HIV/AIDS Prevention in the United States:
The Need for Structural-Level Interventions

By

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INTRODUCTION

In 2010, President Obama released the National HIV/AIDS Strategy (NHAS) to direct and to align the nation's collective HIV/AIDS efforts through 2020. The NHAS serves as a comprehensive roadmap for the country's HIV/AIDS strategy and aims for a United States "where new HIV infections are rare and when they do occur, every person, regardless of age, gender, race/ethnicity, sexual orientation, gender identity or socioeconomic circumstances, will have unfettered access to high quality, life-extending care, free from stigma and discrimination" ("Overview National HIV/AIDS Strategy," 2015). While many stakeholders and institutions were tasked with this effort, the Centers for Disease Control and Prevention (CDC) was charged as the lead governmental agency responsible for HIV/AIDS prevention. ("The National HIV/AIDS Strategy: Updated to 2020," 2015). Being the principal governmental agency charged with HIV prevention, the CDC is a powerful institution that many researchers, activists, policy makers, public health officials, and the public look to for information, recommendations, and funding. In order to achieve the NHAS goals, the CDC developed the High-Impact HIV/AIDS Prevention approach (HIP), which is a packaged evidenced-based approach comprised of various individually focused behavior modification programs.

While the NHAS vision emphasizes the role that structural factors play in contributing to our nation's HIV/AIDS burden, the government's strategies to realize the NHAS goals and to eliminate HIV/AIDS revolve around individual-level interventions. In the first section of my thesis I use qualitative data techniques to show that the CDC's behavioral interventions are not suitable for any population because they assume a level of autonomy, rationality, and freewill that ignores the social and cultural complexities of life. I argue that the CDC's HIV/AIDS prevention efforts reflect an over-privileging of scientific authority, evidence-based

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methodology, and Westernized individualism. The CDC's efforts also reflect an under-privileging of local knowledge, cultural histories, and structural-level changes as tools for HIV prevention. In the second part of my thesis, I use quantitative data on HIV incidence rates to further demonstrate the disconnect between the CDC's individual-based HIV interventions and HIV risk factors. Through statistical analyses, this section examines the role of individual and structural-level vulnerabilities in HIV incidence rates. My findings point to the importance of structural factors in reducing HIV incidence rates in general, and especially in the U.S. South where HIV incidence is currently highest. In light of the federal government's response to HIV prevention, which prioritizes biomedical and individual-level interventions over structural interventions, my results point to the need for reform. In order to realize the NHAS goal of reducing HIV/AIDS rates and HIV/AIDS-related disparities, the federal government must better align its strategies with the structural factors that predominately contribute to HIV rates. To do so, the CDC must take internal action to support structural interventions as HIV prevention strategies, and strengthen collaborative efforts with other governmental agencies. Specifically, my evidence supports the importance of education in reducing HIV rates. Thus, I conclude with recommendations detailing the importance of emphasizing education policy as health policy, and more specifically, education policy as HIV prevention policy.

This thesis concentrates on contemporary federal policy and practice regarding HIV/AIDS prevention efforts in the U.S. and includes both qualitative and quantitative research. First, in order to provide necessary background, I discuss contextual information related to HIV risk factors, prevention efforts, and federal funding allocations. Second, I discuss my research questions and hypothesis to frame my subsequent evidence and arguments. Third, I present my qualitative data, results, and analyses supported by evidence from literature reviews and semi-

structured interviews. This section focuses on the current landscape of domestic CDC

prevention efforts, including how and why we have the prevention programs that we do. This

includes critical analyses related to the history, funding, biomedical authority, leveling, and

theoretical foundations of these prevention programs. I also discuss how organizations have

responded to the CDC's prevention programs – how they are used, not used, and locally adapted

or improvised. Fourth, I present quantitative data, results, and analyses supported by original

statistic regression analyses. To evaluate how well the CDC's current prevention programs map

onto HIV risk factors, I analyze the relative contributions of individual-level factors compared to

the relative contribution of structural-level factors on overall HIV incidence rates in the U.S.

This section identifies which HIV-related vulnerabilities contribute to most of the variation in

HIV incidence rates. Also, this section looks at how results compare across geographic regions

of the U.S., specifically the U.S. South where HIV incidence is currently highest. Fifth, in order

to integrate both my qualitative and quantitative results, I provide a critical analysis of the federal

government's current approach to HIV/AIDS prevention. This section also discusses the

importance of structural interventions, as well as counter arguments and considerations. Sixth, I

provide actionable recommendations on how to improve the CDC's HIV/AIDS prevention

efforts. This section also includes specific policy implications related to the importance of

approaching education policy as general health policy, and specifically as HIV prevention policy.

Factors Impacting HIV/AIDS

A wide range of political, economic, and social factors influence HIV/AIDS rates across the U.S.

Many researchers, public health officials, activists, government workers, and the like, agree that

various behaviors contribute to higher rates of HIV in general. These characteristics include

unprotected sex, sharing needles, substance use, and mental health issues ("HIV Risk Behaviors,

2015"). An emerging body of HIV/AIDS public health research looks at social determinants of

health to better understand the larger context in which these behaviors are more likely to occur.

Specifically, with higher rates of HIV in the South, researchers have increasingly focused their

efforts on understanding how the South is different from other areas of the country with regards

to knowledge, attitudes, behavior, and population composition. Southern states share

characteristics that contribute to the disproportionate impact of HIV, including higher rates of

poverty, racial/ethnic disparities, geographic features, and distinct socio-cultural environments

(Reif and Whetton, 2006). These factors affect individuals across the HIV/AIDS continuum –

from increased risk of transmission, to initial diagnosis, to linkage with care, to medication

adherence, and to viral suppression ("HIV/AIDS Care Continuum," 2015). Most of these factors

are interrelated and overlap across the continuum, but I will focus my analysis on factors that

impact HIV incidence rates. Incidence rates reflect new HIV cases, and are thus related to

transmission and diagnosis. In the HIV community, incidence rates are largely tied to prevention

efforts. Prevention interventions aim to reduce transmission from positive individuals to non-

positive individuals. These efforts focus on non-infected individuals so they are less likely to

acquire HIV, and on HIV-infected individuals so they are less likely to transmit HIV. With no

cure, prevention is arguably the most crucial and effective mechanisms to combat HIV

(Parkhurst, 2015).

       While many interrelated elements influence HIV incidence, I have highlighted various factors commonly referenced in epidemiological literature and governmental publications such as illicit dug use, religiosity, poverty, and education (see Table 1). For the purposes of this thesis, the factors I selected to specifically analyze were determined by literature reviews and public availability of data. Individual-level factors discussed include drug use and religiosity. Structural-level factors include poverty and education. Table 1 details how and why these variables contribute to HIV incidence. Specifically, where applicable, Table 1 also looks at how these factors are experienced in the South, and how these factors make the Southern population at large more vulnerable to HIV/AIDS. Many of these factors overlap, exacerbate, and co-occur with one another. While taking into account that behaviors are context-specific and patterns of behavior change, I focus on how these factors influence behavior, affect decision-making, serve as access or barriers to care, and foster feelings of inclusion and exclusion in society.

Table 1: Factors Impacting HIV Incidence

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Individual-level
Illicit drug use   After sexual intercourse, injection drug use is the second most common mode of HIV transmission ("HIV Risk Behaviors, 2015"). Additionally, the use of non-injection drugs may facilitate sexual transmission through risky sexual encounters and transactional sex ("HIV/AIDS Care Continuum," 2015).
Religiosity   Certain religious groups advocate sex-negative education, like abstinence, and heteronormative sex values. This influences sex-negative and heteronormative attitudes amongst individuals associated with those religious groups. Certain religious groups condemn the use of condoms, which are often used to reduce HIV transmission risk. Also, certain religious identifications are linked to higher rates of homophobia, which can increase stigma and discrimination surrounding HIV-positive individuals and HIV testing (Anijar and DaoJensen, 2005). Thus, religiosity affects individual behavior, perceptions, and stigma. UNAIDS cites stigma and discrimination among the principal barriers to HIV prevention because they make people afraid to seek information, services, and methods to protect against HIV infection ("Reduction of HIV-Related Stigma and Discrimination," 2014). Additionally, stigma and discrimination can discourage people from disclosing their status to partners, which may increase the likelihood that protection is not being used, which increases the risk of transmission ("Reduction of HIV-Related Stigma and Discrimination," 2014).
Structural-level
Poverty   According to the CDC, individuals who make less than $10,000 a year are three times more likely to become HIV-positive compared to individuals who make $50,000 a year ("HIV EIS & the National Strategy," 2016). Additionally, there is a long-standing belief that poverty leads people to high-risk behaviors, like drug use and unprotected sex, which increase the likelihood of acquiring HIV. Poverty is also linked to a higher likelihood of housing instability and homelessness, which increases the likelihood of HIV-related risk behaviors (Adimora and Auerbach, 2010). According to the Census Bureau, Southern states in general experience the highest rates of poverty compared to other regions and the country at large. Additionally, over the past decade, Southern states experienced the highest increase in the number of people living in "poverty areas" where over 20% of people live below the poverty line (Bishaw, 2014).
Education   Education has been identified as a common "social vaccine" against HIV, resulting in the more educated to be less likely to contract HIV ("Education: A 'Social Vaccine' to Prevent the Spread of HIV," 2008). Higher education is linked to greater knowledge about HIV transmission and risk, access to testing and treatment, ability to afford and adhere to medication, and access to condoms and clean needles ("Education: A 'Social Vaccine' to Prevent the Spread of HIV," 2008). Both high school graduation rates and higher education rates are lower in the South compared to other regions in the U.S. ("Understanding HIV Where You Live," 2016).

Prevention Efforts

HIV/AIDS organizations and researchers widely understand HIV prevention efforts in three broad domains – individual interventions, structural interventions, and biomedical interventions. Individual-level interventions directly aim to address people's knowledge, attitudes, skills, and behaviors ("High-Impact Prevention," 2015). Examples of individual interventions include behavioral modification programs, counseling, information and education provisions, and risk reduction techniques to target drug use and risky sexual behaviors ("High-Impact Prevention," 2015). Structural-level interventions address social, economic, and political environments. Interventions aimed at social structures "modify social norms, institutions, laws, and policies to reduce vulnerability and create environments in which individuals can protect themselves against HIV infection" (Auerbach, 2009). Structural-level efforts are also commonly referred to as policy or community-level efforts. Examples include interventions to reduce gender and economic inequalities, policy advocacy for needle syringe programs, laws protecting people with HIV, and increasing access to school-based sexual education ("High-Impact Prevention," 2015). Biomedical interventions use clinical and medical approaches to reduce transmission. Examples include preventative medications and antiretroviral medications.

While researchers and HIV/AIDS agencies identify multi-level interventions as the most successful, funding and implementation complexity restrict their use ("High-Impact Prevention," 2015). Thus, my rationale for distinguishing levels of vulnerabilities relates to how agencies aimed at reducing HIV/AIDS rates structure their prevention efforts. While many researchers and activists in the field take a more interdisciplinary approach to understand what is considered "individual" and "structural," the CDC still divides these levels. Consequently, most interventions are designed to address one level of vulnerability at a time. These levels of

vulnerability are often fluid and overlap. However, for the most part the government and other HIV/AIDS agencies approach these vulnerabilities, and their subsequent intervention efforts, as either individual or structural-level.

Funding and Strategy

In order to decrease the HIV burden in the U.S., President Obama created the NHAS in 2010. The NHAS focuses on four primary goals: "reducing the number of people who become infected with HIV, increasing access to care and optimizing health outcomes for people living with HIV, reducing HIV-related disparities, and achieving a more coordinated national response to the HIV epidemic" ("What Is the National HIV/AIDS Strategy," 2016). Additionally, one of the NHAS sub-goals is to address the South's disproportionate burden of HIV/AIDS infection, progression, and illness related deaths compared to any other region in the U.S.

The national budget for HIV/AIDS efforts provides a clear picture of how the government allocates funds to achieve this goal. Figure 1 provides a breakdown of the federal budget for HIV/AIDS efforts in 2016. Table 2 reflects the federal funding budget efforts between 2011 and 2016. Since 2011, the overall domestic HIV/AIDS budget has increased slightly. However, only the "Domestic Care and Treatment" component has increased significantly compared to other areas. This increase is largely due to mandatory spending on Medicaid and Medicare, the two largest federal HIV/AIDS treatment providers ("U.S. Federal Funding for HIV/AIDS," 2016). The next section, "Domestic Cash and Housing Assistance," provides cash assistance to disabled individuals with HIV and housing support through the Housing Opportunities for Persons with AIDS. The next section, "Domestic Research," is mostly allocated towards the NIH. The smallest portion of the budget is "Domestic Prevention,"

which is largely allocated towards the CDC ("U.S. Federal Funding for HIV/AIDS," 2016).

Because the NHAS reflects the country's collective national response to the HIV/AIDS epidemic

until 2020, budgets are likely to remain stable in 2017. However, the federal budget is up for

change by Congress.

Figure 1: U.S. Federal Funding for HIV/AIDS by Category, 2016 (in U.S. $ billions)
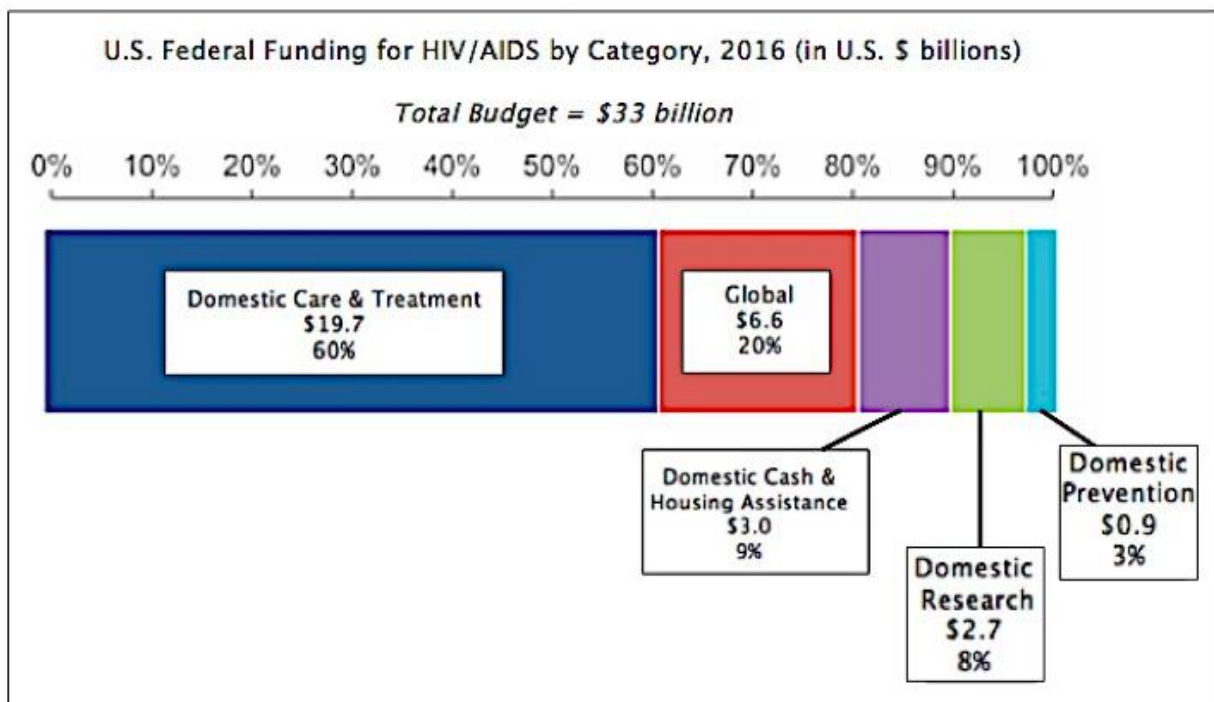
Source: *Kaiser Family Foundation*, "U.S. Federal Funding for HIV/AIDS" (2016)

