HIV/AIDS AND RYAN WHITE PART A EMERGENCY FUNDING:

AN ANALYSIS OF DEMOGRAPHIC GROUPS IN TEXAS

THESIS

Presented to the Graduate Council of
Texas State University
in Partial Fulfillment of
the Requirements

for the Degree

Master of ARTS

by

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San Marcos, Texas
August 2011

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ACKNOWLEDGEMENTS

I would like to thank my family, in particular, my parents Michael and Lizabeth Wharry, my Aunt Ruth Short, and my sisters, Deborah and Lana Wharry. Thank you for your love and support. Thank you to Douglas and Dr. Jennifer Smith and their son, Carter, for showing me the world through their eyes so that I could materialize it through my own. Thank you to Senator Edward Moore "Ted" Kennedy (1932 – 2009) who used his political identity and influence in the vision of health care reform to author and pass the Ryan White Comprehensive AIDS Resources Emergency Act of 1990 (Ryan White CARE Act). Your vision, talents, tenacity, and tragedies were your life's purpose and I am perpetually inspired by your impact on our world. Thank you to my committee members, Dr. Roque Mendez, Dr. Susan Macey and Dr. Shirley Ogletree, who worked diligently with me until the very end. A special thank you to Dr. Roque Mendez; it was your kindness and patience that made the completion of this project possible. Thank you to Dr. Reiko Graham. Lastly, the timeless quote, "we all stand on the shoulders of giants" comes to mind as I reflect upon how grateful I am to previous generations of individuals who humbly committed to a greater purpose.

This manuscript was submitted on June 22, 2011.

TABLE OF CONTENTS

Page

LIST OF TABLES

Table **Page**

LIST OF FIGURES

Figure **Page**

LIST OF ABBREVIATIONS

Page

ABSTRACT

HIV/AIDS AND RYAN WHITE PART A EMERGENCY FUNDING:

AN ANALYSIS OF DEMOGRAPHIC GROUPS IN TEXAS

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The recent shift in HIV/AIDS incidence due to underreporting requires a shift in the way the disease is monitored and funding is analyzed, evaluated and allocated in order to acquire an economic advantage over the epidemic at the federal, state and local levels. This project will investigate the relationships between demographic morbidity cases and funding of HIV/AIDS in the state of Texas during the years 2002 – 2006. Mode of

exposure will be stressed in this study. Accordingly, the analysis will test whether specific demographic variables are associated with funding level for the same period in an effort to provide information about which individuals may be targeted across the state of Texas for emergency funding and prevention services.

CHAPTER 1

INTRODUCTION

Although the United States is currently observing the 30th anniversary of our first reported case of HIV/AIDS, the Centers for Disease Control and Prevention (CDC) has only recently published the first national incidence estimates using new technology and methodology that more accurately measured the number of new HIV infections in the United States. Research revealed significant underreporting of the number of new HIV infections occurring nationally each year, with results indicating that the annual infection rate is 40% higher than previously estimated (Hall, Ruigang, Rhodes, Prejean, Oian, Lee, et al., 2008). In an effort to reduce the use of more costly in-patient care, increase access to care for underserved populations, and improve the quality of life for those affected by the epidemic, the Ryan White HIV/AIDS Program was created in 1990 with the purpose of improving the availability and quality of health care and supportive services needed by low-income and medically underserved individuals and families living with HIV/AIDS (Heath Resources and Services Administration's HIV/AIDS Bureau, (HRSA), 2006). The recent shift in incidence estimates due to more accurate measurement techniques also requires an adjustment in the way funding is analyzed, evaluated, and allocated in order to acquire an economic advantage over the epidemic.

HIV infection takes a tremendous toll on the United States and worldwide. In August 2009, the CDC publicized the first national HIV incidence estimates using new

technology and methodology that more directly measure the number of new HIV infections in the United States. The first analyses, published in the August 6, 2008 issue of the Journal of the American Medical Association (JAMA), showed that in 2006, an estimated 56,300 new HIV infections occurred in the United States (Hall et al., 2008). This number is substantially higher than the previous estimate of 40,000 annual new infections, indicating that the annual infection rate is 40% higher than previously estimated (Hall et al., 2008). Consequently, the effort of humankind to expand our global, domestic and local knowledge of the Human Immunodeficiency Virus (HIV) and its consequence, Acquired Immunodeficiency Syndrome (AIDS), continues to be enormous.

HIV/AIDS in Minority Populations in the United States and Texas

The Kaiser Family Foundation (KFF, 2009) reports more than 25 million people have died of AIDS around the world, and another 33 million are currently living with HIV/AIDS. Acquired Immunodeficiency Syndrome (AIDS) first received a distinct clinical category in 1981 (Rey, 2008). In the United States, the disease initially manifested itself within the gay community and was subsequently stigmatized by many, who linked it to promiscuous homosexual lifestyles following the sexual revolution of the 1960's and 1970's (Rey, 2008). It soon became clear, however, that AIDS was not only a result of homosexual practices, as the epidemic spread to two other vulnerable groups: blood transfusion recipients and illegal drug users (Rey, 2008). By 1984, research confirmed the Human Immunodeficiency Virus (HIV) as the source of the disease and the era of treatment and prevention began (Inciardi, Surratt & Telles, 2000).

The number of living cases in Texas increased among all racial/ethnic groups

between 2002 and 2008, but the increase was greater among Hispanics (58%) and Blacks (44%) when compared to Whites (29%) (Texas Department of State Health Services (DSHS), 2010). In terms of data for the United States, although Blacks represent approximately 12% of the U.S. population, they account for almost half (46%) of the people living with HIV in the U.S. as well as half (45%) of the new infections each year (CDC, 2011).

Hispanics are now the largest underrepresented and underserved group in the United States (Stoff, Forsyth, Marquez, & McClure, 2009), although they make up 15% of the United States population. As of 2008, more than 63,019 Texans had HIV/AIDS and the number of people living with HIV/AIDS in Texas has increased steadily, by about 6% per year (Texas DSHS, 2010). Of this number, 22.6% are Hispanic (Texas DSHS, 2010). Hispanics in Texas are also being tested later than any other ethnic group in a segment of the population already seeing a disproportionate number of cases worldwide (Meyers, 2008). According to Meyers (2008), 32% of Hispanics are diagnosed with full-blown AIDS only a month after testing HIV positive, compared with 24% each for Black and Whites.

In addition to disproportionately affecting populations by ethnicity/race in the United States, HIV/AIDS also disproportionately affects age groups. Of the estimated number of diagnoses of HIV infection in the 40 states with confidential name-based HIV infection reporting in 2009, the distribution of ages at time of diagnosis was highest among age groups 20-29, 30-39, and 40-49 (CDC, 2011a). In terms of the age distribution of full-blown AIDS, the estimated number of diagnoses in 2009 within the 50 States and District of Columbia was highest among age groups 30-49, 40-49 and age

group 50+ (CDC, 2011a). The total number of AIDS cases through 2009 experienced the highest frequency in age group 30-39, with 358,724 total AIDS cases reported across the United States (CDC, 2011a).

