2011-12-07

Sources of Information and HIV/AIDS in Minority Communities of Broward County

Elizabeth Sanchez Brana
University of Miami, edol217@aol.com

Follow this and additional works at: https://scholarlyrepository.miami.edu/oa_dissertations

UNIVERSITY OF MIAMI

SOURCES OF INFORMATION AND HIV/AIDS IN MINORITY
COMMUNITIES OF BROWARD COUNTY

By

Elizabeth Sanchez Brana

A DISSERTATION

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy

Coral Gables, Florida

December 2011

UNIVERSITY OF MIAMI

A dissertation submitted in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

SOURCES OF INFORMATION AND HIV/AIDS IN MINORITY COMMUNITIES OF
BROWARD COUNTY

Elizabeth Sanchez Brana

Approved:

_____
Lisa Metsch, Ph.D.
Professor of Epidemiology
and Public Health

_____
Terri A. Scandura, Ph.D.
Dean of the Graduate School

_____
Margaret Pereyra, Ph.D.
Associate Professor of BioStatistics

_____
Edward Trapido, Ph.D.
Professor of Epidemiology and
Public Health

_____
William W. Darrow, Ph.D.
Professor of Public Health
Florida International University

SANCHEZ BRANA, ELIZABETH   (Ph.D., Epidemiology and Public Health)
Sources of Information and HIV/AIDS   (December 2011)
In Minority Communities of Broward County

Abstract of a dissertation at the University of Miami.

Dissertation supervised by Professor Lisa Metsch.
No. of pages in text. (116)

In 2008 it was estimated that in Broward County approximately 1 in 130 was living with HIV/AIDS. Broken down by race, it was 1 in 216 Whites, 1 in 50 Blacks and 1 in 198 Hispanics. Broward County had the second highest case rate of all the counties in the state of Florida. HIV/AIDS prevention remains a critical challenge and high impact prevention strategies are needed consistently to reach the most people using limited time, effort and funds. There has been little evidence to demonstrate the relationship between sources of information, specifically media channels, and risk perception and risk behaviors. Through its ability to widely spread information and education, media (TV, radio, newspaper and internet) remains a formidable tool in addressing HIV/AIDS prevention with minorities. The literature review found few published reports that explored media and its relationship to risk perception, behavior and testing in minority communities.

This epidemiological study analyzed data from the REACH 2010 Project ("Racial and Ethnic Approaches to Community Health"), a project funded by the Centers for Disease Control and Prevention (CDC), that performed a variety of prevention interventions targeted at minority communities in Broward County, Florida. The study assessed the relationship between media as a source of information for HIV/AIDS with three behaviors; risk perception, risk behavior and HIV testing. It provides valuable

information for future media interventions aimed at risk minority populations by community based organizations (CBOs), HIV/AIDS prevention service providers and state health departments.

DEDICATION

I dedicate this dissertation to my husband Ray and my children Brandon, Lucas and Ellie Grace Brana, for their endless patience and support.

I would like to also dedicate this dissertation to my parents, Deanna and Jorge Sanchez, who instilled in me a work ethic and passion for learning that has kept me going throughout.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Chapter 1. Introduction

1.1. General Overview

The National HIV/AIDS Strategy for the United States (2010) refers to barriers such as poverty and access to care that continue to stand in the way of successful outreach interventions addressing HIV/AIDS prevention for underserved populations. It also acknowledges that disparities in HIV prevention and care persist among racial and ethnic minorities. The national strategy calls for an appropriate response sensitive to the size, diversity, richness and needs of our most affected communities (White House, 2010). This study focused on self-reported exposure to various media sources about HIV/AIDS in 3 minority populations.

The US strategy has focused on 3 main steps for the reduction of inequities; to reduce HIV related mortality within high HIV risk communities, to adopt community level approaches to reduce HIV infection and to reduce stigma and discrimination among those living with HIV (White House, 2010). Within this context, this epidemiological study analyzed data from the REACH 2010 Project ("Racial and Ethnic Approaches to Community Health"), a project funded by the Centers for Disease Control and Prevention (CDC), that performed a variety of prevention interventions targeted at minority communities in Broward County, Florida from 2000 to 2008. REACH 2010 established relationships with local media partners, community based organizations (CBO) and key community gatekeepers to develop culturally sensitive behavioral interventions against the spread of HIV/AIDS.

REACH 2010 focused on 18-39 year-old African-American, Hispanic, Haitian, and other Caribbean residents of 12 ZIP code areas in Broward County. Strategic

communications was one of four interventions implemented by the Broward coalition to increase awareness of the risks of HIV transmission (chances of getting HIV), promote primary prevention (use a condom), secondary prevention (take an annual HIV test), and reduce HIV incidence (number of annual HIV infections reported for Broward County). In 2003, the project implemented a media campaign addressing HIV/AIDS prevention targeted at African American, Hispanic, Haitian and Caribbean residents living in Broward County (FL). The Florida Department of Health had estimated that nearly 1% of the entire population living in Broward County was infected with HIV, about three times the estimated national average, (BCHD, 2002). African-American, Hispanic, Haitian and Caribbean American young people in Broward County were, and continue to be, at an increased risk for HIV infection (BCHD, 2008). Preliminary research for REACH 2010 indicated that 73% of the AIDS cases among racial and ethnic minority populations in Broward County occurred among residents in 12 of 53 zip-code areas (Darrow et al., 2004). In 2008, when research began for this study, it was estimated that in Broward County approximately 1 in 130 was living with HIV/AIDS. Broken down by race, it was 1 in 216 Whites, 1 in 50 Blacks and 1 in 198 Hispanics (BCHD, 2008). It had the second highest case rate of all the counties in the state of Florida.

1.2. Overall Goal

The overall goal of this study was to assess sources of information for HIV prevention and the relationship of the media as a tool to addressing HIV prevention with African American, Hispanic and Caribbean Islander populations. Specifically, the study analyzed the relationship between media sources of information for HIV/AIDS with respect to three behaviors: risk perception, risk behavior and HIV testing. It is important

to note that data analyzed in this study is self-reported exposure to media, self-reported

being a crucial determinant of the two beliefs and two behaviors analyzed in this study.

These data provide important information to support the future development of local

media interventions for at risk minority populations by community-based organizations

(CBOs) and other HIV/AIDS prevention service providers (including state health

departments) with limited time, personnel and funds.

Chapter 2. Background and Significance

This chapter will underscore the need for a greater understanding of the relationship between media and HIV/AIDS knowledge, risk perception and behavior. It will also review literature relevant to the study, including literature about REACH 2010 authored by key players leading the project.

2.1. About REACH 2010

REACH 2010 was designed in 1999 as a response to Healthy People 2010's initiative to eliminate health disparities in minority communities (Darrow, Kim, Montanea Uribe, and Sánchez-Braña, 2010). Broward County (Florida) was selected due to its very high prevalence of HIV/AIDS when compared to the rest of the US. Although reported rates of AIDS began declining nationwide and in many U.S. cities in 1999, the incidence of AIDS increased in Ft. Lauderdale (the largest of 27 municipalities in Broward) from 54.7 per 100,000 in 1998 to 61.2 per 100,000 in 1999. It was also selected because of its extremely diverse population with respect to race-ethnicity and socio-economic class, perceived to be hard to reach populations for HIV/AIDS outreach and education.

2.1.1. Disparities in Broward County.

Disparities were evident in South Florida and Broward County. In 1999, Non-Hispanic Black (African- and Caribbean-American) residents of Broward County account for 14.4% of the total population, but 43.7% of the cumulative AIDS cases reported for adolescents and adults. In the five years previous to the design of REACH 2010 (1994-1999), approximately 51% of the AIDS cases among 18-39 year olds had been classified as "Black, non-Hispanic." HIV infections reported as of July 1997 showed that 66% of HIV-positive tests occurred among Black, non-Hispanic residents, and similarly,

4

Hispanic residents of Broward County were disproportionately infected with HIV compared to white, non-Hispanic residents. It was this data that set the stage for the REACH 2010 project (Darrow et al., 2004). As evidence above, the period before obtaining funding for the REACH 2010 project indicated the HIV/AIDS problem among minority populations in Broward was severe and getting worse.

In 1999, the Florida Department of Health had estimated that nearly 1% of the entire population living in Broward County was infected with HIV, about three times the estimated national average. African-American and Hispanic, Haitian and Caribbean American young people in Broward were at increased risk for HIV infection, and preliminary research indicated that 73% of the AIDS cases among racial and ethnic minority populations in Broward County occurred among residents in 12 of 53 zip-code areas (Darrow et al., 2004).

Evaluations for REACH 2010 during the first year of the project concurred with suggestions in studies like that of Leonard Jason's in 1998. Jason believed that collaborating with media specialists could lead to the development of interventions that were better publicized and better equipped to engage behavior and attitude change within communities. His article describes a series of media interventions involving smoking cessation, drug abuse prevention, stress reduction, weight control, and HIV/AIDS prevention which suggested the utility of large scale (media) interventions along with community based interventions for behavior change (Jason, 1998). REACH 2010 hired a marketing specialist who worked with the project for approximately five years. The project lost this position when funding became capped for marketing, and Public Service Announcements were costly and almost never in-kind. The Computer Assisted Telephone

Interview (CATI) 2003 survey provided a unique opportunity to address the research questions referent to media and sources of information.

2.1.2. Project design.

After formative evaluations were conducted (1999-2000) to develop a community action plan, the REACH 2010 Coalition, based at Florida International University (FIU), designed a comprehensive multilevel, multi-sector and multi-phased intervention program to disrupt the transmission of HIV/AIDS in the 12 county zip codes of Broward County with the highest incidence rate of HIV/AIDS.

Two thirds of the county's impoverished population lived in these areas. Most of these 12 ZIP-code areas lined Interstate highway 95 (I-95): 4 contiguous ZIP-code areas were in the north, 4 in the center, and 4 in the south. HIV prevention efforts had been conducted in these communities in the past, but were sporadic due to their funding. Geographic Information Systems (GIS) software was used to help identify communities and locate neighborhoods with elevated rates of HIV disease. These 12 of the total 53 Broward county ZIP-code areas accounted for 73% of reported AIDS cases among Black and Hispanic young adults aged18 to 39 years, from 1994 through 1999. Participants from each of the 4 major racial and ethnic minority communities of interest in Broward County were recruited from each of the 12 ZIP-code areas in which interventions were being introduced, but residential clustering was notable in several specific areas (Darrow et al., 2004). Culturally sensitive, community-level strategies were implemented to enhance the essential services provided by the Broward County Health Department. Targeted actions for this community demonstration project included:

☐ Horizontal outreach: direct, continuous, persistent interpersonal contacts between community health outreach workers and adults at risk of HIV infection to provide accurate information and stimulation for behavior change

☐ Vertical outreach: direct, continuous, persistent interpersonal contacts with business owners and operators, shopkeepers, civic, political, and religious leaders of minority communities to support HIV prevention activities

☐ Strategic Communications: selective use of radio, television, and print media, and the development of small media (i.e., neighborhood newsletters) to provide accurate factual and motivational messages supporting HIV prevention through community participation, ownership, and action.

☐ Infrastructure Development: sustained efforts to build capacity of community-based organizations and other institutions in Broward County to understand and address the health needs of the underclass and the underlying causes of inequality.

Formative research conducted in 1999-2000 indicated that strategic communications, mass and small media, should be supported by the Broward coalition under REACH 2010 as one of four critical interventions required to eliminate racial and ethnic disparities in HIV disease (Darrow et al., 2004). Communications had to be "strategic," because the State of Florida Department of Health (DOH) had contracted with Sunshine Communications in 1999 to develop a media campaign, "We Make the Change," for African Americans at increased risk of HIV infection throughout the state. The REACH 2010 project sought to complement, but not duplicate, HIV-prevention activities that were being supported by the DOH and other funding agencies concerned about HIV/AIDS in vulnerable populations living in south Florida. Continual budget cuts

throughout the life of the project did not allow for a steady dedication of funds to media. Media institutions can play a crucial role in health behavior because as socializing agents, they have a powerful impact in legitimizing behavioral norms (Glanz et al., 2005).

Horizontal educational outreach to community residents, vertical educational outreach to community leaders, business operators, and influential stakeholders, strategic communications, and infrastructure development were designed to produce synergistic effects. Together with other activities being carried out at the time, REACH 2010 project interventions were implemented to: (1) increase awareness of the extensive HIV problem among minority young adults living in Broward County, (2) reduce the occurrence of risky sexual behaviors that might transmit HIV, and (3) encourage more frequent HIV testing for early detection of HIV infections and immediate referral for appropriate antiviral treatment.

2.2. Healthy People and Health Disparities

Healthy People's focus and goals in the last 20 years has been on disparities. Healthy People 2000 attempted to reduce health disparities among Americans. Healthy People 2010 attempted to eliminate, not just reduce, health disparities. The goal for Healthy People 2020 was expanded even further. It is to achieve health equity, eliminate disparities, and improve the health of all groups.

Health Equity is defined in Healthy People 2020 as attaining the highest level of health for all people. To achieve this, everyone must be valued equally. There must be a focus on this with society's efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and health care disparities.

For the first time, Healthy People 2020 has a new focus on lesbian, gay, bisexual, and transgender health. Efforts to curtail the myriad of issues that affect this group includes interrupting human immunodeficiency virus (HIV) and sexually transmitted diseases (STDs) with interventions that work. This current focus further supports additional studies that should include sources of information and viable interventions for specific communities to target health disparities.

2.3. Selected Literature Examples

When this study on sources of information began in 2007, there had been little evidence to demonstrate the relationship between sources of information, specifically media, and HIV risk perception and HIV risk behaviors of minority communities. The literature review found few published reports that explored media and its relationship to risk perception, behavior and testing. Much of the literature found focused mainly on descriptive reports about sources of information and the populations that reported using them for HIV/AIDS treatment and other health information (Cunningham, Davidson, Terry, Nakazono & Anderson,1999; Henderson, et al., 2004) Very few were found that attempted to analyze the relationship between risk perception, risk behavior and testing to sources of information and its relevance (Dutta-Bergman, 2004; Orrego-Dunleay, Crandall &Metsch, 2005). During the time this study evolved, social media and marketing have become formidable tools in HIV prevention (Gibson et al., 2010; UNAIDS, 2010). While great strides are described in these published reports, there is a strong need for further studies to evaluate such tools and their effectiveness both at the community level and globally.

The literature selected below can serve as an example of relevant studies found in the course of a decade to support the hypotheses proposed in this study.

2.3.1. Ethnic and racial minority communities at increased risk for HIV infection and the sources of information they access

Evidence of the need for minority community research and efficient and effective intervention was present during the early stages of the REACH 2010 project, and has remained a constant request in the last decade.

A cross-sectional study conducted by Cunningham and colleagues in 1999 recognized that it is important to know the sources of information most frequently reported by minorities as useful for HIV/AIDS information, and that little is known about how sources of information for HIV/AIDS vary in effect by race, education and age. This study interviewed 1,769 Black and White adults in Baltimore, Maryland to identify the most common communication channels reported for AIDS information. The study used mean scores to find that TV and broadcast media are the most common, with newspapers and other forms of print media following closely. Television or other broadcast media resulted in a mean frequency rating score of 79.7, from a 0 to 100 range where 100 was the most commonly used source. Newspapers and other print media followed, with a mean frequency rating score of 75.4. The study reports stratification by race, age and gender and found significant differences within most variables using analysis of variance and Duncan's multiple range adjustments for multiple tests. There was little variation across the race groups. National and local public health agencies, as well as medical doctors and dentists, were more commonly reported by Blacks. The authors suggested that future studies need to evaluate the feasibility and effects of such potential interventions (Cunningham, Davidson, Terry, Nakazono & Anderson, 1999).

In 2000, Bhattacharya examined the amount of knowledge about HIV/AIDS and the most used sources of information and knowledge among a minority group, Asian-Indian adolescents, who were born in the USA. Although 86% knew that having unsafe sex with a person infected with HIV could infect them with HIV, 47% did not know that sharing a razor with an HIV-positive person could do so. A significant number believed that donating blood, 27%, and taking blood tests, 14%, could transmit HIV. Television was the most used source of information, but school programs on HIV/AIDS were considered the most useful source. The results indicated that to be effective, among other suggestions, prevention programs should investigate sources of information further to assess media interventions (Bhattacharya, Cleland & Holland).

2.3.2. Effects of media sources on perceptions of public health problems, perceptions of risk and behavior change to prevent and detect HIV infection.

A 10 year systematic review of HIV/AIDS mass communication by Noar and colleagues in 2009, from years 1998-2007, focused on sexual behavior and HIV testing. It compared results with the last comprehensive review of such campaigns, conducted by Myhre and Flora in 2000 from the period 1986-1998. A comprehensive search strategy yielded 38 HIV/AIDS campaign evaluation articles published in peer-reviewed journals, representing 34 campaign efforts conducted in 23 countries. The articles were coded on a variety of campaign design and evaluation dimensions. Results indicated that when compared with the previous systematic review, campaigns have increasingly used improved and specific campaign designs aimed to their targeted communities. Examples include developed targeted defined audiences, designed campaign themes around behavior change rather than knowledge change, use of behavioral theories, high message exposure, stronger research designs for outcome evaluation and measures of

behavior/intentions in outcome assessments. Also, a look at the 10 campaign efforts that used more rigorous quasi-experimental designs reported that 8 of the 10 demonstrated effects on behavior change or behavioral intentions. It is the opinion of the authors that despite these positive developments, most HIV/AIDS campaigns continue to use weak, pre-experimental outcome evaluation designs (Noar, Palmgreen, Chabot, Dobransky, & Zimmerman, 2009).

In the last 5 years, the growth of social marketing and networking in general has increased opportunities for HIV/AIDS education and information to shape knowledge, attitudes and beliefs, the KAB's, needed for behavior change. Social marketing applies marketing principles to promote social good (Gibson et al., 2010). Gibson and colleagues studied injection drug users in 2010 to evaluate a community-based social marketing campaign to reduce injection risk behavior among drug users in California. A review done by this group found 8 of 10 evaluated social marketing interventions responsible for changes in HIV-related behavior (Gibson et al., 2010).

In 2009, the Centers for Disease Control and Prevention (CDC) structured a social marketing intervention inspired by three theories; Ecological Model, the Theory of Planned Behavior and the Health Belief Model. They developed a campaign with print, radio and outdoor advertising along with telephone hotlines, website, community partnerships and events to promote information seeking and HIV testing. Seven core principles were followed to design and evaluate the campaign to include formative research, behavioral theories, audience segmentation, message design and pretesting, channel selection, process evaluation and outcome evaluation (Fraze et al., 2009). The study reported that over 200 partners in both cities contributed significantly to the

campaign. More than 9600 individuals attended campaign events in both cities. Interviews indicated that city infrastructures for HIV testing improved, with 1492 rapid HIV tests administered and 14 newly-identified HIV individuals. In summary, event attendees responded positively to campaign materials, events, and free HIV testing opportunities. Also, the campaign significantly increased information-seeking behaviors in the form of hotline calls and web searches. Exposure to campaign messages was associated with increases in key knowledge items, intentions to get tested, and peer-to-peer communication (Fraze et al., 2009). Fraze and colleagues concluded that all aspects of the intervention acted synergistically to help its campaign reach its target audience to seek information and HIV testing.

2.3.3. Comparative differences in sources of information for varying groups.

Dutta-Bergman (2004) used t-tests to describe that there were differences in health consciousness, health information orientation, beliefs and activities for those who received health-related information from various sources of information. The hypotheses of the study compared different communication channels as sources of health information. The overall goal of the study was to identify differences among individuals that can be used to target health communication for several health risks, including HIV/AIDS. The study used the Porter Novelli HealthStyles database collected annually since 1995. It is based on the results of three postal mail surveys.

The initial survey, the DDB Needham Lifestyles survey, was sent to a stratified random sample of approximately 5,000 U.S. adults in April of each year. The sample was generated from a panel of 500,000 cooperating households that represent a range of socio-demographic characteristics. The second survey was a supplemental mailing of the

Lifestyles survey to adjust the representation of particular households in the database. In 1999, the supplemental mailing was sent to 210 low-income households and 210 minority households to compensate for their lower return rates. The third survey, HealthStyles, was sent to participants who completed either the initial or supplemental Lifestyles survey.