Table 2: Federal Funding for HIV/AIDS by Category, FY 2011-2016 (in US $ billions)

Table 2: Federal Funding for HIV/AIDS by Category, FY 2011 – FY 2016 (in US $ Billions)						
Category	*FY 2011*	*FY 2012*	*FY 2013*	*FY 2014*	*FY 2015*	*FY 2016*
Domestic	**$21.80**	**$22.00**	**$22.50**	**$23.90**	**$25.50**	**$26.40**
Care	$15.30	$15.50	$16.10	$17.40	$18.90	$19.70
Cash/Housing	$2.70	$2.80	$2.90	$3.00	$3.00	$3.00
Prevention	$0.90	$1.00	$0.90	$0.90	$0.90	$0.90
Research	$2.80	$2.80	$2.70	$2.70	$2.70	$2.70
Global	**$6.50**	**$6.40**	**$6.30**	**$6.60**	**$6.60**	**$6.60**
TOTAL	**$28.30**	**$28.50**	**$28.80**	**$30.50**	**$32.10**	**$33.00**

Source: *Kaiser Family Foundation*, "U.S. Federal Funding for HIV/AIDS" (2016)

Various stakeholders and institutions are involved with the federal HIV/AIDS effort, but certain institutions are charged with leading various components. The CDC is the leading government agency responsible for HIV prevention efforts ("The National HIV/AIDS Strategy: Updated to 2020," 2015). In 2016, the CDC received $788 million for domestic HIV/AIDS prevention and research. Of that, $397 million was allocated to health departments, and $135 million was allocated towards other national, regional, local, and community organizations for HIV/AIDS prevention ("U.S. Federal Funding for HIV/AIDS," 2016). Through the PS12-1201 mechanism, the CDC has awarded funding to 61 health departments. With this grant money, health departments are required to support four core requirements: HIV testing, comprehensive behavioral HIV prevention for HIV-positive individuals, condom distribution, and policy interventions. Although not required, 25% of grant money is recommended to be used for social media outreach, support for pre-exposure prophylaxis (PrEP) for high-risk populations, and interventions for high-risk HIV-negative populations.

After completing the required components, individual health departments can allocate portions of money to community-based organizations (CBOs). This money is distributed as grants by health departments. When applying for these grants, CBOs may choose from a list of options to organize their grant proposals around. Choices include the first three components of requirements for health departments – HIV testing, behavioral interventions, and condom distribution. In order to receive funding, CBOs write grant proposals, and winners are selected to receive funding. Every health department has a slightly different way of awarding funds to grant winners. But, similar to how the CDC selects grantees, most health departments look at a combination of factors including geographic prevalence and incidence density, priorities and evaluative measures, data collection methods, and overall alignment with the NHAS goals. In addition to indirect CDC funding from health departments, the CDC provides direct grant funding to 90 CBOs. This grant provides funding for the High-Impact Prevention (HIP) strategy, which is a packaged evidenced-based approach composed of various behavioral-focused interventions. HIP is a "combination of scientifically proven, cost-effective, and scalable interventions targeted to the right populations in the right geographic areas" ("High-Impact HIV Prevention," 2015). HIP strategies include (1) increasing HIV diagnosis by making testing more simple, accessible, and routine (2) increasing access to early, ongoing care and treatment to increase health outcomes and reduce transmission (3) increasing access to condoms (4) promoting uptake for pre-exposure prophylaxis, the daily HIV prevention pill and (5) bolstering behavior change in HIV education, awareness, and decisions ("HIV in the Southern United States," 2015). The CDC also stipulates that organizations can only use funding for high-risk populations, which include men who have sex with men (MSM), transgender individuals, and injection drug users.

Research Questions & Aims

The previous section reveals that the CDC prevention efforts largely focus on individual-level interventions, as opposed to structural-level interventions. Less examined is how exactly individual-level factors impact HIV rates compared to structural-level factors; and how well interventions aimed at respective levels map onto factors impacting HIV. Based on this gap, my research examined current CDC prevention efforts, analyzed how well they map onto HIV vulnerabilities, and identified critiques that point towards areas for improvement.

The first part of my research question aimed to understand the current domestic HIV/AIDS prevention programs. Why do we have the prevention programs that we do? What are the priorities, actions, and rationale involved in these programs? What are the benefits and challenges of current programs? This involved a look at the history, funding, and theoretical foundation of these programs. I also looked at how these programs are used, not used, or locally adapted. From here, the second part of my research question aimed to understand more specifically how the CDC's current prevention programs map onto HIV risk factors. How does the relative contribution of individual-level factors compare to the relative contribution of structural-level factors on overall HIV incidence rates? Within each level of vulnerability, which factors contribute to the most variation in HIV incidence rates? How do these results compare across geographic regions of the U.S., specifically in the U.S. South where HIV incidence is currently highest? The third part of my research question was more future-oriented. Do my results point towards any areas for improvement? If so, how can we use policy to improve HIV prevention efforts to better reflect the populations and vulnerabilities they aim to serve?

Hypotheses

My hypotheses and predictions were based on literature reviews and pilot research. For the first part of my research question, I predicted there would be friction involved in the local implementation of the CDC's prevention programs throughout the U.S. I predicted that there would be a disconnect between the CDC's current prevention programs and the local needs of HIV organizations, the populations they serve, and the HIV risk factors they aim to address.

For the second part of my research question – based on emerging fields of research looking at social determinants of health, I predicted that structural-level vulnerabilities would contribute to more variation in HIV incidence rates compared to individual-level vulnerabilities. While social determinants of health and structural level factors are different, and some social determinants are not structural, the two are related because structural factors are most often considered social determinants in the broad sense. Social determinants of health are the non-clinical factors, like education, race, language, and income that impact health. The World Health Organization (WHO) defines social determinants of health as the "conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks" ("WHO Social Determinants of Health," 2017). Research on social determinants of health looks at the way these factors impact disease burden, health outcomes, healthcare access, and healthcare delivery. Social determinants of health are related to health disparities, which the CDC defines as "preventable differences in the burden of disease, injury, violence, or in opportunities to achieve optimal health experienced by socially disadvantaged racial, ethnic, and other population groups, and communities." ("CDC Health Disparities," 2017). As Link and Phelan suggest, these conditions put at-risk individuals and populations "at risk of risks" – meaning, risk generates

exposure to other risks (Link and Phelan, 1995). For example, individuals with low SES are more likely to have poor health, which puts them at risk for difficulty securing employment, attending school, and so on. While the direction of causation between the social determinant and health is nuanced, research has increasingly focused on the importance of including the role of social determinants in understanding health disparities. Social determinants of health and health disparities are relatively new fields of study, and research specifically relating these disparities to HIV/AIDS is even more emerging. The HIV/AIDS health disparities literature that does exist points to the role of social determinants across the HIV/AIDS continuum – from acquiring HIV, accessing services and treatment, and illness-progression related health outcomes ("HIV/AIDS Care Continuum," 2015). This research also reveals the lack of support for widespread structural changes. Main areas lacking support include the Medicaid coverage gap, inclusive and comprehensive sexual education in more states, and fully federally funded needle-exchange programs. Additionally, because the South experiences a higher burden of structural determinants, like poverty, education, and more people in the coverage gap, I predicted structural-level factors would have the highest impact on HIV incidence rates in the South.

Related to the third part of my research question – based on my prediction that structural-level vulnerabilities would have a higher relative contribution to HIV incidence rates, I predicted structural reforms related to poverty and education would improve current CDC prevention efforts. Epidemiological research identifying HIV risk factors largely focuses on relatively proximal factors, like sexual behaviors. Current prevention efforts reflect this attention towards proximal risk, evident in the individual nature of interventions, such as behavioral modification programs. As detailed in the paragraph above, emerging literature aims to both understand the context in which these proximal factors occur and to design and implement interventions and

policies to address these health disparities. Based on this research, I predicted that in order to better reflect the populations and vulnerabilities they address, CDC HIV/AIDS prevention efforts need to encompass more structural-level interventions.

Mixed Methods Approach

To address these questions I used mixed methods and conducted qualitative and quantitative critical analyses of current CDC HIV prevention efforts in the U.S. Using different kinds of data allowed me to look at various aspects of this issue to comprehensively answer my research question. First, I introduce the data, methods, and results for the qualitative piece addressing contemporary CDC prevention efforts. Then, I introduce the data, methods, and results for the quantitative piece analyzing individual and structural-level HIV risk factors.

QUALITATIVE DATA, RESULTS, & ANALYSES

QUALITATIVE DATA & METHODS

Data & Methods of Analyses

This thesis involved an interdisciplinary approach. First, I used literature-based research methodology to examine, analyze, and critique existing literature. The main fields of study included public health, biomedicine, ethnography, epidemiology, sociology, psychology, history, and anthropology. I used a variety of databases including America: History and Life, PubMed, Medline, POPLINE, Science Direct, Anthropology Plus, Proquest Central, PsychLit, JAMAevidence, Sociological Abstracts, Blackwell Reference Online, and HealthAffairs. The search terms that I had success with included, but are not limited to – "United States and HIV,"

"United States and HIV and intervention," "Intervention and theory and HIV," "Behavioral change and intervention and HIV," "HIV and communication," "HIV and theory and individual," "HIV and theory and community," "HIV and cognitive theory," "HIV and intervention and western," "CDC and critique," "CDC and assumption," and "HIV and the United States South." This search included material from peer-reviewed literature, non-peer reviewed secondary sources, primary sources, and "grey" literature. Primary and "grey" literature included materials from field sites, such as educational pamphlets, grant proposals, and intervention resources. I specifically examined the content, language, presentation, rationale, and context in which they were used.

Second, I used qualitative primary data collection techniques, specifically semi-structured interviews and participant observations, to gain first hand insight into the HIV community. Prior to my fieldwork, I obtained IRB approval (IRB #161792). Once approved, I conducted oral professional interviews and histories, in person or via phone, with employees of the CDC, state health departments, and HIV/AIDS organizations that both receive and do not receive CDC funding. In total, this thesis reflects data from fifteen different informants across these various institutions. To initially recruit informants, I reached out via publicly listed phone numbers or email addresses. Then, I used snowball sampling and additional recommendations by key informants to dictate which organizations and employees to reach out to.

Fieldwork Techniques

For my fieldwork, I took an ethnographic approach and used grounded theory. This encouraged me to observe people's lives and behaviors, but also to infer the layered meanings of their thoughts, beliefs, and behaviors. This also provided me with a reflexive, analytical lens to

navigate between both immersing myself in the HIV community and representing that world to an external audience.

I used semi-structured interviews directed by guiding questions and themes. From research and experience, I have found that it is necessary to prepare for field research and interviews, but having a script or a list of questions can be limiting. It can freeze the informant or box them into answering a certain way, thus possibly missing data that the list of questions does not cover or allow for. Therefore, I structured my interviews around topics and themes, rather than a specific list of questions. I used the inductive theorizing technique, and began with a few assumptions and broad orienting concepts. Using themes instead of questions ties back to my inductive rationale and use of grounded theory, which involves formulating new theoretical ideas from the ground up instead of testing existing theoretical ideas. Additionally, my use of grounded theory added flexibility, which allowed the data and theory to interact. This encouraged me to be an active listener and to direct the conversation based on what the informant was saying, not based on what I was expecting or hoping to hear. Thus, the use of themes instead of specific questions helped me remain open to the unexpected, which was often where the most meaningful data emerged.

I took observations and findings from my literature reviews and previous conversations with people in the HIV/AIDS field to hypothesize important themes for discussion. Because my research was ongoing and conducted at multiple field sites, I continuously made additional observations, and thus revised my hypotheses. This allowed me to start from an unstructured point of view, which took into account real time data and informal observations. By using inductive reasoning, I was able to use my observations to hypothesize major themes that cover often difficult to measure phenomena, like theories of risk and behavior and levels of HIV

interventions. Other major themes covered included - current HIV/AIDS interventions, used of leveled interventions, dominant intervention techniques, benefits and challenges of each type of intervention, theories behind the interventions, assumptions behind the interventions, implications of interventions, how success is measured, populations served, populations left out, disparities in access and treatment, the role of the CDC, and HIV in the U.S. South. Because some of the topics were sensitive in nature and included critical discussions about the CDC and federal funding, I was sure to stress confidentiality and anonymity for both the informant and the organization where they worked. I also made sure to express that each individual interview was to be embedded and analyzed along with other interviews, so it would not be perceived as a case study of one individual or organization.

In order to communicate themes and to direct the conversation during interviews, I encouraged the use of storytelling. For example, instead of saying something like, "Please tell me how your organization approaches HIV interventions," I said, "In your years of experience working in the HIV field, how have interventions changed?" The second revised way of phrasing takes into account both the explicit and implicit layers of information and meaning conveyed through stories. Thus, I used stories, as well as the people telling them, as units for analysis. By structuring my interview around stories, I was able to analyze both the content and the narrative performance through body language, silences or pauses, and facial expressions.

During my interviews, I tended to use the technique "acceptable incompetence," coined by William Neuman. Although I had done extensive research in preparation, I positioned myself as knowing less about topics to encourage the informants to elaborate. This technique worked especially well with HIV/AIDS case managers and specialists because they are teachers and mentors in their everyday life. By coming off as a nonthreatening person who sought guidance

and understanding, the informants welcomed the opportunity to teach me about their work and share their experiences.

At the discretion of my informants, some interviews were digitally recorded, and some were not. After conducting each interview or participant observation, field notes were transcribed and coded for major themes. The coding process involved systematically organizing and comparing my data. In order to do this, I analyzed word frequency, phrase repetition, and distinct concepts. My qualitative results and analyses reflect a combination of data supported by my literature reviews and my fieldwork.

QUALITATIVE RESULTS & ANALYSES

Historical Analysis: "The Perfect Storm"

History of CDC HIV/AIDS Interventions

Until the CDC took interest in behavioral theories, little momentum existed to apply these theories to interventions, let alone to HIV/AIDS interventions (Gandelman, 2014). Instead, these theories were largely isolated to the academic community, specifically to psychology-related research fields. General theories of behavior, risk, and decision-making had been discussed in the academic community since the early 20th century. In the late 1980s and early 90s when HIV rates were climbing, research connecting theories of behavioral modification to HIV began appearing in scholarly communities. Various scholars and researchers had published studies in peer-reviewed journals highlighting both the successes and the limitations of such behavioral-modification strategies. However, there was little momentum for formalized implementation of these efforts (Gandelman, 2014). As these theories were being discussed in the academic

community, HIV rates were rising, and prevention service providers were demanding interventions that worked. Fielding these requests, the CDC began looking for intervention strategies to formulate and to recommend. In 1999, the CDC took interest in the academic research efforts surrounding behavioral modification theories and began conducting research studies around these theories. To apply these theories to HIV prevention, the CDC used randomized control trials with control groups and intervention groups. The methodology rationale was to ensure that "the positive outcomes could be attributed to the interventions" (Gandelman, 2014). Through evidence-based approaches, scientific authority and the CDC endorsed these behavioral interventions for HIV prevention. The CDC worked with their study researchers to package intervention materials into "user-friendly" kits (King, 1999). This marked the birth of the Diffusion of Effective Behavioral Interventions (DEBI), which was renamed to the High-Impact Prevention (HIP) in 2011. As the CDC stated in a press release in 2001, DEBI brings "science-based HIV prevention interventions to community-based service providers and state and local health departments. The goal is to enhance the capacity to implement effective interventions at the state and local levels, to reduce the spread of HIV and STDs, and to promote healthy behaviors" (Gandelman, 2014).

