



# HIV/AIDS Epidemic in the South Reaches Crisis Proportions in Last Decade

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## Executive Summary:

Surveillance data from the Centers for Disease Control and Prevention (CDC)<sup>1</sup> regarding HIV and AIDS in the United States indicate a significant and disproportionate impact of HIV on the Southern United States.<sup>i</sup> These data indicate both a greater impact in Southern states in terms of the proportion of the population affected in the region as well as a disproportionate share of the overall number of individuals with HIV in the US.

The following 2009 data from the CDC provide evidence of the disproportionate burden of new HIV infections (which include all new infections reported regardless of stage of HIV disease) and of new AIDS diagnoses in the South:

- The rate of new HIV infections per 100,000 population was the highest in the Southern US, indicating that this region had the greatest proportion of residents testing positive for HIV in 2009.<sup>2</sup>
- Eight of the 10 US states with the highest rates of new HIV infections were located in the South.<sup>2</sup>
- Half of newly reported HIV infections were in the South although the South accounted for only 37% of the US population.<sup>2, 3</sup>
- The South accounted for nearly half (46%) of new **AIDS** diagnoses and the AIDS diagnosis rate in the Southern region was only second to the AIDS diagnosis rate in the Northeast region. An AIDS diagnosis indicates progression of HIV and is uniformly determined either by a lab test such as a CD4 test or by having certain AIDS defining medical conditions.<sup>1</sup>
- Eight of the 10 US states with the highest rates of new AIDS diagnoses were in the South.<sup>1</sup>

Data from the CDC regarding number and rates of people living with HIV at year end 2008 (also referred to as HIV prevalence) provide evidence of the disproportionate effect of the disease in the US South<sup>1</sup>:

- HIV prevalence data indicate that 43% of people living with HIV in the US reside in the Southern region.<sup>4</sup>
- The Southern region has the second highest HIV prevalence rate per 100,000 population.<sup>4</sup> The Northeastern region continues to have the highest HIV prevalence rate primarily due to the high prevalence rates in New York and New Jersey - states where the epidemic began and where people have been living with the disease for long periods of time.
- **AIDS** prevalence is also high in many Southern states, as Southern states/District of Columbia represent 6 of the 10 areas with the highest AIDS prevalence rates.<sup>5</sup>

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<sup>i</sup> The Census Bureau defines the Southern US as consisting of Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Kentucky, Maryland, Mississippi, Oklahoma, North Carolina, South Carolina, Tennessee, Texas, Virginia, West Virginia, and the District of Columbia

### Targeted Southern states:

A group of Southern states has been particularly affected by the HIV epidemic in recent years and shares common characteristics such as overall poorer health, high poverty rates, and a cultural climate that likely contributes to the spread of HIV and poor health outcomes for those infected. For the purpose of this report, these states are referred to as the “targeted states” and include Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and East Texas. The CDC HIV surveillance statistics for the targeted states are particularly striking<sup>1</sup>:

- The targeted states have the highest rates of new HIV infections compared to other regions of the country and to the rest of the Southern US.<sup>2</sup>
- 8 out of 10 states with the highest rates of new HIV infections are targeted Southern states.<sup>2</sup>
- 35% of new HIV infections were in the targeted states, which contain only 22% of the US population.<sup>3</sup>
- Six of the 10 states with the highest HIV prevalence rates are targeted Southern states.<sup>4</sup>
- The targeted Southern states lead the nation in new AIDS diagnosis rates followed by the Northeast region and then the rest of the Southern states.<sup>1</sup>
- CDC data regarding metropolitan areas indicate that 9 of the 10 metropolitan areas with the highest rates of new HIV infections are in the targeted Southern states. Nine of the 10 metropolitan areas with the highest **prevalence** rates per 100,000 were also in the targeted region.<sup>6</sup>

### HIV Disease Outcomes:

Data gathered by the CDC and other data sources indicate that the Southern US has the highest HIV-related death rates and the highest level of HIV morbidity.

- The Southern states account for 8 of the 10 states with the highest HIV death rates<sup>i</sup> (deaths per 100,000 population). All nine targeted Southern states are among the 15 states with the highest death rates.<sup>7</sup>
- When HIV case fatality rates were examined (defined as the number of HIV-related deaths among those who are HIV-positive), results indicate that 9 of the 10 states<sup>ii</sup> with the highest case fatality rates were in the South; eight of these states were targeted Southern states.<sup>8</sup>

In addition, a study of morbidity among HIV-positive individuals found that individuals with HIV residing in the Southern US were significantly more likely to experience greater than one HIV-related medical event during the study period. They were also significantly less likely to have started antiretroviral therapy in comparison to individuals with HIV living in other geographic regions.<sup>9</sup>

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<sup>i</sup> 10 states did not have CDC death rate information available AK, NH, ME, ID, IA, MT, SD, ND, VT, WY

<sup>ii</sup> Includes all of Texas rather than just East Texas, as county level data was not available for HIV death rates.

**Factors that may contribute to the impact of HIV in the South:**

*General Health Status:* The Southern US has some of the worst overall health rankings in the US, as 9 of the 10 states with the worst health ratings are in the South.<sup>10</sup> The Southern region is also disproportionately affected by sexually transmitted diseases (STDs). For instance in 2009, 9 of the 10 states with the highest syphilis rates were in the South and 7 of these states are targeted states.<sup>11</sup> The high levels of STDs in the targeted states offer some explanation for the higher incidence of HIV in this region, as STDs have been consistently found to facilitate HIV transmission.<sup>12</sup>

*Poverty:* The South and particularly the targeted states have some of the highest levels of poverty in the US. Nine of the 10 states with the lowest median incomes are located in the South<sup>13</sup> and 6 of the 10 states with the highest poverty levels are located in the South.<sup>14</sup> Half of these states are in the target states including Mississippi, which has the highest poverty level (28%) in the US. Poverty is associated with poorer health due to factors such as lack of adequate health care access and lower levels of education.<sup>15</sup> Poorer health in turn leads to greater difficulty escaping poverty, creating a vicious cycle of poverty, lower levels of education, and poorer health. There is increasing evidence that HIV is concentrated in low-income communities, particularly in the South, and states with the lowest incomes have the greatest HIV case fatality rates (HIV-related deaths among people with HIV).<sup>16</sup>

High levels of poverty and disease also result in greater difficulty for Southern states to adequately respond to the health care and resource needs of their citizens. Examination of Medicaid spending for HIV care revealed that Southern states cover fewer individuals with HIV and pay less per individual with HIV than the national average, in addition to having the most restrictive Medicaid eligibility criteria and providing fewer Medicaid benefits than other regions in the country.<sup>17-19</sup>

*Race/Ethnicity and Gender Issues:* African Americans are disproportionately affected by HIV in the US in general and particularly in the South, where the majority of African Americans reside.<sup>20</sup> African Americans are disproportionately represented in low-income communities in the US South, having a poverty rate twice that of White individuals.<sup>21</sup> This phenomenon offers some explanation for the greater impact of HIV on this population. However, research has consistently demonstrated a link between African American race and poorer health access even after controlling for income and health insurance status.<sup>22, 23</sup> A number of potential explanations for this phenomenon among African Americans have been identified, including a large proportion of African Americans with unstable housing and higher rates of incarceration among African Americans, HIV-related stigma issues, lack of trust in the government and health care systems and perceived racial discrimination in health care.<sup>24-26</sup> In addition, African Americans are more likely to report that homosexuality is morally wrong (64% vs. 48% among Caucasian Americans), possibly creating the need for different types of interventions that would be effective for African American men who have sex with men.<sup>27</sup>

The proportion of new HIV infections occurring among women is highest in the South and Northeast and African-American women are particularly affected in the South, as the majority of new HIV diagnoses (71%) among women in this region were among African-American women.<sup>28</sup> African-American women are more likely to report heterosexual HIV transmission than white women.<sup>29</sup>

The disproportionate effect of HIV in minority communities in the South is not limited to African-Americans, as Hispanics/Latinos are also strongly impacted in this region. Half of the new HIV diagnoses among Hispanics/Latinos occurred in the Southern US (among 37 states with CDC estimated HIV infection data) and 6 of the 10 states with the highest HIV infection rate among Hispanics/Latinos from 2006-2009 were in the South.<sup>28, 30</sup>

*State Geography and Culture:* The cultural conservatism in the South, particularly among the targeted states likely plays a role in perceptions and experiences of stigma among people living with HIV in this region.<sup>31</sup> Stigma has been shown to have negative effects on preventive behaviors and health outcomes.<sup>32-36</sup> HIV-related stigma has been found to be greater in rural areas.<sup>32, 37</sup> Rural areas also have additional challenges in addressing HIV due to prolonged travel to access care, lack of financial resources and insufficient supply of HIV care providers.<sup>37-40</sup> The South has the highest number of individuals with HIV living in rural areas so these issues are particularly salient in this region.<sup>41</sup> Some of the Southern laws and policies, especially among targeted states, have also been implicated in fostering the spread of HIV in the South. For example, most targeted states have abstinence-based sex education or lack of sex education in general, which fails to prepare teens to protect themselves from HIV and STD transmission.<sup>31</sup> In addition, laws that criminalize HIV-related behaviors and prohibit needle exchange are common in the South. These laws further marginalize populations at extremely high risk for acquiring HIV, such as sex workers and injecting drug users, and can discourage affected individuals from HIV testing and treatment.<sup>31</sup>

### **Conclusions:**

HIV epidemiological and outcomes data clearly demonstrate a disproportionate effect of HIV disease in the Southern US. These effects are particularly acute among the targeted states, which also have disproportionate rates of other diseases and poverty. Characteristics such as high poverty levels, lack of adequate insurance, HIV-related stigma and the culture of conservatism in the South provide some explanation for the greater impact of HIV in this region. These economic and social factors are all interrelated, each affecting one another, and all contribute to the disproportionate share of HIV found in the US South.

This report documents the epidemiology and outcomes of HIV disease in the South and the targeted Southern states, presents data on financing of HIV care and discusses the factors that contribute to HIV in the South. This information is critical in identifying the nature of the epidemic in the South and devising strategies to address the crisis of HIV disease in this region.

*Research Team:* The research team in Duke's Center for Health Policy and Inequalities Research, within the Duke Global Health Institute, is being led by long-term researchers in the HIV epidemic in the Deep South, Drs. Susan Reif and Kathryn Whetten with support from Elena Wilson, Andrew Goodall, Wenfeng (Winston) Gong, and Sara LeGrand.

## **Introduction:**

The Southern region of the United States is known for its hospitality and rich Southern culture.<sup>42-44</sup> The South<sup>i</sup> is also known for having the worst health in the nation on many health indicators including high rates of diseases such as heart disease and diabetes.<sup>17</sup> Nine of the ten states with the lowest overall health rankings are located in the Southern US.<sup>10</sup> HIV disease is no exception to the poorer health found in the South. Although the HIV epidemic in the United States was initially concentrated in New York City and other large urban areas, over the last two decades, the Southern region has experienced substantial increases in new HIV/AIDS cases while the overall US rate has remained more stable.<sup>45</sup>

A subset of Southern states are particularly affected by HIV disease and share characteristics such as overall poorer health, high poverty rates, an insufficient supply of medical care providers and a cultural climate that likely contributes to the spread of HIV.<sup>17, 45</sup> These states include Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee and East Texas. Henceforth these states will be referred to as the “targeted states.” The targeted states also share a similar heritage that includes slavery, strong rural and agrarian elements and an agricultural and economic base in cotton.<sup>46</sup> HIV and other STDs disproportionately affect individuals in the targeted states and the states share similarities in HIV-related outcomes.<sup>8</sup> Failure to adequately address HIV in the South has serious consequences for affected individuals and their communities. The cost of each new HIV infection averted has been estimated at approximately \$303,000 (2004 dollars).<sup>47</sup> This figure does not include additional costs associated with loss of productivity and the possibility of further transmission of HIV disease.

