HIV in the U.S. Deep South:

Trends from 2008-2019

Center for Health Policy & Inequalities Research AT DUKE UNIVERSITY

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SAC SOUTHERN AIDS COALITION

HIV in the U.S. Deep South: Trends from 2008-2019

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About the Center for Health Policy & Inequalities Research at Duke University

CHPIR is an instigator and facilitator of a broad range of health policy and health disparities research that address policy relevant issues. Activities focus on population-based and health systems research, and intervention and evaluation research.

About Duke Global Health Institute

DGHI seeks to achieve health equity for vulnerable groups and individuals around the world. Activities include preparing global health leaders through world-leading interdisciplinary education; conducting research, designing policies, and implementing evidence-based interventions; and partner for change by engaging international and local organizations in collaborative projects.

About Southern AIDs Coalition

The Southern AIDS Coalition (SAC) is a non-partisan coalition that brings together government, community advocates, business leaders, and people living with HIV to end the HIV epidemic in the South. Our mission is carried out through public health advocacy; capacity building assistance; PLHIV leadership development; research and evaluation; and strategic grantmaking. To learn more or to join SAC, visit www.southernaidscoalition.org.

Executive Summary

Background:

This report expands on the findings from a previous report on HIV surveillance data from 2008–2016 with a focus on the U.S. South (from the Southern HIV/AIDS Strategy Initiative (SASI); now part of the Southern AIDS Coalition) by including the most recent HIV surveillance data from 2017–2019. The recent trend data continues to support the research literature that the U.S. South, particularly the U.S. Deep South, experiences a disproportionate burden of HIV.1 This report also describes STI prevalence, insurance coverage, linkage to HIV care, and PrEP utilization throughout the U.S.

Methods:

Data for this report were obtained from the CDC's HIV Surveillance System Database, AtlasPlus; AIDSVu; HRSA; HUD; and Kaiser Family Foundation. The data is broken down by five U.S. regions: four regions (Northeast, Midwest, West, and South) were defined by the U.S. Census Bureau2; the Southern region was further broken down into two regions, the Deep South (9 states with similarities in cultural contexts and history – AL, FL, GA, LA, MS, NC, SC, TN, TX) and the remaining Southern states.

Results:

- The Deep South had the highest HIV diagnosis rates and number of individuals diagnosed with HIV of any U.S. region for more than a decade (2008–2019).
- The percentage of new diagnoses among Black/African American individuals in the Deep South declined from 2008–2019; however, in 2018, the rate of new HIV diagnoses per 100,000 among Black/African American individuals was eight times greater than that for White individuals.
- In the Deep South, the percentage of new HIV diagnoses that were among Hispanic/Latinx people increased from 2008–2019.
- The proportion of individuals diagnosed with HIV who were Black men who have sex (MSM) increased from 2008–2019 in all regions of the U.S. and now accounts for nearly one-third (30%) of new diagnoses in the Deep South.
- HIV-related death rates declined in all regions from 2008–2019; however, the Deep South experienced the highest HIV-related death rates (2008–2019).
- PrEP use was the lowest in the Deep South (2016–2019).
- STI diagnoses, including Chlamydia; Gonorrhea; and Early, Latent, and Congenital Syphilis, was higher in the Deep South compared to other U.S. regions (2008–2019).
- The Deep South has some of the highest poverty rates and the lowest insurance coverage compared to other U.S. regions.
- Medicaid expansion has not been adopted in 12 states, 8 of which are in the Deep South.

Conclusions:

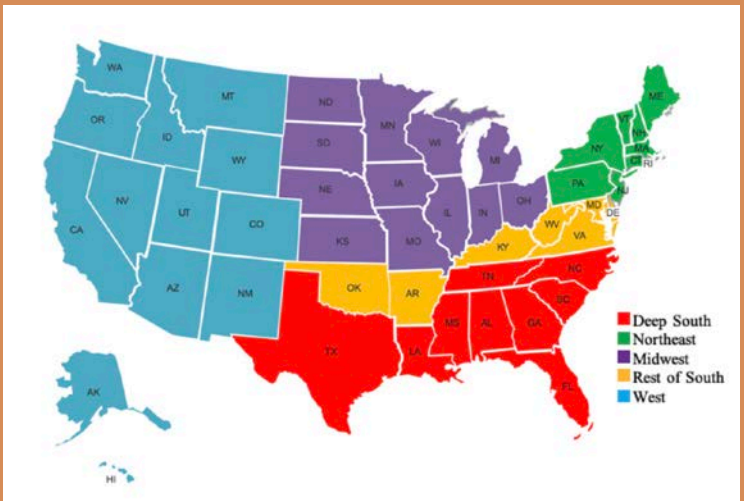
Based on HIV surveillance data, the Deep South has consistently experienced the highest HIV burden since at least 2008. Despite advancement in HIV prevention strategies, the Deep South has fewer people prescribed PrEP. Additionally, the Deep South has the highest number of uninsured individuals and all but one Deep South state have yet to expand Medicaid. The continued disproportionate impact of HIV and low PrEP uptake in the Deep South demonstrates a critical need for evidence-based and coordinated strategies at the federal, state, and community levels to effectively address HIV in the region.

Background

HIV surveillance data from the Centers for Disease Control and Prevention (CDC) has consistently indicated a disproportionate burden of HIV in the Southern United States (U.S.).* In 2017, the Southern states accounted for 52% of new HIV diagnoses and 51% of new HIV cases, while only accounting for 38% of the U.S. population.[1] Further, the South has a higher concentration of HIV diagnoses in suburban and rural areas, which often have fewer resources to prevent and address HIV than urban areas.[1] In addition, fewer people in the South are aware of their HIV status compared to other regions, which consequently leads to fewer people in the region receiving timely medical care and treatment.[1] PrEP has also been underutilized in the South compared to other regions.[1]

A subset of Southern states, known as the Deep South (defined herein as Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas), has experienced an even greater burden of HIV. The Deep South has experienced the highest HIV diagnosis rates and number of people living with HIV (PLWH) and has greater death rates compared to other Southern states and U.S. regions.[1,3] Health disparities and inequities associated with the interconnected social determinants of health and health politics and policy drive the HIV epidemic in the South and Deep South states.[4,5] Policies and laws affecting HIV prevention and treatment vary by state, though many Southern states have key policies that contribute to health inequities for PLWH. For example, as of 2020, all but two states in the Deep South have specific laws or enhanced sentencing used to prosecute and punish PLWH for behaviors including biting and spitting and not disclosing status to partners, among others.[6] Further, social determinants of health related to economic stability including poverty and unemployment; health care access and quality; and social and community conditions including cultural factors and intersectional stigmas related to HIV, sexual and gender identity, and poverty contribute to the burden of HIV in the South and Deep South regions. HIV-related stigma imposes barriers to HIV prevention and care including limiting a person's willingness to disclose their status and seek testing; reducing timely diagnosis and linkage to HIV care and prevention services; and contributing to negative psychological and physical outcomes.[1,7,8]

To effectively respond to the 2019 Ending the HIV Epidemic (EHE) initiative goals by targeting funding and creating and implementing programs, it is critical to document current HIV epidemiological trends.[9] This manuscript continues to build on previous longitudinal analysis and reporting of HIV epidemiological data (2008–2016) by including data from 2017–2019 as well as providing updated information regarding STI prevalence, social determinants of health, linkage to HIV care, and PrEP uptake.



** The U.S. Census Bureau defines the South as Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Oklahoma, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia*

Methods

In this report, rates for HIV diagnoses, transmission, prevalence, deaths, case fatalities, and STDs for the years 2008–2019 are analyzed by region, which were defined using the U.S. Census Bureau's segmentation of the country into South, Northeast, Midwest, and West.[2] The Southern region was further broken down into two groups including the Deep South (defined above) and the rest of the South (Maryland, Delaware, DC, Virginia, West Virginia, Arkansas, Kentucky, Oklahoma) to provide visualization of the epidemic specifically in the more heavily burdened Deep South states.