Beginning in 2003, the CDC required directly funded CBOs, about 150 agencies at the time, to implement one or more of these evidence-based behavioral interventions. In order to implement these mandatory behavioral interventions, CBO employees were also required to complete formal training on these interventions. Formal training involved attending events held nationally and year-round in person or via online training modules. Both of these requirements have continued to this day. In order to reach service providers who do not receive CDC funding, the CDC created the online Compendium of Evidence-Based Interventions and Best Practices for

HIV Prevention (Gandelman, 2014). The Compendium is updated annually to reflect evidence-based standards for best practices and "identifies evidence-based behavioral interventions that have been scientifically proven to significantly reduce HIV risk" ("High-Impact Prevention," 2015). To date, DEBI, and its successor HIP, reflect the largest centralized dissemination of HIV/AIDS prevention efforts in the history of the U.S. (Dworkin, 2008).

Initial Critiques of CDC Interventions

Upon initial implementation in 2003, trained service providers from CBOs were critical of DEBI's "top-down" approach, the unsuitability between DEBI and the populations their organizations served, and the lack of evidence supporting DEBI's effectiveness in their organizations (Dworkin, 2008). CBOs were critical of DEBI because the CDC required strict adherence to the "core elements" of the program, which represent the interventions intent, theory, and logic (Gandelman, 2014). The CDC's rationale was that in order to produce similar outcomes found in the program's research studies, the interventions had to be applied with "fidelity" and "integrity" (Gandelman, 2014). Any modifications to those "core elements" were considered "reinventions," and thus results could not be attributed to the intervention (Gandelman, 2014). This presented challenges at the practical level because service providers were expected to replicate outcomes found in research settings in their community organizations. As Gandelman summarized, "evidence-based approaches are based on successes in controlled research settings, not everyday realties of CBOs and local health departments" (Gandelman, 2014). Many CBOs argued that their target populations, who were often low-resource and at-risk, did not reflect the populations upon which these interventions' successes were based (Dworkin, 2008). Furthermore, because of the strict adherence requirements, agencies were

unclear if by modifying interventions to fit their populations, they were violating core elements and at risk for losing CDC funding.

Building on that critique, many organizations felt their local innovations and expertise were being disregarded (Dworkin, 2008). Because DEBI was deemed a package of "best practices," many organizations found it being promoted as a nearly exclusive approach (Dworkin, 2008). They critiqued these interventions for replacing, rather than building on their local knowledge and histories. Many organizations found their previous intervention efforts, as well as their adaptations to the new behavioral interventions, to differ from DEBI requirements. And because DEBI required strict adherence, many felt the CDC was not honoring their local knowledge (Miller and Shinn, 2005). While these local organizations lacked "scientific" evidence and proof in randomized control trials, they argued they had evidence in local proximity and proof in community relationships (Dworkin, 2008). This reflects the biomedical model that often assumes evidence-based approaches supersede local techniques that have not been scientifically studied (Miller and Shinn, 2005).

Lastly, many argued that these behavioral interventions assumed a certain level of capacity from both the organizations providing the interventions and the clients receiving the interventions (Dworkin, 2008). As mentioned above, prior to implementation, service providers were required to attend lengthy training sessions that used complex concepts like "reinvention versus adaptation." Thus, many CBOs argued that the interventions did not map onto their staff's skills or delivery styles, which they had adopted to successfully build relationships with their organization's populations (Gandelman, 2014). Many organizations cited that while the CDC provided funding for these specific behavioral interventions, they assumed a level of general organizational resources and infrastructure, which many of these non-profits lacked (Rapkin and

Trickett, 2005). In terms of success with clientele, many organizations expressed that the CDC's

mandated target populations, and thus the individuals these organizations served, were often

living in poverty, illiterate, and lacked transportation. Thus, the very requirements of the

interventions, including written materials and reoccurring attendance, were inherently ill suited

for these populations. Some even argued that these behavioral interventions, which included

elements of empowerment and success in personal behavioral changes, were setting up these

populations for failure because structural limitations hindered their behavioral choices and

potential for success (Dworkin, 2008).

The CDC's Response to Initial Critiques

In response to these initial critiques, the CDC funded a number of projects to assist with DEBI's

implementation (Dworkin, 2008). One effort included a technical assistance hotline for

organizations to call. Another included the creation of the Behavioral and Social Science

Volunteer Program, which recruited hundreds of scientists to help CBOs and health departments

implement DEBI. Another support program observed and analyzed a group of organizations that

had implemented DEBI. The researchers recommended how CBOs could better fit their

populations' cultural contexts, risk determinants, and risk behaviors to DEBI without "competing

with or contradicting the core elements and internal logic of the behavioral interventions"

(McKleroy, 2016). Thus, the core theoretical foundations and structures of the behavioral

interventions remained intact.

The CDC's initial response to critiques reflects an attempt to help organizations better fit

DEBI to their populations, rather than the CDC modifying the model to better fit organizations

and populations. Despite many organizations' critiques of both the interventions methodology

and the evidence supporting its applicability, the CDC continued expanding and implementing

DEBI. Moreover, as the next section of my thesis details, many of the critiques that emerged

during initial implementation stages have endured and echo critiques that researchers and my

data point to today.

 With regard to more recent DEBI developments – in 2010, President Obama released the

National HIV/AIDS Strategy (NHAS), which details the priorities, goals, and actionable

strategies to guide the national response to the HIV/AIDS burden. In response to the NHAS,

DEBI was renamed and rebranded as the High-Impact Prevention (HIP). The NHAS highlights

the importance of targeting high-risk populations and geographies, and the renaming was an

effort to reflect that. The core elements of DEBI endured, but organizations were now directed

to focus these interventions almost exclusively on high-risk populations. Additionally, with this

new focus, the CDC marketed this approach as even more "scientifically proven" and "effective"

("High-Impact HIV Prevention," 2015).

Critiques of the CDC's Approach Towards HIV/AIDS Prevention Efforts

This section reflects my critical analyses of current CDC interventions and details the specific

areas that I argue reflect the CDC's shortcomings. This section includes the most compelling

and supported critiques from both my fieldwork and literature sources. These are not in order of

importance, but rather, are structured in a way to reflect how these critiques often overlap and

feed into one another.

Biomedical & Scientific Authority

Among various researchers and activists in the HIV community, HIV is largely understood as both a social and biomedical disease (Osborne, 1986). HIV is considered a social disease because routes of transmission involve contact, certain population groups are more at-risk for infection, and stigma often surrounds the disease and those infected (Weiss, 1993). Likewise, HIV is understood as a biomedical disease because the disease is caused by a virus, results in immune suppression, and responds to certain medications (Weiss, 1993).

Biomedical discourses, which construct HIV in clinical and epidemiological terms, have historically dominated the HIV field (Campbell, 2004). Many researchers argue that interventions privilege the biomedical and individual aspects of HIV, and neglect the social roles and determinants of HIV (Weiss, 1993). As evidenced in my historical section, the very creation of HIV individual-level interventions relied upon the role of scientific authority. The implications are that many intervention efforts focus on evidence-based mechanisms that point to best practices as facts, rather than as value-based judgments (Parkhurst, 2015). However, many researchers point out that these interventions, which aim to address individual behaviors, draw upon values that influence the decision-making processes. Parkhurst's analysis supports this:

> Within the fields of public health, global health, health promotion, and health communication alike, a number of critical authors have pointed to the importance of value systems in shaping decisions which often go unstated or unacknowledged. A common example is the way that individualistic accounts of health production lead to political solutions, which downplay the importance of social action and structural change, instead placing responsibility of poor health on individuals themselves. This acts to both

perpetuate social inequality, while at the same time justify the imposition of social

controls (Parkhurst, 2015).

Thus, these interventions draw upon values that privilege evidence-based approaches and

scientific authority, as well as individualism.

Use of Leveled Interventions

As mentioned in the background section, the CDC categorizes interventions by levels, which

include individual, structural, and biomedical interventions. While many researchers and

activists in the field take a more interdisciplinary approach to understand what is considered

"individual" and "structural," the CDC still uses these levels. Because of the CDC's influence

and authority, this leveling of interventions has been widely adopted and accepted among

HIV/AIDS researchers and service providers.

Separating interventions by levels has implications for how the factors and behaviors that

contribute to HIV risk are both addressed and perceived. By leveling the interventions that aim

to change certain behaviors or address certain risk factors, it explicitly categorizes these

vulnerabilities. By categorizing interventions as "individual" level, like programs for drug use

and risky sexual behaviors, the vulnerabilities themselves get categorized as individual. Not

only are the behaviors deemed individual, but the remedies for these vulnerabilities are also

categorized as individual. Because the CDC recommends individual-level interventions to

address these factors, this puts both the "problem" and the "blame" on the individual. The actual

interventions themselves place the nexus of choice, decision, and behavior on the individual.

And, looking at the actual categories of interventions reveals that not only the decision making

process is perceived as individualistic, but both the disease burden and solution have also been placed on the individual.

Moreover, the CDC's methodology does not just put the "problem" and the "blame" on individuals, it puts the "problem" and the "blame" on certain individuals. As mentioned in the background section, the CDC pursues a High-Impact Prevention approach that ensures funding and interventions are directed towards high-risk individuals. Currently, these high-risk groups include MSM, transgender individuals, and injection drug users ("High-Impact Prevention," 2015). Because certain groups are more likely to experience these HIV risk factors, it does not just problematize their behaviors, it also problematizes the populations and the individuals who identify within these groups (Liamputtong, 2013). One of my informants who currently works at a CBO in the South supported argument by saying:

> Most people I meet with HIV are living in poverty, are not educated, and are homosexual. They often face systematic disparities with their sexuality, their race, their opportunities for employment and housing, and so on. They feel like the system is already against them. This is felt even more so amongst the minority communities of color. They feel like if they get HIV, it's another reason for society to criticize them, blame them, and neglect them.

To further illustrate my argument, I provide an example with MSM and anal sex. Transmission through unprotected sexual encounters is the most common mode of transmitting HIV, and thus, unprotected sex has been identified as an HIV risk behavior ("HIV Risk Behaviors," 2015). Similarly, MSM constitute the largest HIV-infected population, and thus, are deemed a high-risk population by the CDC. Receptive anal intercourse is 17 times more likely to transmit HIV than receptive penile-vaginal intercourse ("HIV Risk Behaviors," 2015). Because anal sex is most

common among MSM, and thus, largely associated with MSM, the CDC's behavioral interventions reflect that (Dowsett, 2009). While the risk rates reflect the importance of these interventions, these interventions foster problematization not only of the behavior, unprotected sex, but also of the type of sex, anal sex, and the populations who engage in that behavior most often, MSM. These interventions foster the perception that this population and their sexual preferences solicit intervention. This institutional problematization has a trickle down effect, which leads to societal discrimination in the form of homophobia against MSM and stigma against anal sex. While institutional problematization reproduces social bias, it also reflects social bias. Thus, this relationship is nuanced in both its reflective and reproductive nature. This relationship is problematic because the Joint United Nations Program on HIV/AIDS (UNAIDS) cites stigma and discrimination as the foremost barriers to HIV prevention since they can make people afraid to seek information, services, and means to reduce the risk of transmission. Additionally, stigma and discrimination can discourage people from disclosing their status to partners, which may increase the likelihood that protection is not being used, which increases the risk of HIV transmission ("Reduction of HIV-Related Stigma and Discrimination," 2014).

This relates to Cathy Cohen's research, which brings into question the avenues through which we identify characteristics of risk. Cohen debates whether it is the demographic characteristics or the behavioral practices that mark certain populations as conducive to health or death. The significance of such is that it employs marginalizing myths attached to group traits and behaviors that have little to do with individual behaviors (Cohen, 1999). Yet, current HIV/AIDS prevention efforts, which revolve around individual-level interventions, place both the HIV risk and the solution on the individual. Leveling the interventions that aim to address certain risk factors explicitly categorizes both the risks and the people engaging in those risks as

conducive to death. This moralizes and problematizes HIV, the groups most at-risk, and their

behaviors.

Interventions' Theoretical Foundations

Like many health programs, HIP's various interventions are formed with explicit and implicit

theoretical foundations – most of which are individual-level theories (King, 1999). Trends in

health psychology literature reveal an overlap in identifying the dominant theories grounding

HIV/AIDS prevention and communication efforts. My personal examination of the CDC's

Compendium, which details the specificities of the interventions and the underlying theories,

confirmed my literature reviews findings. These theories include the Health Belief Model,

Theory of Reasoned Action, and Social Cognitive/Social Learning Theory (Airhihenbuwa and

Obregon, 2000). These theories reflect philosophies on how individuals make decisions, mainly

along the lines of risk behavior and behavior change (Auerbach and Wypijewska, 1994).

Theories of risk behavior focus on predicting risky behaviors as prevention mechanisms.

Theories of behavior change focus on the processes and rationale involved with behavior

modification.

These individual-level theories provide a certain understanding of how individuals

perceive themselves, how they make decisions, how their surroundings influence their behaviors,

and their intentions to change. These theories, and the respective HIV interventions, employ

more Western, individual-centered approaches to the self, as opposed to family or community-

centered approaches to the self (Hanan, 2009). I argue that these are not suitable for any

population becuase they assume a level of autonomy, rationality, and freewill that ignores social

and cultural contexts. My critical analysis of these theories rests in their use of individual

psychology, which assumes an individual, linear, and rational perspective to address health campaigns and prevention efforts (Airhihenbuwa and Obregon, 2000). To contextualize this for HIV/AIDS, this depicts an individual who follows an awareness, to attitude change, to action step in their behavior and decision making process.

The first issue is that these theories assume human behavior is based on rational and cognitive processes (Van der Riet, 2008). As Coates describes:

> The theories guiding most interventions are essentially cognitive and individualistic, and assume that people have the motivation and freedom to adopt protective actions. These theories generally do not address the fact that, whether in sexual contact or injecting networks, HIV transmission is a social event and many factors other than perceived threat, knowledge, self-efficacy, behavioral intentions, and perceived social norms affect whether or not an individual is going to share needles or have sexual intercourse, and then whether or not sexual intercourse will potentially involve transmission risk (Coates, 2008).

Thus, these theories largely assume a certain level of self-efficacy, rationality, and awareness from intervention participants.

The second issue is that these theories assume the decision-making process occurs primarily on an individual-level, which serves as the impetus for action and change. As Link and Phelan suggest, "this focus on proximate risk factors, potentially controllable at the individual-level, resonates with the value and belief systems of Western culture that emphasize both the ability of the individual to control his or her personal fate and the importance of doing so" (Link and Phelan, 1995). However, this is often not the case for both the decision-making process and the behavioral change process. Many HIV risk behaviors, like unprotected sex and drug use,

occur for many reasons and motivations that often extend beyond individual cognition and consciousness. Coates argues that some of these complex, multilayered reasons include "reproduction, desire, peer pressure, pleasure, physical or psychological dependence, self-esteem, love, access to material goods, obligation, coercion and force, habit, gender roles, custom, and culture" (Coates, 2008). The interventions and their respective theories not only neglect the many factors that influence decisions, but they also reduce the decision-making process to individually centered motivations.