This report describes the HIV epidemic in the Southern United States with a focus on the targeted states. The report will also present information about financing for HIV care and discuss factors that contribute to the disproportionate representation of HIV in the South. The report will use the Census Bureau definition for the South.<sup>i</sup> Documenting the HIV epidemic and describing factors that contribute to the disproportionate effects of the disease on the Southern region is critical to creating strategies to address the situation.

## **HIV Epidemiology**

### New HIV/AIDS Infections

Documenting new infections of HIV is important to track the current trends of the epidemic. In 2009, data from the Centers for Disease Control and Prevention (CDC) indicate that half of new HIV infections reported (includes any new HIV diagnoses regardless of stage of HIV disease) were located in the Southern US while the Southern region accounts for only 37% of the US population (Table 1).<sup>1, 3</sup> Eight of the ten states with the highest rates of HIV infections per 100,000 population were in the South (Figure 1).<sup>1</sup> All of these states are targeted Southern states (FL, GA, LA, MS, TX, SC, NC, TN). The HIV infection rate in Eastern

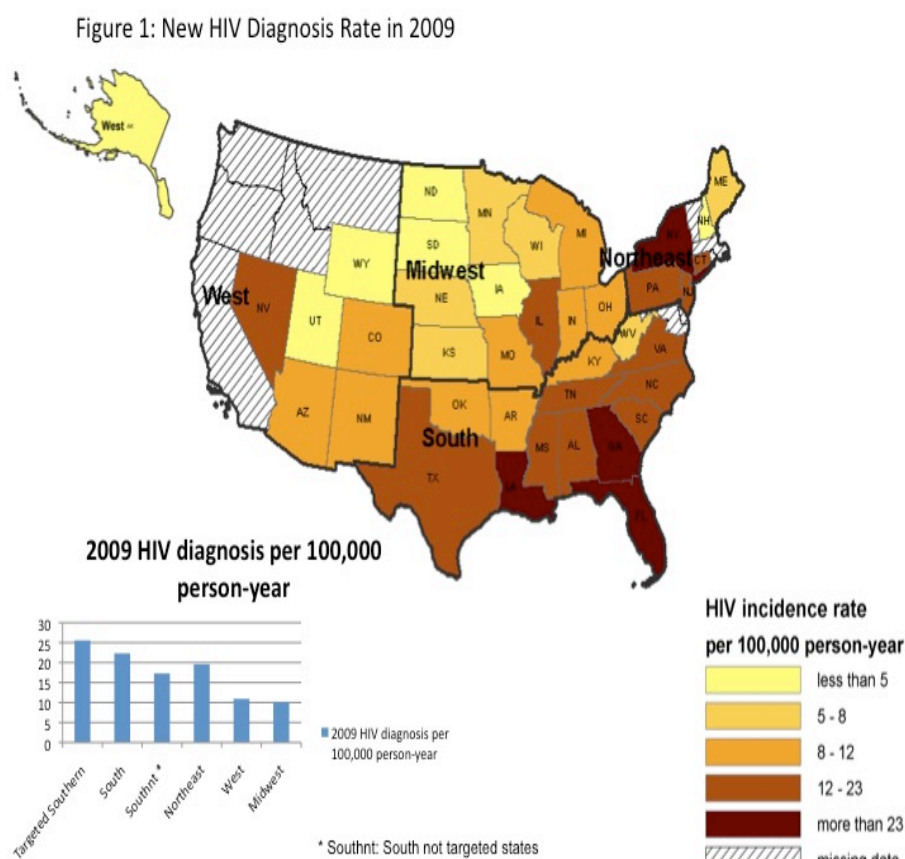
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<sup>i</sup> The Census Bureau defines the South as including Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, North Carolina, South Carolina, Tennessee, Texas, Virginia, West Virginia

Texas (21/100,000) was higher than that of Western Texas (17.7).<sup>48</sup> The challenges and barriers to access to HIV/AIDS prevention, care, and treatment in East Texas differ from the challenges in other (particularly urban) areas of the state. Stigma, access to transportation, and access to experienced HIV/AIDS providers, for example, are significant challenges in East Texas.<sup>49, 50</sup>

When the states are grouped by US Census Bureau region<sup>i</sup>, the South has the highest rate of new HIV cases per 100,000 population, followed by the Northeast (19.6/100,000).<sup>51</sup> The new HIV infection rate in the South (22.3/100,000) was more than double the rate found in the West (10.9/100,000) and Midwest (10.0/100,000).<sup>1</sup> When the targeted states are added as a regional category, this region had the highest new HIV infection rate (25.9/100,000). Thirty-five percent of new HIV infections were in the targeted states while this region only accounts for 22% of the US population.<sup>1, 3</sup>

The Centers for Disease Control and Prevention (CDC) also publishes data regarding new HIV infections diagnosed in metropolitan areas. Data from 2009 indicate that 9 of the 10 metropolitan areas with the highest HIV infection rates were in the Southern US, all within the targeted states (Appendix Figure 1).<sup>1</sup> Metropolitan areas in the South are not the only areas affected by HIV, as the South has more than double the rate of individuals living with AIDS in rural and small cities as the other geographic regions combined.<sup>41</sup>



<sup>i</sup> Ten states and DC (CA, DE, HI, MD, MA, MT, OR, RI, VT and WA) do not have CDC adjusted estimates for new HIV diagnoses due to shorter time since initiation of confidential reporting. For regional estimates, the raw number of cases is used for these states.

The CDC also tracks new diagnoses of AIDS. Individuals with HIV are classified as having an AIDS diagnosis if their HIV disease has progressed to the point of meeting certain diagnostic criteria set by the Centers for Disease Control.<sup>52</sup> An AIDS diagnosis is determined either by a lab test such as a CD4 test or if specific AIDS defining medical conditions are present.<sup>52</sup> When newly diagnosed cases of **AIDS** in 2009 were examined, there were a disproportionate number of these diagnoses occurring in the Southern region (Appendix Figure 2). The South accounts for 46% of new AIDS diagnoses and the AIDS diagnosis rate is second only to the Northeast region.<sup>1</sup> The rate of new AIDS diagnoses in the targeted states

Table 1: HIV Epidemiology

	HIV infection rate* 2009 (regardless of disease stage)	AIDS infection rate 2009	HIV prevalence rate** year end 2008	AIDS prevalence rate*** year end 2008
South	22.3	13.9	363.8	177.0
Northeast	19.6	14.8	501.9	302.9
Midwest	10.1	6.6	181.0	94.0
West	10.9	8.2	270.7	164.6
Targeted States	25.6	15.8	407.1	212.0
US	16.7	11.2	323.4	190.9
Alabama	16.7	5.0	266.5	112.0
Arkansas	10.2	6.8	211.1	102.2
Delaware <sup>^</sup>		18.0		252.8
District of Columbia <sup>^</sup>		119.8		1865.1
Florida	33.0	23.7	586.2	327.8
Georgia	32.9	14.1	450.0	255.2
Kentucky	9.1	5.3	123.7	74.6
Louisiana	28.8	19.4	444.3	234.4
Maryland <sup>^</sup>		19.9		363.3
Mississippi	21.3	13.1	324.9	143.5
North Carolina	19.7	11.6	294.0	118.5
Oklahoma	10.9	5.5	158.8	82.1
South Carolina	19.9	15.6	367.1	197.8
Tennessee	17.2	11.1	281.0	140.0
East Texas	21.0	13.8	300.7	184.5 (all of TX)
Virginia	17.2	8.3	316.4	145.1
West Virginia	5.1	4.8	91.9	532.8

<sup>^</sup>HIV infection and prevalence rate data is not available for these states in CDC publications

\*For the states without CDC estimated new HIV infections, the raw number of infections reported was included in regional calculations

\*\* For the states without CDC estimated new HIV prevalence, the raw prevalence numbers reported was included in regional calculations. Data is for adolescents and adults only.

\*\*\* Data is for adolescents and adults only.

(16.0) is slightly higher than that of the Northeast (14.8) and the targeted states accounted for over one-third (36%) of new AIDS diagnoses in 2009, while only containing 22% of the US population.<sup>3</sup> Five of the targeted states (FL, GA, LA, MS, SC) are among the 10 states with



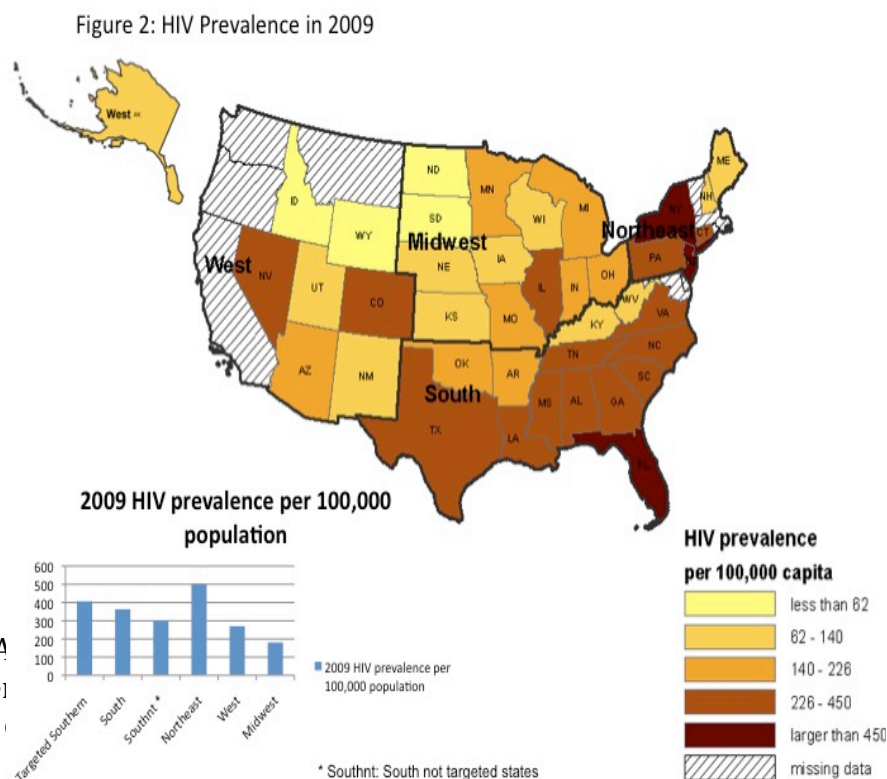
the highest AIDS diagnosis rates in 2009. The high rates of new cases of AIDS are disturbing because once HIV disease has progressed to AIDS it is more difficult to treat and individuals with AIDS are more infectious because they have higher levels of the virus.<sup>53</sup>

Although the CDC surveillance data on new HIV infections provides critical information regarding trends in occurrence of HIV disease, they are limited by the fact that people have to be tested for HIV in order to be included in the surveillance data. It is clear from previous research that a significant proportion of HIV-infected individuals have not been tested for the disease.<sup>54</sup> Research is emerging that estimates HIV incidence, which is the actual occurrence of disease, using sophisticated statistical methods. The data needed to estimate incidence is only available in a subset of states, limiting researchers' ability to make regional comparisons at the present time. HIV incidence estimates indicate that although HIV incidence was relatively stable in the US from 2006-2009, HIV incidence has increased among young men who have sex with men (MSM), particularly African-American MSM.<sup>55</sup> The prevalence of HIV among African-American MSM is high in the South, as a recent study estimated that 1 in 5 African-American MSM in the South are living with HIV.<sup>56</sup> However, research that examines incidence of HIV infection among young African-American MSM by region is needed to assess whether the South has a disproportionate rate of young African-American MSM being infected in comparison to other areas.