In 1999, the response rates for Lifestyles and HealthStyles were 68% and 74%, respectively. The entire sample was weighted on age, sex, race or ethnicity, income, and household size to reflect the US Census population. There were 2,636 participants that provided usable data. The sample was comprised of 48.2% men and 51.8% women. The mean age of the sample was 44.87 (SD = 16.71). Each hypothesis compared those individuals who reported learning most of their health information from a particular sourcel with the individuals who reported not learning health information most often from a particular source. Dutta-Bergman explains that people can be grouped by those that actively seek out information and have strong health beliefs, versus individuals who are not health oriented for which passive media consumption channels (like radio and TV) become health communication resources (Dutta-Bergman, 2004) .

The results showed that people who relied on health-information from inter-personal networks (family and friends) most often were more likely to be health oriented and engage in healthy activities. The study also showed that participants who learned most often from newspapers or magazines reported higher levels of health consciousness and healthy activities. After reviewing the results, Dutta-Bergman suggested that sources of information with an entertainment orientation, TV and radio, would be suited for health prevention campaigns, especially for those less healthy individuals. The author

concluded this study by suggesting the need for future research on such media outlets. Break down by race ethnicity was not looked at in this study (Dutta-Bergman, 2004).

Orrego-Dunleavy and colleagues in 2005 examined sources of health information and their relationship to use of medical care among 1,479 chronic users of illicit drugs and those that are not users. Users were interviewed and recruited from neighborhoods with high rates of drug use in Miami, Florida. The goal of the study was to examine the comparative differences in media use as a tool for disseminating health information among the groups. The study uses logistic regression analysis to find an association between sources of information and perceived primary care access. It found that those using medically related sources of information (pamphlets, doctors and pharmacists) were more likely to access primary health care, suggesting high risk groups are being targeted by medical professionals. Also, the authors found that television, across the board, was an important source for learning about preventative healthcare. The results suggested that chronic drug users were oriented towards using family, friends and magazines for preventative healthcare information, whereas non-drug users reported using doctors, books and magazines significantly more. It demonstrates that data analysis of specific sources of information for health communication can serve to identify appropriate strategies to target groups of people at higher risk of disease, such as HIV infection, for health behavior change (Orrego-Dunleavy, Crandall & Metsch, 2005).

Orrego-Dunleavy's article has been the most similar in study design to what this study attempts do, but with a different population and health problem. Namely, it goes beyond the descriptive statistics of the population and sources of health information.

A meta-analysis published in 2006 by Bertrand and colleagues provided another systematic review of the effectiveness of mass communications on HIV/AIDS behaviors in developing countries. A literature search of 500 scientific articles yielded 24 that met defined criteria. To be eligible, papers had to present a mass media intervention, employ an evaluation design that compared outcomes, be published in a peer-reviewed journal from 1990-2004 and present data from a developing country. The study found that most of the mass media campaigns to date have focused on members of the general public and youth, but not other high risk populations. It divided efforts into two groups, broadcast interventions (radio, TV) and small media which included posters and pamphlets. The study found that studies published after 2000 examined programs that focused on radio and TV as opposed to other smaller scale interventions. Seven outcome variables were looked at, including perceived risk and risk behavior as in this proposed study, and the most common outcomes reported were condom use and HIV knowledge. It yielded mixed results on the effectiveness of mass media and HIV behavior change in developing countries. Evidence from the studies supports the effectiveness of mass media interventions in increasing the knowledge of HIV transmission and prevention, improving self-efficacy in condom use, among others. The studies did not show significant effects in creating awareness that healthy looking people may have HIV or improving self-efficacy in terms of abstinence (Bertrand, O'Reilly, Denison, Anhang & Sweat, 2006).

The authors commented that many of the studies had weak designs, and results underscored the need for researchers involved in such interventions to report their

findings as scientific published literature to help better understand the relationship between mass media and health promotion.

Chapter 3. Research Design and Methodology

This next chapter will describe the design of the project. It will lead into discussion around the design of this study and its methodology.

3.1. Research Design

The research design for the evaluations of REACH 2010 impact (the CATI I-V studies) was prospective. It called for a panel analysis. Considering the populations of interest were highly transient and annual follow up of a cohort would be extremely difficult, sampling with replacement was allowed, and analyses using a series of cross-sectional samples have been performed. This dissertation study is a secondary data analysis using data collected by the Computer Assisted Telephone Interview (CATI) surveys that were part of the REACH 2010 project. Year 2003 CATI was chosen for analysis as it was the next survey conducted after the REACH 2010 media campaign had been launched.

3.2. CATI Methodology

The next section will describe the methods used to employ the CATI surveys to the populations targeted for behavior change within REACH 2010's scope.

3.2.1. What is CATI?

Computer Assisted Telephone Interviewing (CATI) is an interactive front-end computer system that helps interviewers relay survey questions via telephone (UN, 2011). For the REACH CATIs, the interviewer initiated the interview sessions and the answers were keyed into the computer system immediately by the interviewer. Each interviewer sat behind a terminal and asked the questions that appeared on the screen.

The respondent's answer was typed into computer by the interviewer. The computer program controlled branching to or skipping among questions, and validated the data as it was entered. The CATI system scheduled and dialed up households by an automated process. To dial a household, the interviewer needed only click the dialing button on the screen. The system then searched for the next household to call based on certain priority rules. Priority dialing included those households who were not repeat tries, or those who answered a call and confirmed a male within 18-39 years of age. If the call was not answered, the system automatically scheduled the household to another time. If the interview could not be completed, the system also allowed interviewers to re-schedule the appointment to a date and time favored by the household. Supervisors were present for quality control and to assist with specific problems.

There is greater standardization of interviewer behavior in CATI with less interviewer variance. In general, researchers appreciate this greater standardization, because it minimizes interviewer bias (UN, 2011).

3.2.2. The REACH CATI surveys.

The REACH CATI probability based telephone surveys were performed as part of the evaluation efforts of the REACH 2010 project. The surveys began yearly in 2001, but due to budget restraints were done at 2 year intervals after 2003. Surveys were performed by trained interviewers at the Institute for Public Opinion Research (IPOR) at Florida International University.

The CATI surveys were collected to measure the knowledge, attitudes and behaviors (KABs) with respect to HIV/AIDS prevention and REACH 2010 among the Broward County minority residents. The CATI surveys include a series of questions regarding

sources of HIV information and KABs associated with HIV acquisition and prevention. The CATI III, 2003, was chosen due to the fact it was the year the grant had allocated a large portion of the budget for mass media, and thus a campaign was implemented that year. The total number of residents who participated in the 2003 CATI was 2,002. The participants who completed the survey were offered a $10.00 gift card for purchases at Walgreen as an honorarium. It was sent by mail.

3.2.3. The CATI 2003 enrollment criteria.

The CATI 2003 sample, as in other years, consisted of a random selection of telephone numbers of those residents living in the 12 zip codes with the highest HIV/AIDS prevalence in Broward County. Enrollment criteria included adults from 18 to 39 years of age, who identified themselves as minority African-American, Hispanics, Haitian or Caribbean Islanders. To assure the balance in number of men and women interviewed, the person who answered the phone was asked "Is there a male in your household 18 to 39 (years old) of African American, Hispanic, Caribbean or Haitian descent?" If there was not a male, the interview asked for a female. Further demographic information will be presented in Table 2.

3.3. Sources of Information as a Research Strategy

HIV/AIDS prevention remains a critical challenge. When the 2003 CATI survey was conducted, new strategies were needed to reach the most people using limited time, effort and funds. Over 1 million people were living in the US infected with HIV, and there were approximately 40,000 new cases every year (CDC, 2007). Sources of information regarding HIV prevention have been understudied and in most cases underutilized as strategies for HIV prevention in the United States. Successful health promotion efforts

rely on multidimensional interventions to reach diverse audiences about complex health concerns.

At the time, it was recognized that information and education needed to be integrated with community-based programs, policy changes, and improvements in services for maximum effectiveness. The key here was how to effectively disseminate information and education to cause behavior changes within minority communities. Media, for example, had long had the possibility of shaping the behaviors of individuals and setting positive lifestyle trends for entire communities. For the purpose of this study, media was defined as: television news programs, entertainment programs, commercials and public service announcements, radio talk shows, other radio programs, radio commercials, internet, newspapers, magazines, posters/pamphlets, and billboards or bus advertisements. For most of the last decade, advocates for adequate budget allocation focused on increasing media and marketing funding, believing this source of information would be most effective. Today, traditional media and marketing has evolved with the help of the internet and technological advances to also incorporate social media and social marketing, creating new avenues and opportunities for behavioral intervention and change. Yearly, UNAIDS teams up with MTV's Staying Alive Campaign to put HIV prevention on the global agenda. In 2010, the group's attempts focused on social media. Over a six week period leading up to World AIDS day the 'Prevention Revolution' campaign inspired thousands of online conversations on the need to revitalize interest in HIV prevention (UNAIDS, 2010).

This study's purpose was to analyze how to best utilize sources of information for specific communities to help eliminate disparities in HIV/AIDS and minority communities.

3.4. Applicable Theory

Specifically for mass media, the Two Step Flow Theory may be used to describe how media is used to target the opinion leaders of a particular community. This theory explains how REACH 2010 expected to change knowledge, attitudes and beliefs via sources of information discussed in this study.

3.4.1. The Two Step Flow Theory

The Two Step Flow Theory asserts that information retrieved through media moves in two stages (Katz, 1957). There are 'opinion leaders' who, for varying reasons, pay close attention to media and its messages, then pass on the media content and their personal influence to incite audience reaction and changing attitudes and behaviors. Opinion leaders are thought to have this power because they, too, had similar attitudes and behaviors before they were influenced by the messages.

The Two Step Flow Theory can assist in understanding the importance of media as a source of information and how information is passed on for HIV/AIDS prevention, creating a possible relationship between these sources of information, risk behavior and perception. Opinion leaders, used by REACH 2010 and termed in their community action plan as community gatekeepers, may have shaped their knowledge, attitudes and beliefs through what they learned from various sources of information, including media. It was believed that these individuals had a certain influence that allowed them to pass on this

knowledge and further shape the attitudes and beliefs of others in their community not engaged with HIV/AIDS interventions and otherwise unreachable.

It is possible that interventions like the media influenced a certain portion of the population, and then empowered those to pass the message on into their community. While differing forms of media and sub- populations existed, it was not expected that a media campaign would reach the entire audience. However, a two-step flow would best explain the exponential effects of a media campaign on at-risk and otherwise hard to reach populations.

Reach 2010, upon which the study analyses are based, had goals to empower the community and create ownership of the problem with the knowledge and desire to make a change. Funds only allowed for a media campaign to be circulated in 2003, and the materials produced were too costly to be distributed on a consistent basis. Allocation of yearly funding for media would have been needed to continue the media campaign and support other community interventions performed by REACH 2010.

While the data collected by REACH 2010 did not differentiate between gatekeepers and the rest of the community, the two-step flow theory serves to show the value of media sources of information, and supports the need for further investigation of the relationship between sources of HIV information and variables like risk behavior, perception and testing. It is important to recognize that just as there is no single unifying theory that explains and predicts all human behavior, there is no theory that can predict all communication effects (Glanz, Marcus Lewis & Rimer, 2005). See Figure 1.

3.5. Internal Review Board Consent(s)

REACH 2010 was titled at Florida International University (FIU) as "Eliminating Disparities in HIV Disease in Broward County" with project number 200243505 (Principle Investigator William W Darrow, PhD.). This dissertation study under project REACH 2010 has been reviewed by FIUs Internal Review Board (IRB) and was deemed exempt on April 1st, 2008, as no human subjects will be contacted for the purpose of this analytical study of the CATI 2003.

On May 15th, 2008 the University of Miami's Human Subjects Research Office also approved this project for exempt status with a protocol number of 20080322.

3.6. Data Collection

The data for this study were collected from 4 minority race-ethnic groups of both men and women in areas of Broward County with the highest incidence rates of HIV/AIDS. Interventions were specific to Broward County minority populations, and therefore behavior change was only measured in these populations. Both genders and minority race-ethnic groups were included in substantial numbers of: African American, Hispanic, Haitian and Caribbean Islanders. Both race-ethnic and gender specific analyses were performed, as well socio-demographic and socio-cultural analyses.

Under the NIH definition of children under the age 21, the survey did not include 'children' since it questioned individuals of ages 18-39 years old. This fact was included in the original IRB approval and since no new contact was made with participants, it was deemed unnecessary to take any further action.

For this study, data was collapsed to look at Black, Hispanic and Caribbean Islanders to include Haitians and TV, Print, Radio and Internet. Collapsing this data increased the interpretability of the results and analyses.

3.7. Data Confidentiality

This study was an analysis of data collected confidentially that has been approved for human subject matters. The investigation used data that does not contain the subjects' names or other personal identifiers such as social security numbers. Personal identifiers for all respondents were removed from the data, and all precautionary measures were taken to assure an appropriate research protocol. Only investigators had access to the CATI data that was used. A dedicated study computer was used by researchers where all data was contained. During times that the data was not being utilized, it was securely stored under lock and key.

3.8. Specific Aims and Hypotheses

The following aims and hypotheses support the knowledge, attitudes and belief constructs of the Two Step Flow Theory.

3.8.1. Specific Aim #1.

To describe differences in sources of information utilized for HIV/AIDS prevention by socio-demographic (race/ethnicity, gender, educational attainment and marital status) variables, using the REACH 2010 2003 CATI survey.

3.8.2. Specific Aim #2.

To describe the association between study participants' perceived risk of acquiring HIV/AIDS and their reported exposure to information on HIV/AIDS through media (television, radio, bus/poster or internet) using the REACH 2010 2003 CATI surveys.

Hypothesis 2-1: Exposure[1] to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents[2] is significantly associated with the perception that AIDS is the health problem affecting their community the most.

Hypothesis 2-2: Exposure[1] to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority[2] residents is significantly associated with the perception of their chances of getting HIV/AIDS being medium or high.

3.8.3. Specific Aim #3.

To describe the association between study participants' self reported risk behaviors (i.e., used condoms in the past 12 months) and their reported exposure to information on HIV/AIDS through media, using the REACH 2010 2003 CATI surveys.

Hypothesis 3-1: Exposure[1] to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority[2] residents reporting being sexually active is significantly associated with their report of engaging in condom use in the last 12 months.

3.8.4 Specific Aim #4.

To describe the association between study participants' reported exposure to information on HIV/AIDS through media and their report of being tested for HIV/AIDS (i.e., tested in the last 12 months, tested and received results), using the REACH 2010 2003 CATI surveys.

---

[1] *I'm going to read you some different sources of news and information about HIV/AIDS. As I read each one, please tell me whether you, yourself, got any news or information about HIV or AIDS from this source in the past 12 months: TV, print, internet, other.*
[2] African American, Hispanic and Caribbean Islanders

Hypothesis 4-1: Exposure[1] to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority[2] residents is significantly associated with participants being more likely to be tested for HIV/AIDS in the last 12 months.

Hypothesis 4-2: Exposure[1] to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority[2] residents is significantly associated with participants being more likely to be tested for HIV/AIDS in the last 12 months and receive results.

3.9. Description for Variables of Interest

Below is an explanation of the chosen variables that were analyzed for each hypothesis. The variables have been presented by independent and dependent variables, including possible confounders and effect modifiers.

3.9.1. Independent variables.

The independent variables common in all of the hypotheses are the 5 media 'sources of information on HIV/AIDS', which include TV, radio, print, internet and other. Participants were asked if they received any HIV/AIDS news or information from a list of 21 sources provided, and the category other included festivals, street fairs, family members, friends, work, church, doctor and other similar interpersonal sources.

3.9.1. 1. *Socio demographic variables.*

Socio demographic variables included gender (coded as male, female), ethnicity (coded as African American, Hispanics and Caribbean / Haitian), marital status (married or living together, single, divorced, or separated) and educational attainment (up to 12 years, more than 12 years).

3.9.2. Dependent variables.

The dependent variables are perceived risk, risk behavior and HIV testing.

3.9.2.1. *Perceived risk.*

Perceived risk is defined as the reported belief in the chances of getting HIV/AIDS. It was measured in hypothesis 2.1 by analyzing which health problems, from a list, participants felt have affected their community the most. Analysis associated with Hypothesis 2.2 looked at a variable question that asked participants, directly, what they felt their chances of getting HIV were. This was measured by categorizing the variable as 'none or low' and 'medium or high'.

 This analysis allowed for the comparison of participants' differing sources of information and their measure of perceived risk for HIV/AIDS.

3.9.2.2. *Risk behavior.*

Risk behavior was measured by condom use, or lack thereof. Participants were asked the different reasons they may have used condoms for in the last 12 months, with options that included 'not had sex' or 'never used a condom', 'birth control' and/or 'disease protection'. Due to the possibility of multiple responses, participants were grouped by those who answered condom use for disease protection. Sources of HIV/AIDS information were analyzed to note differences in those who did and did not use condoms and where they did and did not receive information from.

3.9.2.3. *HIV testing.*

For this variable, we looked at the question that asked whether participants have been tested in the last 12 months, and looked for differences in participants' sources of HIV/AIDS information. It would be of importance to note whether participants who

receive HIV/AIDS information from different sources varied in testing frequency.
Knowledge like where to go for testing sites and prevention services is an awareness that
can come from mass media and other sources of information, and can positively influence
both HIV/AIDS incidence and prevalence.

3.10 Variables

See Tables A and B

3.11. Statistical Analysis Methodology

Statistical analysis was conducted using Statistical Package for the Social Sciences
(SPSS) 15.0 (2006).

Descriptive statistics were produced to characterize the sample in terms of gender,
race, marital status and educational level as well as to describe the dependent variables.
Descriptive analyses with a series of cross tabulations were carried out to assess the
relationship between independent and dependent variables. Pearson's Chi square test was
used to assess the significance level for Specific Aim 1 variables (descriptive aim). The
sources of information consisted of TV, radio, print, internet, or other sources for
HIV/AIDS information. Sources of Information grouped "Other", as described above,
consisted of mostly interpersonal sources and were not media related. Those in this
category were festivals or street fairs, family members, friends or acquaintances,
materials distributed at work, churches or other religious organizations, doctors or
another health care providers, local health department or local government agency,
materials from AIDS organizations or advocacy groups and schools or universities.

Significance level (alpha) was set at 0.05 for all tests. Logistic Regression was used
as a multivariable analytical technique due to the fact that the data is categorical.   The

Wald statistic was used to test goodness of fit to describe how well it fits the set of observations for p=.05.

Based on the distribution of the variables, some categories were collapsed. There were questionnaire items that gave the options of 'don't know' and 'refused to answer'. Missing variables included those who did not answer, or the answer was not applicable.

Dichotomizing outcome variables allowed for finding significant differences using binary multiple logistic regression models that otherwise would not have been able to be performed unless the sample size were greater. Median was used for dichotomizing.

3.11.1. Statistical analysis for Aim 1.

Cross-tabulation of TV, radio, print, internet and other with gender, education, marital status and race using Chi-square test was performed to test differences in sources of information utilized for HIV/AIDS prevention by socio-demographic variables.

3.11.2. Statistical analysis for Aim 2.

Hypothesis 2.1- Multivariable logistic regression was conducted to test the association between the perception that AIDS is the health problem affecting their community the most and reported media sources of HIV/AIDS information. The categories were 0 = other (diabetes, drug use, gonorrhea, or others) versus 1 = AIDS. Respondents were previously asked if they felt that they belonged to a community. Thus, answers were coded as not applicable if respondents felt that they didn't relate to any of the listed communities or if they felt that the diseases didn't apply to their community.

Hypothesis 2.2- Multivariable logistic regression was conducted to test the association between the perceived risk of getting HIV/AIDS and reported media sources of HIV/AIDS information. The categories were 0 = low or none versus 1 = medium or

high. Out of the 60 of the 2002 participants who did not answer or were not applicable, 4 had AIDS, 9 refused to answer, 41 answered that they didn't know, and 6 were missing. Sample sizes were too small to compare across these groups; thus, these 60 were simply left out of subsequent analyses as missing.