HIV surveillance data for this report were downloaded from the CDC's HIV Surveillance System Database, AtlasPlus, for the years 2008–2019; 2008 was the first year in which all 50 states reported with standard definitions of people diagnosed with HIV and AIDS. Data regarding insurance coverage was also downloaded from AtlasPlus.[10] The CDC adjusts the data for missing data (such as reporting delays) but not for incomplete reporting (such as anonymous testing). The data are also unduplicated for individuals on a national level. Completeness of the AtlasPlus data are estimated to be more than 85%.[10]

Data on PrEP use for each state was obtained from AIDSVu, an interactive online platform that provides visualization of the impact of HIV on communities throughout the U.S.[11] AIDSVu calculates a PrEP-to-Need Ratio (PNR), which is a ratio of the number of PrEP users from 2012–2019 over the number of people newly diagnosed with HIV in each year. AIDSVu researchers created this ratio to "describe the distribution of prescriptions relative to the epidemic need." HIV testing and linkage to care data were also accessed from AIDSVu.

HIV diagnosis, prevalence rates, and death rates were calculated by dividing the total number of PLWH in the region by the total population within the region divided by 100,000. HIV death rates among individuals diagnosed with HIV were calculated as the number of deaths of PLWH divided by the total number of PLWH (prevalence) and reported as the percentage of all PLWH that died during that year. In addition, the CDC releases HIV death data for ICD-10 codes related to HIV in their CDC Wonder database and calculates age adjusted death rates per 100,000 population for each state and for the four Census regions.[12] The CDC Wonder data from each state were used to calculate the HIV death rate where HIV was the underlying cause of death in the Deep South region for 2008–2019.

Results

HIV Diagnoses

Examination of HIV diagnosis rates for the eleven-years of data, 2008–2019, identified a consistent downward trend in rates in each U.S. region, with the Deep South maintaining the highest diagnosis rates for all years, followed by the rest of the South and the Northeast region (Figure 1). From 2008–2019, the Deep South represented a majority of new HIV diagnoses in terms of both number of new diagnoses and percentage of all diagnoses in the US. In 2019, nearly 44% of all HIV diagnoses in the U.S. were in the Deep South, which comprises only 29% of the U.S. population.

In 2019, of the Deep South states, Georgia had the highest HIV diagnosis rate at 26.2 per 100,000 population, followed by Florida and Louisiana at 23.9 and 23.0 per 100,000 population, respectively (Figure 2). Georgia, Florida, and Louisiana consistently maintained the highest HIV diagnosis rates among the Deep South states during 2008–2019 (ranging from 40.2 to 26.2, 37.3 to 23.9, and 29.2 to 23 respectively).

Figure 1: HIV Diagnosis Rate by Region of the US, 2008-2019

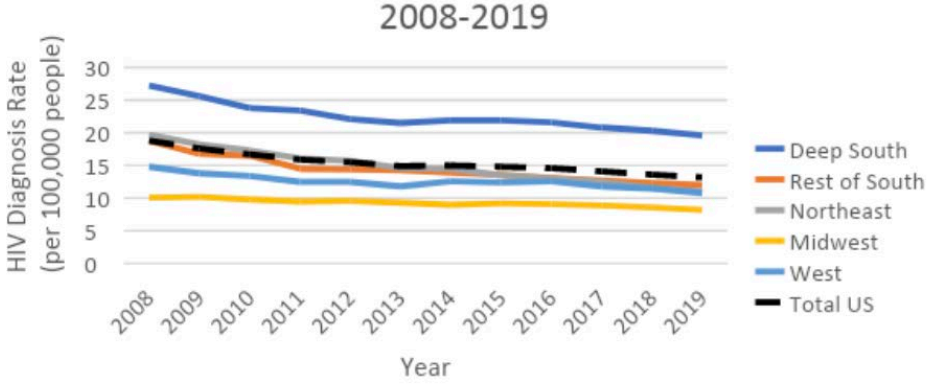
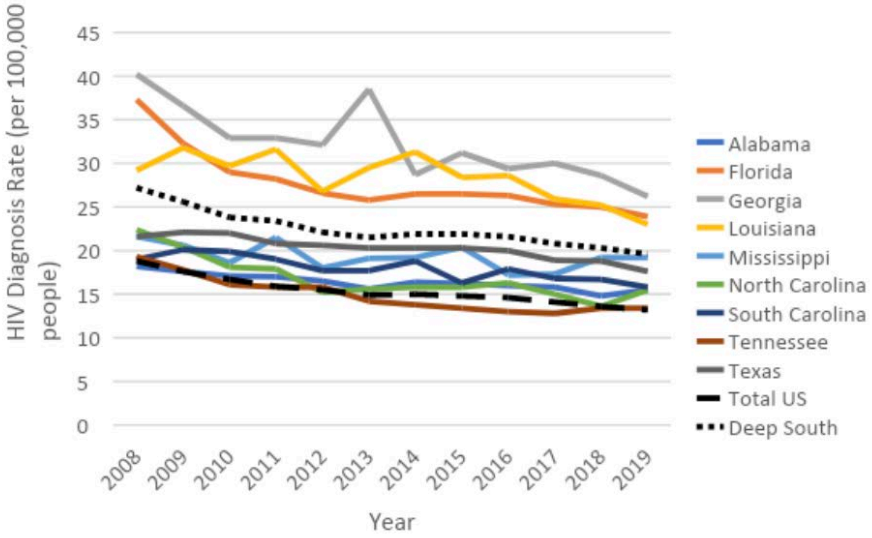