### People Living with HIV/AIDS

Documenting the numbers of people currently living with HIV disease, also referred to as HIV prevalence, is critical for tracking the epidemic and making policy decisions regarding allocation of resources. CDC HIV prevalence data from year end 2008 indicate that 43% of people diagnosed with HIV live in the Southern US while the South comprises only 37% of the population (Figure 3).<sup>1,2</sup> Among the 40 states with CDC estimated HIV prevalence rates available, Southern states account for 7 of the 10 states with the highest rates of people living with HIV in the US (FL, GA, LA, MS, SC, East TX, and VA). All but one of these high prevalence states is a targeted state. The Northeastern region continues to have the highest HIV prevalence rates (501/100,000 population) primarily due to the high prevalence rates in New York and New Jersey, areas where the epidemic began and where people have been living with the disease for long periods of time.<sup>i</sup> The targeted states have the second highest HIV prevalence rates in the country

<sup>i</sup> Ten states and DC (CA, HI, DE, MD, MA estimates for prevalence due to shorter regional estimates, the raw number of



(407/100,000 population), followed by the South excluding the targeted states (301/100,000 population), the West (271/100,000 population) and the Midwest (181/100,000 population.) CDC data from 2009 on HIV prevalence in metropolitan statistical areas reveal disproportionate HIV prevalence rates in the targeted states, as 9 of the 10 metropolitan cities with the highest rates are in targeted states (See Appendix Figure 3).<sup>1</sup>

**AIDS** prevalence is also high in many Southern states, as Southern states/DC represent 6 of the 10 areas with the highest AIDS prevalence rates (DC, MD, FL, GA, DE, LA).<sup>1</sup> Three of these states are targeted states. The Northeastern region leads the nation in AIDS prevalence, while the Southern region has the next highest prevalence rate,<sup>i</sup> with 40% of individuals with AIDS in the US living in the South (Appendix Figure 4).

#### Characteristics of Individuals Diagnosed with HIV<sup>i</sup>

*Race/Ethnicity:* In 2008, African American men and women in the United States were diagnosed at 8 and 19 times the rates of white males and females and 2 and 4 times the rates of Hispanic/Latino men and women, respectively.<sup>28</sup> CDC data indicate that HIV diagnoses among African American men increased each year between 2005 and 2008. African Americans are disproportionally represented among new HIV diagnoses (2005-2008) in the South, as 50% of men and 71% of women diagnosed with HIV in the South were African American. In 2009, the largest proportion of African American individuals living with HIV was in the Southern region (56.7%) followed closely by the targeted states (54.3%).<sup>1, 28</sup>

In the South, the majority of new **AIDS** cases (60%) were among African Americans in 2009.<sup>1</sup> A majority (57%) of African Americans diagnosed with AIDS in the US resided in the Southern region and the South has the highest AIDS diagnosis rate among African-Americans of any region.<sup>1</sup>

Nationally, Hispanics/Latinos accounted for 13.4% of the population and 18% of diagnoses of HIV infection from 2005-2008.<sup>28</sup> Half of the new HIV diagnoses among Hispanics/Latinos occurred in the Southern US (among 37 states with CDC estimated HIV infection data). In the South, 15% of individuals newly diagnosed with HIV during this period were Hispanic/Latino.<sup>28</sup> Both the Northeast and West had a higher proportion of new HIV infections occurring among Latinos between 2005-2008 than the South. However, 6 of the 10 states with the highest HIV infection rate among Hispanics/Latinos from 2006-2009 were in the South (5 of them targeted states)<sup>i</sup> and Hispanics/Latinos are an increasing demographic in the South, where they represent the highest population increase during the last decade in 6 of the 9 targeted states.<sup>30, 57</sup> With the increasing number of Hispanics/Latinos in the targeted states, a greater focus is needed to address the HIV prevention and care needs of this community. An association between Hispanic/Latino ethnicity and having HIV diagnosed at a later stage of disease progression has been identified.<sup>58</sup> Late testing among Hispanics/Latinos may lead to poorer health outcomes and greater possibility of HIV transmission and may be due to barriers often experienced by Hispanics/Latinos including lack of health insurance and access to health care, stigma, language barriers and legality concerns.<sup>59</sup>

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<sup>i</sup> The entire state of Texas is used for the targeted state calculations

*Gender:* In 2009, CDC surveillance data indicated that nearly one-quarter of new HIV infections (24%) were among women.<sup>1</sup> State level data was obtained to examine trends in gender by region.<sup>ii</sup> The regions with the highest proportion of new HIV infections among women were the South (25%) and Northeast regions (27%). The Northeast and South also have the highest HIV infection rates among women, with Washington DC reporting the highest infection rate among women in the US.<sup>60</sup> The proportion of women among new HIV infections in the targeted states was also 25%.<sup>61</sup> With the exception of South Carolina, all of the targeted states reported a higher proportion of women among new HIV infections than US average.<sup>1</sup> African American women are particularly affected by HIV in the South, as the majority of new HIV diagnoses (71%) among women in the South between 2005-2008 were among African-American women.<sup>28</sup> Nonwhite women have been found to be less likely than men and white women to start antiretroviral therapy (ART).<sup>62</sup>

*Mode of HIV Acquisition:* Of new HIV infections in 2009 nationally, 61% were attributed to male-to-male sexual contact (MSM), 27% to heterosexual contact, 9% to injection drug use (IDU), and 3% to male-to-male sexual contact and injection drug use (MSM/IDU).<sup>10,63</sup> HIV surveillance data indicate that heterosexual transmission has increased as a mode of HIV acquisition in recent years.<sup>1</sup> In the targeted states, mode of HIV acquisition in 2009 followed a breakdown proportional to the national figures, with MSM the largest category for HIV transmission (49%), followed by heterosexual contact (27%), IDU (5%), and MSM/IDU (2%).<sup>48, 64-71</sup> Although heterosexual contact accounted for 27% of new infections in the targeted states as a whole, the percentage of HIV acquisition by heterosexual transmission was as high as 40% (Florida) in some states. It is difficult to analyze trends in mode of transmission for the targeted states and make comparisons to the national averages using state level surveillance data due to the large portion of infections that cite unknown or no risk, accounting for 16% of new HIV infections in the region, and significantly larger portions of individual states' transmission breakdowns (54% in GA).

Women were most often infected through heterosexual sex (85%) in 2009.<sup>1</sup> Fifteen percent of women were infected through injection drug use (15%). Heterosexual transmission is higher among African American women and Latinas compared to white women.<sup>29</sup> There are also differences by race/ethnicity in mode of transmission for men. While the majority of new infections among men are through male-to-male sexual contact (MSM), white men are more likely to be infected through MSM (85%) than Latino men (74%) or African American men (68%). Conversely, Hispanic/Latino and African American men are more likely to be infected through injection drug use (IDU), at 10% and 9% of infections respectively, and heterosexual contact, at 20% and 13% respectively, than white men, for whom 4% of new infections are through IDU and 5% through heterosexual transmission.<sup>10</sup> The high levels of heterosexual transmission among women, particularly African-American women, and men make the issue of heterosexual transmission particularly relevant in the Southern states.

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<sup>ii</sup> 3 states were missing gender data (HI, IL, NV) and 10 others had only surveillance data from the year(s) before or after the year of interest (2009). This data was substituted for 2009 in the gender calculations.

*Rural HIV:* A majority (64%) of individuals with AIDS living in rural areas reside in the South.<sup>41</sup> Nationally, 8.9% of new HIV infections were among individuals living in rural areas in the 40 states with CDC estimated information on HIV diagnoses in 2009.<sup>41</sup> For diagnoses of AIDS, CDC data on all 50 states indicates that 7.1% of AIDS diagnoses were among individuals living in rural areas in 2009. The proportion of new AIDS diagnoses in rural areas is higher in the South at 9%.<sup>41</sup>

Among the targeted states, 11% of new HIV infections were among rural living individuals. However, the variability between targeted states is great, with only 3% of new HIV infections occurring in rural areas in Florida and 43% of new infections occurring in rural areas of Mississippi (Table 2).<sup>48, 64-71</sup>

## HIV/AIDS Related Outcomes:<sup>i</sup>

### *Mortality and Morbidity:*

Data from 2007 on the number of age-adjusted deaths of HIV-positive individuals per 100,000 population indicate that the Southern states have some of the worst death rates of the 40 states with available data (Figure 3).<sup>17</sup> Southern states account for 8 of the 10

states with the highest death rates along with New York and New Jersey. All 9 targeted states are among the 15 states with the highest HIV-related death rates in the country.<sup>17</sup>

Hanna and Colleagues (2011), calculated the 2001-2007 HIV case fatality rates for the 37 states with mature HIV reporting systems during this period.<sup>8</sup> They defined HIV case fatality rates as the number of deaths due to HIV during the study period among individuals with HIV disease. This definition differs from the conventional death rate calculations described above, which include both HIV-infected and uninfected individuals in the denominator to describe HIV mortality in a population overall. Study findings indicated that 9 of the 10 states with the highest case fatality rates were in the South, including 8 targeted states.<sup>8</sup> Louisiana and Mississippi had the highest case fatality rates, which were double that of Connecticut and 1.5 times that of New York. Hanna and Colleagues compared the HIV case fatality rates to the conventional HIV death rates (deaths per 100,000 population) and found that some states, such as New York, had substantially lower case fatality rates than their conventional death rates. The study authors state that these findings suggest that these states' higher HIV prevalence rates likely influenced their conventional death rates while their lower HIV case fatality rates may indicate good secondary and tertiary HIV prevention, potentially due to factors such as earlier entry into care, better adherence or better quality of care than found in other states.<sup>8</sup> In contrast, the targeted states had high HIV