Additionally, these theories presume that health communication, action, and behavioral change mainly occur between two binary systems (Lievrow, 1994). The first system includes institutional providers such as the government and organizations, and the second includes individual receivers such as employees and students (Lievrouw, 1994). This binary giving and receiving relationship further places the onus of HIV/AIDS responsibility on the individual. This binary system also neglects less cognitive processes and cultural influences.

Behavioral interventions fail to incorporate how decisions and behaviors are often manifestations and functions of culture. In support of my argument, one informant said, "I think people do make decision based on their self interests, but it's important to see how those decisions and behaviors are influenced by their contexts, their communities, and their groups. And, we have to see how these contexts limit the choices people have in making decisions." This articulation supports my argument that these theories assume a level of freewill in how people make decisions. This is problematic when applied to interventions because it assumes a level of rationality and autonomy in the decision-making processes. Moreover, the CDC forms behavioral interventions around certain behavioral assumptions, rather than looking at the full context of the decision-making process. One of my informants spoke on this:

What the CDC thinks is not always what plays out. They tend to categorize people, like

African Americans or MSMs will behave like X. Or, they'll do X based on certain things

like their race or class status. They apply certain general findings as a blanket

intervention. And they usually get these generalizations from things like EBPs

[evidence-based practices] and RCTs [randomized control trials], which aren't always

best for this real-world stuff.

This informant highlighted the CDC's tendency to generalize populations based on assumptive

patterns of specific behaviors, rather than contextual factors involved in the decision-making

process. This informant also touched on the CDC's inappropriate tendency to form scientific,

evidence-based interventions around natural, unpredictable, and context-specific behaviors.

Furthermore, this privileging of scientific authority and Westernized individualism couples

"culture" and "barrier" (Hanan, 2009). In order to more accurately portray the decision-making

process, not just the end result of the decision, interventions need to reflect theories and

rationales that decouple "culture" and "context" from "barrier".

Citing the perception and the internalization of HIV in relation to behavioral theories, one

of my informants added another layer of analysis to my critique. The informant explained that

he believes these theories are "stuck" because they were applied to HIV during a time when the

disease was thought of in a certain way. Namely, that HIV/AIDS used to be thought of as fatal,

but now it is thought of as chronic. With advances in antiretroviral medications, individuals can

live longer with the HIV virus before it progresses into AIDS. My informant explained how the

specificities of the interventions may be changing, but they continue to be rooted in the same

theories. And, these theories still assume that people make decisions based on the perception

that HIV is a death sentence. The informant said:

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There is a new generation of HIV. People – well, younger people at least – approach the

disease differently now. So, these days, young people especially, they know they have

the most risk to get it [HIV], but they do it anyway. They have sex with that man or

woman that they know has HIV because they 'love them' or they want or need something

from them. They have this mentality that's a mix of 'it won't happen to me' and if it

does, I can manage it and still be alive with it. And that doesn't follow any of the

theories' rationale.

Analyzing this information in relation to my discussion on theories, I hypothesize that younger

people have a greater understanding of HIV versus AIDS. The two are less conflated, and

generally not used interchangeably in everyday language as much as they used to be. The notion

of HIV being a manageable chronic condition, versus AIDS being a death sentence, influences

their decisions and risk behaviors. Thus, the theories that ground the CDC's interventions are

rooted in assumptions of both individualism and an outdated perception of the disease.

In summary, the CDC's current HIV/AIDS prevention efforts are problematic because

interventions are based individual-level theories of risk behavior and behavior modification.

These theories and their respective interventions assume a level of individual autonomy,

rationality, and free will that fails to incorporate socio-cultural contexts and constraints. Thus,

these interventions ignore the multifaceted and dynamic processes through which decisions are

made in everyday life.

The CDC's Hyper-Focus on Certain Populations & Routes of Transmission

As mentioned in the background section, the CDC requires funding to be used for high-risk

groups, including MSM, transgender individuals, and inject-drug users. Two years ago, the CDC

stopped funding prevention programs for women and children. One informant discussed at-length how the funding they receive from the CDC has "very specific" parameters and guidelines for how it can be used. The funding they receive from the CDC must go towards MSM programs, interventions, and testing. Through stories, he expressed how much their organization relies on this funding, and how necessary it is to reach the MSM population. However, he noted that MSM do not just have sex with men. He told stories detailing how many of his clients also have sex with women for a number of reasons including bisexuality, hidden sexuality, and transactional sex. Another informant echoed this and expressed how the CDC has a "hyper focus" on MSM, which often assumes that HIV/AIDS is contained to this population. He described that the CDC's interventions and funding streams fail to incorporate, or choose to ignore, the fact that MSM do not just have sex with men. Another informant I spoke to highlighted why this is problematic:

> This sends a message that women don't need to worry about it [HIV]. So, they are getting tested less, worrying less. And, some women are getting infected by 'in the closet' gay men who are having sex with men on the down low, but not telling their female partners. So, these women have sex with who they think are straight men, and because neither of those populations [women and heterosexual men] get funding or have programs targeted towards them, they get the message that the problem of HIV isn't about them. That they don't need to worry about getting HIV.

By largely focusing funding and program efforts on identified high-risk groups, the CDC is suggesting that individuals who do not identify with those groups will not, or are unlikely to, have HIV/AIDS impact them personally. Additionally, this perception attaches more stigma and blame to marked high-risk groups and their behaviors.

Discussed more thoroughly in the following section, CBOs funding requests for HIV testing kits usually hover around 10% of the total CDC grant budget. One of my informants who works at the CDC said, "Pretty much every single organization is doing testing. But, they don't request funding for test kits from us [CDC] because most kits are given to them as in-kind donations. They get the kits themselves, not funding for the kits." However, after speaking with six organizations who request and receive CDC funding, they cited that the main reason for not requesting more funding for testing kits is because the CDC requires those funds to only be used for MSM or transgender individuals. And most organizations I spoke described testing a demographic of "everyone," with no one subset of the population coming in for testing more than others. While that trend is true for testing, the organizations said that services and treatments are more focused on select populations, like MSM. In-kind sources of testing kits usually have less specific provisions, which better map onto organizations' needs. One informant highlighted how these strict parameters for funding and testing have hampered their local efforts. The informant said:

> Because the CDC requires we focus our testing on just MSM or transgender individuals, it has really affected where we can test. We can't use testing kits in churches or community gathering centers anymore because we have to focus on MSM and transgender sites. It's a real shame though, because it's hurting our strong, long-standing relationships that we worked very hard to build. It was a huge effort and accomplishment to get testing in churches because that's a lot of conservative people in there who have a lot of stigma against HIV and people with HIV. So, to get in there and do testing and spread the word and educate about HIV, was huge. But, now we can't do that anymore, and it's a real shame. We were making real, larger-scale progress.

As this informant explained, CDC requirements have undermined local achievements and milestones, including efforts aimed at structural changes like reducing stigma around HIV in faith-based organizations.

My informants also expressed frustration surrounding the fact that the CDC only funds drug interventions aimed at reducing injection drug use. Four informants discussed at length how crucial this source of transmission is, but also discussed how it often overlaps with other sources of transmission. One informant told stories of his clients who trade sex for drugs, but not just injection drugs – any drugs. He explained how "risky" sexual encounters are often used as commodities for drugs. He explained that most of his clients trade crack, which is usually smoked, not injected. So, the method of administering the drug is not necessarily transmitting HIV, but the means to acquire the drug, namely, risky sexual encounters, are leading to HIV transmission. Thus, all drugs and forms of drug use, not just injection, must be considered as indirect risks for acquiring HIV. However, the CDC, or at least their funding, assumes a direct pathway for transmission. Injection drug use with contaminated needles is a direct, rational, and widely accepted understanding of HIV transmission. However, the CDC fails to address the more indirect pathways of how other drugs or uses of drugs, such as trading sex for drugs, can lead to HIV. Thus, one of my informants who said, "the CDC is in the ball game, but they aren't covering all the bases," aptly captured my argument.

The CDC's Existing Structural Efforts

As mentioned in the background section, the CDC requires some form of structural-level policy efforts as part of the core requirements for health department grants. As stated on the CDC grant application, policy initiatives are defined as "efforts to align structures, policies, and regulations

to enable optimal HIV prevention, care, and treatment (addressing structural barriers to routine

opt-out testing, or updating policies to facilitate sharing of surveillance data across health

department programs)" ("High-Impact HIV Prevention," 2015). After analyzing this language, it

is clear that the CDC's end goals for policy efforts are "to align structures, policies, and

regulations to enable optimal HIV prevention, care, and treatment." However, the recommended

means of achieving these goals are problematic. First, grantees are provided with only a few

recommended strategies – two to be exact. By listing language for only these two recommended

strategies, the CDC is sending the message that grantees should pick either or both of these two.

Second, taking into account the CDC's focus on cost-effectiveness and feasibility, the nature of

these recommended policies is conservative at best. They skirt around structural issues like

poverty and education. And, they avoid issues like homophobia, which often leads to stigma and

discrimination against HIV-positive individuals. By not addressing these issues, these

recommended strategies send a message to agencies applying for funding that these issues do not

merit their policy consideration. Moreover, that these factors do not need to be addressed by

structural interventions, like policy change.

My fieldwork not only supported this analysis, but also revealed that within the two

recommended policy initiatives, flexibility exists. This flexibility allows for even more tempered

and conservative approaches to the recommendations. An informant who currently works at a

state health department supported this:

> There are some structural things that we can change or do that will impact HIV
>
> prevention. And that can mean a lot of different things in a lot of different jurisdictions.
>
> We would love to work on things like criminalization of HIV, or something else that's
>
> actually really important and impactful on a large-scale. But, because of the political

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climate here in the South, we can't. So, instead, what we've focused on with this

required policy piece is winnable battles. Down here [in the South] it's always about

picking things like that.

The informant described how their state focuses policy efforts on opt-out testing for all incoming

inmates at the State Department of Corrections. Opt-out testing involves routinely testing all

individuals unless the individual explicitly refuses the test. Their first milestone involved using

their health department workers to test for HIV during initial inmate intake. Their second

milestone involved getting the prison to use their own staff to do HIV testing as part of the

standard intake screening, which also includes Hepatitis, TB, and STD tests. This is a crucial

accomplishment that helps identify incoming HIV-positive inmates so they can be linked to care

both in prison and upon release. And, the milestone reflects a progression to more efficient and

cost-effect service delivery. However, both the informant's description and affect revealed her

desire to engage in policy work beyond the "more contained realm of prisons" and "to do

something else that's more impactful to a larger scope of society."

Another agency described their experience with trying to include more sweeping policy

initiatives:

We feel really left alone for policies. Our state is really lacking on policies because it is

so conservative that nothing gets pushed through. And when someone does advocate for

something like needle exchange, they get put on the spot and get a scathing review.

Yeah, we are really lacking on policy because we have no support. Hmm, it isn't even

lack of support or dismissing or ignoring these things, it's outright opposition. And we

don't get much support from the CDC for how to move forward with these types of

policy efforts, let alone how to go about it in the face of opposition in the South.

Both informants highlighted the critical role that political context plays in policy reform. And, the second informant highlighted the lack of support navigating these policy initiatives, especially those policy initiatives not specifically endorsed by the CDC. This points to the CDC's use of structural interventions as more of a formality, rather than as a means to enact structural change.

Local Adaptations and Improvisations

As mentioned in the background section, in addition to direct CDC funding, organizations may receive indirect CDC funding from health departments. With the CDC PS12-1201 grant, health departments may allocate a portion of their grant funding to CBOs. While CDC grants for health departments include funding for policy, that policy funding does not extend to CBOs. Health departments give CBOs a list of choices from which they can structure their grant proposals around. Choices include condom distribution, testing, and behavioral interventions. Both the health department and the CDC must approve these indirect grants to ensure that the use of funding aligns with HIP, the program created to achieve the NHAS goals. Within the health departments, CDC employees work alongside health department employees. After speaking with both CDC-employed health department workers and state-employed health department workers, I was provided with a clear picture of CDC funding breakdowns. Most grant proposals that win funding design a plan that involves the following allocation: 10% testing, 20% condom distribution, and 70% behavioral interventions. One informant highlighted how these current breakdowns have changed over time, "When this funding rolled out in 2011 it was almost entirely behavioral interventions, but now they are doing more condom distribution." This

informant expressed that there has been an increased focus on condom distribution, which if implemented on a larger-scale community basis, is a method of structural intervention.

One health department described how they are adapting this "menu" of choices. As mentioned in the background section, with the PS12-1201 grant that the CDC awards to health departments, there are four core requirements. In addition to the requirements, there are recommended efforts, one of which includes navigational support for PrEP. While this does not allow organizations to prescribe or to pay for PrEP, it does assist with navigational aspects like partnering with labs for low-cost blood work, assisting with client access to those labs, and medication adherence. As funded by the CDC grant, this health department engages in PrEP navigation. This year, this health department requested to include PrEP navigation services in the funding options to CBOs. The CDC approved their request. So, for the first time this state's CBOs were given the option to structure their proposals to include PrEP navigation. The informant described their experience with the new option:

> I don't know of any other states that have done this with the CDC 1212 grant. This was our way of knowing that we had to do something different, but not having any additional money to do it. We didn't get any more money; we just used that money differently. We added in an asterisk to the menu of choices. We didn't want to just be promoting behavioral interventions, so we figured a way around it. I definitely think this will be a move in the right direction.

The health department has decided on the grant winners, but they have not yet publicly announced or notified the winners. My informant described that "almost all" winning CBO grant proposals included a funding breakdown of: 10% testing, 20% condom distribution, 30% behavioral interventions, and 40% PrEP navigation services. So, all other program requests

remained consistent, except for behavioral interventions. This situation provides a case example of a health department that is adapting in practice to meet needs not explicitly provided for by the CDC. The health department looked at the needs of their state, and requested an alternative program to meet those needs. And, the altered request structure reflects that CBOs within the state had wanted to engage in efforts other than behavioral interventions, but they just were not given the option. Because this is the first year this is being offered and winners have not yet been announced, and thus programs have not yet been implemented, I cannot speak on the results or implications of this change. However, the desire for change was evident in the health department's request for an alternative use of funding. This reflects dissatisfaction with the current grant choices. Moreover, given the option of alternative funding, behavioral interventions were the only effort altered by CBOs. Additionally, it is important to note that the CDC approved this funding. While PrEP is not a structural intervention, this example does reflect a change in the normal CDC program. Looking ahead, it will be notable to see if other states follow suit with this request, or if other states take this opportunity to request alternative program options. And, to see how the CDC reacts. In the coming future, this will be a crucial case to follow because it reflects local, on the ground innovation and improvisation within the limits of the existing CDC prevention framework.

QUANTITATIVE DATA, RESULTS, & ANALYSES

In the previous section, I provided a critical analysis of the CDC's current approach to HIV prevention, which revolves around individual-level efforts. In the previous section, my analyses were rooted in qualitative techniques – literature reviews and semi-structured interviews. In this

next section, I provide a critical look at the CDC's current approach from a quantitative

standpoint. The quantitative data presented below supplements the qualitative data presented in

the previous section by providing numerical evidence to support conceptual arguments. The

previous section focused on the unsuitability of individual-level interventions, and the next

sections builds on this by also focusing on the suitability of structural-level interventions. This

section looks at the role of individual and structural-level factors in HIV incidence. Ultimately,

my results support the importance of structural-level factors in HIV incidence and the need to

incorporate more structural efforts in CDC prevention efforts. This section also includes specific

case illustrations of the U.S. South. Within the U.S., regional trends exist, specifically with

higher rates of HIV/AIDS across the Southern states. The South accounts for thirty-seven

percent of the overall U.S. population, yet fifty-one percent of reported HIV diagnoses in the

U.S. occur in the South (Reif and Whetton, 2006). Thus, I'm including analyses on the U.S.