3.11.3 Statistical analysis for Aim 3.

Hypothesis 3.1- Multivariable logistic regression was conducted to test the association between reported condom use in the last 12 months and reported media sources of HIV/AIDS information. The categories were 0 = no versus 1 = yes. This was a multiple response variable that was recoded. There were 312 respondents who gave no answer. Of those 312 respondents, 137 had never had sex, so those 137 were recoded to "No." It could not be determined why the final 175 refused to answer. It was not because they had never used a condom. These 175 were coded missing.

3.11.4 Statistical analysis for Aim 4.

Hypothesis 4.1- Multivariable logistic regression was conducted to test the association between being tested for HIV/AIDS in the last 12 months and reported media sources of HIV/AIDS information.

Hypothesis 4.2- Multivariable logistic regression will be conducted to test the association between being tested for HIV/AIDS in the last 12 months and receiving results and reported media sources of HIV/AIDS information. The categories were 0 = no versus 1 = yes. There were 477 additional respondents who gave no answer to this question who had not been tested for HIV in the past 12 months. The survey had a place for don't know/no response. Don't know could have been they had blood work drawn and were not sure if they were automatically tested, no response could be for an undisclosed

reason, they chose not to answer. This happened throughout the survey. These 477

respondents were recoded into the "No" category for this question.

Chapter 4. Results

This chapter presents the analysis of the four specific aims as follows: descriptive

statistics for the demographics of the participants, descriptive statistics for dependent

variables, descriptive statistics for the independent variables, cross-tabulations between

sources of information and demographics, and tests of hypotheses involving chi-square

tests and logistic regression analysis.

4.1 Description of CATI Study Sample

This study examined data from the 2003 CATI survey. Participants of the 2003

survey, with an n of 2,002, described themselves as 31% African American, 35%

Hispanics, 16% Haitian and 18% Caribbean Islanders other than Haitians. Sixty-six (66)

percent were females and 34% were males. Both the mean and median age was 28 years.

Further demographic information are presented in Table 2

4.2. Descriptive Statistics

Table 2 describes this study sample even further. The majority of respondents, 86%,

were at least high school graduates. Fifty seven percent (57%) were single, divorced or

separated as opposed to married. Despite asking for a male participant before

interviewing a female, 66% percent were female respondents. Income data shows 43%

made under $30,000, 33% made above $30,000 and 24% did not answer.

**4.2.1. Specific Aim #1: Differences in Sources of Information by Socio-
Demographic Variables.**

Specific Aim #1 for the study was to describe differences in sources of information

utilized for HIV/AIDS prevention by socio-demographic variables.

Table 3 presents the information sources cross-tabulated with the three racial/ethnic

groups that were used in the study: African American, Hispanic, and Caribbean/Haitian

residents of Broward County, Florida. Chi-square tests were used to assess whether the use of specific sources varied by ethnic group. Every chi-square test showed significant differences in the use of information sources by ethnic group. The African American group used TV, radio, print and other sources (interpersonal sources, i.e. family, friends, churches or other religious organizations) more frequently than the other two groups. One interesting exception was Internet use; the Caribbean group showed the highest usage (50.8%), the African American group was next (47.7%), and the Hispanic group was noticeably lower (37.7%).

Table 4 presents the same information sources cross-tabulated with gender. Chi-square tests were used to assess whether the use of specific sources varied by gender. Significant differences were evident with Radio as an information source, where males showed a slightly higher use (74.9%) than females (70.1%, $p<0.05$), and Other (interpersonal sources, i.e. family, friends, churches or other religious organizations). where females showed more use (92.1%) than males (87.6%, $p = 0.001$).

Table 5 presents the same information sources cross-tabulated with two education groups: (a) up to grade 12 and (b) high school graduate or higher. Chi-square tests were used to assess whether the use of specific sources varied by education. For every information source, the group with more education utilized that source at a statistically significantly higher rate.

Table 6 presents the same information sources cross-tabulated with two marital status groups: (a) single, divorced, or separated, and (b) married or living together. Chi-square tests were used to assess whether the use of specific sources varied by marital status. For every information source, the unmarried group utilized that source at a higher rate or at

an almost equal rate to the married (or cohabitating) group. Four out of the five

comparisons were statistically significantly higher. The difference for Radio did not reach

significance ($p > 0.05$). The largest difference was for Internet use where the unmarried

group reported a usage rate of 50.8% and the married (or cohabitating) group reported

37.8%, $p < 0.001$.

4.2.2. Specific Aim #2: Association between Media Sources and Perceived Risk.

Specific Aim #2 for the study was to describe the association between study

participants' perceived risk of acquiring HIV/AIDS and their reported exposure to

information on HIV/AIDS through media (television, radio, bus/poster, or internet). Two

hypotheses were tested in this section. The grouped term "other health problems"

included diabetes, drug abuse, gonorrhea or other itself as a chosen category. The results

for each will be described below. Other health problems were not analyzed for this study.

4.2.2.1. *Hypothesis 2-1.*

Hypothesis 2-1 predicted that exposure to HIV/AIDS information through TV, radio,

internet, and/or print media among Broward County minority residents would be

significantly associated with the perception that AIDS is the health problem affecting

their community the most. The general trend was that over 80% of respondents answered

that other health problems affect their community the most.

Table 7a presents the information sources cross-tabulated with the question of

whether HIV/AIDS versus other health problems (diabetes, drug abuse, gonorrhea or

other) have affected the community the most. Chi-square tests were used to assess

whether the opinion regarding the biggest health problem (i.e., HIV vs. Other health

problems) varied by the use of information source. The answers varied by information

source for only one of the comparisons. There was a significant chi-square for Print, such that people who received HIV information from print thought that HIV affected the community the most at a rate of 20.0%, whereas people who did not receive HIV information from print thought HIV affected the community the most at a rate of only 10.6% ($p<0.05$). Thus, the significant chi-square for print provided initial support for Hypothesis 2-1.

Table 7b presents demographic variables cross-tabulated with the question of whether HIV/AIDS versus other health problems (diabetes, drug abuse, gonorrhea or other) have affected their community the most. Chi-square tests were used to assess whether the opinion regarding the biggest health problem (i.e., HIV/AIDS vs. Other health problems) varied by demographic variables. The answers varied by the demographic variables of marital status, ethnicity, and income. There was a significant chi-square for marital status, such that unmarried people thought that HIV/AIDS affected the community the most at a rate of 21.5%, whereas people who were married thought HIV/AIDS affected the community the most at a rate of 16.8% ($p< 0.05$). There was a significant chi-square for ethnicity, such that African Americans thought that HIV/AIDS affected the community the most at a rate of 30.2%, whereas Caribbean Islanders were at 17.3% and Hispanics were at 12.3% ($p< 0.001$). This is noteworthy and coincides with the disproportional effect of HIV/AIDS on the African American community. There was a significant chi-square for income, such that people making less than $30K thought that HIV affected the community the most at a rate of 23.3%, whereas people making $30K or more thought HIV affected the community the most at a rate of 17.4% ($p< 0.05$). Education and gender was found not to be significant.

Table 8a presents the results of a logistic regression using only demographic variables (covariates only) as predictors for whether HIV/AIDS vs. Other Health Problems (diabetes, drug abuse, gonorrhea or other) affected the community the most (Model 1). The dependent variable was coded 1 = HIV/AIDS has affected the community the most, and 0 = other health problems have affected the community the most. Likelihood ratio test statistic = 1141.15; Nagelkerke's R-square = 0.073; Hosmer and Lemeshow χ^2 (8) = 4.32, p = 0.827, indicating that the model fit the data. For this model, education, ethnicity, gender, and income were significant predictors of the dependent variable. High school graduates were 0.62 times less likely to believe that HIV affected their community the most compared to those who did not graduate (p< 0.05). Hispanics were 0.31 times less likely (p< 0.001) and Caribbean Islanders were 0.54 times less likely (p = 0.001) than African Americans to believe that HIV affected their community the most. Females were 0.72 times less likely than males (p< 0.05) and those with higher incomes were 0.66 times less likely than those with lower incomes (p< 0.01) to believe that HIV was the health problem that affected their community the most.

Table 8b presents the results of a logistic regression using information sources as well as demographic variables (covariates) as predictors for whether HIV/AIDS vs. Other Health Problems (diabetes, drug abuse, gonorrhea or other) affected the community the most (Model 2). The dependent variable was coded 1 = HIV/AIDS has affected the community the most, and 0 = other health problems have affected the community the most. Likelihood ratio test statistic = 1133.26; Nagelkerke's R-square = 0.083; Hosmer and Lemeshow χ^2 (8) = 11.55, p = 0.173, indicating that the model fit the data. The test of Model 2 vs. Model 1 was not significant, χ^2(5) = 7.90, p = 0.162; thus, the model with the

information sources added did not provide significantly better fit than the model with

only covariates. For Model 2, education, ethnicity, gender, and income were still

significant predictors of the dependent variable. High school graduates were 0.57 times

less likely to believe that HIV affected their community the most compared to those who

did not graduate ($p < 0.05$). Hispanics were 0.32 times less likely ($p < 0.001$) and

Caribbean Islanders were 0.53 times less likely ($p < 0.001$) than African Americans to

believe that HIV affected their community the most. Females were 0.72 times less likely

than males ($p < 0.05$) and those with higher incomes were 0.64 times less likely than those

with lower incomes ($p < 0.01$) to believe that HIV was the health problem that affected

their community the most. None of the information sources was a significant predictor.

Thus, Hypothesis 2-1 was not supported by the logistic regression.

4.2.2.2. *Hypothesis 2-2*.

Hypothesis 2-2 predicted that exposure to HIV/AIDS information through TV, radio,

internet and/or print media among Broward County minority residents would be

significantly associated with the perception of their chances of getting HIV/AIDS being

medium or high, as described below with Table 9a. The general trend was that 18.0% of

respondents answered that their perceived risk of getting HIV/AIDS was medium or high.

Table 9a presents the information sources cross-tabulated with the perception of

whether a person's chances of getting HIV/AIDS is 1 = medium or high vs. 0 = low or

none. Chi-square tests were used to assess whether perceived risk (i.e., medium or high

vs. low or none) varied by the use of specific information sources. The answers varied by

information source utilization for three of the comparisons. The first was Radio, such that

19.2% of the people who received HIV information from the radio thought that their

chances of getting HIV were medium or high, whereas 15.0% of the people who did not receive HIV information from the radio that that their chances of getting HIV were medium or high ($p<0.05$). The second was Internet, such that 22.1% of the people who received HIV information from the internet thought that their chances of getting HIV were medium or high, whereas 14.5% of the people who did not receive HIV information from the internet that that their chances of getting HIV were medium or high ($p<0.001$). The third was Others (interpersonal sources, i.e. family, friends, churches or other religious organizations) such that 18.7% of the people who received HIV information from other sources thought that their chances of getting HIV were medium or high, whereas 10.9% of the people who did not receive HIV information from other sources thought that that their chances of getting HIV were medium or high ($p =0.01$). Thus, the significant chi-squares for radio, internet, and other sources of information provided initial support for Hypothesis 2-2.

Table 9b presents demographic variables cross-tabulated with perception of HIV/AIDS risk. Chi-square tests were used to assess whether perception of risk varied by demographic variables. The answers varied by the demographic variables of education, marital status, gender, and income. There was a significant chi-square for education, such that people with less than a high school education perceived their risk to be medium or high at a rate of 29.1%, whereas people who graduated perceived their risk to be medium or high at a rate of 16.4% ($p< 0.001$). There was a significant chi-square for marital status, such that married people perceived their risk to be medium or high at a rate of 13.3%, whereas unmarried people perceived their risk to be medium or high at a rate of 21.6% ($p< 0.001$). There was a significant chi-square for gender, such that males

perceived their risk to be medium or high at a rate of 26.1%, whereas females perceived

their risk to be medium or high at a rate of 13.9% ($p< 0.001$). There was a significant chi-

square for income, such that people making less than \$30K perceived their risk to be

medium or high at a rate of 21.3%, whereas people making \$30K or more perceived their

risk to be medium or high at a rate of 13.2% ($p< 0.001$).

Table 10a presents the results of a logistic regression using only demographic

variables (covariates only) as predictors for perception of HIV/AIDS risk (Model 1). The

dependent variable was coded 1 = medium or high, and 0 = low or none. Likelihood ratio

test statistic = 1320.19; Nagelkerke's R-square = .077; Hosmer and Lemeshowχ^2 (8) =

11.11, $p = 0.195$, indicating that the model fit the data. For this model, education, marital

status, gender, and income were significant predictors of the dependent variable. High

school graduates were 0.51 times less likely to perceive their risk as medium or high

compared to those who did not graduate ($p = 0.001$). Married people were 0.67 times less

likely to perceive their risk as medium or high compared to unmarried people ($p< 0.01$).

Females were 0.45 times less likely to perceive their risk as medium or high compared to

males ($p< 0.001$). Those with higher incomes were 0.61 times less likely perceive their

risk as medium or high than those with lower incomes($p= 0.001$).

Table 10b presents the results of a logistic regression using information sources as

well as demographic variables (covariates) as predictors for perceived risk (Model 2).

The dependent variable was coded 1 = medium or high, and 0 = low or none. Likelihood

ratio test statistic = 1302.45; Nagelkerke's R-square = 0.096; Hosmer and Lemeshowχ^2

(8) = 5.51, $p = 0.702$, indicating that the model fit the data. The test of Model 2 vs. Model

1 was significant, $\chi^2(5) = 17.74$, $p = 0.003$; thus, the model with the information sources

provided significantly better fit than the model with only covariates. For Model 2,
education, marital status, gender, and income were still significant predictors of the
dependent variable. High school graduates were 0.47 times less likely to perceive their
risk as medium or high compared to those who did not graduate ($p < 0.001$). Married
people were 0.70 times less likely to perceive their risk as medium or high compared to
unmarried people ($p < 0.05$). Females were 0.44 times less likely to perceive their risk as
medium or high compared to males ($p < 0.001$). Those with higher incomes were 0.58
times less likely perceive their risk as medium or high than those with lower incomes ($p < 0.001$). Finally, those who received their HIV information from the internet were 1.52
times more likely to perceive their risk of HIV/AIDS as medium or high than those who
did not receive their information from the internet ($p < 0.01$). Thus, Hypothesis 2-2 was
supported for the internet when using the logistic regression.

4.2.3. Specific Aim #3: Association between Media Sources and Risk Behavior.

Specific Aim #3 for the study was to describe the association between study
participants' self-reported risk behaviors (used condoms in the past 12 months) and their
reported exposure to information on HIV/AIDS through media. One hypothesis was
tested in this section. The results will be described below.

4.2.3.1. *Hypothesis 3-1.*

Hypothesis 3-1 predicted that exposure to HIV/AIDS information through TV, radio,
internet and/or print media among Broward County minority residents who reported that
they were sexually active would be significantly associated with their report of engaging
in condom use in the last 12 months. Of the total n=2002, 1013 participants, or 51%,
reported using a condom in the last 12 months.

Table 11a presents the information sources cross-tabulated with whether or not a condom was used in the past 12 months. Chi-square tests were used to assess whether condom use (i.e., yes vs. no) varied by the use of specific information sources. Condom use varied significantly by information source use for every measurement. For every information source, condoms were used significantly more often for people who used that information source than for people who did not. For those who used TV as an information source, the rate of condom use was 56.5% compared to those who did not use TV (45.0%, $p< 0.01$). For those who used Radio as an information source, the rate of condom use was 57.1% compared to those who did not use Radio (51.2%, $p< 0.05$). For those who used Print as an information source, the rate of condom use was 56.8% compared to those who did not use Print (39.0%, $p< 0.001$). For those who used Internet as an information source, the rate of condom use was 59.6% compared to those who did not use Internet (51.9%, $p = 0.001$). For those who used other information sources (interpersonal sources, i.e. family, friends, churches or other religious organizations), the rate of condom use was 56.3% compared to those who did not use Others (47.4%, $p < 0.05$). Thus, Hypothesis 3-1 was supported by all of the chi-square media tests.

Table 11b presents demographic variables cross-tabulated with condom use in the past 12 months. Chi-square tests were used to assess whether condom use varied by demographic variables. The answers varied by the demographic variables of marital status, ethnicity, and gender. There was a significant chi-square for marital status, such that married people used condoms at a rate of 43.5%, whereas unmarried people used condoms at a rate of 65.0% ($p< 0.001$). There was a significant chi-square for ethnicity, such that African Americans used condoms at the highest rate of 63.4%, followed by

Caribbean Islanders at 55.4% and Hispanics at 48.6% ($p< 0.001$). This is consistent with findings by Doherty et.al in 2009. There was a significant chi-square for gender, such that males used condoms at a rate of 65.6%, whereas females used condoms at a rate of 50.2% ($p< 0.001$).

Table 12a presents the results of a logistic regression using only demographic variables (covariates only) as predictors for whether or not a condom was used in the past 12 months (Model 1). The dependent variable was coded 1 = a condom was used in the past 12 months, and 0 = a condom was not used in the past 12 months. Likelihood ratio test statistic = 1835.73; Nagelkerke's R-square = .100; Hosmer and Lemeshowχ^2 (8) = 5.75, $p = 0.675$, indicating that the model fit the data. For this model, marital status, ethnicity, and gender were significant predictors of the dependent variable. Married people were 0.44 times less likely to have used a condom in the past 12 months compared to unmarried people ($p< 0.001$). Hispanics were 0.66 times less likely to have used a condom in the past 12 months compared to African Americans ($p< 0.01$). Females were 0.54 times less likely to have used a condom in the past 12 months compared to males ($p< 0.001$).

Table 12b presents the results of a logistic regression analysis using information sources as well as demographic variables (covariates) as predictors for condom use in the past 12 months (Model 2). The dependent variable was coded 1 = a condom was used in the past 12 months, and 0 = a condom was not used in the past 12 months. Likelihood ratio test statistic = 1825.24; Nagelkerke's R-square = 0.109; Hosmer and Lemeshowχ^2 (8) = 6.48, $p = 0.593$, indicating the model fit the data. The test of Model 2 vs. Model 1 was not significant, χ^2 (5) = 10.49, $p = 0.062$; thus, the model with the information

sources did not provide significantly better fit than the model with only covariates. For Model 2, marital status, ethnicity, and gender were still significant predictors of the dependent variable. Married people were 0.44 times less likely to have used a condom in the past 12 months compared to unmarried people ($p< 0.001$). Hispanics were 0.69 times less likely to have used a condom in the past 12 months compared to African Americans ($p< 0.01$). Females were 0.54 times less likely to have used a condom in the past 12 months compared to males ($p< 0.001$). Finally, those who received their HIV information from print sources were 1.73 times more likely to have used a condom in the past 12 months than those who did not receive their information from print ($p< 0.05$). Thus, Hypothesis 3-1 was supported for print sources based on logistic regression analyses.

4.2.4. Specific Aim #4: Association between Media Sources and HIV Testing.

Specific Aim #4 for the study was to describe the association between study participants' reported exposure to information on HIV/AIDS through media and their reported HIV testing in the last 12 months. Two hypotheses were tested in this section. The results will be described below.

4.2.4.1. *Hypothesis 4-1*.

Hypothesis 4-1 predicted that exposure to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents would be significantly associated with participants being more likely to be tested for HIV/AIDS in the last 12 months. Of the 2002 participants in 2003, 816, or 41% answered they were tested for HIV/AIDS in the past 12 months.

Table 13a presents the information sources cross-tabulated with whether or not a person was tested in the past 12 months. Chi-square tests were used to assess whether a

person's test status (i.e., yes, tested vs. no, not tested in the past 12 months) varied by the use of specific HIV information sources. Testing varied significantly by three information sources. People who used Radio sources for HIV information were tested in the last 12 months marginally significantly more (43.7%) than people who did not use Radio as a source (38.9%, p =0.051). People who used Print sources for HIV information were tested in the last 12 months significantly more (43.6%) than people who did not use Print as a source (28.4%, $p< 0.001$). People who used Other sources (interpersonal sources, i.e. family, friends, churches or other religious organizations) for HIV information were tested in the last 12 months significantly more (44.1%) than people who did not use Other sources (25.4%, $p<0.001$). Thus, Hypothesis 4-1 was initially supported by the significant chi-square tests for Radio, Print, and Others.