Figure 2: HIV Diagnosis Rate by Deep South State, 2008-2019



Demographic Characteristics

Race/Ethnicity in the US

In the US, diagnosis rates among Hispanic/Latinx people decreased from 28.5 to 20.4 per 100,000 from 2008–2019; however, the percentage of people diagnosed with HIV who reported being Hispanic/Latinx increased from 21.76% in 2008 to 27.83% in 2019. (Figure 3)

From 2008–2019, Asian people had the lowest HIV diagnosis rates (between 5.3 and 6.3 per 100,000 population), followed closely by White and American Indian/Alaska Native people, with diagnosis rates of 5.6–7.4 and 7.5–11.3 per 100,000 population, respectively. HIV diagnosis rates among Black/African American individuals (hereafter referred to as Black) declined overall in the U.S. from 2008–2019 and the percentage of new diagnoses among Black people also declined slightly in the same time frame (from 45.0% to 42.1%).

Race/Ethnicity in the Deep South

Black Americans comprised a majority of HIV diagnoses in the Deep South from 2008–2019 (range 49–54% for all years). The racial disparity in HIV diagnosis rates has been consistent in the Deep South states and throughout the U.S., with more Black people being diagnosed each year than White people. For example, in 2018, the rate of new HIV diagnoses per 100,000 among Black people was eight times greater than that of White people and more than two times greater than that of Hispanic/Latinx people.[13] (Figure 4) In the Deep South, the percentage of newly diagnosed individuals that were Black decreased from 2008–2019 (from 54.1% to 49.1%), while the percentage of newly diagnosed individuals that were Hispanic/Latinx increased from 18.9% in 2008 to 27.2% in 2019. In 2019, more than one-third (42.8%) of the 10,112 Hispanic/Latinx individuals diagnosed with HIV in the U.S. resided in the Deep South.