South because it experiences a disproportionate burden of HIV/AIDS compared to the rest of the

country. This case example of the U.S. South serves to ground both my critiques and

recommendations in real world application.

QUANTITATIVE DATA & METHODS

Rationale

In light of the distribution of HIV/AIDS rates across the U.S. and the literature detailing factors

that impact these rates, my research aimed to understand how exactly these factors impact

HIV/AIDS incidence rates. My aim was to provide more structure to exactly how the factors I

selected relate to HIV/AIDS and to each other. To do so, I evaluated by how individual and

structural-level factors influence HIV incidence rates. This involved analyzing HIV incidence within each level of vulnerability, as well as between the levels of vulnerability. To address my research aims, this thesis examined the relationships between individual and structural-level factors, and how they interact to affect HIV incidence rates. To do this, I took a step-wise approach. First, I examined the variables within the individual-level to see which factors account for more of the variation in HIV/AIDS incidence rates. Second, I did the same thing looking at the variables within structural-level factors. Third, I compared the variation across the two levels of vulnerability to see which level accounts for more of the variation in HIV/AIDS incidence rates. Fourth, I analyzed how results compare based on geographic location, specifically how results compare for the South compared to other regions of the U.S. I used the Northeast region as a baseline for comparison because it is generally referenced as the region considered most different from the South.

Data Sources

I compiled data from the data sources: AIDSVu and Gallup.

(1) AIDSVu

AIDSVu is a collection of HIV/AIDS data created and funded by the Rollins School of Public Health at Emory University. In addition to collecting data, AIDSVu pulls together data from the U.S. Census Bureau and the CDC National HIV Surveillance System database, which is comprised of HIV/AIDS surveillance reports from state and local health departments. Data obtained from AIDSVU included: percent of state population living in poverty, percent of state population with a high school education or the equivalent, and rate of new HIV diagnosis per 100,000 people.

(2) Gallup

Gallup is a research and consulting polling organization. Gallup primarily uses survey methods to gather data in the U.S. and globally on a number of economic, political, and social issues. Given alternatives, I selected Gallup because their data has a large, representative sample size. Additionally, Gallup publicly publishes results in raw data form, which enabled me to conduct original analyses. Data obtained from Gallup included: percent of state population using illicit drugs and percent of state population identifying religion as personally important.

Variables

For the purpose of my project, I used state-level measures of data for all of my variables. The most recent data available for all of the variables were between the years 2011-2013. Thus, the variables I used include aggregate data from all 50 states from three years: 2011, 2012, 2013. Each variable has 150 cases total, 3 per state. I aggregated the data because my goal for this paper was not to measure change across time, but rather to have enough data for each variable to produce accurate analyses. Because Washington, D.C. presented with significantly higher values for multiple variables, I excluded Washington D.C. as an outlier.

Key dependent variables include measures of HIV/AIDS diagnoses. Typically, this is measured with rates or crude numbers of (1) prevalence and (2) new diagnosis/incidence. Incidence is a better variable for my research because it represents regions experiencing increases in new cases, whereas prevalence is a cumulative percentage of all people with HIV/AIDS in a place. Thus, prevalence may not reflect urban zones or temporal shifts very well in areas with mature epidemics. For example, prevalence rates will be higher in places that have historically had HIV around longer, or where there are a lot of people living longer and

contributing to this number for many years. The variable I used reflects HIV incidence rates per

100,000 people to control for population size differences across states.

My research, as detailed in the background section above, dictated the independent

variables I selected. Please see Table 1 for further justification for why I selected these variables

and how they relate to HIV incidence rates. These variables are among the most commonly cited

factors influencing HIV rates across various disciplines of academic literature and government

published reports. The variables I have selected for each level are not fully representative or

encompassing. Rather, they reflect a sample of factors that are highly cited in literature.

Additionally, the factors I have selected were determined by public availability of data.

Widespread classifications across the HIV community dictated how I classified factors as

structural-level or as individual-level. Many researchers and activists in the field, myself

included, take a more interdisciplinary approach to classifying variables as "individual" or

"structural" level. However, the CDC and other federal institutions divide these variables and the

responsive interventions. Thus, my research divides these variables to reflect the dominant

understanding used by the CDC. Other independent variables, including state rates of insurance

coverage, STDs, and yearly routine physician checkups, were initially analyzed. However, I did

not include these variables because they yielded either no relationship or an insignificant

relationship with my dependent variable, HIV incidence rates.

Variables grouped as individual-level vulnerabilities include percent of the state

population who used illicit drugs (including marijuana according to federal law and misuse of

prescription drugs) and percent of the state population who identify religion as personally

important to them. Variables grouped as structural-level vulnerabilities include percent of the

state population living in poverty (defined by the federal poverty line) and percent of the state population with at least a high school education or the equivalent.

In order to address geographical variations in HIV incidence, I created dummy variables coded by region. I used the Northeast region as the constant because it is most widely used as a comparison against the South. In order to define regions, I used the U.S. Census Bureau classifications, which include Northeast, Midwest, South, and West. It is important to note that the U.S. Census Bureau classifies certain States, like Maryland and Delaware, which are not always understood as Southern in the cultural imaginary, as Southern states. Northeastern states include Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, New Jersey, New York, and Pennsylvania. Midwestern states include Illinois, Indiana, Michigan, Ohio, Wisconsin, Iowa, Kansas, Missouri, Nebraska, North Dakota, and South Dakota. Southern states include Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoman, and Texas. Western states include Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming, Alaska, California, Hawaii, Oregon, and Washington.

Methods of Analyses

(1) Descriptive

In order to describe the data and identify variation, I used SPSS software to generate descriptive statistics. Specifically, I looked at maximum, minimum, range, mean, and standard deviation of each variable.

(2) Statistical Analyses

In order to conduct original statistical analyses, I used SPSS software. First, I ran a correlation matrix to measure the Pearson's R and significance. Second, I ran bivariate linear regressions to look at individual variables against HIV incidence rates. The first two analyses provided justification and support for why I picked the variables that I did. Third, in order to answer my research questions, I used multivariate linear regression models. With this, I was able to measure the R square value to see what percent of the variance in HIV incidence was accounted for by independent variables. I also used slope and intercept to measure how changes in my independent variables affected my dependent variable, HIV/AIDS incidence rates.

(3) Visual Representations

To create visual representations of multivariate analyses, I used Tableau Public software to create scatterplots with varying size and color bubbles to reflect the multiple variables. Specifically, I used this to visually show how states and regions compared across various independent variables and my dependent variable, HIV/AIDS incidence rates. I also used Tableau Public software to create thematic maps to show how states compare across variables. This provided a visual illustration of regional and state trends.

QUANTITATIVE RESULTS & ANALYSIS

Results

Descriptive Statistics

In order to describe the data and identify variation, I used descriptive statistics (see Table 3). In this section, I will highlight three noteworthy variables. Between 2011 and 2013, a total of

128,603 new cases of HIV were reported in the U.S. There were about 43,000 new cases of HIV

per year from 2011 to 2013. The dependent variable, HIV incidence rates per 100,000 people by

state, has an average yearly minimum of 2 and a maximum of 35, with a range of 33. The

national yearly average value was 10 new HIV cases per state. The yearly average value for the

Southern states was 18 new HIV cases. Figure 2 is a thematic map showing the average of HIV

incidence rates from 2011, 2012, and 2013 by state. Evident in Figure 2, the top 5 states with the

highest rates of HIV incidence include Georgia, Maryland, Louisiana, Florida, and New York.

Notably, four of the top five states are Southern states. The top 5 states with the lowest rates of

HIV incidence include North Dakota, Idaho, Wyoming, Montana, and New Hampshire. None of

these are Southern states.

Table 3: Descriptive Statistics

Table 3: Descriptive Statistics						
	N	Minimum	Maximum	Range	Mean	Std. Deviation
Rate of HIV new incidence	150	2	35	33	12	8
% Population who use illicit drugs	150	4.8	15.8	11	9	2.4
% Population who identify religion as important	150	40	86	46	64.7	9.9
% Population living in Poverty	150	9	23.9	14.9	15.1	3.2
% Population with HS Education	150	81.1	93.5	12.4	87.9	3.2

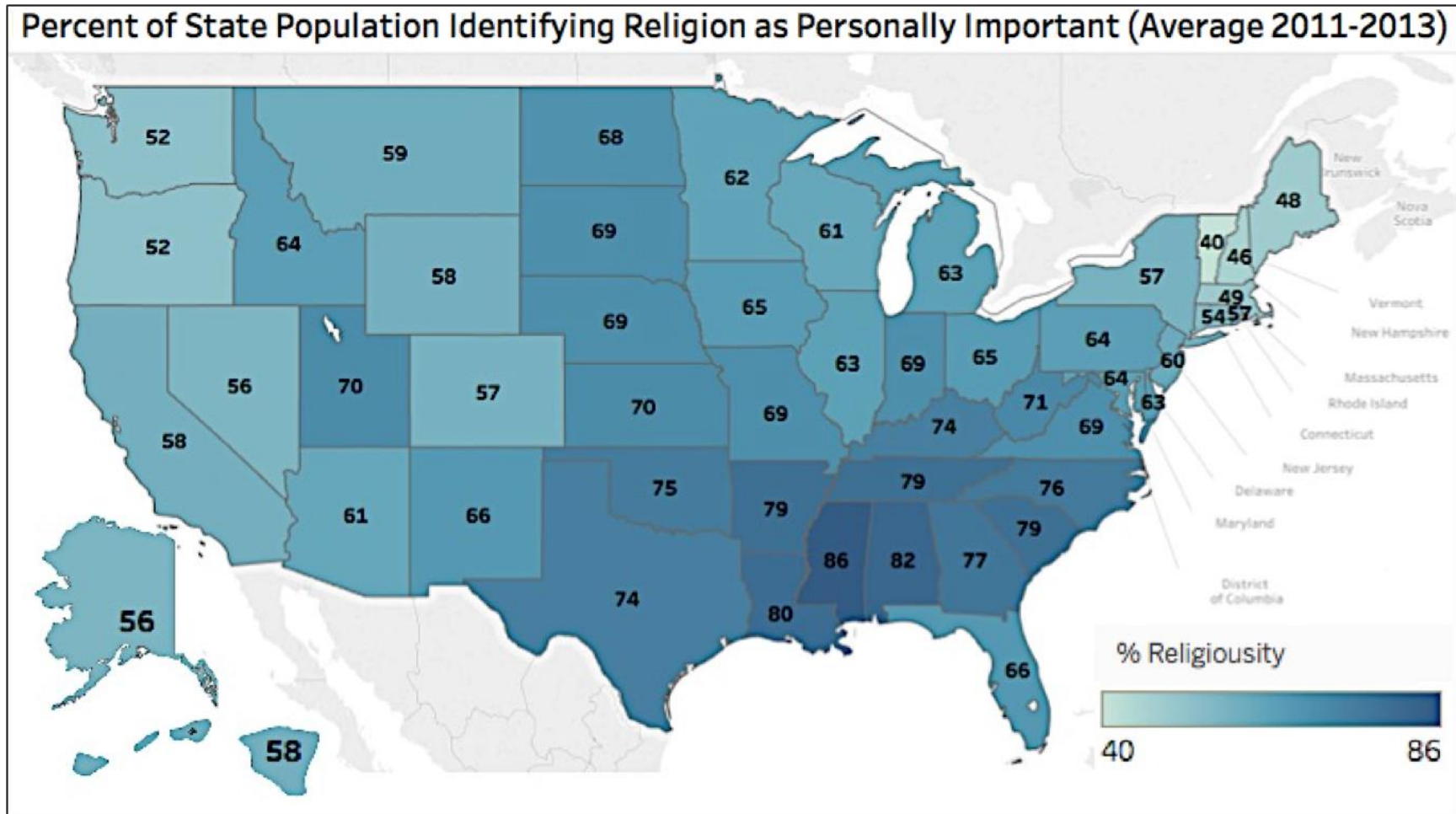Figure 2: HIV Incidence Rate per 100,000 People (Average 2011-2013)
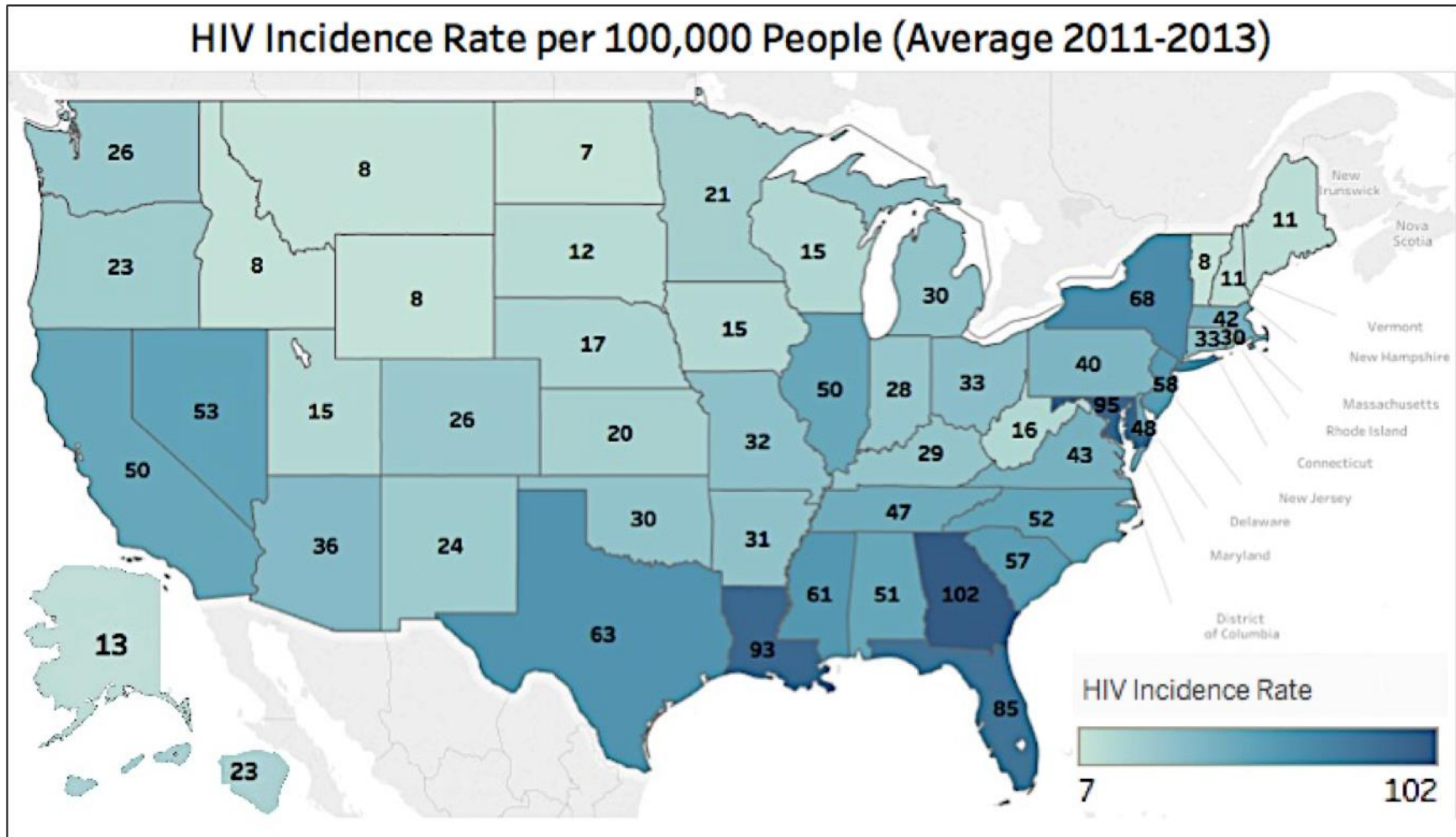
Source: *AIDSVu*, "Illustrating HIV/AIDS in the United States" (2011-2013 data)

Also notable, the variable reflecting the percent of the state's population who identify religion as important has a minimum of 40% and a maximum of 86%. The national average was 64% of the state's population identifying religion personally important. The average value for Southern states was 76% of the state's population identifying religion as important. Figure 3 shows the average state rates for the percent of the population who identify religion as personally important between 2011 and 2013. Figure 3 illustrates that compared to the other thematic maps, religious importance has less variation throughout the U.S. However, as Figure 3 shows, the South has the highest concentration of the highest rates of identified religious importance. The top 5 states with the highest rates of reported religious importance include Mississippi, Alabama, Louisiana, Tennessee, and South Carolina. All of these states are Southern states. The states with the lowest reported religious importance include Vermont, New Hampshire, Massachusetts, Maine, and Washington. None of those are Southern states.