Table 2: New HIV infections and Prevalence in Rural Areas, 2010

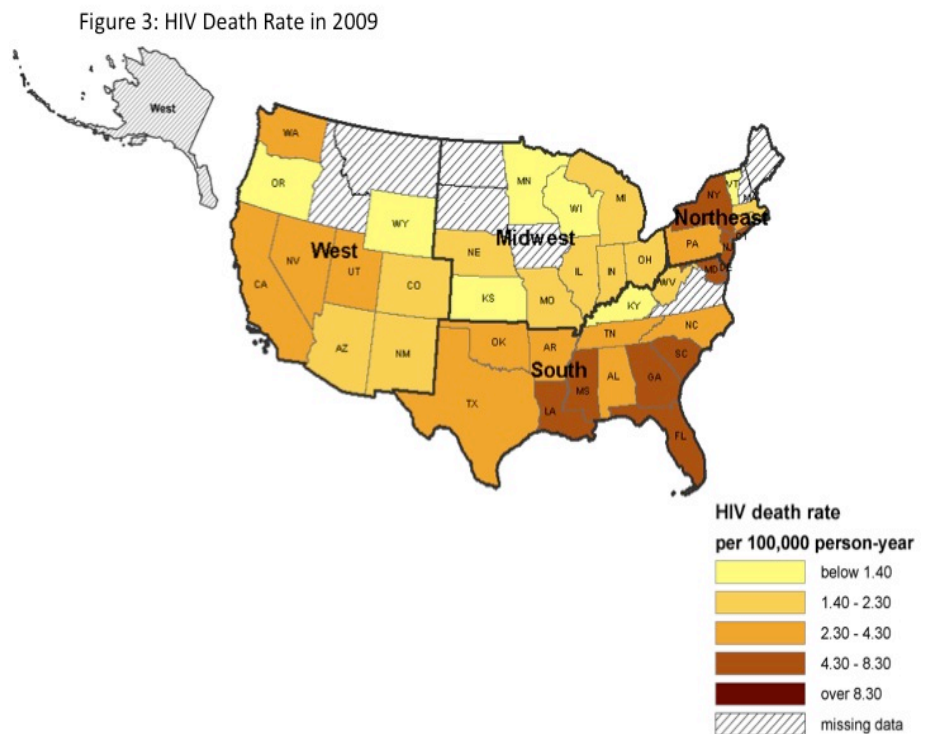
State	Incidence (rural/overall, %)	Living cases (rural/overall, %)
Total	10.2	10.1
Alabama	19.0	data not available
Florida	2.8	7.1
Georgia	10.7	10.8
Louisiana	15.8	14.2
Mississippi	42.9	42.5
North Carolina	19.9	21.2
South Carolina	23.5	data not available
Tennessee	10.7	8.4
Texas	5.6	4.5

<sup>i</sup> The entire state of Texas is used for the targeted Southern state calculations.

conventional death rates as well as high HIV case fatality rates. Non-Hispanic Black race and older age were associated with fatality among individuals with HIV.

A recently published longitudinal study examined morbidity among a cohort of 2277 HIV-positive individuals.<sup>9</sup> Study results indicated that individuals residing in the Southern US were significantly more likely to experience greater than one HIV-related medical event during the study period in comparison to other geographic areas, even after controlling for IDU and use of antiretroviral therapy. Nonwhite individuals in the South were more likely to have greater than one HIV-

related medical event than whites in the South. Whites from the South also experienced higher rates of events than did whites ( $P < .001$ ) and nonwhites ( $P < .001$ ) from the other US regions. Study participants from the South were also less likely to have started antiretroviral therapy than those from other regions regardless of race.<sup>9</sup>



*Late Diagnoses and Delayed Entry into HIV Medical Care:* A late HIV diagnosis has been defined as receiving an AIDS diagnosis within a year of being diagnosed with HIV.<sup>72</sup> Late diagnosis is associated with greater risk for HIV-related mortality and morbidity and higher costs.<sup>73</sup> CDC data from 2008 identified that one-third of HIV diagnoses in the United States were late diagnoses.<sup>74</sup> Four of the Southern states were among the ten states with the highest proportion of late diagnoses (SC, WV, OK, KY), but most Southern states were similar to the national average for late HIV diagnoses.

The data on late diagnoses appear to indicate that for most of the Southern region, late diagnosis of HIV follows a pattern similar to what is observed nationally. However, because newly diagnosed individuals are not followed after their HIV diagnosis, it is possible that detection of late diagnoses may be influenced by whether newly diagnosed individuals access medical care within a year to determine whether their HIV has progressed to AIDS. Delayed entry into medical care may be particularly problematic in the South due to barriers such as shortages of health care professionals and high levels of uninsured individuals.<sup>17</sup> A study that examined delayed initiation into HIV care in a targeted state found that 41% of patients at an HIV primary care clinic first engaged in HIV care only after they had progressed to AIDS. A North Carolina study used CD4 laboratory tests to determine late diagnosis rather than the standard definition of being diagnosed with AIDS within a year of a HIV diagnosis and identified a higher proportion of individuals receiving a late



diagnosis than that identified in the CDC data,<sup>75, 76</sup> as nearly half (49%) of individuals presenting for their initial HIV medical care visit with newly diagnosed HIV disease had a CD4 count less than 200, indicating a late diagnosis.<sup>76</sup>

### **Financing of HIV Care<sup>i</sup>**

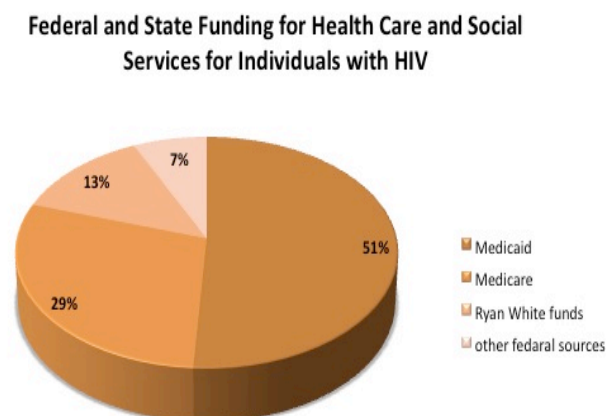
Health care and social services for individuals with HIV are funded through various funding streams including the Ryan White Program, Medicaid, Medicare and other federal funding sources such as the Substance Abuse and Mental Health Services Administration (SAMHSA), Veterans Affairs and the Office of Minority Health (Figure 4). In 2011, federal and state funding for Medicaid accounted for just over half (51%) of spending for HIV medical care, followed by Medicare (29%), Ryan White funds (13%) and other federal sources (7%).<sup>18</sup> Examining how these funding sources are distributed across states is critical to determine factors that contribute to variability in HIV occurrence and outcomes by state and region.

#### Ryan White Program and Other HIV-related Federally Funded Programs

The Ryan White Program provides medical care and support services to individuals living with HIV and acts as the “payer of last resort” by providing services for those who have no other insurance coverage or face limitations on their health care coverage and meet the financial qualifications of the Ryan White Program in their geographic area.<sup>18</sup> Ryan White funding is allocated through several “Parts” including Part A, which provides direct funding to eligible metropolitan areas and Part B, which provides funding for states and the AIDS Drug Assistance Program (ADAP).

Estimates from the Health Resources and Services Administration (HRSA), which administers the Ryan White Program, reveal that most Ryan White Program clients are low-income and the majority (72%) are African American.<sup>77</sup> Reports from the General Accounting Office (GAO) and Institute of Medicine (IOM) in 2005 and 2004 respectively<sup>78, 79</sup> indicated a trend for Southern states to receive less Ryan White funding per AIDS case than other states, particularly in the Deep South (AL, GA, LA, MS, NC, SC). For example, in 2004 on average, the Deep South states received

Figure 4: Federal and State Funding for Health Care and Social Services for Individuals with HIV



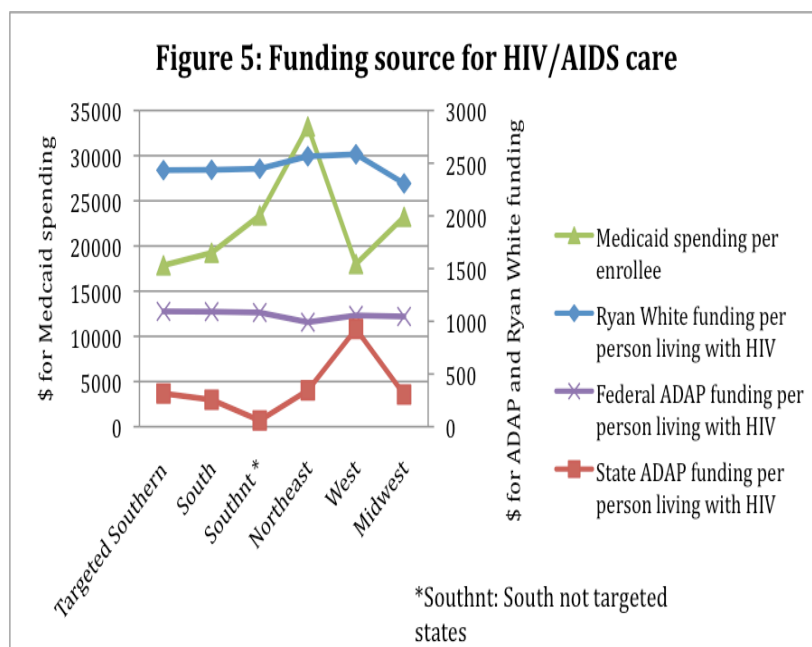
<sup>i</sup> The entire state of Texas is used for the targeted Southern state calculations.

\$3,990 per AIDS case, the remaining Southern states received \$4,258, and the U.S. average without the Deep South states was \$4,529.<sup>80</sup> Since the GAO and IOM reports were released, the Ryan White Program was reauthorized and changes were made to the allocation formulas. Some of these changes were advantageous to the Southern states, such as including those living with HIV in the case counts that the funding allocations are based on rather than just including those living with AIDS.

We calculated the level of 2009 Ryan White funding<sup>i</sup> per person estimated to be living with HIV by state and region to examine whether funding inequities remain in the South. These data indicate that only two Southern states, Arkansas and Virginia, were among the 10 states receiving the least funding per person living with HIV. However, eleven of the 17 Southern states had funding levels less than the Ryan White per capita average, four of them were targeted Southern states.<sup>81</sup> When funding per case was examined regionally, the Southern region had an average of \$2,437 (\$2,434 for the targeted states), which was less than the US average of \$2,519 without the Southern states (Table 3).<sup>81</sup>

Examination of CDC funding for HIV in 2009 revealed that the South and targeted Southern states received less HIV-related funding per individual living with HIV from the CDC than the national average (South \$547 per person; targeted states \$489 per person; US average \$619 per person).<sup>82</sup> The South receives only slightly less HIV-related funding per person living with HIV from SAMHSA, (South \$116 per person; targeted states \$123 per person; US average \$151 per person).<sup>82</sup> For the federal HIV housing funds, Housing Opportunities for Persons with AIDS (HOPWA), the South/targeted states receive virtually the same level of funding per person living with HIV as the national average for HOPWA allocations (South \$321 per person; targeted states \$314 per person and national average \$318 per person).<sup>82</sup>

*AIDS Drug Assistance Program (ADAP).* The ADAP program is funded through the Ryan White Care Act and also receives funding from many of the state governments to provide assistance to low-income individuals living with HIV to obtain prescription medications. Using figures for federal ADAP funds (Part B, Part A, and ADAP Emergency Funding) documented in a National Alliance of State and Territorial AIDS Directors (NASTAD) report, we found that in 2010 the Southern region received comparable federal ADAP funding per individual living with HIV (\$1091) to the US average (\$1052).<sup>83, 84</sup> The federal ADAP



<sup>i</sup> Includes funding for Ryan White Parts A-F, Dental Partnership Program, AIDS Education and Training Centers (AETC), and Special Projects of National Significance (SPNS)

funding per individual living with HIV in the targeted states (\$1094) was also similar to the US average. However, the South received less **state** ADAP funding per individual living with HIV (\$256) than the national average (\$411), which contributed to the overall differences in ADAP budgets.<sup>84</sup> The targeted states had a higher average state ADAP contribution (\$315) than the Southern states not among the targeted states (\$59); however the targeted states still contributed less ADAP funding per person reported living with HIV than the national average. The range in state ADAP contributions for the targeted states was wide; spanning from no contribution in Louisiana to approximately \$1142 per person living with HIV in North Carolina.<sup>84</sup> The lower state allocation in the Southern states that are not targeted states reflects the fact that 5 of these 8 states (DE, DC, MD, KY, and AR) and DC reported no state contributions to their 2010 ADAP budgets.

