQ.220G)

DUQ.217 During the time that you smoked marijuana or hashish, how often would you usually use it?
Once per month..... 1
2-3 times per month..... 2
4-8 times per month (about 1-2 times per week)..... 3
9-24 times per month (about 3-6 times per week)..... 4
25-30 times per month (one or more times per day) 5
REFUSED 7
DON'T KNOW 9

DUQ.219 During the time that you smoked marijuana or hashish, how many joints or pipes would you usually smoke in a day?
1 per day 1
2 per day 2
3-5 per day 3
Six or more per day 4
REFUSED 7
DON'T KNOW 9

DUQ.240 Have you ever used cocaine, crack cocaine, heroin, or methamphetamine? (Target 12-69)
Yes 1
No..... 2 (DUQ.370_)
REFUSED ..... 7 (DUQ.370_)
DON'T KNOW ..... 9 (DUQ.370_)

DUQ.250 Have you ever, even once, used cocaine, in any form?

Yes 1
No..... 2 (DUQ.290_)
REFUSED ..... 7 (DUQ.290_)
DON'T KNOW ..... 9 (DUQ.290_)

DUQ.272 During your life, altogether how many times have you used cocaine, in any form?
Once..... 1
2-5 times..... 2
6-19 times..... 3
20-49 times..... 4
50-99 times..... 5
100 times or more..... 6
REFUSED 77
DON'T KNOW 99

DUQ.290 Have you ever, even once, used heroin? (Target 12-69)
Yes 1
No..... 2 (DUQ.330_)
REFUSED ..... 7 (DUQ.330_)
DON'T KNOW ..... 9 (DUQ.330_)

DUQ.330 Have you ever, even once, used methamphetamine? (Target 12-69)
Yes 1
No..... 2 (DUQ.370_)
REFUSED ..... 7 (DUQ.370_)
DON'T KNOW ..... 9 (DUQ.370_)

DUQ.352 During your life, altogether how many times have you used methamphetamine?
INSTRUCTIONS TO SP:
Please select one of the following choices.
Once..... 1
2-5 times..... 2
6-19 times..... 3
20-49 times..... 4
50-99 times..... 5
100 times or more..... 6
REFUSED 77
DON'T KNOW 99

DUQ.370 Have you ever, even once, used a needle to inject a drug not prescribed by a doctor? (Target 12-69)
Yes 1
No..... 2 (BOX 5)
REFUSED ..... 7 (BOX 5)
DON'T KNOW ..... 9 (BOX 5)

DUQ.380 Which of the following drugs have you injected using a needle? (Target 12-69)
Cocaine 1
Heroin..... 2
Methamphetamine..... 3
Steroids 4
Any other drugs 5
REFUSED 7
DON'T KNOW 9

DUQ.410 During your life, altogether how many times have you injected drugs not prescribed by a doctor? (Target 12-69)
Once..... 1 (BOX 5)
2-5 times..... 2
6-19 times..... 3
20-49 times..... 4
50-99 times..... 5
100 times or more..... 6
REFUSED 77
DON'T KNOW 99

DUQ.420 Think about the period of your life when you injected drugs the most often. How often did you inject then?
Please select one of the following choices.
More than once a day..... 1
About once a day..... 2
At least once a week but not every day 3
At least once a month but not every week..... 4
Less than once a month 5
REFUSED 7
DON'T KNOW 9

DUQ.430 Have you ever been in a drug treatment or drug rehabilitation program?.
Yes 1
No..... 2
REFUSED 7
DON'T KNOW 9

APPENDIX H

TOBACCO – SMQ

Target Group: SPs 12+ (CAPI)

SMQ.681 The following questions ask about use of tobacco products in the past 5 days.
During the past 5 days, including today, did {you/he/she} smoke cigarettes, pipes, cigars, little cigars or cigarillos, water pipes, hookahs, or e-cigarettes?
YES 1
NO..... 2 (SMQ.851)
REFUSED 7 (SMQ.851)
DON'T KNOW 9 (SMQ.851)