Lastly, the variable reflecting the percentage of the state's population with at least a high school education or the equivalent has a minimum of 81.1% and a maximum of 93.5%. The national average value was 88% of the state's population with a high school education. The average value for Southern states was 84% of the state's population with a high school education. Figure 4 shows the average percentage of the population who had a high school education between 2011 and 2013 in each state. Figure 4 provides a thematic map of this variable, providing a clear visualization of rates across the U.S. As Figure 4 illustrates, the lowest rates of educated populations are concentrated across the Southern states. The states with the lowest rates of high school graduates include Texas, California, Mississippi, Louisiana, and Kentucky. Notably, four of the top five states are Southern states.

Figure 3: Personal of State Population Identifying Religion as Personally Important (Average 2011-2013)

Percent of State Population Identifying Religion as Personally Important (Average 2011-2013)

Source: *Gallup Analytics,* "Gallup Daily Tracking" (2011-2013 data)

Figure 4: Percent of State Population with a High School Education (Average 2011-2013)

Percent of State Population with a High School Education (Average 2011-2013)
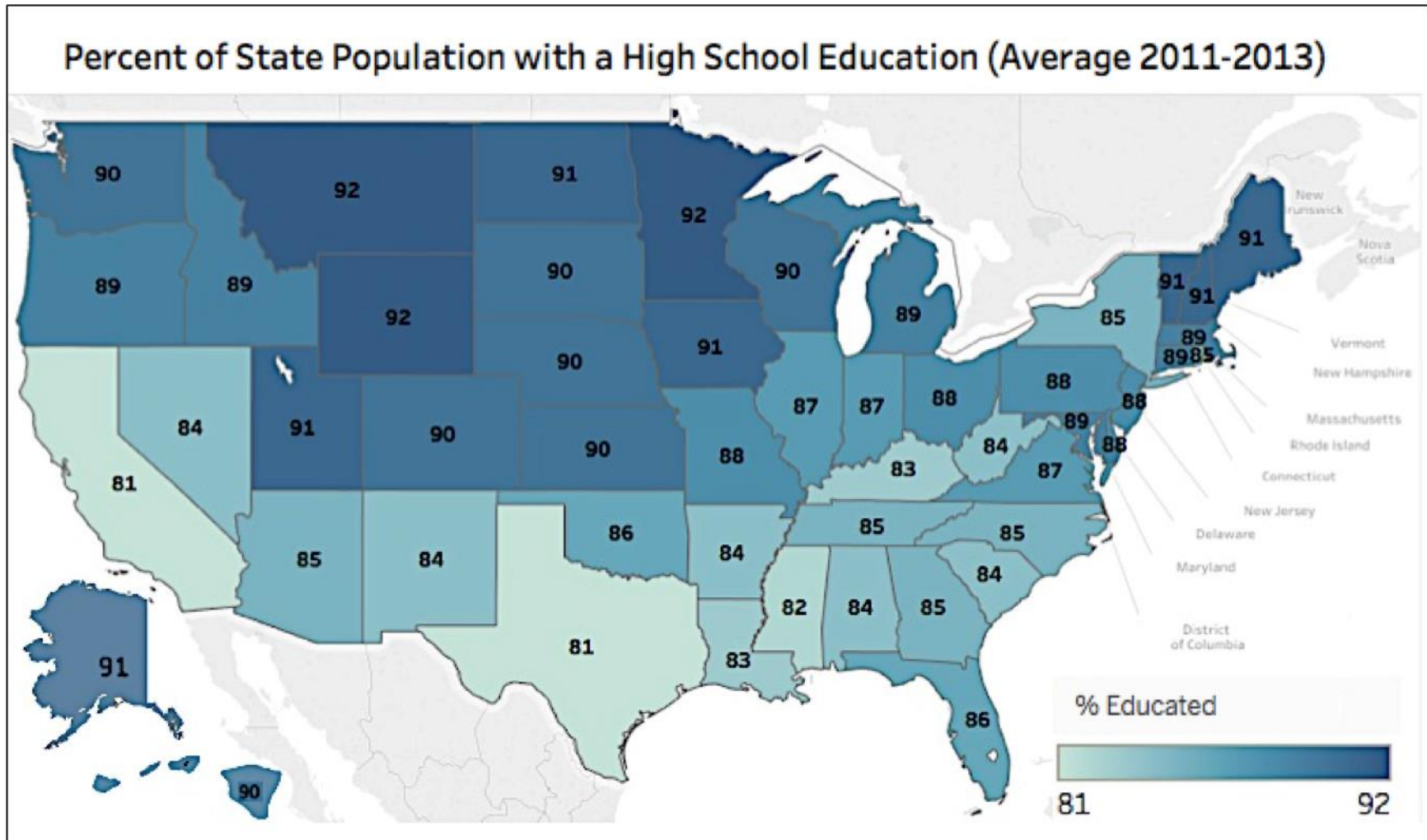
Source: *AIDSVu*, "Illustrating HIV/AIDS in the United States" (2011-2013 data)

Pearson's r Correlations

To assess correlations between my dependent variable, HIV state incidence rates, and the independent variables, I ran a correlation matrix (see Table 4). Important to note, all of the variables I selected yielded significant Pearson's correlation results, and all yielded statistically significant p values. The variable reflecting the percentage of the state population with a high school degree yielded the strongest correlation (-.610) with HIV incidence rates by almost double the amount of the next highest correlation. This means that as the level of educational attainment increases in a state, HIV incidence tends to decrease. Other notably strong correlations with HIV incidence rates include the percent of the state population who identify religion as important (-.380) and the percent of the state population living in poverty (.380). The correlation analyses provided justification and support for why I picked the variables that I did. Other independent variables I initially analyzed included state rates of insurance coverage, civic engagement measured by voting in presidential elections, yearly routine physician checkups, and STDs. I excluded these variables from my analysis because they did not yield significant correlations with my dependent variable, HIV incidence rates.

Table 4: Correlation Matrix

Table 4: Correlation Matrix						
		HIV New Incidence	**Illicit Drug use**	**Religious Importance**	**Poverty**	**Educated**
HIV New Incidence	*Pearson Correlation*					
	Sig. (2-tailed)					
	N					
Illicit Drug use	*Pearson Correlation*	-.173*				
	Sig. (2-tailed)	.035				
	N	150				
Religious Importance	*Pearson Correlation*	-.380**	-.657**			
	Sig. (2-tailed)	0	0			
	N	150	150			
Poverty	*Pearson Correlation*	.355**	-.137	.603**		
	Sig. (2-tailed)	0	.095	0		
	N	150	150	150		
Educated	*Pearson Correlation*	-.610 **	.157	-.532**	-.791**	
	Sig. (2-tailed)	0	.056	0	0	
	N	150	150	150	150	
* Correlation is significant at the 0.05 level (2-tailed).						
** Correlation is significant at the 0.01 level (2-tailed).						

Bivariate Analyses

After I ran a correlation matrix, I ran bivariate linear regressions to more closely look at each independent variable against my dependent variable, HIV incidence rates (see Table 5). Out of all of the variables, education rates accounted for the most variation and had the largest relative effect on HIV incidence rates. The R square value was .372, indicating that the percent of the state population with high school degrees accounts for 37.2% of the variation in HIV incidence rates. The constant was 146.29, meaning if there were a state where zero people had a high school degree, there would be 146 cases of new HIV infections per 100,000 people each year. The unstandardized slope was -1.53, meaning a 10% increase in the proportion of the population with high school degrees translates to about 15 fewer cases of HIV per 100,000 people per year. The significance value was .000, which is accepted as statistically significant. Figure 5 visually illustrates this negatively correlated relationship. As state education rates increase, rates of state HIV incidence decrease. Figure 5 also shows how this relationship compares across different regions of the U.S. As Figure 5 shows, compared to other regions, Southern states are most concentrated in highest left quadrant of the graph. This shows that Southern states in particular are more likely to have lower education rates and higher HIV incidence rates.

Also notable, poverty had the next highest variation and relative effect on HIV incidence rates (See Table 5). The R square value was .126, indicating that the percent of the people living in poverty accounts for 12.6% of the variation in HIV incidence rates. The constant was -1.295, meaning without any percent of the population living in poverty, there would be 1.3 people with HIV per 100,000 people per year. The unstandardized slope was .88, meaning that a 10% increase in the proportion of the population living in poverty translates to about 8 more cases of

HIV per 100,000 people per year. The significance value was .000, which is accepted as statistically significant.

Table 5: Results of Bivariate Linear Regressions Predicting HIV Incidence

Table 5: Results of Bivariate Linear Regressions Predicting HIV Incidence				
	Unstandardized b	Standardized b	Significance	R square
A)				.030
Constant	17.159		.000	
% Population who use illicit drugs	-.577	-.173	.035	
B)				.144
Constant	-7.881		.052	
% Population who identify religion as important	.307	.380	.000	
C)				.126
Constant	-1.295		.660	
% Population living in Poverty	.879	.355	.000	
D)				.372
Constant	146.289		.000	
% Population with HS Education	-1.527	-.610	.000	

Figure 5: HIV Incidence Rate per 100,000 People vs. Percent of the State Population with a High School Education (Average 2011-2013)
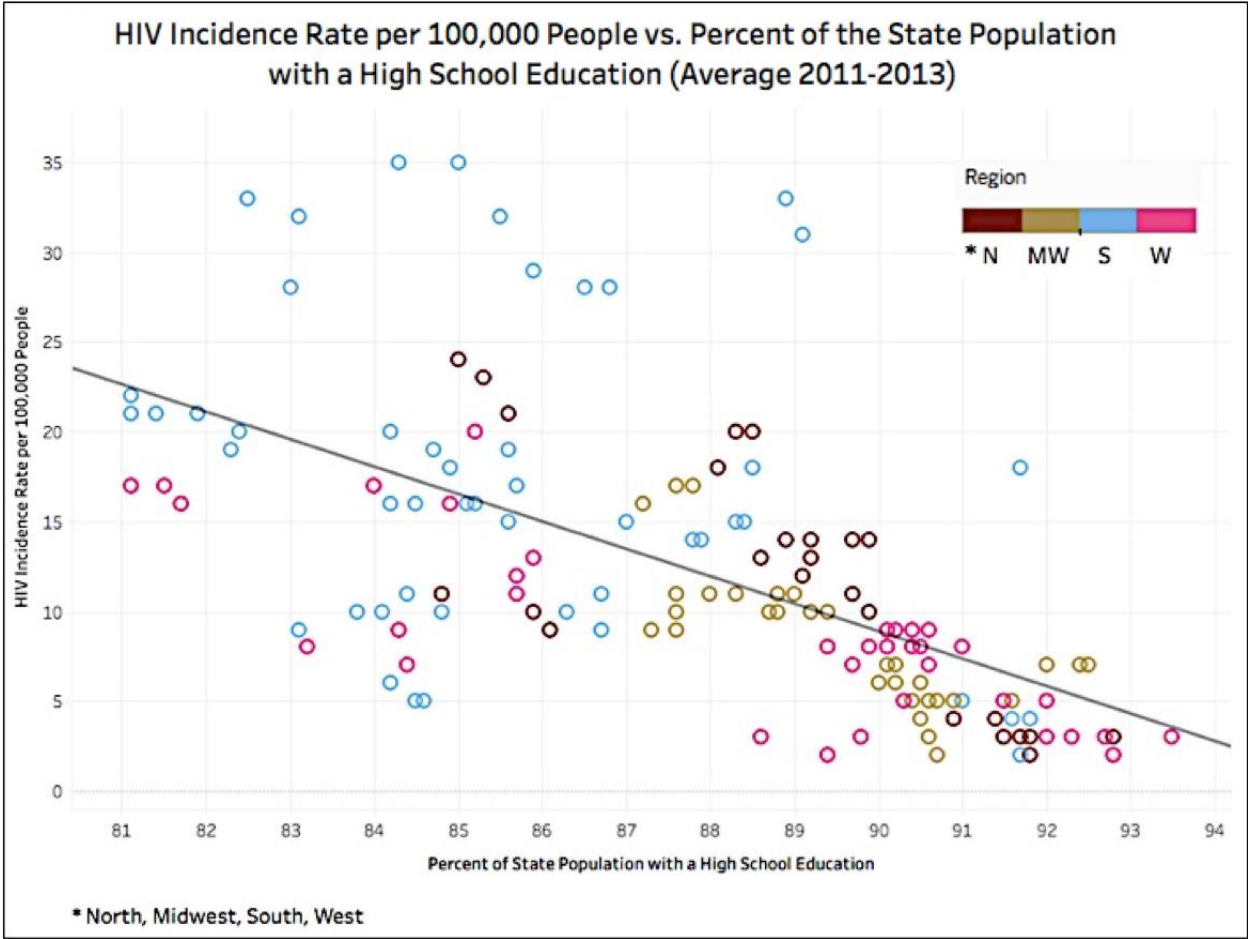
Source: *AIDSVu*, "Illustrating HIV/AIDS in the United States" (2011-2013 data)

For the individual-level vulnerabilities, the variable reflecting the percent of the state population who identify religion as personally important accounted for most of the variation and had the largest relative effect on HIV incidence rates (See Table 5). The R square value was .144, indicating that the percent of people who identify religion as personally important accounts for 14.4% of the variance in HIV incidence rates. The constant was -7.88, indicating that if a state had zero people who identified religion as personally important, there would be about 8 cases of HIV per 100,000 people each year. The unstandardized slope was .31, indicating that a 10% increase in the percent of the population who identify religion as important would result in about 3 more cases of HIV per 100,000 people pear year. The significance value was .000, which is accepted as statistically significant.

One notable finding was that when illicit drug use was ran in a bivariate linear regression against HIV incidence rates (but not in a multivariate regression with other variables), results indicated that as the use of illicit drugs increased, the rate of HIV incidence decreased. The standardized slope was -.557, indicating that a 10% increase in the proportion of the population using illicit drugs translates to 5 fewer cases of HIV per 100,000 people per year. The significance value was .035, which is generally accepted as statistically significant. With a standardized slope of -.173, this variable had the lowest relative effect on HIV incidence rates. Additionally, with an R square value of 3%, this variable accounted for the lowest variation in HIV incidence rates. This result was re-examined and ultimately excluded due to data limitations. Please see the review section below for further analysis of this result and the related data limitations.