Some state ADAPs have waiting lists for individuals to receive ADAP assistance with obtaining medications. Of the 11 states with ADAP waiting lists as of November 2011, seven were in the Southern region and the South accounted for 99.5% of those on ADAP waiting lists.<sup>85</sup> Six of the Southern states with waiting lists were targeted states (AL, FL, GA, LA, MS, NC, SC) and 82% of individuals on ADAP waiting lists nationally reside in the targeted states.

Characteristics of ADAP programs in 2010, such as eligibility criteria and expenditure per beneficiary, were examined to see whether any of these characteristics would provide some explanation for the concentration of waiting lists in the targeted Southern states. However, this examination revealed no substantial differences between the ADAP programs in targeted states and the other states that would contribute to the disproportionate number

Table 3: Financing for HIV Care

Funding Type	Ryan White Funding *^	ADAP-Federal funding only^	ADAP-state funding ^#	ADAP waiting list – (% of total individuals on US ADAP waiting lists)	Medicaid Enrollment (% of HIV population enrolled)	Medicaid Spending (per enrollee)
South	\$2436.9	\$1091.5	\$256.0	99.5%	21.4%	\$19249
Targeted Southern states	\$2433.8	\$1094.1	\$315.0	82.3%	20.8%	\$17861
Southern states not including targeted states	\$2447.3	\$1083.2	\$59.2	17.2%	23.3%	\$23,386
Northeast	\$2565.3	\$991.5	\$344.8	0%	35.3%	\$33,219
Midwest	\$2307.7	\$1045.6	\$305.3	.12%	22.6%	\$23,232
West	\$2584.1	\$1055.9	\$927.6	.39%	20.8%	\$18007
US average	\$2484.3	\$1051.9	\$410.9		25.3%	\$24,867

\*Includes all categories of Ryan White funding

^Spending per individual living with HIV in that state. For the 10 states without estimated CDC HIV prevalence data the raw prevalence data for the state was used. Includes all of Texas. Source: Kaiser State Health Facts

#Includes ADAP funds from Part B Base, Part B ADAP Supplemental, Part B ADAP Earmark, Part A and ADAP Emergency



of waiting lists in this area. For example we found that the Southern states/targeted states tended to spend near or below the national average amount per individual with ADAP coverage so this factor does not appear to influence waiting lists.<sup>86</sup> In addition, the eligibility criteria for the ADAPs were generally less generous in the targeted states, as all targeted Southern states (except MS, which provided no eligibility data) had eligibility levels at 300% or less of the federal poverty level, resulting in fewer individuals with HIV being eligible for ADAP than in other regions of the US.<sup>87</sup> North Carolina had the lowest eligibility of the targeted states, at 125% of the federal poverty level.<sup>88</sup> The ADAP eligibility criteria for non-targeted states ranged from 200-500% of the federal poverty level. In addition, the drug formularies, which are lists of prescription drugs covered by ADAP, for targeted states, on average, had the least amount of drugs included particularly in comparison to the Northeastern region, which had the most generous formularies.<sup>89</sup> Possible contributors to the ADAP waiting lists likely include the lower levels of state ADAP funding for some targeted states and the high levels of poverty in the targeted states, which may contribute to level of need for ADAP coverage.<sup>14</sup>

*Medicaid:* The Kaiser Family Foundation recently released an analysis of state Medicaid spending on HIV care, which included figures for spending and enrollment for each state.<sup>18</sup> An analysis of these data reveal that the Southern region has a lower proportion of individuals with HIV enrolled in Medicaid (21%) than the national average (25%) but comparable enrollment to the West (21%) and Midwest (23%).<sup>18</sup> The Northeast has a substantially higher proportion of individuals with HIV enrolled in Medicaid, as over one-third (35%) of individuals living with HIV in this region are enrolled in Medicaid and also has considerably higher spending per Medicaid enrollee (\$33,220).<sup>18</sup> The targeted states have the lowest spending per enrollee (\$17861), followed by West (\$18007), Midwest (\$23232), and South excluding the targeted states (\$23,386).

Data on state Medicaid eligibility criteria indicate that the US regions are fairly similar on the income amount allowable for a single person who is disabled to be eligible for Medicaid, a category that covers 70% of HIV-positive Medicaid beneficiaries.<sup>17, 90, 91</sup> However, for Medicaid eligibility criteria for parents, 6 of the 10 states with the most restrictive eligibility levels were in the South in 2011.<sup>92</sup> With the exception of South Carolina, the targeted states have Medicaid eligibility criteria for parents that are less than 75% of the federal poverty level. Alabama, Louisiana, and Texas are among the 5 states with the lowest eligibility levels, as their levels are all around 25% of the federal poverty level.<sup>92</sup>

In addition, six of the 17 states that do not have Medicaid medically needy programs are in the South.<sup>93</sup> Medicaid medically needy programs provide Medicaid coverage for individuals with HIV who have an income too high to qualify for Medicaid but who have enough medical bills accrued to meet the eligibility criteria for their state's medically needy program.<sup>94</sup> These programs help to expand coverage for more individuals with HIV, thus assisting in reducing barriers to needed medical treatment. Of the 9 targeted states, 5 have no Medicaid medically needy programs and the remaining 4 targeted states are among the 10 states with the most restrictive income eligibility criteria for the Medicaid medically needy program.<sup>93</sup>

In a 2007 review of state Medicaid programs that ranked states based on eligibility for Medicaid, scope of services, quality of care and reimbursement, the targeted Southern states all fell in the lower half of the ranking, with 4 of the targeted states in the bottom 10 (AL, MS,

SC, TX).<sup>95</sup> However, even targeted states that fared better in the overall rankings had low scores in at least one area of review. For example, Florida, Louisiana and North Carolina ranked in the middle overall, but scored very poorly in scope of services, meaning that even if one qualifies for Medicaid in a state with less stringent eligibility requirements, they still may not be able to receive needed services due to lack of coverage. As the states have authority to determine which services are covered beyond certain mandatory services, there is great variation among the states as to which services are covered and limits to those services.<sup>18</sup> All of the targeted states except Tennessee limit ambulatory care or hospital visits for Medicaid recipients. A number of the targeted states fail to cover services that could be extremely important to individuals with HIV, such as psychologist care (FL, LA, SC), diagnostic screening and preventive services (AL), or substance use and rehabilitative services (LA, TX).<sup>19</sup>

Most concerning to individuals with HIV are restrictions on the number of prescriptions covered by Medicaid. Most targeted states put limits on the number of prescription drugs covered per month, often further restricting brand name drugs, which are necessary for the health of people with HIV as antiretroviral treatment often calls for multiple medicines to be taken daily and many HIV medications are as yet unavailable in their generic forms in the US.<sup>96</sup> Though a few states that are not located in the Southern region have prescription drug restrictions, this limitation is by far the most common in the Southern states, as well as the most restrictive.<sup>19</sup> Every targeted state apart from Florida imposes limits on the number of prescriptions that will be reimbursed each month.<sup>19</sup>

#### HIV Care Financing Summary

The Ryan White funding inequities for the Southern US, particularly the targeted states, detected in the early 2000s appear to have narrowed considerably with the subsequent Ryan White reauthorization in 2006. The estimated gap between the South and the US average without the South in overall Ryan White funding per person living with HIV was just over \$80.<sup>81</sup> It is important to note for this calculation and other related calculations using HIV prevalence that these figures are subject to error, as 10 states do not have CDC estimated prevalence numbers. Therefore the raw numbers of individuals living with HIV (which do not included adjustment for reporting delays) were used for these states. Greater funding inequity was detected for the Southern states for ADAP, as on average, Southern states provided less state ADAP funding.

Medicaid provides the largest proportion of funding for HIV care in the United States.<sup>18</sup> The South provides Medicaid coverage for a lower proportion of individuals with HIV in the region when compared to the national average; however, the proportion of individuals with HIV receiving Medicaid in the South is comparable to the Midwest and West. The Northeast has a greater proportion of individuals living with HIV who are covered by Medicaid and outspends the South and other regions on services per individual living with HIV. The South in general and targeted states have some of the most restrictive Medicaid eligibility criteria for families in the US and provide fewer Medicaid covered benefits than other regions in the country.<sup>18, 19</sup>

Although regional comparisons of funding for federal and state programs provide information regarding equity in funding levels per individual living with HIV, it is critical to note that this data cannot provide information regarding regional differences between states and regions in need of funding to provide HIV medical care and other HIV-related

services. More regional data on the income characteristics and needs of individuals living with HIV are needed to determine regional differences in resource needs. The high levels of poverty in the South and targeted states as well as the concentration of waiting lists for the ADAP program in the targeted states provide some indication of greater resource needs in these areas.