SMQ.692 Which of these products did {you/he/she} smoke?
Cigarettes 1
Pipes 2
Cigars, or little cigars, or cigarillos..... 3
Water pipes or Hookahs 4
E-cigarettes 5
REFUSED 77 (SMQ.851)
DON'T KNOW 99 (SMQ.851)

SMQ.725 When did {you/he/she} smoke {your/his/her} last cigarette? Was it . . .
today,..... 1
yesterday, or..... 2
3 to 5 days ago?..... 3
REFUSED 7
DON'T KNOW 9

SMQ.851 Smokeless tobacco products are placed in the mouth or nose and include chewing tobacco, snuff, snus, or dissolvables.
During the past 5 days, including today, did {you/he/she} use any smokeless tobacco?
(Please do not include nicotine replacement products like patches, gum, lozenge, or spray which are considered products to help {you/him/her} stop smoking.)
YES 1
NO..... 2 (SMQ.863)
REFUSED 7 (SMQ.863)
DON'T KNOW 9 (SMQ.863)

SMQ.853 Which of these products did {you/he/she} use?
Chewing tobacco..... 1
Snuff 2
Snus 3
Dissolvables 4
REFUSED 7 (SMQ.863)
DON'T KNOW 9 (SMQ.863)

SMQ.863 During the past 5 days, including today, did {you/he/she} use any nicotine replacement therapy products such as nicotine patches, gum, lozenges, inhalers, or nasal sprays?

YES 1
NO..... 2 (END OF SECTION)
REFUSED ..... 7 (END OF SECTION)
DON'T KNOW ..... 9 (END OF SECTION)

SMQ.840 When did {you/he/she} last use a nicotine replacement therapy product? Was it . . .
today,..... 1 (END OF SECTION)
yesterday, or..... 2 (END OF SECTION)
3 to 5 days ago?..... 3 (END OF SECTION)
REFUSED ..... 7 (END OF SECTION)
DON'T KNOW ..... 9 (END OF SECTION)

SMQ.860 The next questions are about {your/his/her} exposure to other people's tobacco smoke.
During the last 7 days, did {you/SP} spend time in a restaurant?
YES 1
NO..... 2 (SMQ.870)
REFUSED 7 (SMQ.870)
DON'T KNOW 9 (SMQ.870)
7
SMQ.862 While {you were/SP was} in a restaurant, did someone else smoke cigarettes or other tobacco products indoors?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9
SMQ.870 During the last 7 days, did {you/SP} ride in a car or motor vehicle?
YES 1
NO..... 2 (SMQ.874)
REFUSED 7 (SMQ.874)
DON'T KNOW 9 (SMQ.874)
SMQ.872 While {you were/SP was} riding in a car or motor vehicle, did someone else smoke cigarettes or other tobacco products?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9
SMQ.874 During the last 7 days, did {you/SP} spend time in a home other than {your/his/her} own?
YES 1
NO..... 2 (SMQ.878)
REFUSED 7 (SMQ.878)
DON'T KNOW 9 (SMQ.878)
SMQ.876 While {you were/SP was} in a home other than {your/his/her} own, did someone else smoke cigarettes or other tobacco products indoors?
YES 1

NO..... 2
REFUSED 7
DON'T KNOW 9
SMQ.878 During the last 7 days, {were you/was SP} in any other indoor area?
YES 1
NO..... 2 (END OF SECTION)
REFUSED ..... 7 (END OF SECTION)
DON'T KNOW ..... 9 (END OF SECTION)
8
SMQ.880 While {you were/SP was} in the other indoor area, did someone else smoke cigarettes or other tobacco products?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

APPENDIX I

HEALTH INSURANCE – HIQ

Target Group: All Ages

HIQ.011 The next questions are about health insurance.
Include health insurance obtained through employment or purchased directly as well as government programs like Medicare and Medicaid that provide medical care or help pay medical bills.
{Are you/Is SP} covered by health insurance or some other kind of health care plan?
YES 1
NO..... 2
REFUSED 7
DON'T KNOW 9

HOSPITAL UTILIZATION AND ACCESS TO CARE - HUQ
Target Group: SPs Birth +
HUQ.010 {First/Next} I have some general questions about {your/SP's} health.
Would you say {your/SP's} health in general is . . .
excellent, ... 1
very good,..... 2
good, ... 3
fair, or 4
poor? 5
REFUSED 7
DON'T KNOW 9