Multivariate Analyses – Not Accounting for Region

Next, I used multivariate linear regression models to compare the relative contribution of individual-level variables and structural-level variables on HIV incidence (see Table 6). The R square value for the first model, which only included the individual-level variables (percent of the state population who identify religion as personally important and percent of the population who use illicit drugs), had an R square value of .155. This indicates that the individual-level vulnerabilities I selected account for 15.5% of the variance in state HIV incidence rates. In the second model, which included the individual-level vulnerabilities and the structural-level vulnerabilities (percent of the population living in poverty and percent of the population with a high school education) had an R square value of .438. This indicates that both the individual and structural-level vulnerabilities I selected account for 43.8% of the variation in HIV incidence rates. The R square change was .283, indicating that structural-level vulnerabilities account for 28.3% more of the variance in HIV incidence rates compared to individual-level vulnerabilities.

With a standardized slope value of -.845, state education rates had the largest effect on HIV incidence rates compared to all of the other variables by almost double the value of the next largest slope. The unstandardized slope value for education rates was -2.15. This indicates that accounting for the other variables, a 10% increase in the proportion of the population with a high school degree translates to about 21 fewer cases of HIV per 100,000 people per year. The significance value was <.001, which is accepted as highly statistically significant. Poverty had the next largest effect with a standardized slope value of .462. The unstandardized slope value was 1.14. This means that accounting for the other variables, a 10% increase in the proportion of the population living in poverty would result in about 11 more cases of HIV per 100,000 people each year.

Tables 6-8: Multivariate Linear Regressions

Table 6: Multivariate Linear Regression: Individual & Structural-level Vulnerabilities					
	Unstandardized b	Standardized b	Significance	R square	R square change
MODEL 1				.155	.283
Constant	-16.631		.031		
% Population who use illicit drugs	.379	0.469	.000		
% Population who identify religion as important	.454	0.136	.179		
MODEL 2				.438	
Constant	201.127		.000		
% Population who use illicit drugs	.184	0.228	.050		
% Population who identify religion as important	.160	0.048	.607		
% Population with HS Education	-2.115	-.845	.000		
% Population living in Poverty	1.142	0.462	.000		

Table 7: Multivariate Linear Regression: Individual-level Vulnerabilities				
	Unstandardized b	**Standardized b**	**Significance**	**R square**
				.155
Constant	-16.631		.031	
% Population who use illicit drugs	.454	.136	.179	
% Population who identify religion as important	.379	.469	.000	

Table 8: Multivariate Linear Regression: Structural-level Vulnerabilities				
	Unstandardized b	**Standardized b**	**Significance**	**R square**
				.416
Constant	215.773		.000	
% Population living in Poverty	-.893	-.361	.001	
% Population with HS Education	-2.178	-.870	.000	

Bivariate & Multivariate Analyses – Accounting for Region

To control for other unobserved factors that might vary across regions and states, I ran

multivariate regressions with regional variables. In order to keep the models stable, I ran

separate multivariate linear regressions for each independent variable against HIV incidence

rates and regions (see Tables 9-12). As detailed in Table 12, education rates had the largest

relative effect on the South. As Table 12 shows, accounting for education differences across the

states impacted Southern HIV incidence rates, but kept the other regions HIV incidence rates

about the same. This points to the importance of education differences across regions, and

particularly for predicting HIV incidence rates in the South. The R square value for the first

model was .370, indicating that regional differences account for 37% of the variation in HIV

incidence rates. The R square value for the second model had a value of .474 indicating that

regional differences and education rates account for 47.4% of the variation in HIV incidence

rates. Thus, adding in the education variable increased the variation by .104. In the first model,

the variable for the South had a standardized slope value of .45. In the second model, where I

added in the education variable, the South had a standardized slope value of .215. Thus, when

you take into account education, the effect of living in the South is less by .235. The

unstandardized slope value for the first model was 7.66, and the unstandardized slope value for

the second model was 3.67. The significance value is .023, indicating that this was statistically

significant. This implies that if the Northeast and South had the same kind of high school

completion rates, the South would have about 4 less cases of HIV per 100,000 people per year.

That's also to say that if education rates were the same in the Northeast and the South, the South

would only have 3 more cases of HIV than the Northeast, compared to 7 more cases with the

current education rates. By thinking about the role of education in the South, we can explain

why the South has more new cases of HIV than the Northeast. A side-by-side comparison of

Figure 2 and Figure 4 provides a visualization of these results. These maps show overlaps in the

regional concentrations of lower education rates and higher HIV incidence rates, which largely

occurs in the South. Figure 5 also provides a visualization of this data, with the largest

concentration of lower education rates and higher HIV incidence rates most common among

Southern states.

Tables 9-12: Multivariate Linear Regressions Predicting HIV Incidence by Region

Table 9: Multivariate Linear Regression: Region & Percent of the Population Who Identify Religion as Important					
	Unstandardized b	Standardized b	Significance	R square	R square change
MODEL 1				.370	
Constant	11.148		.000		
West dummy	-3.123	-.172	.053		
Midwest dummy	-3.370	-.181	.040		
South dummy	7.664	0.45	.000		
MODEL 2				.373	.003
Constant	7.134		.164		
West dummy	-3.624	-.200	.037		
Midwest dummy	-4.417	-.237	.035		
South dummy	5.992	.352	.021		
% Population who identify religion as important	.076	.094	.419		

Table 10: Multivariate Linear Regression: Region & Percent of the Population Who Use Illicit Drugs					
	Unstandardized b	Standardized b	Significance	R square	R square change
MODEL 1				.370	
Constant	11.148		.000		
West dummy	-3.123	-.172	.053		
Midwest dummy	-3.370	-.181	.040		
South dummy	7.664	0.45	.000		
MODEL 2				.370	.0
Constant	10.729		.001		
West dummy	-3.115	-.172	.055		
Midwest dummy	-3.253	-.175	.078		
South dummy	7.783	0.457	.000		
% Population who use illicit drugs	.039	0.012	.888		

Table 11: Multivariate Linear Regression: Region & Percent of the Population Living in Poverty					
	Unstandardized b	Standardized b	Significance	R square	R square change
MODEL 1				.370	0
Constant	11.148		.000		
West dummy	-3.123	-.172	.053		
Midwest dummy	-3.370	-.181	.040		
South dummy	7.664	0.45	.000		
MODEL 2				.385	.015
Constant	6.546		.016		
West dummy	-4.015	-.222	.016		
Midwest dummy	-3.943	-.212	.018		
South dummy	5.909	0.347	.001		
% Population living in Poverty	.366	0.148	.058		

Table 12: Multivariate Linear Regression: Region & Percent of the Population with a High School Education					
	Unstandardized b	Standardized b	Significance	R square	R square change
MODEL 1				.370	
Constant	11.148		.000		
West dummy	-3.123	-.172	.053		
Midwest dummy	-3.370	-.181	.040		
South dummy	7.664	0.45	.000		
MODEL 2				.474	.104
Constant	101.593		.000		
West dummy	-3.524	-.194	.018		
Midwest dummy	-2.673	-.144	.077		
South dummy	3.668	0.215	.023		
% Population with HS Education	-1.015	-.405	.000		

<u>Review</u>

Evidence supported my hypothesis that predicted structural-level vulnerabilities would contribute to more of the variation in HIV incidence rates than individual-level vulnerabilities. Specifically, my results revealed that education rates had the largest relative effect on reducing HIV incidence rates. As the level of educational attainment increased in a state, HIV incidence tended to decrease. This suggests education has a protective effect on preventing HIV incidence. My data indicated that regional differences in education rates are crucial predictors for decreasing HIV incidence, especially in the South. By thinking about the role of education in the South, we can explain why the South has more new cases of HIV than the Northeast. These results point to the need to strengthen education reform to reduce HIV rates in the U.S., and especially in the South.

Limitations

Evidence supported my hypothesis, except for my assumption that increasing the proportion of the population who use illicit drugs would increase the rate of HIV incidence. According to my bivariate linear regression results, increasing the percent of the population who do illicit drugs would result in fewer new cases of HIV. Based on my literature reviews detailing how illicit drug use increases the risk for HIV transmission, my results for this variable reflect a limitation in my data. I am not confident in the accuracy of the data reporting illicit drug use. The data is likely underreported and inaccurate because illicit drug use is difficult to measure. Because of legality issues, people are more likely to report not using illicit drugs. Additionally, because the data accounts for marijuana use in states where it is legal, and not in states where it is illegal, the

data is not consistent across the country. This means behaviors not regularly connected to HIV are being counted in some states, and not in others.

Another limitation to my results includes the lack of data available for school-based sexual education in the U.S. Originally, I had planned to incorporate sexual education in my analysis of the role that education plays in impacting HIV rates. However, sexual education varies considerably by state, which made it difficult to establish a comparable baseline. Many states had convoluted policies, including complicated rules and exceptions to the rules. For example, in states that mandate STDs to be included in sexual education, some include HIV, some only include HIV with parental permission, some only include abstinence based HIV education, some only include HIV facts and not prevention mechanisms, and so on. Thus, because sexual education policies varied considerably by state, I was unable to group states with similar policies into data groups. Each state reflected its own data group, which prohibited me from discerning regional trends in sexual education policies and HIV incidence rates. That said, the complexity of sexual education policies across the U.S., which prohibits data collection and analyses, is another issue in itself that merits further research. For the scope of this thesis, it made the most sense to exclude the variable reflecting sexual education policies.

DISCUSSION

Critical Analyses of the Federal Government's Approach to HIV/AIDS Prevention

The federal government's response to combating HIV/AIDS in the U.S. misses on two counts – it does not provide adequate attention or funding to prevention efforts and the prevention efforts that do exist focus largely on individual-level interventions. With no cure for HIV, prevention is

arguably the most crucial and effective mechanism to combat HIV. Yet, as evidenced in Figure

1, only 3% of the federal budget for HIV/AIDS is allocated towards prevention efforts ("U.S.

Federal Funding for HIV/AIDS," 2016). Despite its paramount importance, prevention receives

the smallest portion of the federal HIV/AIDS budget. And, the prevention efforts that do exist

reflect an over-privileging of evidenced methodology and individualism. The NHAS goal is to

reduce HIV incidence and to provide care for all regardless of socio-political and economic

health determinants. While this goal references the importance of structural factors in combating

HIV/AIDS, the government's response has largely been focused on individual-level

interventions. Furthermore, these individual-level interventions revolve around behavioral

modification programs, which have widely been critiqued in the academic and activist

community, as well as in my personal analyses. The few structural-level interventions that do

exist are both limited in scope and funding. They skirt around issues of poverty, education,

stigma, and discrimination.

The government's current approach, which privileges individual-level interventions, is

especially problematic in the South where structural issues are more prevalent. One CDC

representative informed me that, "the heavy burden of HIV in the South is driven in part by

unique socioeconomic factors. Income inequality, poverty, and poorer health outcomes have

long been more widespread in Southern states, compared to the rest of the nation." When I asked

what the CDC is doing to combat HIV in the South to achieve the NHAS goals, the CDC

informant said, "the CDC is responding to the challenge of HIV in the South and nationwide by

prioritizing the hardest-hit areas and populations and investing in the most effective evidence-

based strategies. These strategies include expanded testing for HIV, helping people living with

HIV obtain ongoing care and treatment, and increasing awareness of and access to all effective

prevention tools, including condoms, pre-exposure prophylaxis - or PrEP, and interventions to decrease risky behaviors." This CDC representative was referring to HIP, which the CDC created in 2011 to achieve the NHAS goals. As evidenced in the CDC excerpts, the government understands the root of the HIV burden in the South to be structural, but the means to address the issue largely focus on individual-level interventions. Furthermore, these individual-level interventions revolve around behavioral modification programs, which have widely been critiqued in the academic and activist community.

Currently, the government's main structural support includes providing housing assistance through the "Domestic Housing and Cash Assistance" portion of the budget. Within the prevention budget, the CDC's HIP strategy endorses condom distribution programs as their structural-level effort. In terms of policy, the CDC provides recommendations, but they are limited. For example, the CDC stresses the importance of clean needles and the effectiveness of needle-exchange programs. However, due to Congressional stipulations, the CDC can only support certain components of needle-exchange programs, such as educational materials, and not the purchase of needles ("HIV Risk Behaviors," 2015). Additionally, the CDC requires grant-receiving health departments to engage in some sort of policy efforts. However, on the CDC's grant application, the two recommended policy initiatives are to "support opt-out testing and to update policies to facilitate the sharing of surveillance data across health departments" ("High-Impact Prevention," 2015). These policies skirt around issues of poverty, education, and healthcare access. Also, they avoid issues like homophobia, which often leads to stigma and discrimination against HIV-positive individuals. By not addressing these other issues, the CDC's recommended strategies send a message to agencies applying for funding that these issues do not merit structural interventions or policy consideration.

Counter Arguments & Considerations

Why Behavioral Interventions are Still Used

Despite increasing arguments critiquing behavioral interventions, they continue to be endorsed by the CDC, and thus used by many HIV/AIDS organizations. Because the CDC recommends behavioral interventions as best practices, and scientific authority has endorsed them as evidence-based, they have been widely implemented as "proven" mechanisms to prevent HIV (Gandelman, 2014). The CDC markets these interventions as measureable, cost-effective, and scalable. This leads many organization to adopt these interventions because they are seen as manageable and affordable, but also effective.

Additionally, service providers and clients often perceive behavioral interventions as a direct, more immediate way to reduce HIV risk (Van der Riet, 2008). These interventions target the individual and their feelings, behaviors, and decisions. Success is measured by an individual's behavior modification, which puts the nexus of choice on the individual, but also puts the nexus of success on the individual. Thus, many behavioral interventions focus on individual empowerment and ownership. These are direct, individual-centered results, which literature has cited as important to successful HIV efforts (Van der Riet, 2008). Referencing the empowering aspects of behavioral interventions, one informant at a CBO said, "When a person starts a behavioral intervention, they are proud of themself for starting something that science says will help them make better, safer decisions. They feel empowered for taking things into their own hands and deciding to start an intervention." Another informant echoed this sentiment, and highlighted the perceived immediacy of behavioral interventions:

In the everyday life of poverty, people want immediate help. They aren't interested in larger structural interventions because they can't see that far ahead. They don't see that

long-term structural issues might have gotten them in this place to begin with, or that

structural changes could help get them out of their poverty. They are so deep in poverty

that they can only worry about day-to-day needs. So, they want to walk out of the clinic

with something that helps them that day.

However, with that argument, others point to the fact that interventions usually occur in the

organization and target only those engaging in the interventions. Thus, after participating in

behavioral interventions, many individuals return to their high-risk environments where their

behaviors originated, possibly undermining the benefits of the behavioral interventions (Golden

et al, 2013). Other informants also highlighted how behavioral interventions only reach a small

subset of the population that enroll in the behavioral interventions. One of informants supported

this by saying:

The populations who come in for these interventions are sort of privileged, like they were

healthy enough to come in, had access to transportation to get here, had someone to

watch their kids, and so on. Behavioral interventions may help that immediate group, but

what about everyone else not fortunate enough to be able to enroll in interventions? We

need to change the world they exist in so they don't have to enroll in an intervention to be

able to make better choices.

By highlighting the limited scope and "privilege" of behavioral interventions, this informant

touched on the drawbacks of the immediacy that behavioral interventions offer.