### Health Indicators in the South<sup>i</sup>

To better understand HIV in the South and targeted Southern states, it is important to examine the epidemic in the context of the general health in the region. When compared with other areas of the United States, the South and targeted states rank poorly on many health indicators in addition to HIV. For example, 9 of the 10 states with the highest percentage of adults who have ever been told by a doctor they have diabetes (2010) are in the South; 6 were in targeted states.<sup>97</sup> Eight of the 10 of the states with the highest heart disease death rates (2007)<sup>98</sup> and all of the 10 states with the highest proportions of preterm births were in the South in 2008. Six of the 10 states with the highest proportions of preterm birth were targeted states.<sup>99</sup>

Sexually transmitted diseases such as chlamydia, syphilis and gonorrhea are all highly prevalent in the South (Table 4). For instance, 9 of the 10 states with the highest syphilis rates (2009) were in the

Table 4: STD Epidemiology

	Syphilis Rates 2009	Chlamydia Rates 2009	Gonorrhea Rates 2009
US	14.7	409.2	99.1
Alabama	24.4	556.2	160.8
Florida	21.1	397.9	113.9
Georgia	20.1	411.2	141.3
Louisiana	44.5	626.4	204.0
Mississippi	25.4	802.7	246.4
North Carolina	16.5	445.1	150.4
South Carolina	11.3	595.0	185.7
Tennessee	21.2	478.1	127.5
Texas	20.7	435.4	120.4

South and 7 of these states were targeted states.<sup>11</sup> In 2009, 8 of the 10 states with the highest chlamydia rates were in the South (5 are targeted states)<sup>100</sup> and 7 of the 10 states with the highest rates of gonorrhea were in the South (5 in the targeted states).<sup>101</sup> The high levels of STDs in the South offer some explanation for the higher incidence of HIV in this region, as STDs have been consistently found to facilitate HIV transmission.<sup>12</sup>

### Factors that May Contribute to a Disproportionate Burden of HIV in the South

The President's National AIDS Strategy notes the importance of addressing HIV in the context of factors such as other sexually transmitted disease and poverty that contribute to spread of HIV disease and to the challenges of HIV prevention and treatment.<sup>102</sup> In addition to other sexually transmitted diseases, there are a number of contributing factors that are particularly salient to the Southern region including the following:

<sup>i</sup> The entire state of Texas is used for the targeted state calculations

**Economics:** Health experts cite characteristics of the South, including poverty and lack of health insurance, as factors that contribute to the higher rates of STDs/HIV and other diseases in this region.<sup>103</sup> Data from the US Census Bureau indicate that the South has some of the lowest median income figures in the country, as 9 of the 10 states with the lowest median incomes from 2007-2009 were located in the South (Table 5); five were targeted Southern states.<sup>13</sup> Furthermore, 6 of the 10 states with the highest poverty levels in the country are located in the South.<sup>14</sup> Four of these states are located in the targeted states including Mississippi, which has highest poverty level (28%) in the US. When poverty rates are examined regionally, the targeted states have the highest poverty levels (21.0%), followed closely by the West (19.7%), then the South without the targeted states (17.3%), Midwest (16.8%) and Northeast (16.5%).<sup>14</sup>

Poverty is often related to lack of education, which has also been consistently associated with poorer health.<sup>104-106</sup> The Southern states, particularly the targeted states, continue to lag behind national averages in educational attainment.<sup>107</sup> The South is the only region in the nation where low-income children constitute a majority of public school students and the South also has some of the highest rates of school dropout.<sup>108, 109</sup>

High unemployment rates are another contributor to poverty in the Southern US. Five of the Southern states (all targeted states) and the District of Columbia were among the 10 areas with the highest unemployment rates (2011) in the country.<sup>110</sup> Lack of health insurance is often related to unemployment and is a significant issue in the South where 5 of the 10 states with the highest rate of

uninsured individuals are located (2009). Seven of the 9 targeted states are above the national average for the rate of uninsured individuals.<sup>111</sup>

The high levels of poverty and unemployment limit the resources available for Southern state governments to provide adequate

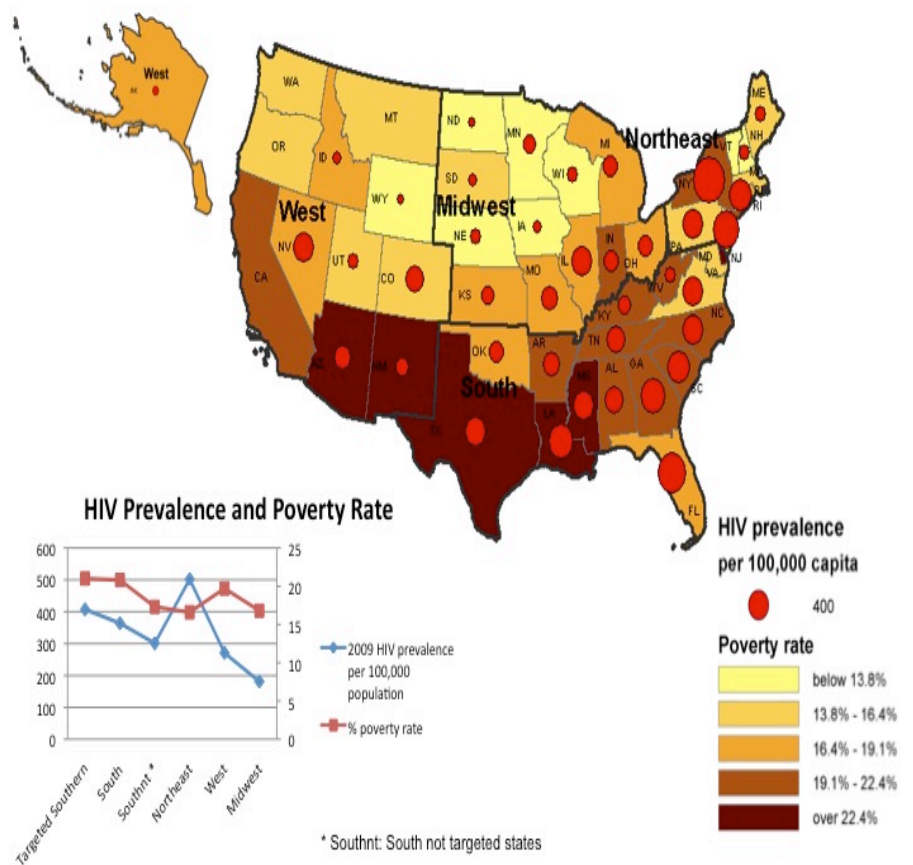
Table 4: Poverty and Insurance

	Median Annual Household Income (2007-2009)	Poverty Rates (under 100% FPL)	Uninsured
South	\$45,930	21%	10%
Northeast	\$56,491	17%	13%
Midwest	\$49,914	17%	12%
West	\$53,683	20%	17%
Targeted States	\$43,167	21%	19%
US	\$49,945	20%	17%
Alabama	\$42,652	22%	14%
Florida	\$45,097	19%	21%
Georgia	\$46,570	21%	19%
Louisiana	\$42,520	23%	10%
Mississippi	\$36,650	20%	10%
North Carolina	\$43,229	20%	17%
South Carolina	\$42,945	20%	16%
Tennessee	\$40,095	21%	15%
Texas	\$47,143	23%	26%

disease prevention and treatment for HIV, STDs and other health issues. Recent reports show that while Medicaid enrollment continues to increase due to the recession and high unemployment numbers, the federal spending for Medicaid will decrease as the American Recovery and Reinvestment Act of 2009 is set to expire.<sup>112</sup> For the 9 targeted states, 8 saw an increase in Medicaid enrollment in FY 2010.<sup>113</sup> In 2011, 7 of these 9 states are estimated to see a decrease in total Medicaid funds.<sup>113</sup>

There is increasing evidence that the HIV epidemic is currently concentrated in low-income communities, particularly in the South (Figure 6). Researchers at the Rollins School of Public Health at Emory University examined the 439 counties with the highest HIV infection rates in the US and found that the counties with high HIV infection rates in the South had much higher poverty rates than the counties with high HIV infection rates in other areas of the country.<sup>16</sup> In addition, of the 175 counties that rank among the top 20% for both HIV and poverty, all but six are in the South.<sup>16</sup> High levels of poverty are also associated with higher HIV case fatality rates  $p < .001$  (Appendix Figure 5). The lower levels of education and lack of health insurance and adequate medical care often found in low-income areas likely contribute to high HIV infection rates in these areas. Furthermore, poverty has been linked with drug use and lack of drug treatment, which in turn may contribute to greater transmission of HIV/AIDS.<sup>114, 115</sup>

Figure 6: HIV Prevalence and Poverty Rate in 2009



**Race/ethnicity:** African Americans are disproportionately represented in low-income communities and among individuals with HIV.<sup>28</sup> This disparity is of particular concern in the targeted states, where the percentage of the population that is African American is the highest in the country.<sup>116</sup> The poverty rate among African Americans (25.7%) is more than double that of Non-Hispanic whites (9.9%) and the proportion of uninsured individuals among African Americans is 1.5 times that of whites.<sup>21, 117</sup> These factors may result in compromised access to health care, offering some explanation for the disproportionate representation of African Americans among individuals with HIV. However, even after controlling for poverty and health insurance status, African American race has been consistently associated with inequitable access to medical care.<sup>22, 23</sup> For example, some studies have identified an association between African American race and being less likely to be on antiretroviral medications to treat HIV regardless of income.<sup>118, 119</sup>

A report by the National Minority AIDS Council describes the HIV epidemic among African Americans in the United States and discusses factors that may influence the disproportionate occurrence of HIV among African Americans in addition to issues of

poverty and health insurance.<sup>24</sup> These factors included a large proportion of African Americans with unstable housing, higher rates of incarceration among African Americans, stigma issues particularly among African American MSM, and lack of trust in the government and the health care system, which has been influenced by historical atrocities such as the Tuskegee Syphilis Study.<sup>24, 25</sup>

Lack of trust in the medical care establishment has been consistently documented among African Americans and has been associated with poorer health outcomes.<sup>120</sup> A study of trust in medical providers and the government among individuals with HIV in the Deep South revealed that African Americans showed greater distrust of the government and of health care systems and that greater distrust, regardless of race/ethnicity, was related to decreased antiretroviral medication use and poorer physical and mental health.<sup>120</sup>

The National Minority AIDS Council report on HIV in the African American community identifies the higher rate of incarceration among African Americans (7 times that of whites) as a significant influence on HIV infection.<sup>24</sup> The Southern states place more people in prison than any other region, with Louisiana having the highest incarceration rate (67% higher than the national average) in the country.<sup>31, 121</sup> Incarceration may increase the risk of HIV transmission because of risky sexual or drug use practices and lack of availability of condoms inside prisons. Incarcerated individuals who are HIV positive may have difficulty establishing care and obtaining medications upon their release, thus increasing their risk for transmission, as untreated HIV infection is more transmissible to others.<sup>122</sup> In addition, incarceration may also affect HIV transmission through an influence on social networks.<sup>24</sup> In a special issue of the journal *Sexually Transmitted Diseases*, Adimora and colleagues describe research regarding social networks and STD transmission and conclude that areas of elevated STD rates are characterized by high levels of concurrent relationships and “sexual bridging between the general population and high-risk, high-prevalence subgroups,” facilitating the spread of HIV and STDs.<sup>123</sup> They further conclude that these relationship patterns are fostered in the African American community by discrimination, lack of economic opportunities and low male-to-female ratios created, in part, by high levels of incarceration.<sup>123</sup>

HIV-Related Stigma and Other Cultural Factors: HIV-related stigma is a critical issue related to HIV disease among African Americans and the Southern region in general. HIV-related stigma and lack of knowledge about HIV are still prevalent among the general population, although on a decline, as evidenced by a recent Kaiser survey of HIV-related opinions in the United States.<sup>124</sup> Perception of HIV-related stigma and lack of basic knowledge regarding HIV have been found to be higher in rural areas and among African-Americans.<sup>32, 37, 124</sup> HIV-related stigma has been found to have negative effects on preventive behaviors, HIV test-seeking behavior, care-seeking behavior after diagnosis, HIV medication adherence, mental health, quality of HIV care provided to HIV-infected individuals and treatment of HIV-infected individuals by their support networks and communities.<sup>32-36</sup> HIV-related stigma is frequently layered on top of other stigmas, such as stigma related to sexual orientation and drug use, and these layers can compound the negative effects on HIV-positive individuals.<sup>24, 125</sup> This phenomenon may be present among African American MSM. African American MSM have been disproportionately affected by HIV, having HIV prevalence rates twice those of white MSM.<sup>24</sup> Research has indicated that African American MSM are less likely to identify as being gay or to disclose their sexual behavior.<sup>24</sup> A study of HIV positive and negative MSM

found that the social stigma the men experienced for being both African American and MSM affected HIV testing and medication adherence behaviors.<sup>126</sup> This issue is particularly critical in the South where 1 in 5 African American MSM has been estimated to be living with HIV.<sup>56</sup>