Figure 3: HIV Diagnosis Rate by Race/Ethnicity in the U.S., 2008-2019

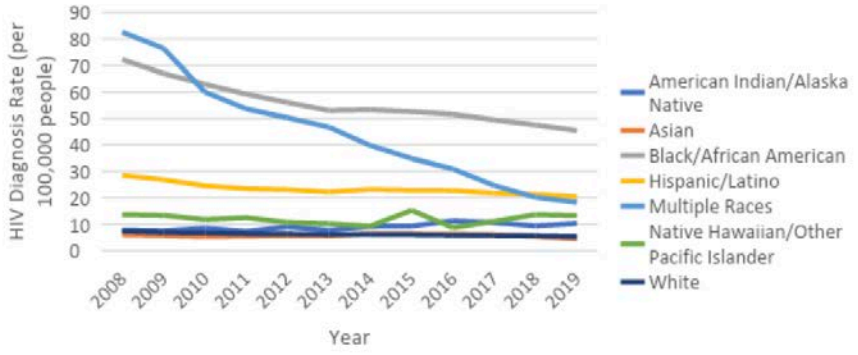
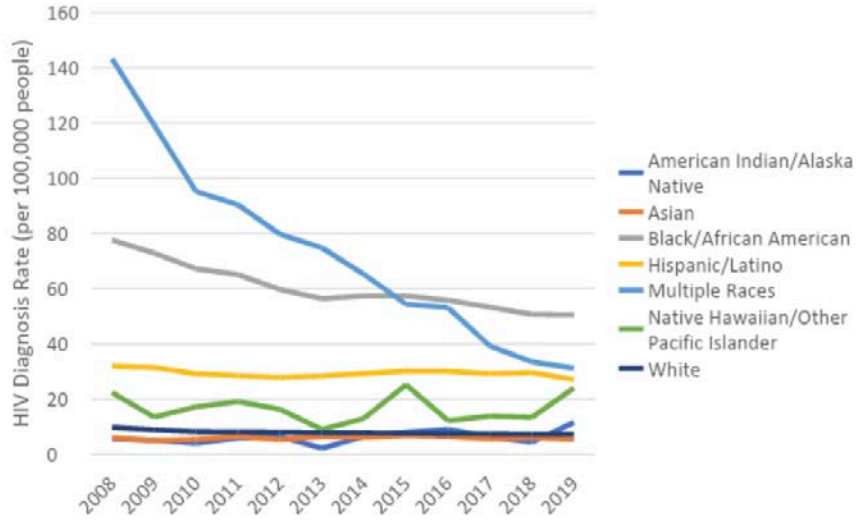


Figure 4: HIV Diagnosis Rate by Race/Ethnicity in the Deep South, 2008-2019



"The racial disparity in HIV diagnosis rates has been consistent in the Deep South states and throughout the US, with more Black people being diagnosed each year than White people."

Demographic Characteristics *(Continued)*

Sexual Orientation

Surveillance data indicated that the percentage of individuals diagnosed with HIV who identified as men who have sex with men (MSM) increased in all regions of the U.S. from 2008–2019. The percentage of HIV diagnoses that were Black MSM increased substantially in the Deep South (from 23.6% to 29.7%) and in the Rest of the South (24.5% to 31.6%), closely followed by the Midwest (22.1% to 27.1%). (Figure 5) The percentage of HIV diagnoses among Latinx/Hispanic MSM was consistently greatest in the West (26.5% to 35.2%), however the percentage of diagnoses increased most significantly in the Deep South (12%–23%) followed by the Northeast (12.8% to 19.8%). (Appendix 1) In contrast, the percentage of individuals diagnosed with HIV that were White MSM remained relatively constant over time in the Deep South states.

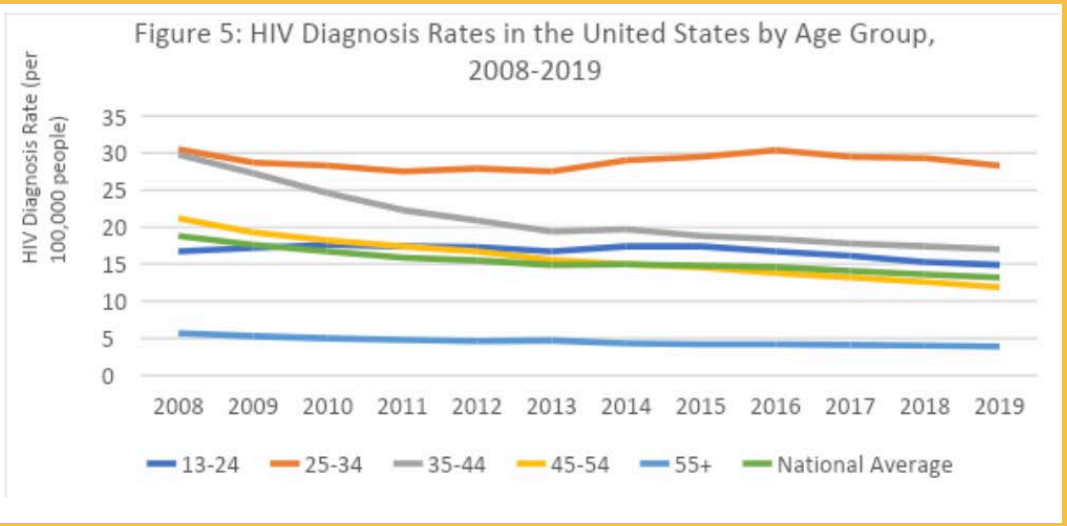
Age Groups

In the U.S., HIV diagnoses steadily decreased among most age groups over the eleven-year period (2008–2019), with the exception of the 25–34 age group. HIV diagnosis rates among the 25–34 age group have stayed relatively constant during this time period (Figure 5). Black people aged 25 to 34 saw a 7% increase in HIV diagnosis rates over this period.