One of the outstanding issues with HIV/AIDS is that the number of those infected in the emerging HIV/AIDS populations is greatly underestimated (HRSA, 2009), and several reasons are cited for this underestimation. For example, in minority, immigrant, and non-English speaking communities, social, economic, cultural and language barriers often discourage those who might be infected with HIV/AIDS from being tested or seeking treatment (HRSA, 2009). In particular, Hispanics in the United States face a number of unusual challenges in combating the disease, including language barriers, limited access to health care, and legality issues (Meyers, 2008). In addition, the emerging populations affected by HIV/AIDS are more difficult to serve if they also suffer from substance abuse or addiction, hopelessness, mental illness, or other conditions requiring considerable care (HRSA, 2009).

Moreover, the United Nations Programme on HIV/AIDS (UNAIDS) (2008) reported greater human rights violations against certain groups that are infected with the virus. Women, sex workers, people who inject drugs and men who have sex with other men are more likely to be marginalized and discriminated against (UNAIDS, 2008). According to United Nations (UNAIDS, 2008), several countries still have policies that interfere with the accessibility and effectiveness of HIV-related measures for prevention and care; examples include laws criminalizing consensual sex between men, prohibiting condom and needle access for prisoners, and restricting access to prevention and

treatment services to those not holding residency status. At the same time, laws and regulations protecting individuals from discrimination are not enacted or fully implemented or enforced (UNAIDS, 2008).

The Ryan White Program

The United States Congress enacted the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act, named for a young AIDS activist who died of the disease in 1990 (Congressional Digest, 2006). It was organized under the Health and Human Services Administration, within the Public Health Service area (Government Accountability Office (GAO, 2006). The CARE Act was developed as a wide-ranging response to the HIV epidemic and its impact on individuals, families, communities, cities, states, and local community-based organizations (HRSA, 2009). The purpose of its design was to provide healthcare to those who would otherwise not have access to healthcare and was also meant to provide emergency relief funding to communities with the highest number of reported AIDS cases (HRSA, 2009). In its infancy, financial assistance under the Ryan White CARE Act was allocated to states based on the number of AIDS cases within their borders, using a formula weighted toward large cities and populations with full-blown AIDS (Congressional Digest, 2006). But since the law was written, the geographical spread of HIV into rural areas, particularly in the South, altered the terrain of the disease and raised new questions about the distribution of resources (Congressional Digest, 2006). Yet, given this trend, Congress had not substantially increased the funding level for Ryan White programs, set at two billion dollars a year, since 2003 (GAO, 2006).

Since its inception in 1990, the Ryan White Program has been revised three times,

most recently in 2006 with the Modernization Act. In 2006, the GAO (2006) recommended that Congress provide more equitable distribution of funds throughout the country and require that the government start counting people who are HIV positive as well as those who have AIDS. Consequently, in the 109th Congress, legislation was introduced that would change the allocation formula to include HIV as well as AIDS, thus reducing payments to States with large cities and redirecting the money into smaller cities with rising numbers of cases (Congressional Digest, 2006). The new formula would consist of a tiered system of cities and change provisions favoring funding for cities that first experienced the epidemic. The reauthorization change also required States to switch to a name-based reporting system or face cuts in their Ryan White Programs (Congressional Digest, 2006). In name-based reporting of AIDS cases, patient names are forwarded to the Health Department by health care providers when HIV or AIDS is diagnosed. However, an exception occurred in that States that had code-based HIV surveillance systems must establish a plan to transition to name-based surveillance systems within five years. At present, name-based reporting States are required to submit their case counts to the CDC; code-based States are mandated to submit their data to HRSA. To date, most States have transitioned to name-based systems for reporting living HIV cases. However, some are still transitioning due to complexities surrounding public health surveillance and reporting systems. In addition, some States require a lengthier transition time to adopt name-based reporting of HIV cases due to various reasons, such as changes in State legislation.

Although the 2006 Modernization Act legislation passed in the U.S. House, it stalled in the U.S. Senate. Supporters of the measure argued that with HIV/AIDS no

longer as localized in cities as it was two decades ago, rural areas were now seeing a rapid increase in cases and should also be eligible for Part A federal funds. According to the Alabama-based Southern AIDS Coalition, southern states have 46% of all new AIDS cases, but receive only 34% percent of the funding because they have fewer metropolises that qualify for city grants (Congressional Digest, 2006). Opponents insisted that urban centers still bear the brunt of the disease and should not lose funding. They maintained that instead of changing the allocation formula, Congress should provide more money for CARE Programs to meet the new demands for treatment and services. In 2006, the Act was reauthorized for three more years, ending on September 30, 2009, with a funding level of 2.1 billion dollars (Riechmann, 2006). In 2009, Congress passed the HIV/AIDS Treatment Extension Act, which was signed by President Barack Obama on October 30, 2009 (Crowley, 2009). This bill extended the Care Act for another four years.

There are 6 divisions under the CARE Act, A – F. For the purposes of this project, Part A will be addressed, as it mandated the core definitions of Eligible Metropolitan Areas (EMAs) and Transitional Grant Areas (TGAs) created by the 2006 Modernization Act and determined how funding was to be distributed. In general, Part A is used to provide a continuum of care for persons living with HIV disease. As defined by Part A, 75% of the award must be used for core medical services and 25% must be used for support services. Core services are limited to outpatient and ambulatory services, AIDS Drug Assistance Program (ADAP) treatment in accordance with section 2616, AIDS pharmaceutical assistance, oral health, early intervention, health insurance premium and cost-sharing assistance for low-income individuals, home health care, medical nutrition therapy, hospice services, home and community-based health services, mental health

services, substance abuse outpatient care, and medical case management, including treatment adherence services (HRSA, 2009). Support services are included under Part A, but must be linked to medical outcomes and may include outreach, medical transportation, linguistic services, respite care for people caring for HIV/AIDS patients, referrals for health care and other support services, case management, and substance abuse residential services (HRSA, 2009).

Current funding is allocated to certain parts of a state based on specific definitions which require that the amount of funding a location receives be determined by the number of HIV positive individuals residing in that area (GAO, 2006). Funding locations are classified as an EMA or a TGA. To be classified as an EMA, an area must have a population of at least 50,000 people and 2000 or more cumulative cases of HIV/AIDS in the last 5 years (HRSA, 2009). There are currently 22 EMAs in the United States, two of which are in Texas and include several counties around the Houston and Dallas areas. To be classified as a TGA, an area must have a population of 50,000 or more individuals and 1000-2000 cumulative cases of HIV/AIDS in the last five years (HRSA, 2009). There are currently 34 TGAs in the United States, three of which are in Texas and include several counties around the Austin, Ft. Worth and San Antonio areas. See Figure 1.