The cultural conservatism in the South likely plays a role in continued stigma and perceptions of stigma among people living with HIV in this region.<sup>31</sup> The Southeastern and South-central regions of the US have been referred to as the “Bible Belt”, which is an informal name for a geographical area where socially conservative evangelical Protestantism is a substantial part of the culture and church attendance is generally higher than the US average.<sup>127</sup> Commonly held beliefs in this region regarding sexual orientation, sexual activity and drug use contribute to the stigma perceived and experienced by individuals living with HIV or those at higher risk for contracting the disease. Research regarding the Southern US has identified an association between perceiving that HIV is a sin or punishment from God and delays in accessing medical care as well as poorer medical care adherence.<sup>120, 128</sup>

Rural Nature of the South: Prevention and treatment of HIV/AIDS are further complicated in the South and specifically in the targeted states by the high prevalence of HIV-infected individuals living in rural areas (Table 2). Providing HIV care in rural areas of the South may be particularly challenging due to factors associated with rural-living including prolonged travel to access care, lack of financial resources, an insufficient supply of HIV care providers and greater HIV-related stigma.<sup>38, 37, 39, 40</sup> Smaller urban areas (populations less than 500,000) may face similar challenges, including lack of comprehensive public transportation and insufficient supplies of HIV care providers, in meeting the needs of individuals with HIV. When smaller urban areas and rural areas are combined, they contain 24% of new AIDS diagnoses in the South compared to 10% in the other combined regions of the US.<sup>41</sup>

Health Care Availability: There are more Health Professional Shortage Areas (HPSA) in the South than any other region.<sup>31</sup> A HPSA is defined as a service area that demonstrates a critical shortage of primary care physicians, dentists, or mental health providers.<sup>129</sup> Six of 9 targeted states are higher than the national average (11%) in estimated underserved population living in a primary care HPSA, with Mississippi having the highest proportion of underserved individuals living in a primary care HPSA in the US (31%).<sup>130</sup> There is also a lack of health care professionals in the South that are specialized in HIV care,<sup>31</sup> particularly in rural areas of the South.<sup>75</sup>

The Commonwealth Fund scored states on their health system performance, including access to healthcare, and found that overall, Southern states ranked the lowest.<sup>131</sup> Seven of the targeted states scored in the bottom quartile of the rankings, which found that people living in these states were more likely to be uninsured and less likely to receive preventive care.<sup>131</sup>

#### Policies That May Contribute to the Spread of HIV:

*Abstinence-based Sex Education:* Abstinence-based sex education programs require abstinence to be strongly emphasized and encouraged and limit discussion of HIV prevention. These programs have been shown to have little effect on teens’ sexual behavior and may contribute to lack of knowledge about HIV/STDs.<sup>132, 133</sup> Abstinence-based sex

education is not recommended by the CDC in favor of comprehensive sex education that demonstrates and discusses HIV prevention and contraceptive methods such as condoms.<sup>134</sup> In 8 of the Southern states, sex education is not required in schools even though all the Southern states report teen sexual activity higher than the national average.<sup>31</sup> Five of the states not requiring sex education were targeted states (AL, FL, LA, MS, TX).<sup>135</sup> Six of the targeted states (FL, GA, LA, MS, TX, TN) focus on an abstinence-only sex education curriculum and do not require any mention of contraception or preventive devices.<sup>135</sup> Beyond the lack of general education about prevention and contraception, many Southern states' sex education contains messages that could be damaging to homosexual youth including stating that heterosexual marriage is the only acceptable place for sex or promoting anti-sodomy laws.<sup>31</sup> These policies may contribute to a stigmatized environment for gay and bisexual youth, which has been found to discourage HIV testing and seeking of care.<sup>31, 136</sup>

*Criminalization of HIV-related behavior:* Criminalization of behavior that exposes others to HIV pertains to individuals knowledgeable about their status who do not disclose to a sexual partner regardless of whether HIV is transmitted in the sexual encounter. Twelve Southern states have mandates criminalizing behavior related to the spread of HIV, including 8 targeted states.<sup>137</sup> UNAIDS found that these statutes are frequently applied to populations such as MSM, drug users and sex workers, populations that are often blamed for the spread of HIV. For example, between 2008 and 2010, Tennessee prosecuted 48 people for behavior related to HIV, 39 of who were sex workers. Human Rights Watch argues that criminalization discourages HIV testing because only those who know their status are eligible for prosecution, and spreads misinformation about HIV because behaviors that do not transmit HIV, such as spitting and biting, are included in criminalization statutes.<sup>31</sup>

*Lack of Syringe Exchange Programs:* Syringe exchange programs have been consistently shown to reduce HIV risk and are recommended by the CDC to reduce HIV transmission among IDU.<sup>125, 138, 139</sup> Thirty-three states and DC have syringe exchange programs.<sup>140</sup> Eight of the states that do not have syringe exchange programs are in the South and 4 are among the targeted states. Five targeted states (FL, GA, LA, NC, TX) offer some syringe exchange programs, although for all of these states except North Carolina only one program is reported. However, even within these states, lack of clear legal mandates and misunderstanding with law officials is pervasive.<sup>125</sup> For IDUs in states allowing sale of clean syringes in pharmacies, fear of arrest and lack of knowledge about available resources may discourage IDUs from utilizing these services.<sup>31</sup>

Summary of Contributing Factors: Examination of the economic, cultural, demographic and legal characteristics of the Southern United States, particularly in the targeted states, reveal conditions ripe for the spread of disease and poor disease outcomes especially among the region's poorest, most vulnerable populations. The high level of poverty in the South results in a substantial proportion of individuals being more susceptible to poor health due to factors such as lack of adequate insurance coverage, lower levels of education, and less access to stable housing and other basic needs. The high rate of poverty among African Americans in the South, coupled with a history of racism and discrimination that fueled lack of trust in the government and medical systems likely result in a greater prevalence of HIV



disease among African Americans. The high levels of HIV-related stigma as well as the culture of conservatism in the South, which has led to laws that further marginalize individuals with HIV, also likely contribute to the higher HIV prevalence in this region. State level economic challenges in the Southern states further contribute to difficulty in addressing prevention and care needs of individuals living with and at risk for HIV. The economic and social factors such as poverty, stigma and culture are all interrelated, each affecting the others, and all contribute to the disproportionate share of HIV found in the US South.

## **CONCLUSIONS:**

Epidemiological data from the CDC clearly indicate a disproportionate effect of HIV in the Southern states both in new HIV infections and in rates of individuals living with HIV. The targeted Southern states have been particularly impacted by HIV disease. The HIV case fatality rates in the South, especially in the targeted states, are striking and indicative of the critical need to improve detection and treatment of HIV in these states. Failure to adequately treat individuals with HIV has serious consequences for the individuals involved as well as for the affected communities, as untreated HIV virus is much more transmissible than HIV virus at undetectable levels.<sup>53</sup>

The disproportionate burden of HIV in the South is noted in the President's National AIDS Strategy.<sup>102</sup> The President's National AIDS Strategy also states that addressing factors that contribute to the spread of HIV such as poverty, sexually transmitted diseases, stigma and treatment inequities is a necessary step in abating the HIV epidemic and more effectively preventing and treating HIV disease. These factors are particularly present and problematic in the South. The National AIDS Strategy advocates for a "holistic approach to HIV prevention and care that extends beyond risk behaviors of the individual and address not only mental health, but contextual factors such as sexual and drug use networks, joblessness or homelessness and others that increase risk for infection or suboptimal access or response to care."<sup>102</sup> Adopting a holistic approach to addressing HIV in the South and the targeted states that focuses on the specific situations and needs of the region seems critical in the face of the complexity of issues that challenge this region.

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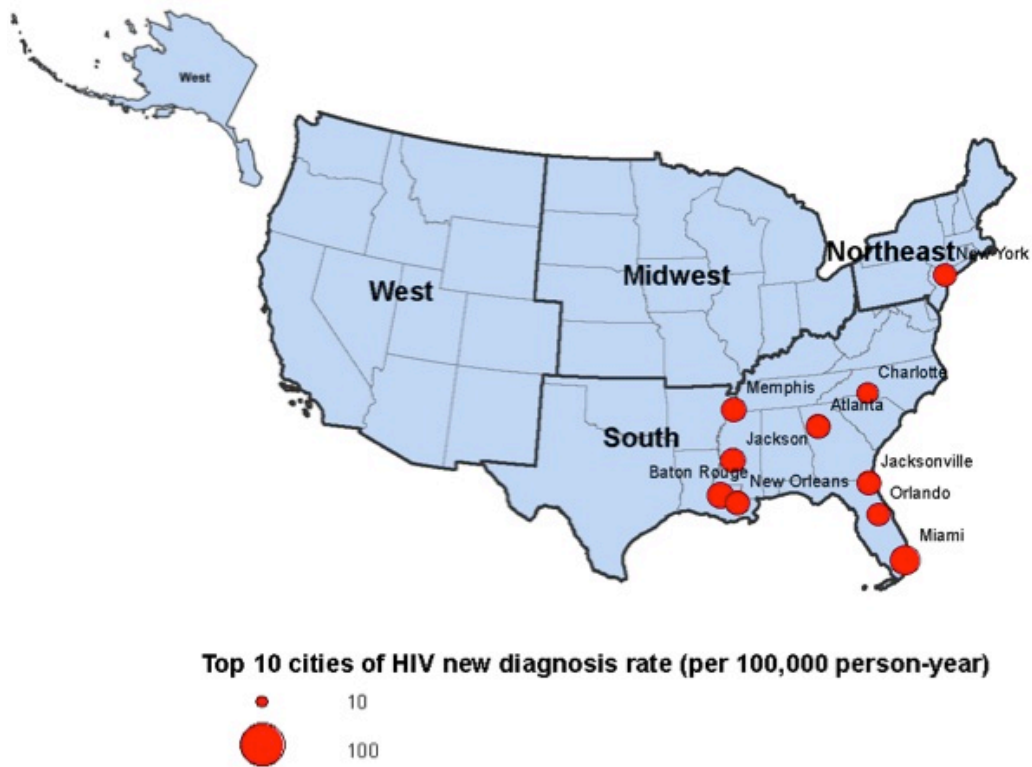