Table 13b presents demographic variables cross-tabulated with whether or not a person was tested in the past 12 months. Chi-square tests were used to assess whether being tested in the last 12 months varied by demographic variables. The answers varied by the demographic variables of ethnicity and gender. There was a significant chi-square for ethnicity, such that African Americans were tested in the last 12 months at the highest rate of 50.2%, whereas Caribbean Islanders were tested at a rate of 39.6% and Hispanics were tested at a rate of 38.1% ($p< 0.001$). There was a significant chi-square for gender, such that females were tested at a rate of 47.3%, whereas males were tested at a rate of 32.8% ($p< 0.001$).

Table 14a presents the results of a logistic regression analysis using only demographic variables (covariates only) as predictors for whether or not a person was tested in the last 12 months (Model 1). The dependent variable was coded 1 = Yes, and 0

= No. Likelihood ratio test statistic = 1973.22; Nagelkerke's R-square = 0.033; Hosmer and Lemeshowχ^2 (8) = 11.53, p = 0.174, indicating that the model fit the data. For this model, ethnicity and gender were significant predictors of the dependent variable. Hispanics were 0.60 times less likely (p< 0.001) and Caribbean Islanders were 0.67 times less likely (p< 0.01) to have been tested in the last 12 months compared to African Americans. Females were 1.55 times more likely to have been tested in the last 12 months than males (p< 0.001).

Table 14b presents the results of a logistic regression using information sources as well as demographic variables (covariates) as predictors for whether or not a person was tested in the last 12 months (Model 2). The dependent variable was coded 1 = Yes, and 0 = No. Likelihood ratio test statistic = 1951.73; Nagelkerke's R-square = 0.052; Hosmer and Lemeshowχ^2 (8) = 6.20, p = 0.625, indicating that the model fit the data. The test of Model 2 vs. Model 1 was significant, χ^2(5) = 21.48, p = 0.001; thus, the model with the information sources provided significantly better fit than the model with only covariates. For Model 2, ethnicity and gender were still significant predictors of the dependent variable. Hispanics were 0.62 times less likely (p< 0.001) and Caribbean Islanders were 0.70 times less likely (p< 0.01) to have been tested in the last 12 months compared to African Americans. Females were 1.51 times more likely to have been tested in the last 12 months than males (p< 0.001). Finally, those who used other sources (interpersonal sources, i.e. family, friends, churches or other religious organizations) for HIV information were 2.26 times more likely than those who did not use other sources to have been tested in the last 12 months (p< 0.001). Thus, Hypothesis 4-1 was supported for other information sources when using the logistic regression.

4.2.4.2. *Hypothesis 4-2.*

Hypothesis 4-2 predicted that exposure to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents would be significantly associated with participants being more likely to be tested for HIV/AIDS in the last 12 months and receive results. Of the total n=2002, 816, or 41% were tested for HIV in the last 12 months. Of those 816 who were tested, 795, or 97% did receive their results.

Table 15a presents the information sources cross-tabulated with whether or not a person was tested in the last 12 months and received results. Chi-square tests were used to assess whether a person's test status (i.e., yes, tested and received results vs. no, not tested in the last 12 months and received results) varied by the use of specific HIV information sources. Testing with results varied significantly by three information sources. People who used Radio sources for HIV information were tested in the last 12 months and received results significantly more (42.7%) than people who did not use Radio as a source (37.5%, $p< 0.05$). People who used Print sources for HIV information were tested in the last 12 months and received results significantly more (42.5%) than people who did not use Print as a source (27.1%, $p< 0.001$). People who used other sources (interpersonal sources, i.e. family, friends, churches or other religious organizations) for HIV information were tested in the last 12 months and received results significantly more (43.1%) than people who did not use Other sources (23.2%, $p< 0.001$). Thus, Hypothesis 4-2 was initially supported by the significant chi-square tests for Radio, Print, and Others.

Table 15b presents demographic variables cross-tabulated with whether or not a person was tested in the last 12 months and received results. Chi-square tests were used to assess whether being tested in the last 12 months and receiving results varied by demographic variables. The answers varied by the demographic variables of ethnicity, gender, and income. There was a significant chi-square for ethnicity, such that African Americans were tested in the last 12 months and received results at the highest rate of 47.9%, whereas Caribbean Islanders were tested and received results at a rate of 38.8% and Hispanics were tested and received results at a rate of 37.6% ($p < 0.001$). There was a significant chi-square for gender, such that females were tested and received results at a rate of 46.1%, whereas males were tested and received results at a rate of 31.8% ($p < 0.001$). There was a significant chi-square for income, such that those with lower incomes were tested and received results at a rate of 45.4%, whereas those with higher incomes were tested and received results at a rate of 39.9% ($p < 0.05$).

Table 16a presents the results of a logistic regression using only demographic variables (covariates only) as predictors for whether or not a person was tested in the last 12 months and received results (Model 1). The dependent variable was coded 1 = Yes, and 0 = No. Likelihood ratio test statistic = 1970.14; Nagelkerke's R-square = 0.030; Hosmer and Lemeshowχ^2 (8) = 9.84, $p = 0.198$, indicating that the model fit the data. For this model, ethnicity, gender, and income were significant predictors of the dependent variable. Hispanics were 0.66 times less likely ($p < 0.01$) and Caribbean Islanders were 0.71 times less likely ($p = 0.01$) to have been tested in the last 12 months and received results compared to African Americans. Females were 1.55 times more likely to have been tested in the last 12 months and received results than males ($p < 0.001$). People

making $30K per year or more were 0.79 times less likely to have been tested in the last 12 months and received results than people making less than $30K ($p < 0.05$).

Table 16b presents the results of a logistic regression using information sources as well as demographic variables (covariates) as predictors for whether or not a person was tested in the last 12 months and received results (Model 2). The dependent variable was coded 1 = Yes, and 0 = No. Likelihood ratio test statistic = 1945.72; Nagelkerke's R-square = 0.052; Hosmer and Lemeshow χ^2 (8) = 6.45, $p = 0.597$, indicating that the model fit the data. The test of Model 2 vs. Model 1 was significant, $\chi^2(5) = 24.42$, $p < 0.001$; thus, the model with the information sources provided significantly better fit than the model with only covariates. For Model 2, ethnicity, gender, and income were still significant predictors of the dependent variable. Hispanics were 0.67 times less likely ($p < 0.01$) and Caribbean Islanders were 0.74 times less likely ($p < 0.05$) to have been tested in the last 12 months and received results compared to African Americans. Females were 1.51 times more likely to have been tested in the last 12 months and received results than males ($p < 0.001$). People making $30K per year or more were 0.79 times less likely to have been tested in the last 12 months and received results than people making less than $30K ($p < 0.05$). Finally, those who used other sources (interpersonal sources, i.e. family, friends, churches or other religious organizations) for HIV information were 2.46 times more likely than those who did not use other sources to have been tested in the last 12 months and received results ($p < 0.001$). Thus, Hypothesis 4-2 was supported for other information sources when using the logistic regression.

4.3. Missing Variables

Missing variables include those who did not answer, or the answer was not applicable. A comparison on ethnicity and gender of the missing 312 for hypothesis 3.1 only differed by ethnicity. For hypothesis 4.1 regarding whether they were tested in the last 12 months, a comparison on ethnicity and gender of the 590 with no answer versus those who answered had differences in both. People who did not answer tended to be younger. The differences in ethnicity were different for the different variables. The only consistent trend was that those that were coded missing tended to have a greater proportion of Haitians than those who were coded with an answer.

4.4. Major Findings

The major findings of this epidemiologic study are: (1) African Americans, more highly educated, and unmarried respondents used TV, radio, print and other sources of information about HIV/AIDS more frequently than other respondents, (2) African American and unmarried respondents also were more likely to believe that AIDS affected their community more than other respondents, but high school graduates were 0.62 times less likely to believe that HIV affected their community the most compared to those who did not graduate (p< 0.05), and (3) Hispanics were least likely to use the Internet. Respondents who received information about HIV/AIDS from the radio, Internet, and other sources were more likely than others to believe that their chances of getting AIDS were high or moderately high. Those less well educated, unmarried, male, and poor were also more likely than others to believe that their chances of getting AIDS were high or moderately high. Self-reported condom use in the past year was higher among respondents who obtained information about AIDS in the past year than among those

who did not; it was also higher for men, African Americans, and unmarried respondents. Self-reported HIV testing in the past year was higher among respondents who obtained information about AIDS in the past year than among those who did not; it was also higher for women and African American respondents.

Chapter 5. Discussion

For HIV/AIDS behavioral interventions, is critical to understand which sources have the greatest impact on what groups, so that limited funds are not wasted. This study attempted to identify relationships between race/ethnicity, sources of information and perceived risk, condom use and testing. It is important to note that although the data collected for this study dates back to 2003, this chapter will reveal information to alleviate the challenges that still exist today with culturally sensitive and community specific high impact behavioral interventions. This chapter will discuss the key findings in the analysis investigation of the specific aims. It will begin with differences in sources of information by demographic variables and then review the key findings for significant associations between sources of information and perceived risk, risk behaviors and use of HIV testing among minority populations. It will point out limitations and conclude with recommendations.

5.1. Specific Aim #1: Differences in Sources of Information by Socio Demographic Variables

To ensure the benefits of media, social marketing and networks to all subgroups, it is necessary to first identify characteristics of subpopulations that may lack equal access to health information (Lorence, Park & Fox, 2006). This identification can assist with the development of new strategies to target underserved populations and help in developing information seeking skills relevant to their healthcare (Lorence, Park & Fox, 2006). Access to health information is a critical component in promoting healthy behavior overall.

This study brings forth the racial and ethnic differences associated with media exposure to HIV/AIDS information. Overall, the African American group used media sources more frequently than the Hispanics and Caribbean Islanders. Romer and colleagues in 2009 made reference to commercial marketing that suggests African Americans respond favorably to mass media messages designed to address their specific interests. Romer and authors go on to express similar sentiments described in this study regarding weak evidence for the effectiveness of general HIV mass media prevention campaigns in the United States, specifically true for campaigns targeting African-Americans. Romer et al. found that a large proportion of the study participants watched TV (69%) and listened to radio (47%) two or more hours on an average weekday, justifying the assertion that media messages had a great potential of reaching African Americans (Romer et al., 2009).

This is also consistent with what Weinhardt and colleagues found in 2007. In that study, African American men with limited income in an inner city clinic reported a willingness to use an individually tailored, multimedia, computerized sexually transmitted infection (STI)/HIV-risk reduction intervention (Weinhardt, Mozack & Swain, 2007).

Television, as well as other media sources, has traditionally played essential roles in the dissemination of health information. The Internet and social media incorporates much of this function today. A variety of mediums exist through which individuals can access health information online. These include websites, listservs, online support groups, chat rooms, instant messaging, social networking and email. More than 70,000 websites have been documented to contain health information, and the number of health websites

is rapidly increasing (Toms & Latter, 2007). Although a multitude of online health information exists, there is little consistency recorded in terms of how many people actually use this information, their expectations of it, and the implications of this usage (Toms & Latter, 2007). Regardless, it is evident that those seeking health information via the Internet are part of a growing sector, and characterizing reach rates, minimizing attrition, promoting website utilization, tailored messaging and social networking may improve the implementation of Internet interventions and their associated outcomes. (Bennett & Glasgow, 2009)This makes it important to characterize this growing population of users.

Lorence and colleagues, in 2006, also examined the racial and ethnic differences in internet usage and found significant differences in internet usage between races. This REACH 2010 study also found differences in Internet usage amongst races. For internet, the Caribbean group showed the highest usage followed by the African Americans and then Hispanics (Lorence, Park and Fox, 2006).

This study also analyzed the differences in media exposure between the unmarried group and married (or cohabitating) group for every information source mentioned above. It found that unmarried group reported a much higher usage of Internet compared to the married group. In a study on marital status and wellbeing by Bailey & Snyder in 2007, it was found that married individuals experience less stress and emotional strain, due to their relationship experience, compared to their unmarried counterparts. It is hence a plausible explanation that unmarried individuals are more likely to seek health information through media sources and not via interpersonal sources (Bailey & Snyder, 2007).

There were differences in Internet usage according to education as well. Those with higher education levels utilized media sources at a much higher rate. Lorence details the importance of this, where he describes that behavioral patterns were noted to change once internet access becomes available to groups with no prior access (Lorence, Park and Fox, 2006). This thus highlights the importance of media sources and the impact possible to groups of lower educational levels and at higher risk.

This study did not indicate significant differences in the use of information sources by gender. Goldfarb and Prince did not find gender differences either in 2008. He examined gender differences with Internet usage using a survey of 18,439 Americans and found that high-income, educated people were more likely to have adopted the internet as a source of information. However, conditional on low-income, less-educated people spend more time online. Interestingly enough, according to the Census Bureau in 2009, slightly more women than men now complete college, positioning themselves better for participation in the information revolution. While there were no gender differences noted in this study, further investigation is warranted now that significant time has passed (Goldfarb & Prince, 2008).

5.2. Specific Aim #2: Association between Media Sources and Perceived Risk

This aim analyzes what sources of information are best for creating awareness around the increased risk of infection in the 12 zip with the highest incidence of HIV in Broward County.

5.2.1. Hypothesis 2.1: Exposure to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents and significant association with the perception that AIDS is the health problem affecting their community the most.

In a study by Dunlop in 2010, persuasion of perception was considered in two studies exploring responses to health-promoting mass media messages. In the first study smokers who experienced antismoking messages in a narrative reported that they would make a greater effort to quit smoking, and this effect was mediated by both experiential (emotional and self-referencing) and cognitive responses to the messages. In the second study, experiential responses to magazine messages promoting skin protection were related to intentions to protect one self, and this effect was mediated by feelings of risk(Dunlop, 2010). This REACH 2010 study looks at the effect of radio, television and print media over the general population in Broward County. The majority of the participants in this study believed that other health problems apart from HIV/AIDS affect their community the most. The grouped term "other health problems" included diabetes, drug abuse, gonorrhea or other as a chosen category. Other health problems were not analyzed for this study. The results are described below.

There was a direct relationship between the access of print material and the perception that HIV/AIDS is a serious health problem affecting Broward communities. Respondents whose primary language was Spanish, though, relied relatively more on broadcast media than on print media. Considering the influence of the media on Hispanics is warranted because Hispanics in the US benefit from having a dedicated media outlet strong and diverse. Spanish-language broadcast presence is available to most Hispanics today, and it is can be incredibly powerful for influencing health beliefs and behavior change (Constantakis-Valdés, 2008).

The belief that HIV/AIDS affected the community the most varied with ethnicity. In this study, African Americans were more likely to believe that HIV affected their community, compared to the Caribbean Islanders and Hispanics. Black Americans have always been significantly more affected by the HIV epidemic, contrary to popular belief in the early years of the epidemic. By the end of 1981, almost 20 percent of all reported AIDS cases were among African-Americans who, at the time, only made up 13 percent of the population (CDC, 2010). This incorrect misconception that the epidemic did not include blacks may have fueled the changing face of HIV/AIDS. The perceived *white gay man disease* saw a shifted in 1990, when the number of new HIV diagnoses among black Americans, or incidence, exceeded the number of new diagnoses among whites. This trend has continued until now (CDC, 2010).

It is predicted, though, that Hispanics will outnumber African Americans and become the majority minority in the United States, also gaining on HIV/AIDS infections. In 2006, statistics revealed that Hispanics were three times more likely to become HIV infected than whites, and 17% of new infections were Hispanics (Lansky et al., 2010). This study found that Hispanics were least likely to believe that HIV/AIDS affected their community the most. It reveals the importance of channeling efforts towards educating this population about HIV/AIDS risk reduction.

The belief that HIV/AIDS affected the community the most also varied with income. This study found that lower income groups were more likely to think that HIV/AIDS affected their community the most compared to those who earned more than 30k. This is consistent with an analysis discussed in a press release by the CDC in July of 2010. The CDC analysis on 9,000 heterosexual adults from neighborhoods with high poverty rates

across 23 US cities. More than 75% of the study's participants were black. The study

concluded that poverty and HIV most definitely have a direct relationship in the U.S.

CDC researchers looked at HIV prevalence and found that in high-poverty

neighborhoods prevalence was more than double that of the nation's overall statistic.

Within these high-poverty neighborhoods, prevalence among people living below the

poverty line was also double that of those living above it (CDC, 2010).

5.2.2. Hypothesis 2.2: Exposure to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents and significant association with their perception of their chances of getting HIV/AIDS being medium or high.

Social marketing interventions are an important aspect of AIDS prevention efforts

(Gibson et al., 2010). Interventions mainly use mass media and interpersonal

communication to decrease risk behavior, mostly by targeting risk perception and

promoting condom use.

It has been shown that mass media advertising messages have a positive effect on safe

sex behavior by affecting risk perception (Agha & Van Rossem, 2002). A study by Agha

and Van Rossem in 2002 examined how social marketing advertising campaigns can

influence risk perception. It presented an empirical examination of the process through

which mass media advertising can ultimately influence behavior. Exposure to branded

advertising was associated with higher perceptions of personal risk, self-efficacy, condom

efficacy, condom availability, risk severity. Moreover, in nearly all cases, there was a

dose-response relationship between exposure to branded advertising and positive

outcomes. These findings support the contention that mass media public health

campaigns can promote healthy behaviors through risk perception. This study is

important because it highlights a process through which mass media can influence

behavior: it shows how the use of branded advertising to construct the image of healthy lifestyle choices can exert a significant influence on risk awareness, self-efficacy and other behavioral predictors. The findings in this hypothesis can be significantly built upon using the Two Step Flow Theory described above, which considers it possible that interventions like the media can influence a certain portion of the population, and then empowered those to pass the message on into their community (Katz, 1957). It supports interventions targeting those that have low risk perception in high risk communities.

Education, marital status, gender, and income were significant predictors of perception of risk for HIV/AIDS. High school graduates were less likely to perceive their risk as medium or high compared to those who did not graduate. Married people were less likely to perceive their risk as medium or high compared to unmarried people. Females were less likely to perceive their risk as medium or high compared to males. Those with higher incomes were less likely to perceive their risk as medium or high than those with lower incomes. Finally, those who received their HIV information from the internet were more likely to perceive their risk of HIV/AIDS as medium or high than those who did not receive their information from the internet.

With regards to marital status, gender and internet as a source of information, the internet can be used to target women, specifically married women, who may believe that they are at a low risk for HIV/AIDS when the opposite may be true. Outreach staff working for REACH 2010 observed married women having low risk perceptions. When education about the benefits of condom use at events within high risk communities, some women would refrain from listening and accepting free condoms, remarking 'I don't need that, I am married'. As the Two Step Flow Theory describes, REACH 2010 targeted

education and outreach to gatekeepers, often entering beauty salons with print information. Hair dressers in these communities have a unique opportunity as they have a captive audience, mostly women in lower income brackets. Women account for more than one fourth of all new diagnosis of HIV infections and AIDS diagnoses in the US (CDC, 2008). In 2006, HIV infection was the fifth leading cause of death among US women between the ages of 35 and 44 years, and the sixth leading cause of death among women between 25 to 34 years of age, with only cancer and heart disease causing more deaths due to illness. High risk heterosexual contract was the leading cause of HIV infection among women between the ages of 20 to 34 years, 82%, with injection drug use ranking second, 12% to 18% (CDC, 2007). Literature on married women's risk of HIV concentrates outside the US. International studies, like that of Kaiser, et al. in 2011, looked at married and cohabitating couples and their HIV risk in Kenya. He concluded that prevention messages often ignore couples, focusing on casual partnerships despite the frequent lack of knowledge within couples, specifically those with high HIV risk or those already infected. Lack of knowledge may be increased by a lack of risk awareness within a stable relationship that results in low condom use, as was confirmed in this study as well as Kaiser's study (Kaiser, 2011).