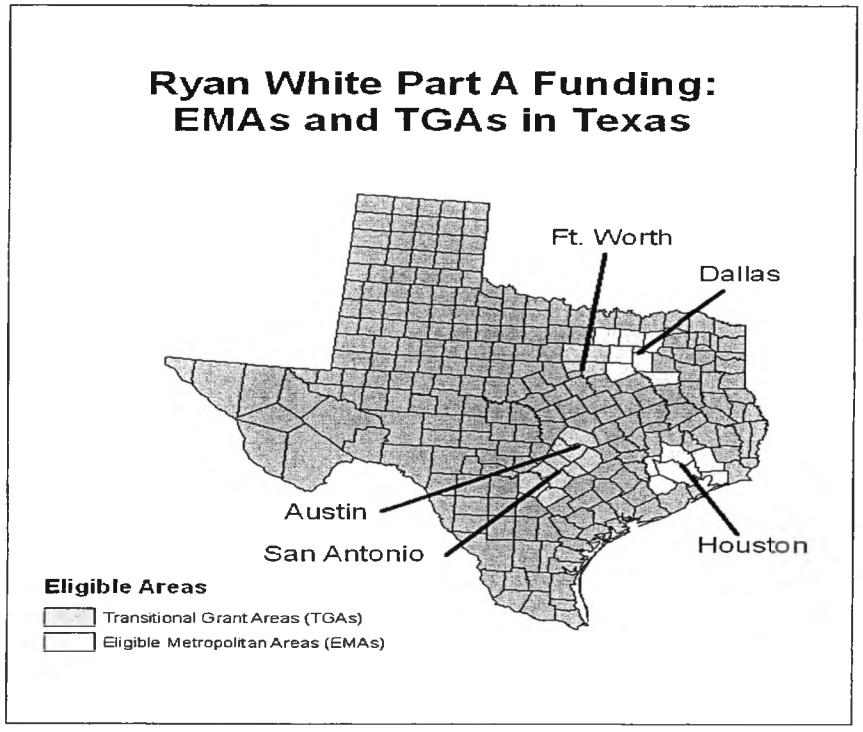

Figure 1: Ryan White Part A Funding: EMAs and TGAs in Texas.

In addition to the complexity of the funding designations inside the Ryan White Program, some external issues add to the difficulty of managing the disease according to mandates established through policy. For example, gaps in services or lack of facilities for patients represent one issue (Heckman, Somlai, Peters, Walker, Otto-Salaj, Galdabini, et al., 1998). Another issue points to the lack of cultural, language, or gender appropriate programs (Marin, Tschann, Gomez, & Kegeles, 1993). Although services for emerging populations exist, geography and/or lack of transportation make them difficult to access (Wellstood, Wilson, & Eyles, 2006). Moreover, while individual success stories in

problem areas can be identified in each community, outcome evaluations that measure whether the program is accomplishing its overall goals have been underfunded (HRSA, 2009) . For example, client satisfaction surveys have been administered among providers at the local level, but these surveys are limited to an assessment of an individual provider's services rather than a comprehensive evaluation of the Ryan White program in their communities (HRSA, 2009).

Approaches to Reporting HIV/AIDS and Modes of Exposure

Medical, pharmaceutical and technological advances have reduced the spread of HIV, while improving the quality of life of those burdened with it (Rey, 2008). Moreover, traditional methods of prevention, education programs, testing, condom distribution, and needle exchanges have produced significant results, yet these advances alone have not curtailed HIV/AIDS cases with sufficient haste, given the enormity of the disease (Rey, 2008).

According to the CDC (2011), the implementation of HIV infection reporting has differed from state to state. Before 1991, the surveillance of HIV infection was not standardized and the information on many of the cases reported before 1991 is not complete (CDC, 2011). Since then, the CDC has assisted states in conducting active surveillance of HIV infection by the use of standardized report forms and software (CDC, 2011). In 2009, the estimated number of diagnoses of HIV infection in the 40 states and 5 U.S. dependent areas with confidential name-based HIV infection reporting was 42,959 (CDC, 2011). Of these, 42,011 were in the 40 states and 948 were in the 5 dependent areas (CDC, 2011). In the 40 states, diagnoses of HIV infection among adults and adolescents totaled 41,845 with 31,872 diagnoses in males and 9,973 diagnoses in

females (CDC, 2011). Among children under age 13 years, there were an estimated 166 diagnoses of HIV infection in 2009 (CDC, 2011). In terms of classification, the CDC has established six standard transmission categories to classify how an individual was infected with HIV (although transmission categories display slight variations across states). The categories include men who have sex with other men (MSM), injection drug use, MSM and injection drug use, heterosexual contact, mother-to-child (perinatal) transmission, and other (includes blood transfusions and unknown cause). For the purposes of this research, two modes of exposure will be analyzed: heterosexual and male-to-male sexual contact. The researcher selected 'heterosexual' and 'MSM' categories in the present research because they represented categories with the largest amount of data records with which to conduct the study.

The heterosexual category contains information about individuals who were infected by a member of the opposite sex. According to the CDC (2011), this category represents the second largest area of transmission, as an estimated 12,860 heterosexual adult and adolescent males and females were diagnosed with HIV infection across the 40 United States and 5 U.S. dependent areas with confidential name-based reporting systems in 2009.

The MSM category contains information about men who have sex with other men. According to the CDC (2011), this category represents the single largest category of infection, as an estimated 23,846 adult and adolescent males were diagnosed with HIV infection across the 40 United States and 5 U.S. dependent areas with confidential name-based reporting systems in 2009.

The Psychology of Prevention and Intervention

Understanding the modes of transmission and exposure helps in identifying psychological interventions and strategies that may help stem infections and help those infected with ways to cope with the disease. In terms of psychology, an individual's behaviors and cognitions are often factors that may cause them to engage in risky behaviors. For instance, one study indicated that sexual minority men may be targeted because of their sexual orientation (Relf, 2001), and thus may be vulnerable to increased psychological sequelae, such as internalized homophobia (Herek, Gillis & Cogan, 1999). The study suggested that internalized homophobia contributed to the individual's participation in risky behaviors.

Apart from the difficulties associated with disease progression, its social impacts, emotional repercussions, related stigmas and economic hardships take a tremendous toll on the victims' quality of life (Riedinger, Dracup, Brecht, Padilla, Sarana & Ganz, 2001). The World Health Organization defines quality of life as "an individual's perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (Skevington, Lofty and O'Connell, 2004, p. 299). This definition reflects the view that the quality of life of an individual refers to an introspective evaluation that is integrated in cultural, social and environmental contexts (Rai, Dutta & Gulati, 2008).

As a result, improving quality of life is one of the most prominent issues surrounding the care and support of individuals living with HIV/AIDS. A study investigating the quality of life of HIV-infected people across different stages of infection noted that "quality of life is an important component in the evaluation of patients well-

being following HIV infection. Improving quality of life is a major goal in treating individuals infected with HIV, so it is important to identify which domain of individual's life is most affected by the disease" (Rai, Dutta & Gulati, 2008, p. 62).

There are several factors that affect quality of life in individuals living with HIV/AIDS. Grant and DeCock (2001) reported that physical illness has an adverse effect on the well-being of the person living with HIV/AIDS (PLWHA). In addition, HIV-AIDS stigmatization is stimulated by misinformation about risk of HIV transmission by prejudicial attacks against the groups most affected by the disease (Mahendra, Gilborn, George, Samson, Mudoi & Jadav, 2006). A related stigmatization constitutes a pandemic in itself – a pandemic of fear, prejudice, and discrimination (Rai, Dutta & Gulati, 2008). Subsequently, individuals who experience repeated acts of discrimination can become bitter, hostile, suspicious, and alienated (Rai, Dutta & Gulati, 2008). HIV-associated stigma also contributes to anxiety, depression, and interpersonal distrust (Rai, Dutta & Gulati, 2008).