HUQ.030 Is there a place that {you/SP} usually {go/goes} when {you are/he/she is} sick or {you/s/he} need{s} advice about {your/his/her} health?
YES 1
THERE IS NO PLACE..... 2 (HUQ.051)
THERE IS MORE THAN ONE PLACE..... 3
REFUSED 7 (HUQ.051)
DON'T KNOW 9 (HUQ.051)

REFERENCES

Andresen FM, Miller DK. The future (history) of socioeconomic measurement and implications for improving health outcome among African Americans. J Gerontol A Biol Sci Med Sci. 2005;60:1345-1350.

Balsam, K. F., Beadnell, B., & Riggs, K. R. (2012). Understanding sexual orientation health disparities in smoking: A population-based analysis. American Journal of Orthopsychiatry, 82, 482–493. http://dx.doi.org/10.1111/j.1939-0025.2012.01186.x

Blackless, M., Charuvastra, A., Derryck, A., Fausto-Sterling, A., Lauzanne, K., & Lee, E. (2000). How sexually dimorphic are we? Review and synthesis. American Journal of Human Biology, 12, 151-166.

Boehmer, U. (2002). Twenty years of public health research: Inclusion of lesbian, gay, bisexual, and transgender populations. *American Journal of Public Health, 92*(7), 1125-1130.Braveman, P. (2006). Health disparities and health equity: Concepts and measurement. *Annu.Rev.Public Health, 27*, 167-194.

Boehmer U, Bowen DJ, Bauer GR: Overweight and obesity in sexual minority women: evidence from population-based data. Am J Pub Health 2007;97:1134–1140.

Brandenburg, D. L., Matthews, A. K., Johnson, T. P., & Hughes, T. L. (2007). Breast cancer risk and screening: a comparison of lesbian and heterosexual women. *Women & health, 45*(4), 109-130.

Bonvicini, K. A., & Perlin, M. J. (2003). The same but different: Clinician– patient communication with gay and lesbian patients. Patient Education and Counseling, 51, 115–122. http://dx.doi.org/10.1016/s0738- 3991(02)00189-1

Brondolo, E., Gallo, L. C., & Myers, H. F. (2009). Race, racism and health: disparities, mechanisms, and interventions. *Journal of behavioral medicine,32*(1), 1-8.

Buchmueller, T., & Carpenter, C. S. (2010). Disparities in health insurance coverage, access, and outcomes for individuals in same-sex versus different-sex relationships, 2000-2007. *American Journal of Public Health, 100*(3), 489-495.

Cahill, S., & Makadon, H. (2014). Sexual orientation and gender identity data collection in clinical settings and in electronic health records: A key to ending LGBT health disparities. *LGBT health, 1*(1), 34-41.

Carter-Pokras, O., & Baquet, C. (2002). What is a "health disparity"? *Public Health Reports (Washington, D.C.: 1974), 117*(5), 426-434.

Case, P., Bryn Austin, S., Hunter, D. J., Manson, J. E., Malspeis, S., Willett, W. C., & Spiegelman, D. (2004). Sexual orientation, health risk factors, and physical functioning in the Nurses' Health Study II. *Journal of Women's Health, 13*(9), 1033-1047.

Center for Disease Control (CDC; 2014). About HIV/AIDS. Retrieved from http://www.cdc.gov/hiv/basics/whatishiv.html.

Cochran, S. D. (2001). Emerging issues in research on lesbians' and gay men's mental health: Does sexual orientation really matter?. *American psychologist*, *56*(11), 931.

Cochran, S. D., & Mays, V. M. (2007). Physical health complaints among lesbians, gay men, and bisexual and homosexually experienced heterosexual individuals: results from the California Quality of Life Survey.*American Journal of Public Health*, *97*(11), 2048-2055.

Cole, E. (2009). Intersectionality and Research in Psychology. American Psychological Association Vol. 64, No. 3, 170–180 DOI: 10.1037/a0014564

Conron, K. J., Mimiaga, M. J., & Landers, S. J. (2010). A population-based study of sexual orientation identity and gender differences in adult health. *American Journal of Public Health*, *100*(10), 1953-1960.