5.3. Specific Aim #3: Association between Media Sources and Risk Behaviors

This aim demonstrates what could be the most effective source of information for eliminating risk behaviors with a behavioral intervention program. Behavior change is ultimately the goal of a behavioral intervention program.

5.3.1. Hypothesis 3.1: Exposure to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents who reported they were sexually active and significant association with their report of condom use in the last 12 months.

Hypothesis 3-1 predicted that exposure to HIV/AIDS information through TV, radio, internet and/or print media among Broward County minority residents who used condoms varied significantly by information source use. Indeed, results showed that for every information source, condoms were used significantly more often by people who used that information source than for people who did not. Condoms were used significantly more often by those who received their HIV/AIDS information from the Internet the most.

Those who received their HIV information from print sources were 1.73 times more likely to have used a condom in the past 12 months than those who did not receive their information from print. This is consistent with a study Walls and colleagues conducted in 1998, where her group evaluated both print media and outreach interventions to examine the effects of intervention exposure on condom use by women. The print media campaign reached the largest number of women. However, women at highest risk did not have high rates of exposure to print media, but had greater exposure to outreach. In other words, those that were at highest risk were not impacted by print the most, but by community outreach (Walls, Lauby, Lavelle, Derby &Bonds, 1998).

With regards to internet and condom use, Bull and colleagues in 2009 published findings with the Youthnet trials. A single session condom promotion internet intervention for 18-24 year olds was conducted, where one recruiting method was conducted via the internet and another via participating clinics. Among sexually active youths in the internet sample, researchers reported an increase in condom norms among

respondents. This corroborates this study's findings that condoms were used significantly more often by those who sought HIV/AIDS information from the Internet the most (Bull, Pratte, Whitesell, Rietmeijer & McFarlane, 2009).

Findings are also consistent with the Two Step Flow Theory, which considers it possible that interventions like the media can influence a certain portion of the population, and then empower those to pass the message on into their community to incite behavior change (Katz, 1957).

Health beliefs and perceptions have the capability to impede disease control. One role of public health agencies and organizations involved with health promotion is to influence health belief and encourage healthful behaviors in the population. Because of budget limitations, agencies must choose effective interventions for their specific populations. Insights from the theories of individual behavioral change and social/health marketing may help organizations choose the interventions that best improve the health of the community they are working with (Diehr, 2011). This makes it important to characterize populations for positive behavior change.

5.4. Specific Aim #4: Association between Media Sources and Use of HIV Testing

This aim is an important part of the study because it provides insight on the sources of information disseminated by REACH 2010 with respect to HIV testing. In 2006, the CDC revised its recommendations for HIV testing. These recommendations emphasize the importance of expanding HIV testing to health care settings. Separate informed consent for an HIV test raised concern regarding patients being tested for HIV without their knowledge, but requiring separate and written informed consent was thought to be a

barrier that makes HIV screening difficult to conduct. CDC is suggesting that removing this requirement may make widespread HIV screening more feasible (CDC, 2006).

The importance of testing and serostatus awareness was highlighted by Gary Marks in articles published in 2005 and 2006. In 2005 Marks and colleagues conducted a meta-analysis on 11 independent studies and reported estimations in a separate study in 2006. He concluded both times that the prevalence of high-risk sexual behavior is reduced substantially after people become aware they are HIV positive. He recommended that increased emphasis on HIV testing and counseling is needed to reduce exposure to HIV from persons unaware they are infected. Ongoing prevention services are needed for persons who know they are HIV positive and continue to engage in high-risk behavior (Marks, Crepaz & Janssen, 2005; Marks, Crepaz, Senterfitt &Janssen, 2006). Under the REACH 2010 in Broward County, preventative services that included HIV testing were offered by the Community Based Organizations that collaborated with the project.

5.4.1. Hypothesis 4.1: Exposure to HIV information through TV, radio, internet and/or print media among Broward County minority residents and significant association with participants more likely to be tested for HIV/AIDS in the last 12 months.

People who used print sources for HIV information were tested in the last 12 months significantly more, followed by radio, than those who did not use these informational sources for HIV information. Literature review on these results, for the past 10 years, was not conclusive. Much has changed in 10 years. Rapid testing is more common, and the internet, with social media and social marketing has overtaken the spotlight within mass communication. In March of 2011, a systematic review by Lorenc and colleagues reviewed interventions such as prospective studies using randomized controlled trials (RCT), to study the efficacy and cost-effectiveness in increasing the uptake of HIV

testing among men who have sex with men (MSM). Lorenc's review substantiated

evidence that rapid testing, counseling in community settings and intensive peer

counseling can increase HIV testing among MSM. There were promising results

regarding the introduction of opt-out testing in sexually transmitted infection clinics. But

findings regarding other interventions, including bundling HIV tests with other tests, peer

outreach in community settings, and media campaigns including print and other sources,

were inconclusive (Lorenc et al., 2011).

African Americans, when compared to Hispanics and Caribbean Islanders, and

women, when compared to men, were tested more in the last 12 months. A study by

Merchant and colleagues in 2008 used multivariable logistic regression model and found

the odds of accepting screenings were greater among those who were younger than 40

years old, nonwhite, not married, lacking private health insurance, and who had 12 or

fewer years of education. Patients not previously tested for HIV who were white,

married, and 45 years or older and who had private health insurance were more likely to

have declined HIV screening (Merchant et al., 2008).

This hypothesis was supported for other information sources when using logistic

regression.

5.4.2. Hypothesis 4.2: Exposure to HIV information through TV, radio, internet and/or print among Broward County minority residents and significant association with participants more likely to be tested for HIV/AIDS in the last 12 months and receive results.

Receiving results of HIV tests continues to be a challenge since not all community

based organizations and testing sites offer rapid testing. One factor could be the

uncertainty of cost. As late as 2009, a study acknowledged this challenge and reviewed

the costs of rapid HIV tests in 28 community clinics and 7 CBOs for directors to assess

the economic impact of implementing rapid testing at their sites)Pinkerton, 2009). Per-client rapid testing cost, HIV-negative client cost, preliminary-positive client cost and personnel costs were described in the study. The findings attempted also to incite discussions regarding national and local HIV testing policies (Pinkerton et al., 2009). According to the CDC, in most cases the EIA (enzyme immunoassay) test, used on blood drawn from a vein, is still the most common screening test still used to look for antibodies to HIV (CDC,2010). In other words, people receiving the test have to return to receive their results.

Also, it is important to acknowledge that those who receive tests results from rapid HIV tests with positive preliminary results must follow up with a confirmation test. Results of this confirmatory test can take a few days to a few weeks. Myers and colleagues in 2009 described that most preliminarily positive rapid tests in his study resulted in unconfirmed infections (Myers et al., 2009).

In this study, those who tested and received results in the last 12 months was significantly higher for those who used print and radio as a source of information. For those groups that utilize print as a source of information, print media has the capacity to shape health behaviors that can influence the follow through of testing and receiving results. There was no literature associating sources of information with testing and receiving results.

African Americans, females and those with lower income were tested and received their results at a greater rate. For African Americans, this is consistent with findings by Swenson and colleagues in May of 2011, which described the black population to be more likely to accept testing as compared to Latinos, at 75% versus 39% (Myers, Hadley,

houck, Dance & Brown, 2011). Myers and colleagues in 2009 corroborated this study's finding that women were more likely to want to know their serostatus than men. African Americans were also more likely to want to know their serostatus followed by Hispanics and then Whites in Myers study (Myers et al., 2009).

5.5. Limitations

5.5.1. Data collection.

There were difficulties reported by the Institute for Public Opinion Research (IPOR) conducting the interviews with regards to merging the data, variable coding and respondent number changes with follow up interviews. Also, the project experienced loss to follow-up. Follow up interviews were extremely low due to the nature of this transient population. By 2003, only 12% of the participants were actual original participants, with 1,210, or 60%, being interviewed for the first time. To avoid loss to follow-up bias, a cross-sectional design was chosen. Therefore, temporality or causality could not be assessed via a cohort study.

5.5.2. Co-existing media interventions.

Co-intervention bias could have influenced the findings of this study. Media interventions by REACH 2010 were dispersed throughout Broward County in conjunction with other forms of HIV prevention interventions by other local projects and the county health department. It cannot be proven that these interventions, although minimal, may have impacted the associations that were seen in this study. Although available data by year does suggest that the community action plan adopted by the Coalition at REACH 2010 did contribute to promoting behavior change and reducing the burden of HIV disease (BCHD, 2002; BCHD, 2006) it is difficult to measure the extent

of the impact made by the interventions. The CDC did not make funds available for those implementing the REACH 2010 projects to create control communities elsewhere for comparative data collection.

5.5.3. Limitations to a cross sectional study.

A major problem in this cross-sectional study is collinearity, interpretation and inference. For example, young African American unmarried men in Broward County are at high risk for HIV infection. One could argue that it is not surprising to learn that their perception of HIV risk is higher than other residents, regardless of being exposed to print media about AIDS in the last 12 months. The assumption, though, warrants the search for evidence and additional investigation on what material could possibly cause risk behavior change for that population/race.

5.5.4. Limited literature review specific to independent variables.

While the literature review surfaced quite a few studies related to perceived risk, risk behavior and use of services, there were limited studies on specific sources of information and the effects of mass media on these variables. Studies tended to generalize sources of information as one intervention and rarely gave differences in radio, TV, print and internet.

Articles reviewed were not comparable to the community involved in this survey. Many studies involved internationally collected data. This factor made it difficult to relate other study outcomes to the findings of this study. Yet as Noar suggested in 2009, segmenting the community into meaningful subgroups and using a message design approach that is targeted to those subgroups is key in creating successful interventions.

5.5.5. Progressive advancements since the inception of the study.

In the last 3 years, there has been a sharp increase in social media and social marketing due to internet networks. When this survey was conducted, the internet was not as readily available to all as it is today. Internet can be assessed today on most phones, and WLAN (Wireless Local Area Network) allows most to pick up free internet access. Curiosity arose as to how these incredibly intrusive communication methods could be used as a source of information and intervention to not only inform but create behavior change. While this provided a greater range of literature to review, not all was conclusive or relative to this study.

Nevertheless as mentioned above, sources of information continues to be an area of interest that needs to be studied by each variable per community it is targeting, making this study all the more valuable. Noar in 2009 went on to recommend effective channels that are persuasive and widely viewed by the community it is targeting, process evaluation, high message exposure and sensitive outcome evaluation designs to reduce threats to internal validity and allow causal inferences about the intervention impact made.

5.5.6. Omitted questions.

The questions related to media when the survey was created were assigned by a media expert hired by REACH 2010. However, in attempting to minimize the length of the survey, questions were omitted which could have been used to better analyze sources of information. For example, time listened to radio was asked, but this measurement was not used for TV or internet. Since this survey was not designed for sources of information analysis, the evaluation of this area was not conceptualized.

5.5.7. Omitted responses.

Categories were collapsed due to the answer choices given to respondents and the distribution of the variables. Dichotomizing outcome variables allowed for finding significant differences using binary multiple logistic regression models that otherwise would not have been able to be performed unless the sample size were greater.

5.5.8. Self report.

Self-report studies have specific disadvantages due to participant's generalized behavior. Self-reported answers could have been exaggerated. Also, participants may have been too embarrassed to reveal private details. Social desirability bias is the tendency of participants to reply in a manner that will be viewed favorably by others. This could have caused respondents to over-report good behavior or under-reporting bad behavior.

As a self reported study, there could have been bias due to the person's feelings at the time they filled out the questionnaire. If a person felt bad at the time they fill out the questionnaire, for example, their answers could have been more negative. If the person felt good at the time, then the answers could have been more positive.

It is also possible for the results to have been biased by a lack of respondents, if there were systematic differences between people who responded and people who did not. This study tried to compensate for one known systematic difference, which was that males were less likely to participate in phone surveys. The interviewers first asked for a male participant before interviewing a female participant.

Memory bias is not believed to have played a role in data collection since respondents were asked to recall experiences in the last 12 months.

5.5.9. Limitations conclusion.

Despite these limitations, it is expected that the study will support less budget restrictions for media interventions, culturally sensitive media campaigns for minority communities, as well as the allowance for analysis of media campaigns and other sources of information to continue to discern valuable tools for HIV/AIDS prevention.

While the results of basic analyses performed on the collected data indicate it may not be sufficient to inform or change policy, it underscores the value of further investigating sources of information and its relationship to risk behavior, perception and testing.

5.6. Conclusion.

HIV/AIDS is a preventable disease. For infection to cease, new approaches are needed that recognize the cultural, as well as the community determinants of health behavior change specific to HIV/AIDS prevention, and begin to address these determinants with broad, empowering messages that use appropriate media to reach specific target communities. This study further define these determinants for minority and other hard-to-reach populations, and evaluates the hypothesis that the media as a source of information for education and services can, through the two step flow process, exponentially increase the benefits of HIV/AIDS prevention strategies for increased risk populations.

In 2006, Hlaing and Darrow used REACH 2010 CATI survey data to examine changes in perceptions of HIV risk, abstinence, condom use, and intentions to use condoms for disease protection among African American, Hispanic, Haitian, and Afro-Caribbean unmarried and married men and women living in Broward County, Florida. The study found that sexually active residents who had been exposed to the REACH

2010 interventions, in general, were significantly more likely than others to report using a condom in the year prior. The study recommended that HIV-prevention programs should consider locally collected data, take into account cultural, living situations, and other significant differences, and be evaluated to assess differentiated impact (Hlaing, 2006).

In 2010, Darrow et al. published a summative evaluation of this community mobilization program (Darrow, 2010) REACH 2010, as a community-level intervention project, was the first systematic approach to eliminate disparities in HIV disease in racial and ethnic minority communities in the United States. When interventions ceased towards the end of the project, data showed the incidence of HIV infections among non-Hispanic Black residents of Broward County had declined from 193 per 100,000 in 1999 to 81.1 per 100,000 in 2006. HIV-infection rates for Hispanic and non-Hispanic white residents, however, had increased. Trends were studied in new cases of HIV infection per 100,000 in Black populations 13 years of age and older reported for Broward County, Miami-Dade County, and Palm Beach County. Results were compared with rates for three urban counties located outside of the South Florida media market. Rates were higher in South Florida before the mobilization activities began in 1999, and declined greater over the next seven years in Broward and the two adjoining counties in the south than in the three urban counties to the north.

Both of Darrows' studies, in 2006 and 2010, called for further research to be conducted to determine the magnitude of the impact of the interventions used in this demonstration project. The summative evaluation specifically highlighted the need to focus on the impact of strategic communications and media as interventions for the communities targeted, thus supporting the need for this study.

This study has only touched the surface of the types of analyses needed to successfully implement media interventions for at risk minority populations in south Florida, and calls for the same types of analyses to be conducted before culturally sensitive evidence based interventions are implemented across the United States. Further investigation is needed to examine the relationship between media and behavior change among high risk populations. Like successful campaigns of various industries, we need to create "brands" and messages that are trusted and respected, and above all begin to build long term relationships with our target audiences through consistent campaigns (Hastings and McFadyen, 2002) with appropriate follow up for the process to be successful.

Figures

Figure 1.   The Two-Step Flow Theory Conceptual Model as Applied to REACH 2010

MEDIA	influence	OPINION LEADER (GATEKEEPER)	influence	COMMUNITY
-TV		Transform their own KABs		Individuals
-Radio		about -risk perception		in social contact
-Newspapers		-risk beliefs		with gatekeeper
-Magazines		-use of services		
-Posters/pamphlets				
-Billboard/Bus Ad				
-Internet				
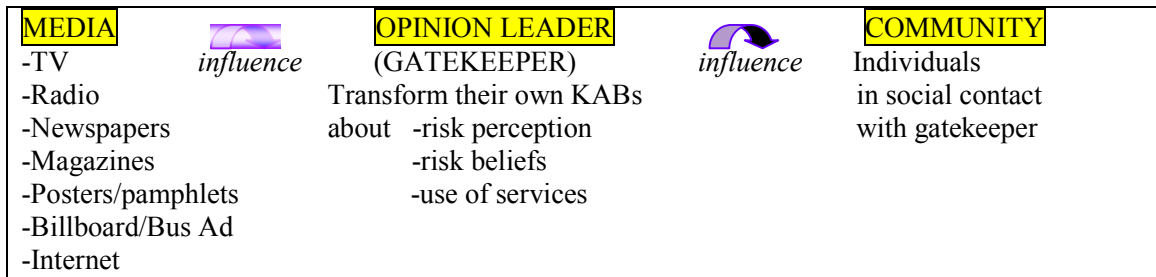
Tables

Table A

Independent Variable(s)

Variable	Questionnaire Item	Response Category
I'm going to read you some different sources of news and information about HIV/AIDS. As I read each one, please tell me whether you, yourself, got any news or information about HIV or AIDS from this source in the past 12 months.	TV Radio Print Internet Other	0: no 1: yes

Table B

Dependent Variables

Questionnaire Item	Variable	Response Category
H2.1 *Which of these health problems have affected your community the most: diabetes, drug abuse, gonorrhea or AIDS?*	other, (diabetes, drug use, gonorrhea	0
	AIDS	1
H2.2 *What are your chances of getting HIV that is the virus that causes AIDS: would you say high, medium, low or none?*	None or Low	0
	Medium or High	1
H3.1 *In the last 12 months, have you used condoms with a partner for birth control only, for disease protection only, both for birth control and disease protection, have you not used a condom with a partner in the last 12 months or not had sex in the last 12 months?*	Have not used condoms in the last 12 months	0
	Have used condoms in the last 12 months	1
H4.1 *In the last 12 months, have you been tested for HIV, the virus that causes AIDS?*	No	0
	Yes	1
H4.2 *In the last 12 months, have you been tested for HIV, the virus that causes AIDS, and received your results?*	No	0
	Yes	1

Table 1

Descriptive Statistics for 2003 Dependent Variables: Risk Behaviors and Perceived Risk

(N = 2002)

	Frequency	Percent
Health problem affecting your community the most		
Other (diabetes, drug use, gonorrhea, or others)	1222	61.0
AIDS	292	14.6
Not applicable	488	24.4
Perception of your chances of getting HIV/AIDS		
Low or none	1592	79.5
Medium or high	350	17.5
Did not answer or not applicable	60	3.0
Used a condom in the past 12 months		
No	814	40.7
Yes	1013	50.6
Did not answer	175	8.7
Tested for HIV in the past 12 months		
No	1110	55.4
Yes	816	40.8
Did not answer	76	3.8
Tested for HIV in the past 12 months and received results		
No	1133	56.6
Yes	795	39.7
Did not answer	74	3.7

Table 2

Descriptive Statistics for 2003 Independent Variables: Demographics and Sources of

Information (N = 2002)

	Frequency	Percent
Education		
Up to grade 12	270	13.5
High school graduate or higher	1726	86.2
Did not answer or not applicable	6	0.3
Marital status		
Single, divorced, or separated	1137	56.8
Married or living together	860	43.0
Did not answer or not applicable	5	0.2
Ethnicity		
African American	625	31.2
Hispanic	690	34.5
Caribbean or Haitian	687	34.3
Gender		
Male	676	33.8
Female	1326	66.2
Income		
Under $30,000	863	43.1
$30,000 and above	664	33.2
Did not answer or not applicable	475	23.7
Sources of information		
TV		
No	195	9.7
Yes	1807	90.3
Radio		
No	566	28.3
Yes	1436	71.7
Print		
No	160	8.0
Yes	1842	92.0

Table 2 Continued

	Frequency	Percent
Internet		
No	1095	54.7
Yes	907	45.3
Others		
No	189	9.4
Yes	1813	90.6