With the understanding that the primary focus of psychology is to moderate risk behaviors, it is important to recognize that thoughts and behaviors can be altered with the use of prevention and intervention programs, thus moderating the amount of new HIV infections over time. Determining what groups are being infected will provide researchers, psychologists, clinicians, and lawmakers with an understanding of how to treat these specific groups within a cultural context for issues common to the PLWHA such as depression, interpersonal violence, drug use and other risky behaviors. This information, in turn, may also affect where funding is allocated. Consequently, the researcher aims to address the populations with the greatest number of HIV morbidity

cases in both emergency funded and non-funded areas so that future funding recommendations can be made to establish intervention programs and assist with increasing the quality of life for those individuals infected with HIV/AIDS.

Study Objectives

The Ryan White Program seeks to provide health care to those who would otherwise not have access to health care, and was also meant to provide emergency relief funding to communities with the highest number of reported AIDS cases (HRSA, 2009). However, the recent national shift in incidence due to underreporting also requires a shift in the way funding is evaluated, analyzed and tested in order to acquire an economic advantage over the epidemic at Federal, State and Local levels. The primary objectives of this study are to:

- Examine mode of exposure categories by heterosexual and men who have sex with other men (MSM). Examining sex-ethnicity/race and age differences within each category will provide information about which individuals are being infected and are at a greater risk. This analysis will provide information about which individuals may be targeted for funding and prevention services.
- Determine the distribution of modes of exposure by sex-ethnicity/race and age groups between emergency funded and non-funded areas in Texas counties. This analysis will provide information about individuals living in emergency funded and non-funded areas and assist with determining which populations may be targeted for funding and prevention services in the non-funded areas.

Hypotheses

Two specific hypotheses are advanced to address the first objective:

1. There will be differences in sex and among ethnicity/race groups by modes of exposure for the years 2002-2006.
2. There will be differences in age groups by mode of exposure for the years 2002-2006.

Based on the second objective, three specific hypotheses are advanced:

3. There will be differences between funded and non-funded areas by modes of exposure for the years 2002-2006.
4. There will be differences in sex and among ethnicity/race groups by funded and non-funded areas for the years 2002-2006.
5. There will be differences among age groups by funded and non-funded areas for the years 2002-2006.

CHAPTER II

METHODOLOGY

Data Collection

Data for this project were approved for exemption through the Institutional Review Board (IRB) at Texas State University-San Marcos, in the summer of 2008. The data were approved for exemption as it involved the use of free public health data. HIV/AIDS morbidity records were retrieved from the Texas Department of State Health Services during the fall of 2009 for each of the 254 counties in the state of Texas, for the years 2001-2006. The range of years from 2002 - 2006 was selected because these years represented the years that funding data could also be retrieved for. The records were transferred in an Excel spreadsheet, which was burned onto a password-protected CD obtained by the researcher from the Texas DSHS. Due to privacy and confidentiality concerns surrounding HIV/AIDS, the researcher and her adviser signed a 'right to privacy' form as required by the DSHS for any person requiring HIV/AIDS public health data. A confidential password was then given to the researcher in order to access the data on the CD, which contained a total of approximately 27,000 morbidity records. Since the analysis focused on the years 2002-2006, the data for 2001 was extracted. In addition, as the study was executed based on the modes of exposure by heterosexual and MSM, the data for all other modes of exposure was extracted from the records, and a total of 14,334

records were accepted for analysis. The information captured for each case was self-reported by the individual at time of testing, and subsequently reported to the Texas DSHS if the results of the HIV test were positive. Each record represented a single case of HIV/AIDS. Morbidity data attached to each record included county of residence, residence zip code, year of diagnosis, sex, ethnicity/race, age, and mode of exposure. Ryan White Part A funding data for the State of Texas was collected for each year 2002–2006, and was retrieved from the Kaiser Family Foundation (2011) website.

Procedure

Descriptive statistics were used to characterize the modes of exposure variables under study for the 14,334 records. Chi-square analyses were performed to test for differences between sex, ethnicity/race and age groups by mode of exposure and funding in the heterosexual and MSM samples. In one instance, Cramer's V was used to report associations in the data. The significance value for the acceptance of the hypotheses predicted in this study will be set at a conservative tolerance of 0.001 due to the large number of records. Finally, a series of tables and charts detailing the associations between variables and patterns were produced.

CHAPTER III

RESULTS

Ryan White Part A emergency funds were designated across the State of Texas to areas where the frequency of cases was the highest during the years 2002-2006. Consequently, it was important to determine as much information as possible about the demographics of the population of those infected with HIV/AIDS to establish associations and differences between variables that could be targeted for prevention, intervention, and emergency funding services.

Overall Data

In terms of the overall data, results indicated that females represented 2,568 (18.3%) cases of the total reported cases, while males accounted for 11,437 (81.7%) cases of the total reported cases during the years 2002-2006, as illustrated by Figure 2.

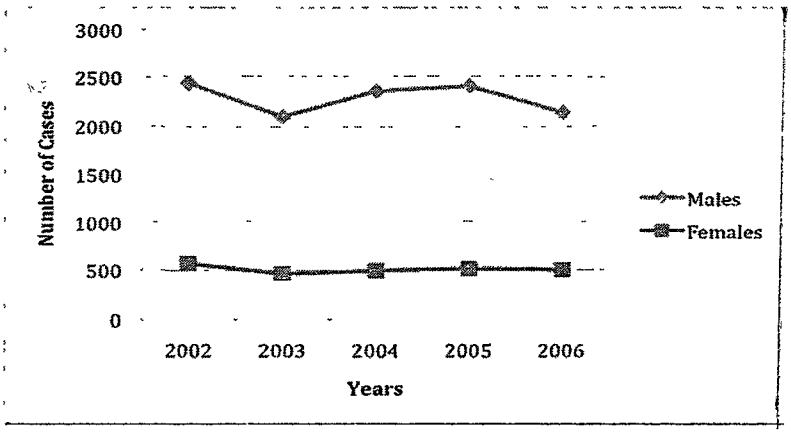

Figure 2. Gender difference (new cases) trends in the overall population, 2002-2006.

Given that males represented such a large proportion of the overall population of those infected with HIV/AIDS, this group was investigated further. Results indicated White males represented the largest population affected by HIV/AIDS during 2002-2006, with 4,267 (29.8%) cases of the total cases reported. This trend seemed alarming at first observation; however, given that white males represented a larger proportion of the overall population of males, results appeared consistent with the data (although they required investigation). In addition, as illustrated by Figure 3, white males infected with HIV/AIDS saw an overall decrease in cases during the years 2002-2005. In terms of Black males, associations indicated a steady increase in the proportion (21.4%) of cases (3,066), even though Black males represented a smaller proportion of the overall population and reported fewer infections than both White and Hispanic males in the years 2002-2005. These differences required further analysis to determine if the associations were related to heterosexual or MSM modes of exposure, as heterosexual mode of exposure accounted for 1,463 (12.8%) cases of all males and MSM exposure accounted for 9,974 (87.2%) of all males.