Diamant, A. L., & Wold, C. (2003). Sexual orientation and variation in physical and mental health status among women. *Journal of Women's Health*, *12*(1), 41-49.

Drabble, L., Midanik, L. T., & Trocki, K. (2005). Reports of alcohol consumption and alcohol-related problems among homosexual, bisexual and heterosexual respondents: Results from the 2000 National Alcohol Survey. Journal of Studies on Alcohol, 66, 111–120. http://dx.doi.org/10.15288/jsa.2005.66.111

Fassinger, R. E., & Arseneau, J. R. (2007). " I'd Rather Get Wet Than Be Under That Umbrella": Differentiating the Experiences and Identities of Lesbian, Gay, Bisexual, and Transgender People.

Fenway Health Comments on Stage 2 proposed Meaningful Use Guidelines (CMS-0044-P) www.fenwayhealth.org/site/DocServer/Meaningful_Use_Guidelines_Fenway_Health_comment_summary_.pdf?docID = 10303 (accessed September 4, 2016).

Fredriksen-Goldsen, K. I., Kim, H. J., Barkan, S. E., Muraco, A., & Hoy-Ellis, C. P. (2013). Health disparities among lesbian, gay, and bisexual older adults: results from a population-based study. *American journal of public health*, *103*(10), 1802-1809.

Friedman, M. S., Marshal, M. P., Guadamuz, T. E., Wei, C., Wong, C. F., Saewyc, E. M., & Stall, R. (2011). A meta-analysis of disparities in childhood sexual abuse, parental physical abuse, and peer victimization among sexual minority and sexual nonminority individuals. *American Journal of Public Health*, *101*(8), 1481-1494.

Frost, D. M., Lehavot, K., & Meyer, I. H. (2015). Minority stress and physical health among sexual minority individuals. *Journal of Behavioral Medicine*, *38*(1), 1-8.

GLAAD Media Reference Guide - Lesbian / Gay / Bisexual Glossary of Terms. (2014). Retrieved September 04, 2016, from http://www.glaad.org/reference/lgb

Greenwood, G. L., & Gruskin, E. P. (2007). LGBT tobacco and alcohol disparities. In I. H. Meyer & M. E. Northridge (Eds.), The health of sexual minorities: Public health perspectives on lesbian, gay, bisexual and transgender populations (pp. 566–583). New York, NY: Springer.

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707.

Herek, G. M., Gillis, J. R., & Cogan, J. C. (2015). Internalized stigma among sexual minority adults: Insights from a social psychological perspective.

Heck, J. E., & Jacobson, J. S. (2006). Asthma diagnosis among individuals in same-sex relationships. *Journal of Asthma, 43*(8), 579-584.

Johnson, C. V., Mimiaga, M. J., & Bradford, J. (2008). Health care issues among lesbian, gay, bisexual, transgender and intersex (LGBTI) populations in the United States: Introduction. Journal of Homosexuality, 54, 213–224. http://dx.doi.org/10.1080/00918360801982025

Jones, A. R., & Hoyler, C. L. (2006). HIV/AIDS among women who have sex with women. In F. Fernandez & P. Ruiz (Eds.), Psychiatric aspects of HIV/AIDS (pp. 299–307). Philadelphia, PA: Lippincott Williams & Wilkins.

Kaestle, C. E., & Ivory, A. H. (2012). A forgotten sexuality: Content analysis of bisexuality in the medical literature over two decades. *Journal of Bisexuality*, *12*(1), 35-48.

Kann, L., Olsen, E. O., McManus, T., Kinchen, S., Chyen, D., Harris, W. A., & Wechsler, H. (2011). Sexual identity, sex of sexual contacts, and health-risk behaviors among students in grades 9–12—Youth risk behavior surveillance, selected sites, United States, 2001–2009. MMWR CDC Surveillance Summaries, 60, 1–133.

Keener, E (2015). Journal of Sex Roles 73: 481. https://doi.org/10.1007/s11199-015-0542-5

Kelleher, C. (2009). Minority stress and health: Implications for lesbian, gay, bisexual, transgender, and questioning (LGBTQ) young people. *Counselling Psychology Quarterly, 22*(4), 373-379.