Table 3

Sources of Information by Race-Ethnicity for 2003

	African A.	Hispanic	Caribbean	Total	$\chi^2(2)$	*p*
TV						
No	38 (6.1%)	73 (10.6%)	84 (12.2%)	195 (9.7%)	14.91	0.001
Yes	587 (93.9%)	617 (89.4%)	603 (87.8%)	1807 (90.3%)		
Total	625	690	687	2002		
Radio						
No	132 (21.1%)	259 (37.5%)	175 (25.5%)	566 (28.3%)	47.62	<0.001
Yes	493 (78.9%)	431 (62.5%)	512 (74.5%)	1436 (71.7%)		
Total	625	690	687	2002		
Print						
No	28 (4.5%)	82 (11.9%)	50 (7.3%)	160 (8.0%)	25.17	<0.001
Yes	597 (95.5%)	608 (88.1%)	637 (92.7%)	1842 (92.0%)		
Total	625	690	687	2002		
Internet						
No	327 (52.3%)	430 (62.3%)	338 (49.2%)	1095 (54.7%)	25.98	<0.001
Yes	298 (47.7%)	260 (37.7%)	349 (50.8%)	907 (45.3%)		
Total	625	690	687	2002		
Others						
No	38 (6.1%)	75 (10.9%)	76 (11.1%)	189 (9.4%)	12.02	0.002
Yes	587 (93.9%)	615 (89.1%)	611 (88.9%)	1813 (90.6%)		
Total	625	690	687	2002		

Table 4

Sources of Information by Gender for 2003

	Male	Female	Total	$\chi^2(1)$	p
TV					
No	55 (8.1%)	140 (10.6%)	195 (9.7%)	2.99	0.084
Yes	621 (91.9%)	1186 (89.4%)	1807 (90.3%)		
Total	676	1326	2002		
Radio					
No	170 (25.1%)	396 (29.9%)	566 (28.3%)	4.91	0.027
Yes	506 (74.9%)	930 (70.1%)	1436 (71.7%)		
Total	676	1326	2002		
Print					
No	54 (8.0%)	106 (8.0%)	160 (8.0%)	0.00	0.996
Yes	622 (92.0%)	1220 (92.0%)	1842 (92.0%)		
Total	676	1326	2002		
Internet					
No	361 (53.4%)	734 (55.4%)	1095 (54.7%)	0.69	0.407
Yes	315 (46.6%)	592 (44.6%)	907 (45.3%)		
Total	676	1326	2002		
Others					
No	84 (12.4%)	105 (7.9%)	189 (9.4%)	10.64	0.001
Yes	592 (87.6%)	1221 (92.1%)	1813 (90.6%)		
Total	676	1326	2002		

Table 5

Sources of Information by Education for 2003

	Up to grade 12	High school graduate or higher	Total	$\chi^2(1)$	*p*
TV					
No	45 (16.7%)	147 (8.5%)	192 (9.6%)	17.84	<0.001
Yes	225 (83.3%)	1579 (91.5%)	1804 (90.4%)		
Total	270	1726	1996		
Radio					
No	106 (39.3%)	456 (26.4%)	562 (28.2%)	19.03	<0.001
Yes	164 (60.7%)	1270 (73.6%)	1434 (71.8%)		
Total	270	1726	1996		
Print					
No	40 (14.8%)	117 (6.8%)	157 (7.9%)	28.81	<0.001
Yes	230 (85.2%)	1609 (93.2%)	1839 (92.1%)		
Total	270	1726	1996		
Internet					
No	182 (67.4%)	908 (52.6%)	1090 (54.6%)	20.62	<0.001
Yes	88 (32.6%)	818 (47.4%)	906 (45.4%)		
Total	270	1726	1996		
Others					
No	36 (13.3%)	152 (8.8%)	188 (9.4%)	5.61	0.018
Yes	234 (86.7%)	1574 (91.2%)	1808 (90.6%)		
Total	270	1726	1996		

Table 6

Sources of Information by Marital Status for 2003

	Single, divorced, or separated	Married or living together	Total	$\chi^2(1)$	*p*
TV					
No	95 (8.4%)	99 (11.5%)	194 (9.7%)	5.56	0.018
Yes	1042 (91.6%)	761 (88.5%)	1803 (90.3%)		
Total	1137	860	1997		
Radio					
No	311 (27.4%)	254 (29.5%)	565 (28.3%)	1.15	0.284
Yes	826 (72.6%)	606 (70.5%)	1432 (71.7%)		
Total	1137	860	1997		
Print					
No	73 (6.4%)	87 (10.1%)	160 (8.0%)	9.08	0.003
Yes	1064 (93.6%)	773 (89.9%)	1837 (92.0%)		
Total	1137	860	1997		
Internet					
No	559 (49.2%)	535 (62.2%)	1094 (54.8%)	33.64	<0.001
Yes	578 (50.8%)	325 (37.8%)	903 (45.2%)		
Total	1137	860	1997		
Others					
No	91 (8.0%)	98 (11.4%)	189 (9.5%)	6.57	0.010
Yes	1046 (92.0%)	762 (88.6%)	1808 (90.5%)		
Total	1137	860	1997		

Table 7a

Has HIV/AIDS vs. Other Health Problems Affected the Community the Most by

Information Sources for 2003

	Other health problems	HIV/AIDS	Total	$\chi^2(1)$	p
TV					
No	107 (83.6%)	21 (16.4%)	128	0.74	0.388
Yes	1115 (80.4%)	271 (19.6%)	1386		
Total	1222 (80.7%)	292 (19.3%)	1514		
Radio					
No	342 (82.8%)	71 (17.2%)	413	1.60	0.206
Yes	880 (79.9%)	221 (20.1%)	1101		
Total	1222 (80.7%)	292 (19.3%)	1514		
Print					
No	101 (89.4%)	12 (10.6%)	113	5.89	0.015
Yes	1121 (80.0%)	280 (20.0%)	1401		
Total	1222 (80.7%)	292 (19.3%)	1514		
Internet					
No	669 (82.0%)	147 (18.0%)	816	1.84	0.175
Yes	553 (79.2%)	145 (20.8%)	698		
Total	1222 (80.7%)	292 (19.3%)	1514		
Others					
No	107 (82.3%)	23 (17.7%)	130	0.23	0.630
Yes	1115 (80.6%)	269 (19.4%)	1384		
Total	1222 (80.7%)	292 (19.3%)	1514		

Table 7b

Has HIV/AIDS vs. Other Health Problems Affected the Community the Most by

Demographic Variables for 2003

	Other health problems	HIV/AIDS	Total	χ^2(df)	p
Education					
Up to grade 12	144 (77.8%)	41 (22.2%)	185	1.14(1)	0.285
HS grad or higher	1076 (81.1%)	250 (18.9%)	1326		
Total	1220 (80.7%)	291 (19.3%)	1511		
Marital					
Not married	643 (78.5%)	176 (21.5%)	819	5.25(1)	0.022
Married	574 (83.2%)	116 (16.8%)	690		
Total	1217 (80.6%)	292 (19.4%)	1509		
Ethnicity					
African Amer.	312 (69.8%)	135 (30.2%)	447	52.94(2)	<0.001
Hispanic	486 (87.7%)	68 (12.3%)	554		
Caribbean	424 (82.7%)	89 (17.3%)	513		
Total	1222 (80.7%)	292 (19.3%)	1514		
Gender					
Male	393 (78.3%)	109 (21.7%)	502	2.84(1)	0.092
Female	829 (81.9%)	183 (18.1%)	1012		
Total	1222 (80.7%)	292 (19.3%)	1514		
Income					
< $30K	505 (76.7%)	153 (23.3%)	658	6.11(1)	0.013
$30 K or more	428 (82.6%)	90 (17.4%)	518		
Total	933 (79.3%)	243 (20.7%)	1176		

Table 8a

Logistic Regression Model for Predicting whether HIV/AIDS vs. Other Health Problems have Affected the Community the Most with Covariates only (Model 1) for 2003 (N = 1174)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 1					
HS graduate	-0.48	0.23	0.62	0.39 – 0.98	0.040
Married	-0.06	0.16	0.95	0.70 – 1.28	0.720
Hispanic	-1.16	0.19	0.31	0.22 – 0.46	<0.001
Caribbean	-0.61	0.18	0.54	0.39 – 0.77	0.001
Female	-0.32	0.16	0.72	0.53 – 0.98	0.037
≥ $30K	-0.42	0.16	0.66	0.48 – 0.90	0.008

Note. For Model 1: Constant = 0.05; Likelihood ratio test statistic = 1141.15; Nagelkerke's R-square = 0.073; Hosmer and Lemeshow $\chi^2(8) = 4.32$, $p = 0.827$.

Table 8b

Logistic Regression Model for Predicting whether HIV/AIDS vs. Other Health Problems have Affected the Community the Most with Covariates and Sources of Information (Model 2) for 2003 (N = 1174)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 2					
HS graduate	-0.56	0.24	0.57	0.36 – 0.90	0.017
Married	-0.02	0.16	0.98	0.72 – 1.33	0.888
Hispanic	-1.16	0.19	0.32	0.22 – 0.46	<0.001
Caribbean	-0.63	0.18	0.53	0.37 – 0.76	<0.001
Female	-0.32	0.16	0.72	0.53 – 0.98	0.039
≥ $30K	-0.44	0.16	0.64	0.47 – 0.88	0.005
TV	0.23	0.34	1.26	0.65 – 2.43	0.499
Radio	-0.14	0.19	0.87	0.61 – 1.26	0.466
Print	0.64	0.38	1.89	0.89 – 4.02	0.096
Internet	0.27	0.16	1.31	0.96 – 1.78	0.087
Others	-0.27	0.29	0.76	0.43 – 1.34	0.349

Note. For Model 2: Constant = -0.47; Likelihood ratio test statistic = 1133.26; Nagelkerke's R-square = 0.083; Hosmer and Lemeshow $\chi^2(8) = 11.55$, $p = 0.173$. The test of Model 2 vs. Model 1 was not significant, $\chi^2(5) = 7.90$, $p = 0.162$.

Table 9a

Perception of HIV/AIDS Risk by Information Sources for 2003

	Low or none	Medium or high	Total	$\chi^2(1)$	*p*
TV					
No	146 (83.4%)	29 (16.6%)	175	0.27	0.601
Yes	1446 (81.8%)	321 (18.2%)	1767		
Total	1592 (82.0%)	350 (18.0%)	1942		
Radio					
No	464 (85.0%)	82 (15.0%)	546	4.64	0.031
Yes	1128 (80.8%)	268 (19.2%)	1396		
Total	1592 (82.0%)	350 (18.0%)	1942		
Print					
No	128 (87.7%)	18 (12.3%)	146	3.46	0.063
Yes	1464 (81.5%)	332 (18.5%)	1796		
Total	1592 (82.0%)	350 (18.0%)	1942		
Internet					
No	899 (85.5%)	153 (14.5%)	1052	18.80	<0.001
Yes	693 (77.9%)	197 (22.1%)	890		
Total	1592 (82.0%)	350 (18.0%)	1942		
Others					
No	156 (89.1%)	19 (10.9%)	175	6.68	0.010
Yes	1436 (81.3%)	331 (18.7%)	1767		
Total	1592 (82.0%)	350 (18.0%)	1942		

Table 9b

Perception of HIV/AIDS Risk by Demographic Variables for 2003

	Low or none	Medium or high	Total	χ^2(df)	p
Education					
Up to grade 12	178 (70.9%)	73 (29.1%)	251	23.91(1)	<0.001
HS grad or higher	1410 (83.6%)	276 (16.4%)	1686		
Total	1588 (82.0%)	349 (18.0%)	1937		
Marital					
Not married	864 (78.4%)	238 (21.6%)	1102	22.28(1)	<0.001
Married	725 (86.7%)	111 (13.3%)	836		
Total	1589 (82.0%)	349 (18.0%)	1938		
Ethnicity					
African Amer.	492 (81.1%)	115 (18.9%)	607	0.75(2)	0.686
Hispanic	556 (81.9%)	123 (18.1%)	679		
Caribbean	544 (84.9%)	112 (17.1%)	656		
Total	1592 (82.0%)	350 (18.0%)	1942		
Gender					
Male	483 (73.9%)	171 (26.1%)	654	44.05(1)	<0.001
Female	1109 (86.1%)	179 (13.9%)	1288		
Total	1592 (82.0%)	350 (18.0%)	1942		
Income					
< $30K	662 (78.7%)	179 (21.3%)	841	16.38(1)	<0.001
$30 K or more	565 (86.8%)	86 (13.2%)	651		
Total	1227 (82.2%)	265 (17.8%)	1492		

Table 10a

Logistic Regression Model for Predicting Perception of HIV/AIDS Risk with Covariates

only (Model 1) for 2003 (N = 1490)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 1					
HS graduate	-0.67	0.20	0.51	0.34 – 0.76	0.001
Married	-0.41	0.15	0.67	0.50 – 0.89	0.007
Hispanic	-0.01	0.18	0.99	0.70 – 1.39	0.935
Caribbean	0.00	0.18	1.00	0.71 – 1.42	0.987
Female	-0.80	0.14	0.45	0.34 – 0.60	<0.001
≥ $30K	-0.50	0.15	0.61	0.45 – 0.82	0.001

Note. For Model 1: Constant = -0.09; Likelihood ratio test statistic = 1320.19; Nagelkerke's R-square = .077; Hosmer and Lemeshow $\chi^2(8) = 11.11$, $p = 0.195$.

Table 10b

Logistic Regression Model for Predicting Perception of HIV/AIDS Risk from Covariates

and Sources of Information (Model 2) for 2003 (N = 1490)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 2					
HS graduate	-0.76	0.21	0.47	0.31 – 0.70	<0.001
Married	-0.35	0.15	0.70	0.52 – 0.95	0.020
Hispanic	0.02	0.18	1.02	0.72 – 1.44	0.905
Caribbean	-0.02	0.18	0.98	0.70 – 1.40	0.930
Female	-0.82	0.14	0.44	0.33 – 0.59	<0.001
≥ $30K	-0.54	0.15	0.58	0.43 – 0.79	<0.001
TV	-0.26	0.28	0.77	0.44 – 1.34	0.359
Radio	0.26	0.18	1.29	0.90 – 1.84	0.159
Print	0.01	0.33	1.01	0.53 – 1.94	0.967
Internet	0.42	0.15	1.52	1.13 – 2.03	0.005
Others	0.52	0.31	1.68	0.92 – 3.07	0.093

Note. For Model 2: Constant = -0.66; Likelihood ratio test statistic = 1302.45; Nagelkerke's R-square = 0.096; Hosmer and Lemeshow $\chi^2(8) = 5.51$, $p = 0.702$. The test of Model 2 vs. Model 1 was significant, $\chi^2(5) = 17.74$, $p = 0.003$.

Table 11a

Condom use in Past 12 Months by Information Sources for 2003

	No	Yes	Total	$\chi^2(1)$	p
TV					
No	94 (55.0%)	77 (45.0%)	171	8.29	0.004
Yes	720 (43.5%)	936 (56.5%)	1656		
Total	814 (44.6%)	1013 (55.4%)	1827		
Radio					
No	249 (48.8%)	261 (51.2%)	510	5.22	0.022
Yes	565 (42.9%)	752 (57.1%)	1317		
Total	814 (44.6%)	1013 (55.4%)	1827		
Print					
No	86 (61.0%)	55 (39.0%)	141	16.72	<0.001
Yes	728 (43.2%)	958 (56.8%)	1686		
Total	814 (44.6%)	1013 (55.4%)	1827		
Internet					
No	475 (48.1%)	513 (51.9%)	988	10.81	0.001
Yes	339 (40.4%)	500 (59.6%)	839		
Total	814 (44.6%)	1013 (55.4%)	1827		
Others					
No	91 (52.6%)	82 (47.4%)	173	5.01	0.025
Yes	723 (43.7%)	931 (56.3%)	1654		
Total	814 (44.6%)	1013 (55.4%)	1827		

Table 11b

Condom use in Past 12 Months by Demographic Variables for 2003

	No	Yes	Total	$\chi^2(df)$	*p*
Education					
Up to grade 12	114 (46.9%)	129 (53.1%)	243	0.62(1)	0.429
HS grad or higher	698 (44.2%)	881 (55.8%)	1579		
Total	812 (44.6%)	1010 (55.4%)	1822		
Marital					
Not married	356 (35.0%)	661 (65.0%)	1017	84.20(1)	<0.001
Married	457 (56.5%)	352 (43.5%)	809		
Total	813 (44.4%)	1013 (55.5%)	1826		
Ethnicity					
African Amer.	203 (36.6%)	352 (63.4%)	555	26.53(2)	<0.001
Hispanic	332 (51.4%)	314 (48.6%)	646		
Caribbean	279 (44.6%)	347 (55.4%)	626		
Total	814 (44.6%)	1013 (55.4%)	1827		
Gender					
Male	215 (34.4%)	410 (65.6%)	625	39.65(1)	<0.001
Female	599 (49.8%)	603 (50.2%)	1202		
Total	814 (44.6%)	1013 (55.4%)	1827		
Income					
< $30K	350 (44.0%)	446 (56.0%)	796	0.51(1)	0.473
$30 K or more	284 (45.9%)	335 (54.1%)	619		
Total	634 (44.8%)	781 (55.2%)	1415		

Table 12a

Logistic Regression Model for Predicting Condom use in Past 12 Months with Covariates

only (Model 1) for 2003 (N = 1414)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 1					
HS graduate	0.10	0.19	1.10	0.76 – 1.60	0.606
Married	-0.83	0.12	0.44	0.35 – 0.55	<0.001
Hispanic	-0.41	0.14	0.66	0.50 – 0.87	0.003
Caribbean	-0.25	0.14	0.78	0.59 – 1.03	0.079
Female	-0.62	0.12	0.54	0.42 – 0.68	<0.001
≥ $30K	-0.01	0.12	0.99	0.79 – 1.24	0.927

Note. For Model 1: Constant = 1.18; Likelihood ratio test statistic = 1835.73; Nagelkerke's R-square = .100; Hosmer and Lemeshow $\chi^2(8) = 5.75$, $p = 0.675$.

Table 12b

Logistic Regression Model for Predicting Condom use in Past 12 Months from

Covariates and Sources of Information (Model 2) for 2003 (N = 1414)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 2					
HS graduate	0.04	0.19	1.04	0.72 – 1.52	0.817
Married	-0.81	0.12	0.44	0.35 – 0.56	<0.001
Hispanic	-0.37	0.14	0.69	0.52 – 0.91	0.008
Caribbean	-0.24	0.14	0.78	0.59 – 1.04	0.086
Female	-0.62	0.12	0.54	0.42 – 0.68	<0.001
≥ $30K	-0.02	0.12	0.98	0.78 – 1.24	0.866
TV	0.01	0.22	1.01	0.66 – 1.55	0.952
Radio	0.02	0.14	1.02	0.78 – 1.34	0.862
Print	0.55	0.25	1.73	1.06 – 2.83	0.028
Internet	0.17	0.12	1.18	0.94 – 1.49	0.149
Others	0.06	0.21	1.06	0.71 – 1.59	0.777

Note. For Model 2: Constant = 0.53; Likelihood ratio test statistic = 1825.24; Nagelkerke's R-square = 0.109; Hosmer and Lemeshow $\chi^2(8)$ = 6.48, *p* = 0.593. The test of Model 2 vs. Model 1 was not significant, $\chi^2(5)$ = 10.49, *p* = 0.062.