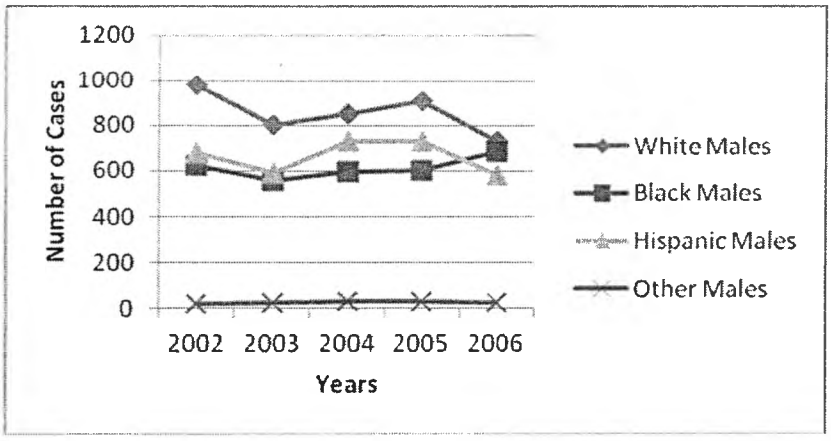

Figure 3. Ethnicity/race (new cases) trends in the overall male population, 2002-2006.

Tests of Hypotheses

There were two objectives and five hypotheses outlined in this study. The first objective was to examine sex-ethnicity/race and age differences by heterosexual and male having sex with other men groups. The second objective was to examine the distribution of modes of exposure of HIV/AIDS cases and cases between sex and among ethnicity/race and age groups between emergency funded and non-funded areas in Texas counties to determine if any of these variables was associated with funding level.

The hypotheses tested for the first objective were:

1. There will be differences in sex and among ethnicity/race groups by modes of exposure for the years 2002-2006.
2. There will be differences in age groups by mode of exposure for the years 2002-2006.

Based on the second objective, three specific hypotheses are advanced:

3. There will be differences between funded and non-funded areas by modes of exposure (heterosexual and MSM) for the years 2002-2006.
4. There will be differences in sex and among ethnicity/race groups by funded and non-funded areas for the years 2002-2006.
5. There will be differences among age groups by funded and non-funded areas for the years 2002-2006.

With regard to the first objective, hypothesis one predicted differences in sex among ethnicity/race groups by mode of exposure for the years 2002-2006. Pearson's Chi-Square test indicated overall statistically significant associations between sex-ethnicity/race and modes of exposure: χ^2 (8, N=14,334) = 7673.62, $p < .001$. Since

associations were present, the differences were explored further.

In terms of associations, Pearson's Chi-square test indicated a statistically significant association between ethnicity/race for heterosexual males: χ^2 (4, N=1463) = 1222.35, $p < .001$. Black men had the highest frequency, with 738 (5.1%) cases of all heterosexual cases. Hispanic men had the second highest frequency with 458 (3.2%) cases of all heterosexual cases, while white men represented 138 (1.0%) cases of all heterosexual cases. Other males represented 20 (0.1%) cases of all heterosexual cases for the years 2002-2006. See Figure 4 and Table 1.

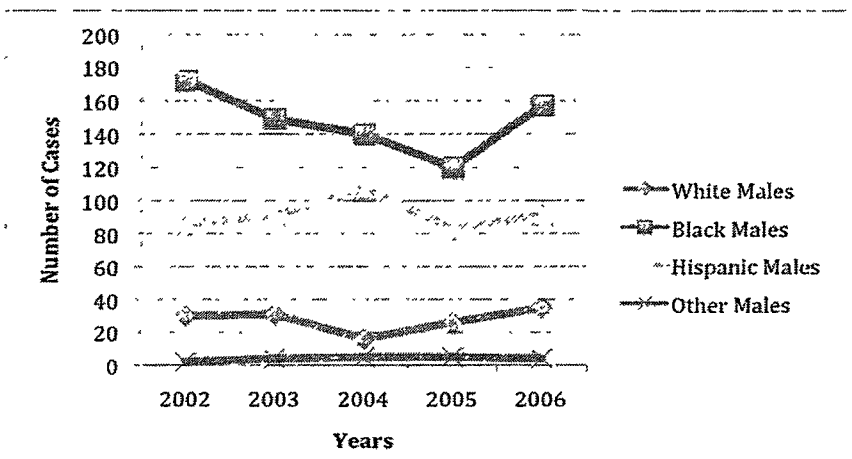

Figure 4. Ethnicity/race trends in the heterosexual male population, 2002-2006.

In terms of MSM, Pearson's Chi-Square test indicated statistically significant associations between ethnicity/race in: χ^2 (4, N=9974) = 5533.03, $p < .001$. White males had the highest frequency with 4,129 (28.8%) cases of all MSM. Hispanic males had second highest frequency with 2,855 (19.9%) cases of all MSM. Black men had the third highest frequency with 2,328 (16.2%) cases of all MSM. Other males represented 113 (0.8%) cases of all MSM for the years 2002-2006. See Figure 5 and Table 1.

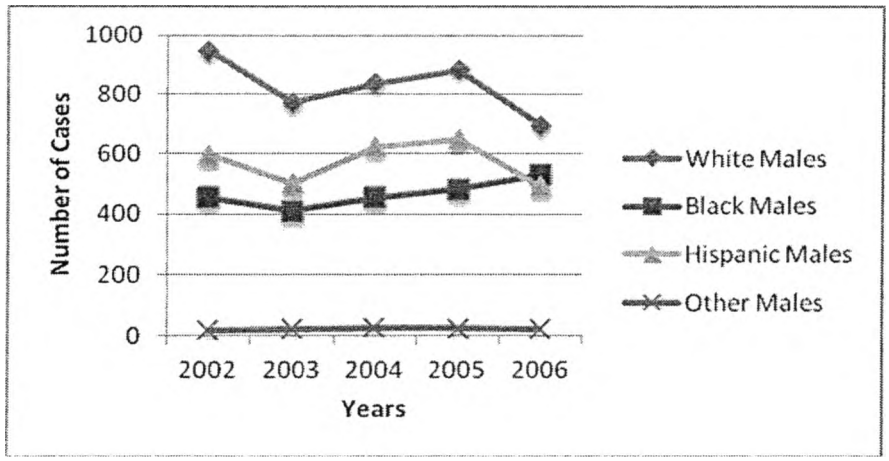

Figure 5. Ethnicity/race trends in the MSM population, 2002-2006.

In terms of the female population, Pearson's Chi-Square test indicated statistically significant associations between ethnicity/race: χ^2 (4, N=2,568) = 2544.58, $p < 001$. Black females had the highest frequency with 1,482 (10.3%) cases of all heterosexual cases for the years 2002-2006. Hispanic females had the second highest frequency with 532 (3.7%) cases of all heterosexual cases. White females had the third highest frequency with 330 (2.3%) cases of all heterosexual cases. Other females represented 33 (0.2%) cases of all heterosexual cases for the years 2002-2006. See Figure 6 and Table 1.