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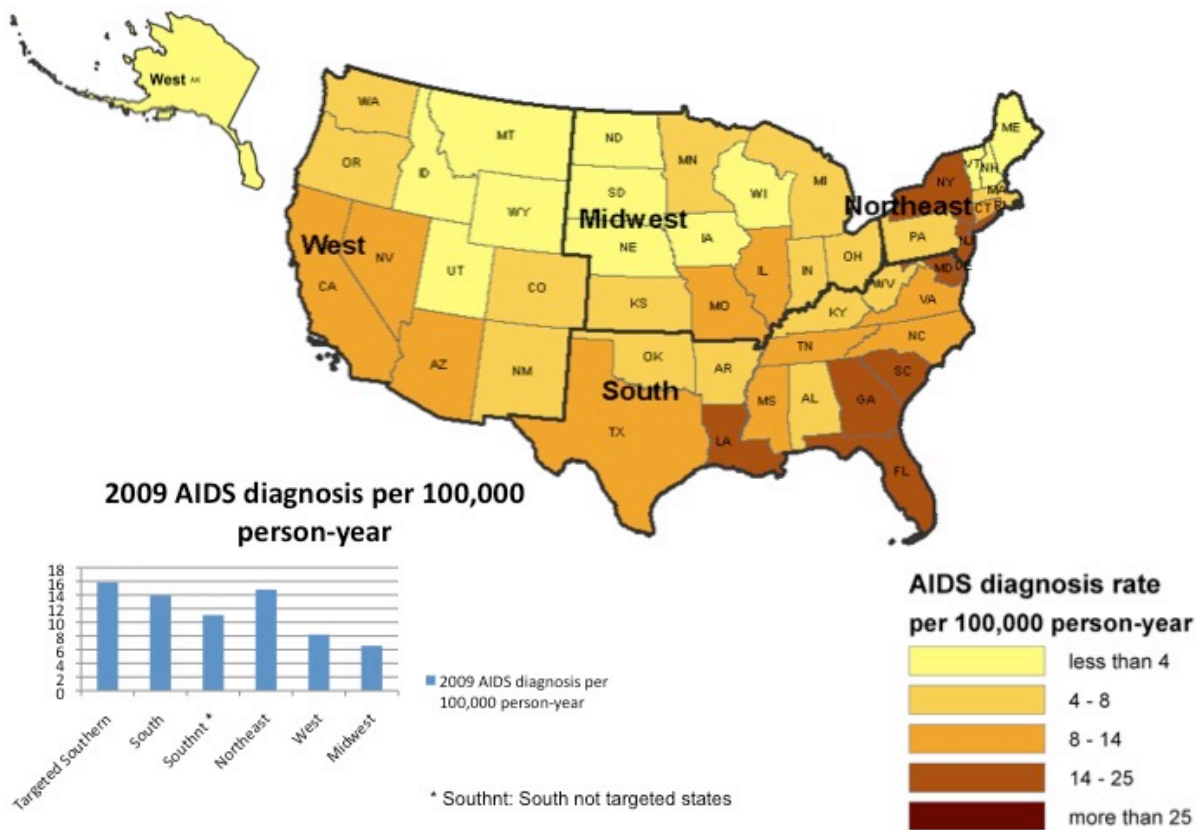
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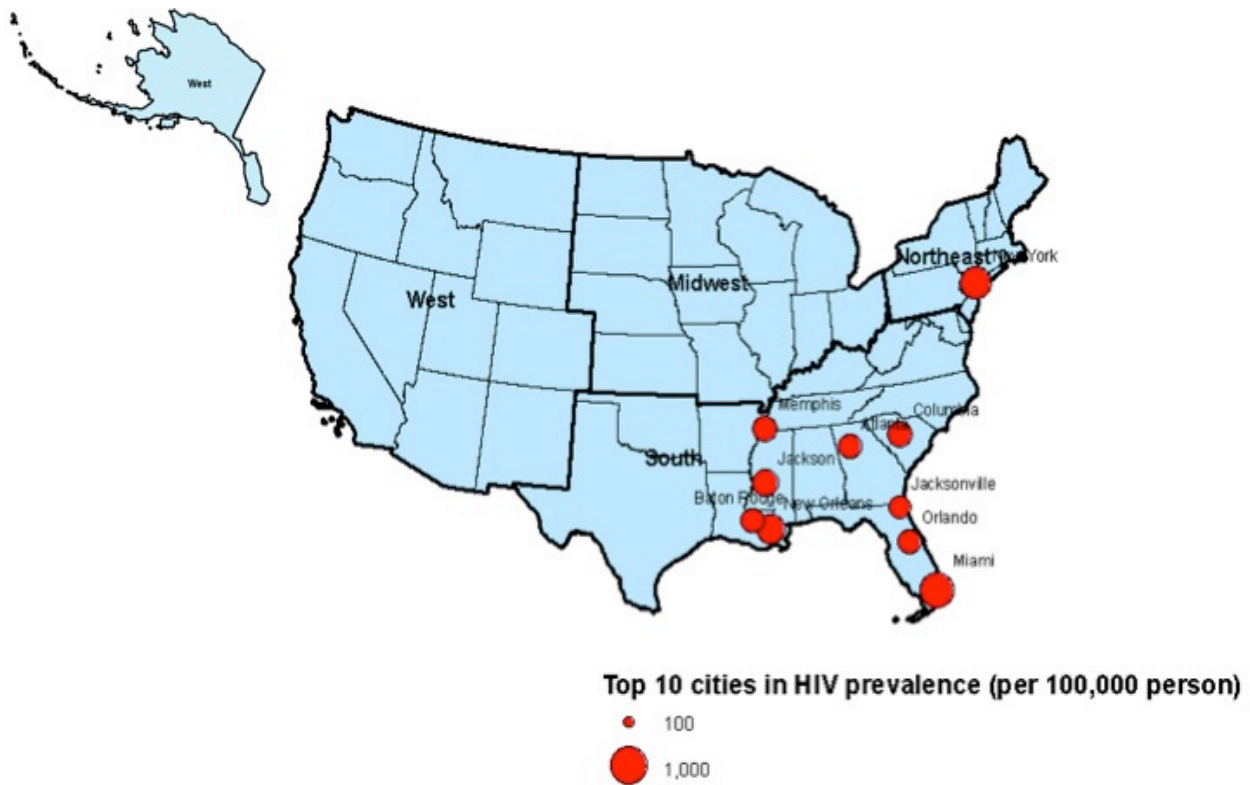
Figure 3: 10 Cities with Highest HIV Diagnosis Rate in 2009



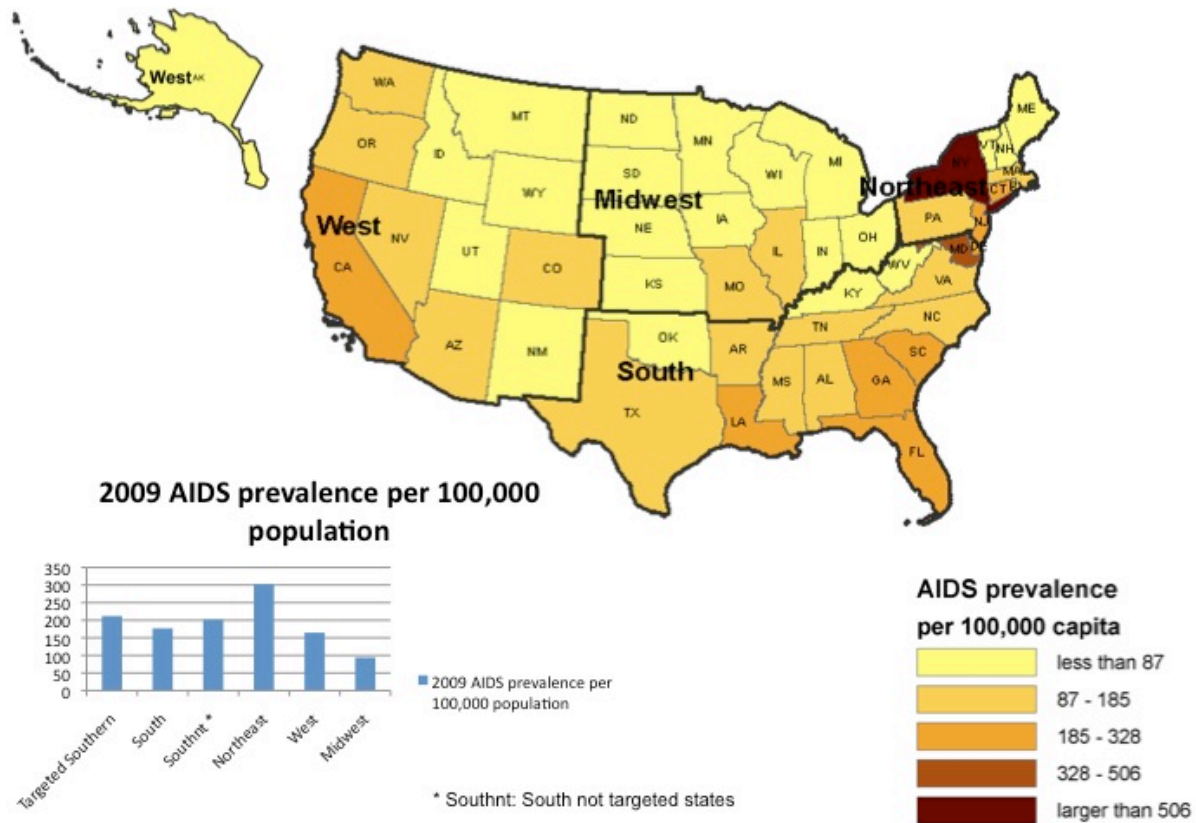
Appendix Map 2: New AIDS Diagnosis Rate in 2009



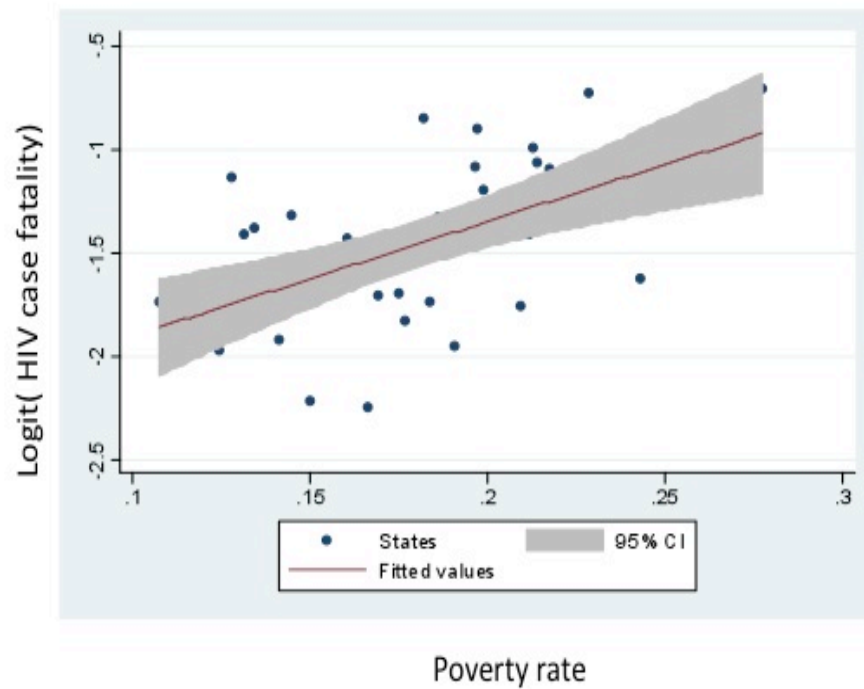
Appendix Map 3: 10 Cities with Highest HIV Prevalence in 2009



Appendix Map 4: AIDS Prevalence in 2009



Appendix Figure 5: HIV case fatality rate vs. poverty rate



HIV case fatality rate is positively related with poverty rate ( $p < 0.001$ )