Table 13a

Tested for HIV in the last 12 Months by Information Sources for 2003

	No	Yes	Total	$\chi^2(1)$	*p*
TV					
No	120 (64.2%)	67 (35.8%)	187	3.63	0.057
Yes	990 (56.9%)	749 (43.1%)	1739		
Total	1110 (57.6%)	816 (42.4%)	1926		
Radio					
No	332 (61.1%)	211 (38.9%)	543	3.81	0.051
Yes	778 (56.3%)	605 (43.7%)	1383		
Total	1110 (57.6%)	816 (42.4%)	1926		
Print					
No	111 (71.6%)	44 (28.4%)	155	13.49	<0.001
Yes	999 (56.4%)	772 (43.6%)	1771		
Total	1110 (57.6%)	816 (42.4%)	1926		
Internet					
No	621 (58.8%)	436 (41.2%)	1057	1.20	0.273
Yes	489 (56.3%)	380 (43.7%)	869		
Total	1110 (57.6%)	816 (42.4%)	1926		
Others					
No	135 (74.6%)	46 (25.4%)	181	23.52	<0.001
Yes	975 (55.9%)	770 (44.1%)	1745		
Total	1110 (57.6%)	816 (42.4%)	1926		

Table 13b

Tested for HIV in the last 12 Months by Demographic Variables for 2003

	No	Yes	Total	χ^2(df)	p
Education					
Up to grade 12	160 (60.8%)	103 (39.2%)	263	1.26(1)	0.261
HS grad or higher	947 (57.2%)	710 (42.8%)	1657		
Total	1107 (57.7%)	813 (42.3%)	1920		
Marital					
Not married	634 (57.8%)	462 (42.2%)	1096	0.01(1)	0.905
Married	475 (57.6%)	350 (42.4%)	825		
Total	1109 (57.7%)	812 (42.3%)	1921		
Ethnicity					
African Amer.	299 (49.8%)	301 (50.2%)	600	22.02(2)	<0.001
Hispanic	416 (61.9%)	256 (38.1%)	672		
Caribbean	395 (60.4%)	259 (39.6%)	654		
Total	1110 (57.6%)	816 (42.4%)	1926		
Gender					
Male	440 (67.2%)	215 (32.8%)	655	37.02(1)	<0.001
Female	670 (52.7%)	601 (47.3%)	1271		
Total	1110 (57.6%)	816 (42.4%)	1926		
Income					
< $30K	448 (54.0%)	381 (46.0%)	829	2.75(1)	0.097
$30 K or more	373 (58.4%)	266 (41.6%)	639		
Total	821 (55.9%)	647 (44.1%)	1468		

Table 14a

Logistic Regression Model for Predicting whether Respondent was Tested for HIV in the

Last 12 Months with Covariates only (Model 1) for 2003 (N = 1465)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 1					
HS graduate	-0.05	0.18	0.95	0.67 – 1.36	0.790
Married	0.02	0.11	1.02	0.82 – 1.26	0.892
Hispanic	-0.51	0.13	0.60	0.46 – 0.78	<0.001
Caribbean	-0.40	0.13	0.67	0.52 – 0.87	0.003
Female	0.44	0.12	1.55	1.23 – 1.94	<0.001
≥ $30K	-0.19	0.11	0.82	0.66 – 1.03	0.085

Note. For Model 1: Constant = -0.12; Likelihood ratio test statistic = 1973.22; Nagelkerke's R-square = 0.033; Hosmer and Lemeshow $\chi^2(8) = 11.53$, $p = 0.174$.

Table 14b

Logistic Regression Model for Predicting whether Respondent was Tested for HIV in the

Last 12 Months from Covariates and Sources of Information (Model 2) for 2003 (N =

1465)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 2					
HS graduate	-0.11	0.18	0.90	0.62 – 1.29	0.552
Married	0.04	0.11	1.04	0.83 – 1.30	0.745
Hispanic	-0.48	0.14	0.62	0.47 – 0.80	<0.001
Caribbean	-0.36	0.14	0.70	0.54 – 0.91	0.008
Female	0.41	0.12	1.51	1.20 – 1.91	<0.001
$\geq$ $30K	-0.18	0.11	0.83	0.67 – 1.04	0.108
TV	0.21	0.22	1.24	0.81 – 1.88	0.323
Radio	-0.05	0.13	0.95	0.73 – 1.23	0.686
Print	0.09	0.24	1.10	0.68 – 1.77	0.707
Internet	0.04	0.11	1.04	0.83 – 1.30	0.731
Others	0.81	0.22	2.26	1.47 – 3.47	<0.001

Note. For Model 2: Constant = -1.08; Likelihood ratio test statistic = 1951.73; Nagelkerke's R-square = 0.052; Hosmer and Lemeshow $\chi^2(8) = 6.20$, $p = 0.625$. The test of Model 2 vs. Model 1 was significant, $\chi^2(5) = 21.48$, $p = 0.001$.

Table 15a

Tested for HIV in the Last 12 Months and Received Results by Information Sources for

2003

	No	Yes	Total	$\chi^2(1)$	p
TV					
No	122 (65.2%)	65 (34.8%)	187	3.58	0.058
Yes	1011 (58.1%)	730 (41.9%)	1741		
Total	1133 (58.8%)	795 (41.2%)	1928		
Radio					
No	340 (62.5%)	204 (37.5%)	544	4.36	0.037
Yes	793 (57.3%)	591 (42.7%)	1384		
Total	1133 (58.8%)	795 (41.2%)	1928		
Print					
No	113 (72.9%)	42 (27.1%)	155	13.90	<0.001
Yes	1020 (57.5%)	753 (42.5%)	1773		
Total	1133 (58.8%)	795 (41.2%)	1928		
Internet					
No	635 (60.0%)	423 (40.0%)	1058	1.52	0.218
Yes	498 (57.2%)	372 (42.8%)	870		
Total	1133 (58.8%)	795 (41.2%)	1928		
Others					
No	139 (76.8%)	42 (23.2%)	181	26.80	<0.001
Yes	994 (56.9%)	753 (43.1%)	1747		
Total	1133 (58.8%)	795 (41.2%)	1928		

Table 15b

Tested for HIV in the Last 12 Months and Received Results by Demographic Variables

for 2003

	No	Yes	Total	$\chi^2(df)$	p
Education					
Up to grade 12	165 (62.7%)	98 (37.3%)	263	1.96(1)	0.162
HS grad or higher	965 (58.2%)	694 (41.8%)	1659		
Total	1130 (58.8%)	792 (41.2%)	1922		
Marital					
Not married	650 (59.3%)	447 (40.7%)	1097	0.16(1)	0.692
Married	482 (58.4%)	344 (41.6%)	826		
Total	1132 (58.9%)	791 (41.1%)	1923		
Ethnicity					
African Amer.	313 (52.1%)	288 (47.9%)	601	16.32(2)	<0.001
Hispanic	420 (62.4%)	253 (37.6%)	673		
Caribbean	400 (61.2%)	254 (38.8%)	654		
Total	1133 (58.8%)	795 (41.2%)	1928		
Gender					
Male	447 (68.2%)	208 (31.8%)	655	36.78(1)	<0.001
Female	686 (53.9%)	587 (46.1%)	1273		
Total	1133 (58.8%)	795 (41.2%)	1928		
Income					
< $30K	453 (54.6%)	377 (45.4%)	830	4.48(1)	0.034
$30 K or more	384 (60.1%)	255 (39.9%)	639		
Total	837 (57.0%)	632 (43.0%)	1469		

Table 16a

Logistic Regression Model for Predicting whether Respondent was Tested for HIV in the

Last 12 Months and Received Results with Covariates only (Model 1) for 2003 (N =

1466)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 1					
HS graduate	-0.02	0.18	0.98	0.69 – 1.40	0.930
Married	0.03	0.11	1.03	0.83 – 1.29	0.785
Hispanic	-0.42	0.13	0.66	0.50 – 0.82	0.002
Caribbean	-0.35	0.13	0.71	0.54 – 0.92	0.010
Female	0.44	0.12	1.55	1.23 – 1.95	<0.001
≥ $30K	-0.24	0.11	0.79	0.63 – 0.98	0.031

Note. For Model 1: Constant = -0.22; Likelihood ratio test statistic = 1970.14; Nagelkerke's R-square = 0.030; Hosmer and Lemeshow $\chi^2(8) = 9.84$, $p = 0.198$.

Table 16b

Logistic Regression Model for Predicting whether Respondent was Tested for HIV in the

Last 12 Months and Received Results from Covariates and Sources of Information

(Model 2) for 2003 (N = 1466)

Predictors	*B*	*SE B*	*OR*	95% CI for OR	*p*
Model 2					
HS graduate	-0.08	0.18	0.92	0.64 – 1.33	0.675
Married	0.05	0.11	1.05	0.84 – 1.32	0.643
Hispanic	-0.39	0.14	0.67	0.52 – 0.88	0.004
Caribbean	-0.30	0.14	0.74	0.56 – 0.96	0.025
Female	0.41	0.12	1.51	1.20 – 1.91	<0.001
≥ $30K	-0.23	0.11	0.79	0.64 – 0.99	0.041
TV	0.13	0.22	1.14	0.75 – 1.74	0.533
Radio	-0.04	0.13	0.96	0.74 – 1.24	0.745
Print	0.16	0.25	1.17	0.72 – 1.90	0.524
Internet	0.03	0.11	1.03	0.82 – 1.28	0.805
Others	0.90	0.23	2.46	1.58 – 3.83	<0.001

Note. For Model 2: Constant = -1.26; Likelihood ratio test statistic = 1945.72; Nagelkerke's R-square = 0.052; Hosmer and Lemeshow $\chi^2(8) = 6.45$, $p = 0.597$. The test of Model 2 vs. Model 1 was significant, $\chi^2(5) = 24.42$, $p < 0.001$.

REFERENCES

Agha, S. & Van Rossem, R. (2002). Impact of mass media campaigns on intentions to use the female condom in Tanzania. *International Family Planning Perspective, 28,* 151-158.

AIDS Community Demonstration Projects. (1996). Sources of HIV information among injecting drug users: association with gender, ethnicity, and risk behaviour. *AIDS Care, 8(5),* 541-55.

Albarracin, J. & Plambeck, C. (2010). Demographic factors and sexist beliefs a predictors of condom use among Latinos in the USA. *AIDS Care, 22(8)*, 1021-1028.

Bailey, T. & Snyder, C. (2007) Satisfaction with life and hope : A look at age and marital status. *The Psychological Record*, *57(2),* article 5.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bennett, G. & Glasgow, R. (2009). The delivery of public health interventions via the internet: actualizing their potential. *Annual Review of Public Health, 30,* 273-292.

Bertrand, J.T. & Anhang, R. (2006). The effectiveness of mass media in changing HIV/AIDS-related behaviour among young people in developing countries. *World Health Organization Technical Report Series*, *938,* 205-241, 317-341.

Bertrand, J.T., O'Reilly, K., Denison, J., Anhang, R. & Sweat, M. (2006). Systematic review of the effectiveness of mass communication programs to change HIV/AIDS-related behaviors in developing countries. *Health Education Research, 21(4),* 567-597.

Bhattacharya G., Cleland C. & Holland S. (2000). Knowledge about HIV/AIDS, the perceived risks of infection and sources of information of Asian-Indian adolescents born in the USA. *AIDS Care, 12(2)*, 203-209.

Bimber, B. (2000). Measuring the gender gap on the internet. *Social Science Quarterly, 8(3),* 868-873.

Boyd, N.R., Sutton, C., Orleans, C. T., McClatchey, M. W., Bingler, R., Fleisher, L., Heller, D., Baum, S., Graves, C. & Ward, J. (1998). Quit Today! A targeted communications campaign to increase use of the cancer information service by African American smokers. *Preventive Medicine, 27(5),* 50-60.

Bradner, C.H., Ku, L. & Lindberg, L.D. (2000). Older, but not wiser: how men get information about AIDS and sexually transmitted diseases after high school. *Family Planning Perspectives, 32(1),* 33-38.

Breslow, E. & Gale, T. (2002). Precede-Proceed model. *Encyclopedia of Public Health.* Retrieved from http://health.enotes.com/public-health-encyclopedia/precede-proceed-model

Brodie, M., Kjellson, N., Hoff,T. & Parker M. (1999). Perceptions of Latinos, African Americans, and Whites on media as a health information source. *Howard Journal of Communication, 10(3),* 147-167.

Broward County Health Department (BCHD). (2002). Broward County HIV and AIDS statistics. Retrieved from http://browardchd.org/ Services/AIDS/Statistics.htm

Broward County Health Department (BCHD). (2006). Broward County HIV and AIDS statistics. Retrieved from http://browardchd.org/ Services/AIDS/Statistics.htm

Broward County Health Department (BCHD). (2008). Broward County HIV and AIDS statistics. Retrieved from http://browardchd.org/Services/AIDS/Statistics.htm

Bull, S., Pratte, K., Whitesell, N., Rietmeijer C. & McFarlane, M. Effects of an internet-based intervention for HIV prevention: The Youthnet trials. (2009). *AIDS and Behavior, 13(3),* 474-487.

Cabanero Verzosa, C. (2007). Communications for behavior change: A toolkit for task managers. *Human Development Department, World Bank.* Retrieved from http://www.emaxhealth.com/cms/?m=search&opt=search_proceed&n net_author=1&nnet_catid=&search_conjunction=AND&keywords=Q2Vud GVyIGZvciB0aGUgQWR2YW5jZW1lbnQgb2YgSGVhbHRo&page=1"

Caudle, P. (1993). Providing culturally sensitive health care to Hispanic clients. *Nurse Practitioner*, 18(12), 40-51.

Census Bureau. (2009). Current population survey reports. Retrieved from http://www.census.gov/population/www/socdemo/school.html

Center for the Advancement of Health. (2005). Media can help increase HIV testing. Retrieved from http://www.emaxhealth.com/54/3339.html

Center for Communications Programs. (2007). A field guide to designing a health communication strategy. *Bloomberg School of Public Health, John Hopkins University*. Retrieved from http://www.jhuccp.org/pubs/fg/02/12-appendix1.pdf

Centers for Disease Control and Prevention. (1996). Community-level prevention of human immunodeficiency virus infection among high-risk populations: The AIDS Community Demonstration Projects. MMWR Recommendations and Reports, 10(RR-6).

Centers for Disease Control and Prevention. (2005). HIV/AIDS surveillance report; Cases of HIV infection and AIDS in the United States and dependent areas.17.

Centers for Disease Control and Prevention. (2005). Racial and ethnic approaches to community health (REACH) 2010. *Coordinating Center for Health Promotion Addressing Disparities in Health.* Retrieved from http://www.cdc.gov/reach2010

Centers for Disease Control and Prevention. (2006). CDC HIV/AIDS science facts: CDC releases revised HIV testing recommendations in health care settings. *National Center for HIV, AIDS, STD and TB Prevention.* Retrieved from http://www.cdc.gov/hiv/topics/testing/resources/factsheets/healthcare.htm

Centers for Disease Control and Prevention. (2010). HIV among African Americans. *National Center for HIV, AIDS, STD and TB Prevention.* Retrieved from http://www.cdc.gov/hiv/topics/aa/pdf/aa.pdf

Centers for Disease Control and Prevention. (2010). National HIV and STD testing resources. Retrieved from http://www.hivtest.org/faq.aspx#screening

Centers for Disease Control and Prevention. (2010). New Study in low-income heterosexuals in America's inner cities reveals high HIV rates. Retrieved from http://www.cdc.gov/nchhstp/Newsroom/povertyandhivpressrelease.html.

Chang, T., Shoemaker, P.J., Reese, S.D. & Danielson, W.A. (1987). Sampling ethnic media use: The case of Hispanics. *Journalism Quarter, 64(2),* 189-191.

Channel 3000. (2007). New campaign targets Hispanic women with postpartum depression. Retrieved from http://www.channel3000.com/health/10797277/detail.html

Citizen's Commission to Protect the Truth. (2007). The Truth Campaign. Retrieved from http://www.protectthetruth.org/truthcampaign.htm

Clarke, J.N., McLellan, L. & Hoffman-Goetz L. (2006). The portrayal of HIV/AIDS in two popular African American magazines. *Journal of Health Communication. 11(50),* 495-507.

Cohen, D.A., Wu, S.Y. & Farley, T.A. (2006). Structural interventions to prevent HIV/sexually transmitted disease: Are they cost effective for women in the Southern United States? *Sexually Transmitted Diseases, 33 (7),* 46-S49.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Colley, R.H. (1961). *Defining advertising goals for measured advertising results.* New York, NY: Association of National Advertisers.

Constantakis-Valdes , P. (2008). Univision and Telemundo on the campaign trail: 1998. *The Mass Media and Latino Politics*. Routledge, New York. F.A. Supervi-Velez (131-153).

Coombs, R. (1991). Marital status and personal well-being: A literature review. *Family Relations, 40(1),* 97-102.

Cotton, S. &Gupta, S. (2004). Characteristics of online and offline health information seekers and factors that discriminate between them. *Social Science & Medicine, 59(9),* 1795-1806.

Crosby, R.A., DiClemente, R.J., Wingood, G.M., Salazar, L.F., Harrington, K., Davies, S.L. & Oh, M.K. (2003) Identification of strategies for promoting condom use: a prospective analysis of high-risk African American female teens. *Prevention Science, 4(4),* 263-70.

Cunningham, W.E., Davidson, P.L., Terry, T., Nakazono, O. & Andersen, R.M. (1999). Do black and white adults use the same sources of information about AIDS prevention*? Health Education and Behavior, 26,* 703-713.

Darrow, W., Kim, S., Montanea, J., Uribe, C., Sánchez-Braña, E. and Gladwin, H. (2010). Summative evaluation of a community mobilization program to eliminate racial and ethnic disparities in HIV disease. *International Public Health Journal, 2(3),* 301-312.

Darrow, W., Montanea, J., Fernandez, P., Zucker, U., Stephens, D. & Gladwin H. (2004). Eliminating disparities in HIV disease: community mobilization to prevent HIV transmission among Black and Hispanic young adults in Broward County, Florida*. Journal of Ethnicity and Disease, 14.*

Darrow W., Montanea J. & Gladwin H. (2000). AIDS-related stigma among Black and Hispanic young adults. *AIDS and Behavior, 13*, 1178-1188.

Darrow W., Montanea J. &Sánchez-Braña E. (2010). Coalition contract management as a systems change strategy for HIV prevention. *Health Promotion Practice, 11,* 867-875.

DeJong, W. & Winsten, J.A. (1990). The use of mass-media in substance abuse prevention. *Health Affairs, 9(2),* 30-46.

DeLamater, J., Wagstaff, D.A. & Havens, K.K. (2000). The impact of a culturally appropriate STD/AIDS education intervention on black male adolescents' sexual and condom use behavior. *Health Education & Behavior, 27(4),* 454-70.

Delate, R. (2003). HIV/AIDS and the media: a discussion paper. *Centre for AIDS Development, Research and Evaluation,* 29.

Diehr, P. (2011). Social Marketing, stages of change, and public health smoking interventions. *Health Education Behavior.* Retrieved from http://works.bepress.com/paula_diehr/57

Di Noia, J., Schinke, S.P., Pena, J.B. & Schwinn, T.M. (2004). Evaluation of a brief computer-mediated intervention to reduce HIV risk among early adolescent females. *Journal of Adolescent Health, 35 (1),* 62-64.

Doherty, I., Schoenbach, V. and Adimora, A. (2009). Condom use and duration of concurrent partnerships among men in the United States. *Sexually Transmitted Diseases, 36 (5),* 265-272.

Donovan, R.J., Jason, J., Gibbs, D.A. & Kroger F. (1991). Paid advertising for AIDS prevention--would the ends justify the means? *Public Health Reports, 106 (6),* 645-651.

Dunlop, S. (2010) Pathways to persuasion: cognitive and experiential responses to health-promoting mass media messages. *Communication Research*, 37 (1), 133-164.

Dutta-Bergman, M. (2004). Primary sources of health information: Comparisons in the domain of health attitudes, health cognitions, and health behaviors. *Health Communication, 16 (3),* 273-288.

Elwood, W.N. & Ataabadi, A.N. (1997) Influence of interpersonal and mass-mediated interventions on injection drug and crack users: diffusion of innovations and HIV risk behaviors. *Substance Use & Misuse, 32 (5),* 635-651.

Family Health International. (2009). Behavior change communication for HIV/AIDS. Retrieved from http://www.fhi.org/en/HIVAIDS/pub/fact/bcchiv.htm

Farrelly, M., Davis, K., Lyndon Havil, M., Messeri, P. & Healton, C. (2005). Evidence of a dose—response relationship between "truth" antismoking ads and youth smoking prevalence. *American Journal of Public Health, 95*, 425-431.

Fraze, J., Uhrig J., Davis K., Taylor,M., Lee, N., Spoeth, S., Robinson, A., Smith, K., Johnston, J. & McElroy, L. (2009). Applying core principles to the design and evaluation of the 'Take Charge. Take the Test' campaign: What worked and lessons learned. e23-e30.

Galvao, J. (1991). Sacred messages for AIDS prevention; Principles into practice. *Development Communication Report, 74*, 16-18.

Gibson, D., Zhang, G., Cassady, D., Pappas, L., Mitchell, J. and Kegeles, M. (2010). Effectiveness of HIV prevention social marketing with injecting drug users. *American Journal of Public Health, 100(10),* 1828-30.