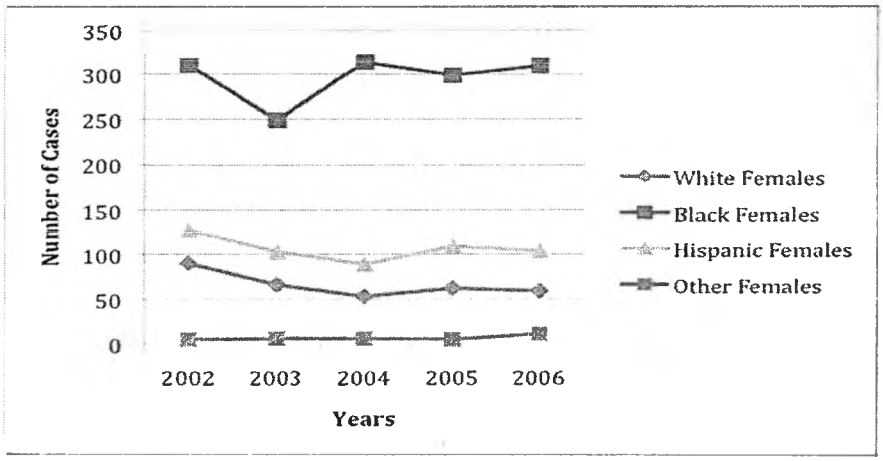

Figure 6. Ethnicity/race trends in the female population, 2002-2006.

Table 1

Total Sex-Ethnicity/Race by Mode of Exposure (%)

	Mode of Exposure		
Sex-Ethnicity/Race	Hetero	MSM	Totals
S-E/R Unspecified	2.6 (N=376)	5.6 (N=802)	8.2 (N=1178)
White Males	1.0 (N=138)	28.8 (N=4129)	29.8 (N=4267)
Black Males	5.1 (N=738)	16.2 (N=2328)	21.4 (N=3066)
Hispanic Males	3.2 (N=458)	19.9 (N=2855)	23.1 (N=3313)
Other Males	0.1 (N=20)	0.8 (N=113)	0.9 (N=133)
White Females	2.3 (N=330)	0.0 (N=0)	2.3 (N=330)
Black Females	10.3 (N=1482)	0.0 (N=0)	10.3 (N=1482)
Hispanic Females	3.7 (N=532)	0.0 (N=0)	3.7 (N=532)
Other Females	0.2 (N=33)	0.0 (N=0)	0.2 (N=33)
Totals	28.7 (N=4107)	71.3 (N=10227)	100.0 (N=14334)

**Chi-square Table probability <0.001*

Source: SPSS Crosstabs Sex-Ethnicity/Race by Mode of Exposure

Hypothesis two predicted differences among age groups by modes of exposure for the years 2002-2006. Pearson's Chi-Square test indicated overall statistically significant associations between age groups and modes of exposure: χ^2 (5, N=14,334) = 91.85,

$p < .001$. In terms of the heterosexual population, the highest frequency of cases occurred in the age group 30-39 with 1,298 (9.1%) cases of total heterosexual reported, and in the age group 20-29 with 1,113 (7.8%) cases of total heterosexual cases reported for the years 2002-2006. See Figure 7 and Table 2.

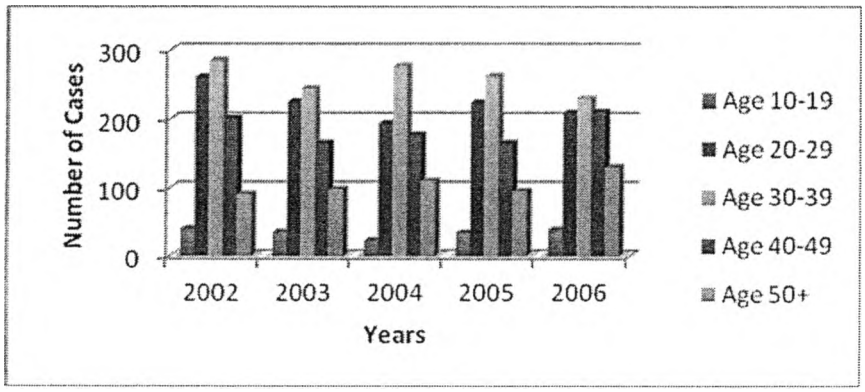

Figure 7. Age groups in the heterosexual population, 2002-2006.

In terms of the MSM population, the highest frequency of cases occurred in the age group 30-39 with 3,619 (25.2%) cases of all MSM cases reported. The second highest frequency occurred in the age group 20-29 with 2,671 (18.6%) cases of all MSM cases reported. Age group 40-49 represented the third highest frequency with 2,451 (17.1%) cases of all MSM cases reported for the years 2002-2006. See Figure 8 and Table 2.

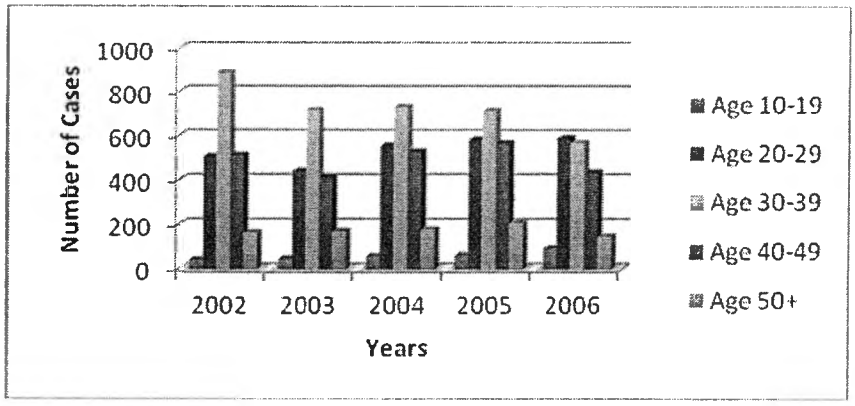

Figure 8. Age groups in the MSM population, 2002-2006.

Table 2

Total Age Group by Mode of Exposure (%)

	Mode of Exposure		
Age Group	Hetero	MSM	Totals
Age Unspecified	0.6 (N=83)	2.1 (N=305)	2.7 (N=388)
Age 10-19	1.2 (N=171)	2.2 (N=309)	3.3 (N=480)
Age 20-29	7.8 (N=1113)	18.6 (N=2671)	26.4 (N=3784)
Age 30-39	9.1 (N=1298)	25.2 (N=3619)	34.3 (N=4917)
Age 40-49	6.4 (N=918)	17.1 (N=2451)	23.5 (N=3369)
Age 50+	3.7 (N=524)	6.1 (N=872)	9.7 (N=1396)
Totals	28.7 (N=4107)	71.3 (N=10227)	100.0 (N=14334)

**Chi-square Table probability <0.001*

Source: SPSS Crosstabs Age Group by Mode of Exposure

With regard to the second objective, hypothesis three predicted differences between emergency funded and non-funded areas by modes of exposure for the years 2002-2006. A Nominal by Nominal symmetric measure was computed to assess the relationship between the mode of exposure in funded and non-funded areas. Cramer's V indicated a statistically significant association between mode of exposure and funded versus non-funded areas: Cramer's V (N=14,334) = .09, $p < .002$. In terms of both modes of exposure, higher frequencies of HIV/AIDS were located in the funded areas. Results also revealed that MSM cases were far more frequent than heterosexual cases in both funded and non-funded are for the years 2002-2006. See Table 3.