Keppel, K., Pamuk, E., Lynch, J., Carter-Pokras, O., Kim, I., Mays, V., . . . Weissman, J. S. (2005). Methodological issues in measuring health disparities. *Vital and Health Statistics.Series 2, Data Evaluation and Methods Research, (141;* 141), 1-16.

Kerr-Corrêa, F., Igami, T. Z., Hiroce, V., & Tucci, A. M. (2007). Patterns of alcohol use between genders: A cross-cultural evaluation. Journal of Affective Disorders, 102, 265–275. http://dx.doi.org/10.1016/j.jad.2006 .09.031

Killermann, S. (2015). The Genderbread Person v3. Retrieved from http://itspronouncedmetrosexual.com/2015/03/the-genderbread-person-v3/

King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., & Nazareth, I. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. BMC Psychiatry. Advance online publication. http://dx.doi.org/10.1186/1471-244X-8-70

Kinsey, A. C., Pomeroy, W. B., & Martin, C. E. (1948). Sexual behavior in the human male. Philadelphia: W. B. Saunders.

Kinsey, A. C., Pomeroy, W. B., Martin, C. E., & Gebhard, P. H. (1953). Sexual behavior in the human female. Philadelphia: W. B. Saunders.

Klein, F. (1993). The bisexual option (2nd ed.). New York: Haworth Press.

Koblin, B. A., Hessol, N. A., Zauber, A. G., Taylor, P. E., Buchbinder, S. P., Katz, M. H., & Stevens, C. E. (1996). Increased incidence of cancer among homosexual men, New York City and San Francisco, 1978–1990. *American Journal of Epidemiology*, *144*(10), 916-923.

Liebman, M., Cameron, B. A., Carson, D. K., Brown, D. M., & Meyer, S. S. (2001). Dietary fat reduction behaviors in college students: Relationship to dieting status, gender and key psychosocial variables. Appetite, 36, 51–56. http://dx.doi.org/10.1006/appe.2000.0383

Lock, J., & Steiner, H. (1999). Gay, lesbian, and bisexual youth risks for emotional, physical, and social problems: Results from a community-based survey. *Journal of the American Academy of Child & Adolescent Psychiatry*,*38*(3), 297-304.

Lick, D. J., Durso, L. E., & Johnson, K. L. (2013). Minority stress and physical health among sexual minorities. *Perspectives on Psychological Science : A Journal of the Association for Psychological Science, 8*(5), 521-548. doi:10.1177/1745691613497965 [doi]

Mayer, K. H., Bradford, J. B., Makadon, H. J., Stall, R., Goldhammer, H., & Landers, S. (2008). Sexual and gender minority health: What we know and what needs to be done. *American Journal of Public Health, 98*(6), 989-995.

Mays, V. M., & Cochran, S. D. (2001). Mental health correlates of perceived discrimination among lesbian, gay, and bisexual adults in the United States. *American Journal of Public Health, 91*(11), 1869-1876.

Mays, V. M., Yancey, A. K., Cochran, S. D., Weber, M., & Fielding, J. E. (2002). Heterogeneity of health disparities among African American, Hispanic, and Asian American women: Unrecognized influences of sexual orientation. *American Journal of Public Health, 92*(4), 632-639.

McKay, B. (2011). Lesbian, gay, bisexual, and transgender health issues, disparities, and information resources. Medical Reference Services Quarterly, 30, 393– 401. http://dx.doi.org/10.1080/02763869.2011 .608971

Meyer, I. H. (1995). Minority stress and mental health in gay men. *Journal of Health and Social Behavior, ,* 38-56.

Meyer, I. H., & Northridge, M. E. (2007). *The health of sexual minorities* (pp. 242-267). Springer Science+ Business Media, LLC.Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological bulletin, 129*(5), 674.