Glanz, K., Marcus Lewis, F. & Rimer, B.K. (2005). *Theory at a glance: A guide for health promotion practice.* National Institute of Health.

Goldfarb, A. & Prince, J. (2008). Internet adoption and usage patterns are different: Implications for the digital divide. *Information Economics and Policy, 20(1).* Pages 2-15.

Grandinetti, D. (2000). Doctors and the Web. Help your patients surf the Net safely. *Medical Economics. 77(5),* 186-188, 194-196, 201.

Green, L.W. & Kreuter, M.W. (1999). *Health Promotion Planning: An Educational and Ecological Approach.* Mountain View, CA: Mayfield.

Halpern, J. & Finger, W.R. (1992). Prevention of STDs -- the challenge of changing behaviors. *Network, 12(4),* pp. 16-18.

Harrison, D.F., Wambach, K.G., Byers, J.B., Imershein, A.W., Levine, P., Maddox, K., Quadagno, D.M., Fordyce, M.L. & Jones, M.A. (1991). AIDS knowledge and risk behaviors among culturally diverse women. *AIDS Education and Prevention, 3(2),* 79-89.

Hastings, G. & MacFadyen, L. (2002). Controversies in tobacco control; The limitations of fear messages. *Tobacco Control, 11(1),* 73-75.

Hausman, C. (1990). *The decision-making process in journalism.* Chicago, IL: Prentice-Hall.

Henderson, S.J., Bernstein, L.B., George, D.M., Doyle, J.P., Paranjape, A.S. & Corbie-Smith, G. (2004). Older women and HIV: how much do they know and where are they getting their information? *Journal of the American Geriatrics Society, 52(9),* 1549-1553.

Hines, A.M., Snowden, L.R. & Graves, K.L. (1998). Acculturation, alcohol consumption and AIDS-related risky sexual behavior among African American women. *Women and Health, 27(3),* 17-35.

Hirose, H., Nakaune, N., Ishizura, T. & Takanashi, Y. (1998). A study of the role of AIDS mass communication. How do the mass media affect HIV testing behavior? *Japanese Psychological Research, 40 (4),* 246-255.

Hlaing, W. & Darrow, W. (2006) HIV risk reduction among young minority adults in Broward County. *Journal of Healthcare for the Poor and Underserved, 17,* 159-173.

Hofstetter, C.R., Hovell, M.F., Myers, C.A., Blumberg, E., Sipan, C., Yuasa, T.& Kreitner, S. (1995). Patterns of communication about AIDS among Hispanic and Anglo adolescents. *American Journal of Preventive Medicine, 11(4),* 231-237.

Hsieh, F.Y., Block, D.A. & Larsen, M.D. (1988). A simple method of sample size calculation for linear and logistic regression. *Statistics in Medicine, 17,* 1623-1634.

Hu, D., Keller, R. & Fleming, D. (1989). Communicating AIDS information to Hispanics: The importance of language and media preference. *American Journal of Preventive Medicine, 5(4),*196-200.

Ibanez, G.E., Van Oss Marin, B., Villareal, C. & Gomez, C.A. (2005). Condom use at last sex among unmarried Latino men: an event level analysis. *AIDS & Behavior, 9(4),* 433-441.

Jason, J., Solomon, L., Celentano, D. & Vlahov, D. (1993). Potential use of mass media to reach urban intravenous drug users with AIDS prevention messages. *International Journal of the Addictions, 28,* 837-851.

Jason L. (1998). Tobacco, Drug, and HIV prevention media interventions. *American Journal of Community Psychology, 26(2),* 145-187.

Jeffres, L. W. & Hur, K. K. (1981). Communication channels within ethnic groups. *International Journal of Intercultural Relations, 5(2),* 115-132.

Kaiser R, Bunnell R, Hightower A, Kim AA & Cherutich P. (2011). Factors associated with HIV infection in married or cohabiting couples in Kenya: Results from a nationally representative study. *Plos One, 6(3).* Retrieved from http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.001784 2

Kaiser Family Foundation. (1998). What's the diagnosis? Latinos, media, and health. Retrieved from http://www.kff.org/minorityhealth/1400-latino.cfm

Kaiser Family Foundation. (2004). First-ever global HIV/AIDS creative meeting at the United Nations brings together creative experts from 35 media companies; Historic gathering builds on efforts of global media AIDS initiative. Retrieved from http://www.kff.org/hivaids/phip112304nr.cfm?RenderForPrint=1

Kaiser Family Foundation. (2004). The Media and HIV; Making a Difference. Retrieved from http://www.kff.org/hivaids/upload/The-Media-and-HIV-AIDS-Making-a-Difference.pdf

Kaiser Family Foundation. (2007). HIV/AIDS: The HIV/AIDS policy fact sheet. Retrieved from http://www.kff.org/hivaids/upload/3029-071.pdf.

Katz, E. (1957). The T=two-step flow of ommunication: An up-to-date report on a hypothesis. *The Public Opinion Quarterly, 21*(1) 61-78.

Katz, E., Blumler, J. & Gurevitch, M. (1973). Uses and gratification research. *The Public Opinion Quarterly, 37(4),* 509-523.

Katz, E., Blumler, J. & Gurevitch, M. (1975). *The uses of communications*, BeverlyHills, CA: Sage Publications.

Keating, J., Meekers, D. & Adewuyi, A. (2006). Assessing effects of a media campaign on HIV/AIDS awareness and prevention in Nigeria: results from the VISION Project. *BMC Public Health,* 6 (123). Retrieved from http://www.biomedcentral.com/1471-2458/6/123.

Kennedy, M., O'Leary, A., Beck, V., Pollard, K. & Simpson, P. Increases in calls to the CDC national STD and AIDS Hotline following AIDS-related episodes in a soap opera. 2004. *Journal of Communication, 54(2),* 287–301.

Kim, Y. M., Kols, A., Nyakauru, R., Marangwanda, C. & Chibatamoto, P. (2001). Promoting sexual responsibility among young people in Zimbabwe. *International Family Planning Perspectives, 27(1),* 11-19.

Kincaid, D., Figueroa, M., Storey, D. & Underwood, C. (2001). Communication and behavior change: The role of ideation. *Center for Communications Programs, Bloomberg School of Public Health, John Hopkins University.*

Lansky, A., Brooks, J., DiNenno, E., Heffelfinger, J., Hall, I. & Mermin, J. (2010). Epidemiology of HIV in the United States. *Journal of Acquired Immune Deficiency Syndromes, 55*, 64-68.

Lavidge, R.C. & Steiner, G.A. (1961). A model for predictive measurements of advertising effectiveness. *Journal of Marketing, 25,* 59–62.

Leach, M., Wolitski, R. J., Goldbaum, G. M., Fishbein, M., and the AIDS Community Demonstration Projects. (1997). HIV risk and sources of information among urban street youth. *Psychology, Health, and Medicine, 2*, 119-134.

Leiter, K., Harriss, J. & Johnson, S. (2000). *The complete reporter: fundamentals of news gathering, writing, and editing.* Needham Heights, MA.: Allyn & Bacon.

Lorenc, T., Marrero-Guillamón, I., Aggleton, P., Cooper, C., Llewellyn, A., Lehmann, A. & Lindsay, C. (2011). Promoting the uptake of HIV testing among men who have sex with men: systematic review of effectiveness and cost-effectiveness. *Sexually Transmitted Infections, 87,* 263.

Lorence, D., Park, H., & Fox, S. Racial disparities in health information access: resilience of the digital divide. (2006). *Journal of Medical Systems, 30(4),* 241-249.

Marin, G. & VanOss Marin, B. (1990). Perceived credibility of channels and sources of AIDS information among Hispanics. *AIDS Education and Prevention, 2(2),* 154-161.

Marks, G., Crepaz, N. & Janssen, R. (2006). Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. *AIDS, 20 (10)*, 1447-1450.

Marks, G., Crepaz, N., Senterfitt, W. & Janssen, R. (2005). Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: implications for HIV prevention programs. Journal of Acquired Immune Deficiency Syndromes, 39(4), 446-453.

McAlister, A., Johnson, W., Guenther-Grey, C., Higgins, D., O'Reilly, K. & Fishbein, M. (2000). Behavioral journalism for HIV prevention: Community newsletters influence risk-related attitudes and behavior. Journalism and Mass Communication Quarterly.

McKee, M.B., Picciano, J.F., Roffman, R.A., Swanson, F. & Kalichman SC. (2006). Marketing the 'Sex Check': evaluating recruitment strategies for a telephone-based HIV prevention project for gay and bisexual men. *AIDS Education & Prevention, 18(2),* 116-31.

Merchant R., Seage G., Mayer K., Clark M., DeGruttola V. & Becker B. (2008). Emergency department patient acceptance of opt-in, universal, rapid HIV screening. *Public Health Report, 123 (Suppl 3):*27–40.

Miller, J.E. (2000). Differences in AIDS knowledge among Spanish and English speakers by socioeconomic status and ability to speak English. *Journal of Urban Health, 77(3),* 415-24.

Murray-Johnson, L., Witte, K., Liu, W.Y., Hubbell, A.P., Sampson, J. & Morrison, K. (2001). Addressing cultural orientations in fear appeals: promoting AIDS-protective behaviors among Mexican immigrant and African American adolescents and American and Taiwanese college students. *Journal of Health Communication, 6(4),* 335-58.

Myers, J., Modica, C., Dufour, S., Bernstein, C. & McNamara, K. (2009). Routine rapid HIV screening in six community health centers serving populations at risk. *Journal of General Internal Medicine, 24(12),* 1269-1274.

National Cancer Institute (NCI). (2005). Theory at a glance. A guide for health promotion practice. *US Department of Health and Human Services.* Bethesda, MD: National Government Publication.

Nicoll, A., Laukamm-josten, U., Mwizarubi, B., Mayala, C., Mkuye, M., Nyembela, G. & Grosskurth, H. (1993) Lay health beliefs concerning HIV and AIDS—a barrier for control programmes. *AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV, 5(2),* 231 – 241.

Noar, S., Palmgreen, P., Chabot, M., Dobransky, N. & Zimmerman, R. (2009). A 10-year systematic review of HIV/AIDS mass communication campaigns: have we made progress? *Journal of Health Communication: International Perspectives, 14(1),* 5-42.

Obiaja K, Darrow W, Sánchez-Braña E & Uribe C. (2008). Self-assessed spirituality, worship attendance, and HIV-related preventive behaviors among unmarried ethnic minority adults living in a high AIDS prevalence area. *Journal of HIV/AIDS and Social Services, 7,* 399-415.

O'Donnell, L., Dova,l A., Vornfett, R. & DeJong, W. (1994). Reducing AIDS and other STDs among inner-city Hispanics: The use of qualitative research in the development of video-based patient education. *AIDS Education and Prevention, 6(2),* 140-153.

Orrego Dunleavy, V., Crandall, L. & Metsch, L. (2005). A comparative study of sources of health information and access to preventive care among low income chronic drug users. *Communication Research Reports, 22(2),* 117 – 128.

Palmgreen, P.; Noar, SM.; Zimmerman, RS. (2008). Mass media campaigns as a tool for HIV prevention. In T. Edgar, S. Noar & V. Freimuth (Eds.), Communication perspectives on HIV/AIDS for the 21st century. New York: Lawrence Erlbaum Associates.

Pickle, K. Quinn, S.C. & Brown, J.D. (2002). HIV/AIDS coverage in Black newspapers, 1991-1996: implications for health communication and health education. *Journal of Health Communication, 7(5)*, 427-44.

Pinkerton, S., Bogart, L., Howerton, D.,Snyder, S., Becker, K., & Asch, S. (2009). Cost of OraQuick oral fluid rapid HIV testing at 35 community clinics and community-based organizations in the USA. *AIDS Care*, *21(9),* 1157-1162.

Piotrow, P.T., Kincaid, D.L., Rimon, J. & Rinehart, W. (1997). *Health communication: lessons from family planning and reproductive health.* Westport, CT: Praeger Publishers.

Ramos, R.L., Hernandez, A., Ferreira-Pinto, J.B., Ortiz, M. & Somerville, G.G. (2006). Promovision: designing a capacity-building program to strengthen and expand the role of promotores in HIV prevention. *Health Promotion Practice, 7(4),* 444-449.

Rhodes, S.D., Hergenrather, K.C., Montano, J., Remnitz, I.M., Arceo, R., Bloom, F.R., Leichliter, J.S., Bowden, W.P. (2006). Using community-based participatory research to develop an intervention to reduce HIV and STD infections among Latino men. *AIDS Education & Prevention, 18(5),* 375-389.

Ritieni, A., Moskowitz, J. & Tholandi, M. (2008). HIV/AIDS misconceptions among Latinos: findings from a population-based survey of California adults. Health Education and Behavior. 35 (2), 245-259. Rodgers, E. (2003). *Diffusion of innovations.* New York, NY: The Free Press.

Romer, D., Sznitman, S., Hennessy, M., DiClemente, R., Vanable, P., Carey, M., Brown, L., Valois, R., & Stanton, B. (2009). Mass media as an HIV-preventive strategy: Using culturally sensitive messages to reduce HIV-associated sexual behavior of high-risk African American youth. *American Journal of Public Health, 99,* 2150-2159.

Rotter, J. (1982). Development and applications of social learning theory. New York, NY: Praeger Publishers.

Sheridan Burns, L. (2002). *Understanding journalism.* London, UK; Sage Publishing.

Simons-Morton, B.G., Donohew, L. & Crump, A.D. (1997) Health communication in the prevention of alcohol, tobacco, and drug use. *Health Education & Behavior, 24*, 544-554.

Sly, D., Hopkins, R.,Trapido, E. & Rav, S. (2001). Influence of a counteradvertising media campaign on initiation of smoking: The Florida "truth" campaign. *American Journal of Public Health, 91(2),* 233-238.

Somerville, G.G., Diaz, S., Davis, S., Coleman, K.D. & Taveras, S. (2006). Adapting the popular opinion leader intervention for Latino young migrant men who have sex with men. *AIDS Education & Prevention, 18(4),* 137-48.

Sormanti, M., Pereira, L., El-Bassel, N., Witte, S., Gilbert, L. (2001). The role of community consultants in designing an HIV prevention intervention. *AIDS Education & Prevention, 13(4),* 311-328.

Stephens, T., Braithwaite, R.L., Taylor, S.E. (1998) Model for using hip-hop music for small group HIV/AIDS prevention counseling with African American adolescents and young adults. *Patient Education & Counseling, 35(2),*127-37.

Stewart, D.L., DeForge, B.R., Hartmann, P., Kaminski, M. & Pecukonis, E. (1991). Attitudes toward condom use and AIDS among patients from an urban family practice center. *Journal of the National Medical Association, 83(9),* 772-776.

Swanepoel, T., Fourie, L. & Froneman, J. (2005). Ethically accountable HIV/AIDS reporting: A case study of three South African newspapers. *School of Communication Studies. North West University (Potchefstroom Campus), South Africa.* Retrieved from http://www.healthe.co.za/resources/sa%20aids%20conference%20final%20paper%20june%202005.doc

Swenson, R., Hadley, W., Houck, C., Dance, S. & Brown, L. (2011).Who accepts a rapid HIV antibody test? The role of race/ethnicity and HIV risk behavior among community adolescents. *Journal of Adolescent Health, 48(5)*, 527-529.

Taylor, M., Alman, A., & Manchester, D. (2001). Use of the internet by patients and their families to obtain genetics-related information. *Mayo Clinic Proceedings.76(8),* 772-776.

Tucker P, Liao Y, GilesWH, Liburd L. (2006). The REACH 2010 logic model: an illustration of expected performance. *Preventing Chronic Disease*. Retrieved from http://www.cdc.gov/pcd/issues/2006/jan/05_0131.htm.

Thabede, S. (2005). For the Swazi media, HIV/AIDS is public scourge and personal demon. *NERCHA 2005 Annual Report*. Retreived from http://www.globaljournalist.org/magazine/2005-4/swaziland.html

Toms, E. & Latter, C. (2007). How consumers search for health information. *Health Informatics Journal*, *13(3),* 223-35.

UNAIDS. (1997). Expanding the global response to HIV/AIDS through focused action; reducing risk and vulnerability: definitions, rationale and pathways. *UNAIDS Best Practice Collection, Key Material.*

UNAIDS. (1999). Peer education and HIV/AIDS; concepts, uses and challenges. *UNAIDS Best Practice Collection, Key Material.*

UNAIDS. (2010). The Prevention Revolution: HIV prevention on the social media agenda. *UNAIDS High Level Commission on HIV Prevention.* Retrieved from http://www.hivpreventioncommission.com/index.php?q=node/43

United Nations. (2011). Application of new technology in population data collection, processing, dissemination and presentation. ESCAP; Economic and Social Commission for Asia and the Pacific. Retrieved from http://www.unescap.org/stat/pop-it/pop-guide/index.asp

Uribe C, Darrow W, Villanueva L, Obiaja K, Sánchez- Braña E & Gladwin H. (2009). Identifying HIV risk-reduction strategies for Hispanic populations in Broward County. *Annals of Epidemiology, 19,* 567-574.

U.S. Department of Health and Human Services (2010). *Healthy people 2020: The road ahead.* Retrieved from http://www.health.gov/healthypeople/url/

Vaughan, P.W., Rogers, E.M., Singhal, A. & Swalehe, R.M. (2000) Entertainment-education and HIV/AIDS prevention: A field experiment in Tanzania. *Journal of Health Communication, 5(1),* 81-100.

Vernon, R., Ojeda, G., Murad, R. (1990) Incorporating AIDS prevention activities into family planning organization in Colombia. *Studies in Family Planning, 21*, 335–43.

Villanueva, L., Darrow, W., Uribe, C., Sánchez-Braña, E., Obiaja, K. and Gladwin, H. (2010). Ethnic differences in HIV risk perceptions and behaviors among black 18-39 year old residents of Broward County, Florida *AIDS Education and Prevention, 22(2),* 160-171.

Walls, C., Lauby, J., Lavelle, K., Derby, T., Bond, L. (1998). Exposure to a community level HIV prevention intervention: who gets the message? *Journal of Community Health, 23(4),* 281-299.

Webster, R., Darrow, W., Paul, J., Roark, R., Taylor, R. & Stempel, R. (2005). Community planning, HIV prevention and a needs assessment for men who have sex with men: the South Beach Health Survey. *Sexually Transmitted Diseases, 32(5),* 321-327.

Weinhardt, L., Mosack, K. & Swain, G. (2007). Development of a computer-based risk-reduction counseling intervention: acceptability and preferences among low-income patients at an urban sexually transmitted infection clinic. *AIDS Behavior, 4,* 549-56.

Weissfeld, J., Kirscht, J. & Brock, B. (1990). Health beliefs in a population: The Michigan blood pressure survey. *Health Education and Behavior, 17(2),* 141-155.

White House Office of National AIDS Policy (2010). National HIV/AIDS strategy for the United States. Washington, DC. Retrieved from http://www.whitehouse.gov/sites/default/files/uploads/NHAS.pdf2

Wilkinson, J.D., Zhao, W., Santibanez, S., Arnsten, J., Knowlton, A., Gomez, C. & Metsch, L. (2006). INSPIRE Study Group. Providers' HIV prevention discussions with HIV-seropositive injection drug users. *AIDS & Behavior, 10(6),* 699-705.

Winett, L. & Wallack, L. (1996). Advancing public health goals through the mass media. *Journal of Health Communication, 7(3),* 173-196.

Wolitski, R., Bensley, L., Corby, N., Fishbein, M. & Galavotti, C. (1996) Sources of AIDS information among low-risk and at-risk populations in five U.S. cities. *Journal of Community Health, 21(4),* 293-310.

Yoder, P.S., Hornik, R. & Chirwa, B.C. (1996). Evaluating the program effects of a radio drama about AIDS in Zambia. *Studies in Family Planning, 27,* 188–203.

Yoo, H., Lee, S. H., Kwon, B. E., Chung, S. & Kim, S. (2005), HIV/AIDS knowledge, attitudes, related behaviors, and sources of information among Korean adolescents. *Journal of School Health, 75,* 393–399.