Table 3

Total Funding by Mode of Exposure (%)

	Mode of Exposure		
Funding	Hetero	MSM	Totals
Not Funded	6.9 (N=987)	11.8 (N=1695)	18.7 (N=2682)
Funded	21.8 (N=3120)	59.5 (N=8532)	81.3 (N=11652)
Totals	28.7 (N=4107)	71.3 (N=10227)	100.0 (N=14334)

**Cramer's V (N=14,334) = .09, p < .001*

Source: SPSS Crosstabs Funding by Mode of Exposure

Hypothesis four predicted differences among sex and ethnicity/race groups by funded and non-funded areas for the years 2002-2006. Pearson's Chi-Square test

indicated statistically significant associations between sex and ethnicity/race in the funded and non-funded areas: χ^2 (8, N=14,334) = 1113.49, $p < .001$. White men represented the highest frequency in funded areas, at 3,759, or 26.2% of all cases in funded areas. Hispanic men had the highest frequency in non-funded areas at 740 (5.2%) cases. In terms of females, Black females represented the highest frequency of cases in both funded and non-funded areas at 1261 (8.8%) cases of the total cases reported in the funded area, and 221 (1.5%) cases of total cases reported in the non-funded area for the years 2002-2006. See Table 4.

Table 4

Total Sex-Ethnicity/Race by Funding (%)

	Funding		
Sex-Ethnicity/Race	Not Funded	Funded	Totals
S-E/R Unspecified	4.2 (N=597)	4.1 (N=581)	8.2 (N=1178)
White Males	3.5 (N=508)	26.2 (N=3759)	29.8 (N=4267)
Black Males	2.6 (N=370)	18.8 (N=2696)	21.4 (N=3066)
Hispanic Males	5.2 (N=740)	18.0 (N=2573)	23.1 (N=3313)
Other Males	0.0 (N=7)	0.9 (N=126)	0.9 (N=133)
White Females	0.6 (N=90)	1.7 (N=240)	2.3 (N=330)
Black Females	1.5 (N=221)	8.8 (N=1261)	10.3 (N=1482)
Hispanic Females	1.0 (N=146)	2.7 (N=386)	3.7 (N=532)
Other Females	0.0 (N=3)	0.2 (N=30)	0.2 (N=33)
Totals	18.7 (N=2682)	81.3 (N=11652)	100.0(N=14334)

* *Chi-square Table probability <0.001*

Source: SPSS Crosstabs Sex-Ethnicity/Race by Funding

The fifth hypothesis predicted differences among age groups by funded and non-funded areas for the years 2002-2006. Pearson's Chi-Square test indicated statistically significant associations between age groups in the funded and non-funded areas:

χ^2 (5, N=14,334) = 39.66, $p < .001$. In both funded and non-funded areas, the highest frequency occurred in age group 30-39, the second largest number of cases was in age group 20-29 and the third largest frequency was in age group 40-49. In terms of HIV/AIDS in the older population, age 50+ represented the fourth highest frequency of cases for the years 2002-2006. See Table 5.

Table 5

Total Age Group by Funding (%)

	Funding		
Age Group	Not Funded	Funded	Totals
Age Unspecified	0.6 (N=91)	2.1 (N=297)	2.7 (N=388)
Age 10-19	0.7 (N=96)	2.7 (N=384)	3.3 (N=480)
Age 20-29	5.1 (N=733)	21.3 (N=3051)	26.4 (N=3784)
Age 30-39	5.7 (N=817)	28.6 (N=4100)	34.3 (N=4917)
Age 40-49	4.3 (N=622)	19.2 (N=2747)	23.5 (N=3369)
Age 50+	2.3 (N=323)	7.5 (N=1073)	9.7 (N=1396)
Totals	18.7 (N=2682)	81.3 (N=11652)	100.0 (N=14334)

* *Chi-square Table probability <0.001*

Source: SPSS Crosstabs Age Group by Funding

CHAPTER IV

DISCUSSION

The present research was conducted in order to gain a richer understanding of the distribution of cases over time, while investigating the relationship between modes of exposure and funding in the state of Texas for the years 2002-2006. The recent shift in incidence due to underreporting requires a shift in the way the disease is monitored and funding is analyzed, evaluated and allocated in order to acquire an economic advantage over the epidemic at federal, state and local levels. The research shed light on whether the current emergency funding structure is adequate to treat the heterosexual community as well as MSM across the state of Texas.

Findings

One obvious and consistent trend in the data indicated that the total HIV/AIDS cases for males and females dropped in 2003. Although there appeared to be no particular reason for this pattern, this trend likely represented a change in the HIV/AIDS reporting system in Texas.

The first objective examined mode of exposure by heterosexual and MSM to analyze the cases by sex-ethnicity/race and age. Statistically significant differences between sex-ethnicity/race by heterosexual and MSM modes of exposure yielded patterns for hypothesis one. Among heterosexual males and females, the frequency for

heterosexual females was higher (63.7%) than that of heterosexual males (36.3%). Upon closer inspection by ethnicity/race, minority populations of heterosexual Black males and females in Texas were affected in disproportionate numbers by HIV/AIDS. These results were consistent with what we know about HIV/AIDS, namely, that although Blacks represent approximately 12% of the U.S. population, they account for almost half (46%) of the people living with HIV in the U.S. as well as half (45%) of the new infections each year (CDCA, 2011). An additional trend observed in the Black population was that Black heterosexual females were twice as likely to be infected with HIV/AIDS than Black heterosexual males during the years 2002-2006, and more than three times as likely to contract HIV/AIDS than their White and Hispanic counterparts. However, Black MSM (75.9%) were three times as likely than Black heterosexual (24.9%) males to contract HIV/AIDS.

Regarding MSM, White males represented the highest frequency (43.8%) of morbidity cases in the MSM population for the years 2002-2006, followed by Hispanic MSM (30.3%). During this time period, the total frequency for White males has steadily declined, yet the trend for Hispanic males has increased. This pattern for Hispanic males was supported by the existing data on what we know about the data for Hispanics in Texas, that the increase in cases was greater among Hispanics (58%) when compared to Blacks and Whites between 2002-2008 (DSHS, 2010). Black MSM represented 22.8% of MSM infected with HIV/AIDS, although they represented 75.9% of all Black males infected with HIV/AIDS. This result might suggest an association among Black heterosexual females and Black bisexual males who reported as MSM, given that black heterosexual males only represented 24.1% of all Black males infected with HIV/AIDS.

There could be a variety of explanations as to why the prevalence of HIV/AIDS is so high among sexual minority men, but perhaps these results are consistent with the literature, in that, internalized homophobia, as well as issues of stigma and discrimination, play a role in increasing risky behaviors within this population. Based on this finding, it is evident that Black MSM be targeted for prevention and intervention services; this population must be handled with a sense of urgency and must be targeted with emergency funds across the State of Texas in both rural and urban areas. This trend also indicated a need to target Black females for prevention and intervention services in an effort to communicate risk information and prevention techniques.

In terms hypothesis two, age groups examined by mode of exposure yielded consistent results across both heterosexual and MSM categories, and are consistent with the CDC (CDCB, 2011) data on age groups affected by HIV/AIDS. In the current study, the age group with the highest frequency of cases was 30-39, followed by 20-29 and 40-49, in that order. In the heterosexual category, age 50+ accounted for higher increases in cases over the years than did the MSM category for age 50+. This increase across the heterosexual group indicated that older populations are not immune to contracting HIV/AIDS; they represented another specific sample of the population that might benefit from education and prevention services.