Challenges with Structural Interventions

The breadth and complexity of structural interventions make them difficult to implement and

sustain. Structural interventions are expensive and time consuming to design, execute, and

maintain. It is easier to measure, quantify, and see the effects of individual-level interventions compared to structural interventions, which are often more diffuse and indirect (Golden et al, 2013). Debates exist around the direction of causation between structural-level factors and health outcomes (Link and Phelan, 1995). For example, does low income cause poor health, or does poor health cause low income? Due to the complex and indirect causal pathways from intervention to change, evaluating the effects of structural interventions is also difficult (O'Leary, 2002). Moreover, researchers point to both the difficulty and the inappropriateness of forming structural interventions into testable studies that employ vigorous evaluation methods (Auerbach, 2009). Thus, many structural changes, like policy implementation, are difficult to measure with the "gold standard" methodology that uses randomized-control trials. For many scientists, policymakers, and researchers, observed outcomes are difficult to attribute to the defined structural change (Auerbach, 2009). Additionally, because structural factors, like poverty and lack of education, are often interrelated and confounding, it is difficult to pinpoint how a structural intervention impacts specific structural vulnerabilities. Consequently, it is difficult to evaluate the impact of structural-level interventions on structural-level changes.

Additionally, because structural interventions extend beyond the realm of behavior and lifestyle, they are often political in nature (Parkhurst, 2015). Some argue that HIV prevention is inherently political, and thus necessitates a political response. Thus, many structural interventions aim to alter social arrangements, which often involve contested values (Parkhurst, 2015). However, because no universal value system exits, the issue involves deciding on which structural factors and policies to focus on, and the impact it will have on certain populations over others (Sanderson, 2006). This often proves problematic in deciding on which course of action to pursue. Some focus efforts and funding on one structural issue, whereas others focus on many

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structural issues, and others on no structural issues. Thus, alignment and continuity in structural efforts are often difficult to achieve. Additionally, others argue that improving structural factors requires equalizing the distribution of power, money, and other resources (Sanderson, 2006). This can lead to difficulty garnering both public and political support for structural changes.

The Case for Structural Efforts

Although structural interventions are more challenging than behavioral interventions to implement and to evaluate, they have the ability to reach populations, rather than individuals (O'Leary, 2002). Thus, the potential for structural interventions extends beyond individual behavioral changes and paves the way for structural changes. As Auerbach notes, "It's necessary to enact social and policy changes that transform social structures and environments that constrain individuals' ability to reduce their vulnerability to HIV infection" (Auerbach, 2009). Structural interventions help modify determinants and facilitators that contribute to HIV risk (O'Leary, 2002).

Research points to the successes of interventions that address contextual factors, which influence people's behaviors and decisions, more so than interventions that solely address individual behaviors (Hecht, 2009). Additionally, financial analyses have shown that although structural changes are expensive, they offer the most long-term promise to reduce HIV incidence (Coates, 2008). Many health economists also point to structural interventions that address social determinants of health as the most cost-effective strategy for HIV prevention (Adimora and Auerbach, 2010). Additionally, compared to individual changes, structural changes are more likely to yield multiple confounding social benefits, such as economic productivity and housing

stability (Coates, 2008). Improving structural conditions reduces disparities for many health outcomes, including those related to HIV.

RECOMMENDATIONS

The CDC is the lead governmental agency responsible for HIV prevention efforts, and thus, has both a unique opportunity and duty to improve structural efforts to better reflect HIV risk factors. While understanding that many factors are important and connected to HIV prevention, my research reveals an area that necessitates more attention and funding. As evidenced in my background section, the federal government prioritizes biomedical and individual-level interventions over structural-level interventions for HIV/AIDS prevention efforts. And the structural-level interventions that do exist skirt around issues like poverty and education. This is problematic because data points to the role of structural-level vulnerabilities predicting HIV risk more so than individual vulnerabilities, and government efforts do not reflect this. This section argues that in order to improve structural issues impacting HIV incidence, the CDC must take internal action to support structural interventions as prevention efforts and to strengthen collaborative efforts with other governmental agencies. Understanding the stringency and complexity of federal budgets, the suggestions I propose do not require substantial additional funding.

Recommendations: Three Ways to Strengthen Structural Efforts that Involve the CDC

(1) Increase Research Supporting the Role of Structural Factors in HIV Prevention

Based on my results, I recommend that the government take a stronger, more assertive stance on the role that structural issues play in preventing HIV and reducing HIV risk. While individual-level interventions are a crucial aspect of HIV efforts, I argue that they should not form the crux of HIV prevention. Instead, they should serve as support and extensions of structural-level efforts to form multi-level interventions. To support this stance, I recommend the CDC promote more research directly examining the relationship between HIV and structural-level vulnerabilities, as I did in this thesis. The CDC could either directly conduct the research, fund other institutions or individuals research, or endorse another institutions or individuals research. These options involve a range of funding commitments, but they all involve the CDC attaching their powerful and influential name to HIV-related structural research.

Currently, epidemiological research identifying HIV risk factors largely focuses on relatively proximal factors, like sexual behaviors and injection drug use. Contemporary prevention efforts reflect this focus on proximate and individual-level risk factors, evident in the individual nature of interventions, such as behavioral modification programs. Structural interventions are most often seen as support provisions, rather than as directly connected to prevention. As this thesis shows, the data connecting structural vulnerabilities and HIV exists, it just lacks support from an authoritative institution, like the CDC. The CDC's role in prevention efforts is often forgotten, and this provides an opportunity for the CDC to assert their role as the government's leading disease prevention agency. Thus, I recommend the CDC focus more research efforts on the multi-level effects that structural interventions play in both improving social determinants, while also impacting individual behaviors. Sumartojo summarizes how

"HIV-related structural factors are defined as barriers to, or facilitators of, an individual's HIV prevention behaviors" (Sumartojo, 2000). Currently, only a small number of studies showing the role of structural-level factors in HIV prevention exist in the U.S. and internationally (Sumartojo, 2000). However, the studies that do exist support the greater impact structural-level interventions have on improving HIV rates, as well as other health outcomes, compared to individual-level interventions (Sumartojo, 2000). By supporting their stance with data and research, the CDC further legitimizes the important role structural factors play in HIV risk. By supporting more research on the role that structural factors play in HIV risk, and creating interventions around that research, the CDC has the potential to impact both policy makers and the public.

(2) Strengthen CBOs Role in the CDC's Structural Efforts

Because of their local knowledge and connections, CBOs provide a unique opportunity to contribute to structural initiatives through community mobilization. Currently, the CDC provides intervention information and funding to state health departments and select CBOs. Based on my fieldwork, I argue that another way to increase the role of structural interventions in prevention efforts is to include CBOs in structural-level efforts. CBOs are unique in their ability to connect with populations on the ground level, and thus, they hold great potential for the necessary community mobilization involved in structural-level changes. An informant who currently works at a CBO supported this:

> I think community based organizations would be incredibly influential if they were
>
> included in structural interventions and policy advocacy. We experience these issues on
>
> the ground everyday. We know local people, their needs, and the context in which they

experience the disease. We know our communities; we have relationships. We know local authority figures personally. We can draw on all that to help make large-scale changes.

Another informant echoed this sentiment:

A lot of organizations don't have the funding to make structural changes, but they have the skillset and the desire. We wish we were included in those efforts, I think we could make a real difference. One thing especially, is with policy. Most places want to be involved in bigger issues, like reducing poverty, increasing education, or expanding Medicaid, because those are a lot of the reasons our people end up in here. But, we just don't get the funding or the formal training.

These informants' articulations reflect the majority of my fieldwork findings, which supports my argument that CBOs provide a unique window of opportunity to expand structural efforts. Moreover, by restructuring funding budgets, similar to how the health department mentioned in the section above did, this could be done without increasing the budget. The CDC could include CBOs in structural efforts through two avenues without increasing funding. The CDC could include structural efforts on the list of intervention choices for direct CDC grants or for indirect CDC grants that come through state health departments. With either avenue, given the funding for structural initiatives, CBOs have the potential to help enact structural changes.

(3) Increase Collaboration Between Federal Agencies

In order to make progress and enact change on a structural-level, collaboration across federal agencies is necessary. Structural issues are vast, deep-rooted, and complex. In order to tackle structural-level issues, they must be approached from many angles. To do so, the federal

government must foster collaboration between and across agencies. This involves aligning

incentives, programs, and funding. I suggest that health disparity policy serve as the common

thread aligning these groups. Health disparity policy addresses differences in health and

healthcare access based on dimensions of inequity including race, ethnicity, income, gender,

sexual orientation, language, age, and location ("The Disparities Policy Project," 2016). We

need more disparity policy as HIV prevention policy, health policy, social policy, economic

policy, and education policy. The more agencies supporting disparity policy, the more likely

progress will be made. Furthermore, by engaging agencies with different priorities, the more

likely it is to resonate and gain traction with diverse supporters. This interdisciplinary support

will further engrain the role of structural conditions in improving health outcomes, including

those related to HIV incidence.

As my research reveals, disparities play a large role across the HIV/AIDS continuum –

from risk of infection, to diagnosis, to access to care, and to life expectancy. My evidence

supports that structural disparities are at the root of HIV incidence rates. People living in states

with higher poverty rates and lower education rates are more likely to contract HIV. As poverty

rates decrease and education rates increase in a state, HIV incidence decreases. Regarding

specific structural disparity issues to focus on, my results support the strongest connection

between high school graduation rates and HIV incidence rates, particularly for the South. Thus, I

argue one way to reduce HIV incidence is to target education inequalities, which are largely

concentrated in the South (Weissman, 2013). While improving education is important for many

reasons, my data speaks to its importance regarding HIV incidence rates. Likewise, the role of

general education rates, which my data supports, has been less explored than the role of sexual

education in HIV incidence. This provides an example of a factor that is not obviously

associated with HIV risk, but impacts it. In order to improve education disparities and subsequently improve HIV incidence rates, collaboration amongst federal agencies is essential. Specifically, the CDC, the lead governmental agency charged with HIV prevention, and the Department of Education, the lead governmental agency charged with education policy, should collaborate to frame education as HIV prevention. Education has a protective effect on HIV, and both the CDC and the Department of Education must act on that. The federal government must foster collaboration across agencies to promote education policy as HIV prevention policy.

POLICY SUGGESTION: EDUCATION POLICY IS HEALTH POLICY

As discussed in the previous section, my results revealed that higher education rates had the largest effect on reducing HIV incidence rates. Higher education rates correlate with lower HIV rates. Thus, education has a protective effect on HIV. This section provides a policy recommendation for improving high school graduation rates in the U.S., especially in areas where they are lowest – namely, the U.S. South. In line with my suggestion that the federal government should better foster agencies to work together to improve HIV rates through disparity policy efforts, the CDC and the Department of Education should co-lead this federal policy. This policy involves the CDC playing a larger role in schools to help engage students in health topics and to teach them real world skills, which will improve both graduation and proficiency rates.

Currently, the CDC has two programs open to high school students, and both take place at the CDC headquarters in Atlanta, Georgia. The first, "CDC Museum Disease Detective Camp," is a five-day program that aims to teach participants skills related to the fundamentals of

the CDC's work – public health and epidemiology. The second, "Student Worksite Experience Program," is a sixth month volunteer internship program open to both high school and college students. This program aims to provide students with practical experience and professional development, and offers positions ranging from office support to data collection ("CDC Fellowships, Internships, and Learning Opportunities," 2017).

The CDC should engage in more direct involvement at the high school level. I recommend that the CDC harness their expertise in the health field and conduct high school level programs focused on medicine and public health. Currently, the CDC only has two programs available to high school students. And, those programs have lengthy applications, are very selective, and require students to be in Atlanta, Georgia. In order to reach the most amount of students, the CDC's high school level programs should be integrated in the students school day. The CDC should lead general health education components, as well as more specialized programs for students interested in medicine or public health. In addition to teaching students about general health, this program will also educate students about jobs available in the health field, as well as begin to teach them the necessary skills for those jobs.

The CDC's direct involvement in high schools will not only encourage students to graduate, but to also learn the necessary skills to succeed in college and the workforce. This simultaneously improves both graduation rates and proficiency rates. While the nation's average high school graduation rate is the highest it has been since 1974, at 78.2%, students' proficiency rates are decreasing ("High School Graduation Rates," 2016). Based on the Program for International Student Assessment, students' proficiency has decreased from 12% in 2000 to 8% in 2012 (Rothman, 2014). Policy wise, this means we must bring together aspects of education, business, and industry to focus on improving completion rates while incentivizing students to

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achieve necessary proficiency to prepare them for success in college and the job market. By

compounding graduation rates with proficiency rates, it is more likely that students will become

proficient in necessary skills that the modern world demands, rather than just accumulating credit

hours. By educating high schools students on health related topics, as well as providing more

specialized programs related to medicine and public health, the CDC will both incentivize

students to stay in school and prepare them for life after high school. This policy is realistic

because it harnesses the CDC's existing expertise. Furthermore, this recommendation extends

beyond giving money or lending their name because it directly engages the CDC at the high

school level.

CONCLUSION

The NHAS vision emphasizes the principal role that structural factors play in

contributing to our nation's HIV/AIDS burden. However, the government's strategies to realize

the NHAS goals and to eliminate HIV/AIDS revolve around individual-level interventions. This

disconnect between need and response enables HIV/AIDS in the U.S., especially so in areas

where structural disparities are most prominent. As one of my informants articulated, "The

problem is that the CDC knows some of these flaws about themselves, but it takes a lot of effort,

time, and money to change. So, they don't change." Based on my analyses, I argue that the time

has come for the CDC to take responsibility of the fact that HIV is largely a structural-level issue

that requires large-scale, structural-level interventions. For too long the government has forgone

ownership and responsibility of HIV/AIDS and the necessary structural interventions to reduce

the burden. The government does not want to take responsibility for the issues or the solutions,

so they have prominent agencies, like the CDC, use "evidence-based" and "scientific" approaches to "prove" that HIV is an individual-level problem requiring individual behavior modification.

One is left to wonder what the implications of an organization, like the CDC – the lead governmental agency charged with HIV prevention – departing from the platform that supports individual-level interventions. What is the power of a governmental agency, like the CDC, asserting that HIV is largely caused by social determinants of health, and thus necessitates structural-level changes to prevent HIV?

I argue that the implications are vast, and compel action. In order to realize the NHAS goals of reducing HIV/AIDS rates and HIV/AIDS-related disparities, the federal government must better align its strategies with the structural factors that predominately contribute to HIV rates. With no existing cure for HIV, the government must look towards strengthening its prevention efforts to achieve the NHAS goals. Within prevention efforts, the government must first take a stronger, more assertive stance on the role that structural issues play in HIV risk. Second, the government must implement programs that use structural-level interventions, such as education reform, as HIV prevention mechanisms.

Because the CDC is the lead agency responsible for HIV prevention, this institution provides a crucial opportunity both to promote and to implement my recommendations. The CDC is a both a representation and a reflection of the government's stance on HIV/AIDS. Because the CDC is the primary agency charged with HIV/AIDS efforts, the CDC holds much authority. The CDC sets the precedent for HIV prevention, and other organizations follow suit. I argue that it is time for the CDC to use its power and influence to mobilize attention and funding towards structural-level interventions. Once one institution of influence, like the CDC,

deems HIV a structural issue, other sources of institutional authority, like policy makers, will be more likely to reproduce the same evaluation. Once embedded at the institutional level, the important role structural factors play in preventing HIV will be more likely to permeate throughout the population to affect public perception. This has the potential to reduce some of the blame and stigma surrounding HIV-positive individuals and their behaviors.

Currently, the CDC enables our country's HIV/AIDS burden because its individually focused prevention strategies do not adequately map onto the structural-level factors that predominately contribute to the burden. However, as my thesis argues, this does not need to be the case. This is not a foregone conclusion, but rather, a call to action. By both asserting and acting on the importance of structural-level factors in preventing HIV, the CDC has the potential to enable large-scale change that will improve structural inequities that contribute to many health disparities, including HIV.

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