Meyer, I. H., & Wilson, P. A. (2009). Sampling lesbian, gay, and bisexual populations. Journal of Counseling Psychology, 56, 23–31. http://dx.doi.org/10.1037/a0014587

Mollon, L. (2012). The forgotten minorities: Health disparities of the lesbian, gay, bisexual, and transgendered communities. Journal of Health Care for the Poor and Underserved, 23, 1–6. http://dx.doi.org/10.1353/hpu.2012.0009

Moradi, B., Mohr, J. J., Worthington, R. L., & Fassinger, R. E. (2009). Counseling psychology research on sexual (orientation) minority issues: Conceptual and methodological challenges and opportunities. *Journal of Counseling Psychology, 56*(1), 5.

Mustanski, B. (2011). Ethical and regulatory issues with conducting sexuality research with LGBT adolescents: A call to action for a scientifically informed approach. *Archives of Sexual Behavior, 40*(4), 673-686.

Petroll, A. E., & Mosack, K. E. (2011). Physician awareness of sexual orientation and preventive health recommendations to men who have sex with men. *Sexually transmitted diseases*, *38*(1), 63.

Sandfort, T. G., Bakker, F., Schellevis, F. G., & Vanwesenbeeck, I. (2006). Sexual orientation and mental and physical health status: findings from a Dutch population survey. *American Journal of Public Health*, *96*(6), 1119-1125.Shavers, V. L. (2007). Measurement of socioeconomic status in health disparities research. *Journal of the national medical association*, *99*(9), 1013.

Sandfort, T. G., Bakker, F., Schellevis, F., & Vanwesenbeeck, I. (2009). Coping styles as mediator of sexual orientation-related health differences. *Archives of sexual behavior*, *38*(2), 253-263.

Smalley, K. B., Warren, J. C., & Barefoot, K. N. (2016). Differences in health risk behaviors across understudied LGBT subgroups. *Health Psychology*,*35*(2), 103.

Trocki, K. F., Drabble, L. A., & Midanik, L. T. (2009). Tobacco, marijuana, and sensation seeking: Comparisons across gay, lesbian, bisexual, and heterosexual groups. Psychology of Addictive Behaviors, 23, 620– 631. http://dx.doi.org/10.1037/a0017334

U.S. Department of Health and Human Services: Affordable Care Act to improve data collection, reduce health disparities. News release. June 29, 2011. www.hhs.gov/news/press/2011pres/06/20110629a.html (accessed August 29, 2016).

U.S. Department of Health and Human Services: Healthy People 2010 (2000). Secretary's Advisory Committee on Health Promotion and Disease Prevention Objectives for 2010. Available at: www.healthypeople.gov/Implementation/Council (accessed September 4, 2016)

U.S. Department of Health and Human Services: Healthy People 2020. Lesbian, gay, bisexual and transgender health. Available at: www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=25 (accessed September 4, 2016).

Wainberg, M. L., & Ashley, K. B. (2006). HIV/AIDS among men who have sex with men. In F. Fernandez & P. Ruiz (Eds.), Psychiatric aspects of HIV/AIDS (pp. 288–298). Philadelphia, PA: Lippincott Williams & Wilkins.

Wallace, S. P., Cochran, S. D., Durazo, E. M., & Ford, C. L. (2011). The health of aging lesbian, gay and bisexual adults in California. *Policy brief (UCLA Center for Health Policy Research)*, 1.

Wang, J., Häusermann, M., Vounatsou, P., Aggleton, P., & Weiss, M. G. (2007). Health status, behavior, and care utilization in the Geneva Gay Men's Health Survey. *Preventive medicine*, *44*(1), 70-75.

Ward, B. W., Dahlhamer, J. M., Galinsky, A. M., & Joestl, S. S. (2014). Sexual orientation and health among US adults: National Health Interview Survey, 2013. *Natl Health Stat Report*, *77*(77), 1-10.

Whitehead, M. (1992). The concepts and principles of equity and health. *International journal of health services*, *22*(3), 429-445.

Worthington, R. L., & Mohr, J. J. (2002). Theorizing heterosexual identity development. The Counseling Psychologist, 30, 491–495.

Worthington, R. L., & Moreno, M. V. (2005, August). *Beyond Kinsey and Klein: Measuring sexual orientation and identity*. Paper presented at the annual convention of the American Psychological Association, Washington, DC.