The second objective examined sex-ethnicity/race and age variables by modes of exposure within emergency funded and non-funded areas to determine if either variable was associated with funding level. Regarding Ryan Part A emergency funds, data indicated that roughly 80% of all cases of HIV/AIDS are in Texas cities, namely the TGAs and EMAs. However, it appeared that these regions receive emergency funding

according the Ryan White Part A policy because, overall, they experienced higher cases than rural areas. Observing this trend shifted the focus from funded areas to non-funded areas.

Regarding hypothesis three, there were more MSM cases in both funded and non-funded areas. As evidenced by the data, and in line with hypothesis four, more males than females were living with HIV/AIDS in areas that did not receive Ryan White Part A emergency funds. A further association in the data indicated that the Hispanic males and Black females represented the highest number of cases living in non-funded areas during the years 2002-2006, but particularly Hispanic men who comprised 5.2% of the total number of cases residing in non-funded areas. In addition, results indicated that Hispanics, as a whole, represented the largest ethnic group living in non-funded areas. These trends were consistent with the knowledge we have about HIV/AIDS data, in that there are underserved and underreported populations outside of the emergency funded areas, which will continue to increase if further measures to restructure emergency funding are not taken.

In terms of hypothesis five, positive results indicated that age groups living in emergency funded and non-funded areas yielded similar patterns. Age 30-39 yielded the highest frequency of cases in both funded and non-funded areas, while age group 20-29 yielded the second highest cases in both emergency funded and non-funded areas, followed by age groups 40-49 and 50+ for the years 2002-2006.

Limitations

Limitations existed with regard to the current data. First, the privacy of the records represented a limitation because the records contained confidential HIV/AIDS reporting

status and information about the individuals associated with the records are still living. Additionally, the researcher relied solely on the accuracy of the data from the State of Texas, and did not depend on any other source. Regarding the data, there were numerous records that contained unspecified or vague information. These records were marked with asterisks and zeros, which meant that they could not be classified into the main analysis categories and used for reporting. However, they were left in this study because, according to Ryan White program guidelines, the number of positive individuals within an area count towards the overall funding designated to that certain area. Furthermore, a limitation that must be addressed when utilizing the datasets within this study is that the range of years analyzed may not be expansive enough to demonstrate conclusive trends over time. HIV/AIDS may be better suited for research that is longitudinal in nature.

Perhaps one of the most unsettling limitations surrounding the challenges of HIV/AIDS research, in general, is the perpetual dilemma surrounding the number of individuals each year who remain underreported. As communicated by this study, underreporting occurs for a number of reasons, yet additional reasons may involve issues surrounding the categorization of the data by state and governmental agencies. For example, the CDC and the State of Texas do not currently have categories established in order to capture information and statistics for Asian American and Pacific Islander populations. Since there are no categorization variables established for these (and other) minority population in the United States, it is possible that specific populations may remain unaware of their need for intervention for an undetermined period of time, as they technically do not exist in the classification system where patterns might be observed. The danger in this type of underreporting is that those individuals may be severely

underestimated in terms of morbidity cases, and may be unaware of their positive status thus unknowingly infecting others.

Directions for Future Research

Future studies may address and determine a holistic definition of 'need' as it applies to funding allocation and policy issues surrounding HIV/AIDS. According to McLafferty (2003), need is a multidimensional concept that reflects the characteristics of people, their behaviors, and the environments in which they work and live. Regarding HIV/AIDS, the definition of need is as complex as the disease itself.

Social science research has utilized GIS to investigate HIV/AIDS. In relation to incidence studies, the disease is spread by actions requiring close contact, so the geographical aspect is crucial to understanding the transmission of the disease and developing interventions to slow down or stop the spread of the disease. When approaching the treatment of those already infected with the disease, the study of spatial location may be of importance if allocation of scarce resources, such as funding, is to be effective. In the United States, geospatial analyses have been used in conducting investigations of CDC-funded HIV prevention programs for African Americans (Gilliam, Hanchette, Fogarty, & Gibbs, 2008). Local health departments are using GIS to track diseases and plan services (Gardner & Harrington, 2003).

Another direction future studies may take is to aggressively adapt, combine and visualize datasets of interest to public health care professionals and policymakers. Nationally and within states, Geographic Information Systems (GIS) could pull together disparate research efforts to assist in understanding the successes and failings of federal and state programs such as Ryan White (Philips, Kinman, Schnitzer, Lindbloom &

Ewigman, 2000). For example, HIV/AIDS mortality rates could be investigated by Congressional District to determine if policymakers representing those districts are voting in the interests of those affected by HIV/AIDS. A GIS analysis of this type would assist policymakers in a useful, positive and beneficial way, and could assist with reallocating funding from areas of modest incidence to the areas of greatest need.

Lastly, it is important to note that the successful prevention, intervention and treatment of disease may vary among cultures. Future research must more closely observe populations within their specific culture in order to establish culturally appropriate and gender strategies for combating HIV/AIDS.

Summary

The recent shift in HIV/AIDS incidence due to underreporting requires a shift in the way the disease is monitored and funding is analyzed, evaluated and allocated in order to acquire an economic advantage over the epidemic at the federal, state and local levels. The objectives of this study were to examine heterosexual and MSM modes of exposure by sex-ethnicity/race and age for each category and to test whether the variables are associated with funding level. Various studies have been conducted in the field of HIV/AIDS using distinctive techniques, but none that assess funded non-funded areas in Texas with the highest morbidity cases in order to recommend restructuring the allocation of Ryan White Part A emergency funds. Examining sex-ethnicity/race and age differences within each category provided information about which individuals were being infected and were at greater risk, and provided information about cases outside of the emergency funded areas. Moreover, this analysis provided information about which individuals may be targeted across the state of Texas for emergency funding and

prevention services.

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VITA

Michelle Ann Wharry was born in Yale, Michigan, on June 12, 1974, the daughter of Michael Brent Wharry and Ann Marie Jones. Michelle entered Texas State University-San Marcos in 1993. During her undergraduate studies, Michelle served in Student Government as Senator to the School of Science, and sang in the University Chorale. She received a degree of Bachelor of Science in Cartography from Texas State in December 1999. Immediately upon graduation, Michelle was employed in the oil and gas industry in Houston, Texas, working in geophysics and pipeline risk assessment. After relocating to Austin, Texas, in 2003, Michelle worked in small business management, and as an independent Consultant working with children. In 2006, Michelle was inducted as a member of Psi Chi, the International National Honor Society in Psychology, and in 2007, entered the Graduate College at Texas State University-San Marcos. During her graduate studies, Michelle was published under Dr. John Davis in the International Journal of Psychology's electronic annual annotated bibliography supplement, and was also awarded the position of Legislative Aide to State Representative Elliott Naishtat at the Texas House of Representatives, working on constituent correspondence as well as issues involving Health and Human Services. Currently, Michelle is serving as board Vice-President of Faith in Action-North Central Caregivers, a non-profit organization that assists older individuals with staying independent in their own homes, and is involved in politics in Austin, Texas. Michelle has traveled to six continents and enjoys international relations and meeting new people.

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