In the Deep South, most age groups also saw a steady decrease in HIV diagnosis rates between 2008 and 2019. The 35–44 age group saw a significant decline over the time period, ranging from 42.0 to 24.5 diagnoses per 100,000. However, HIV diagnoses rates remained relatively constant over the eleven-year period among the 25–34 age group, ranging between 42.4 per 100,000 (2008) and 41.8 per 100,000 (2019). (Appendix 2)

"In the Deep South, most age groups also saw a steady decrease in HIV diagnosis rates between 2008 and 2019."

Figure 5: HIV Diagnosis Rates in the United States by Age Group, 2008-2019



Demographic Characteristics *(Continued)*

Gender and Race/Ethnicity

In the U.S. overall, HIV diagnosis rates varied considerably among different gender and racial groups over the 2008-2019 period. HIV diagnoses have historically been high among Black men, Black women, and Hispanic/Latinx men, as well as multiracial men. Diagnosis rates among Black men declined between 2008 and 2019 (from 100.8 to 71.7). In addition, diagnosis rates among Black women declined significantly, with the rate of 44.5 diagnoses per 100,000 in 2008 declining to 21.3 per 100,000 in 2019. Diagnosis rates among Hispanic/Latinx men declined marginally from 47 to 37.5 diagnoses per 100,000 over the eleven-year period and diagnosis rates remained low among American Indian/Alaska Native women, Asian women, and White women over the eleven-year period.

Within the Deep South region, HIV diagnosis rates also varied substantially by race/ethnicity and gender between 2008 and 2019. HIV diagnoses were very high among multiracial men, Black/African American men, Hispanic/Latino men, and Black/African American women in the region during this time period. However, a sharp decrease was seen in diagnoses among multiracial men, with a decline from 226.3 in 2008 to 51.1 diagnoses per 100,000 population in 2019. Diagnoses among Black men also declined between 2008 and 2019 (with rates of 109.8 and 82.5 in these years respectively). Diagnoses among Hispanic/Latino men stayed relatively constant over the study period, around 50 diagnoses per 100,000 population. Although HIV diagnoses among Black women have historically been high in the Deep South region, a steady decline in diagnoses was identified between 2008 and 2019 in this demographic group (with rates of 49.6 in 2008 and 22.6 in 2019).

The CDC has only recently begun to include the gender identity categories other than male and female in their data reporting (starting with 2018 data). These categories include of "transgender male to female," "transgender female to male," and "additional gender identity." In 2019, only 1.9% of HIV diagnoses were categorized as occurring among individuals identifying as transgender or with "additional gender identity," which prior research on HIV and gender identity suggests is likely a notable underestimate of HIV among this population.[14,15] Based on the limited data available, Black transgender people, especially transgender women, experience a disproportionate burden of HIV.[16]

HIV Transmission

Causes of Transmission in the US

Surveillance data from 2008 to 2019 indicate that the primary cause of HIV case transmission was male-to-male sexual contact. In 2019, two-thirds (66%) of individuals newly diagnosed with HIV indicated male-to-male sexual contact as the cause of transmission. Heterosexual contact was the second-most-common cause of transmission for newly diagnosed individuals, making up around 23% of all new HIV diagnoses in the U.S.

Causes of Transmission in the Deep South

In the Deep South region, the number of individuals newly diagnosed with HIV that indicated male-to-male sexual contact as the cause of transmission increased from 10,107 in 2008 to 10,451 in 2019. While the total number of new HIV diagnoses in the Deep South decreased from 18,774 in 2008 to 15,937 in 2019, the percentage of new HIV diagnoses with male-to-male sexual contact as the cause of transmission increased from 53.8% in 2008 to 67.8% in 2019. (Figure 6)

Figure 6: HIV Cases by Cause of Transmission in the Deep South, 2008-2019

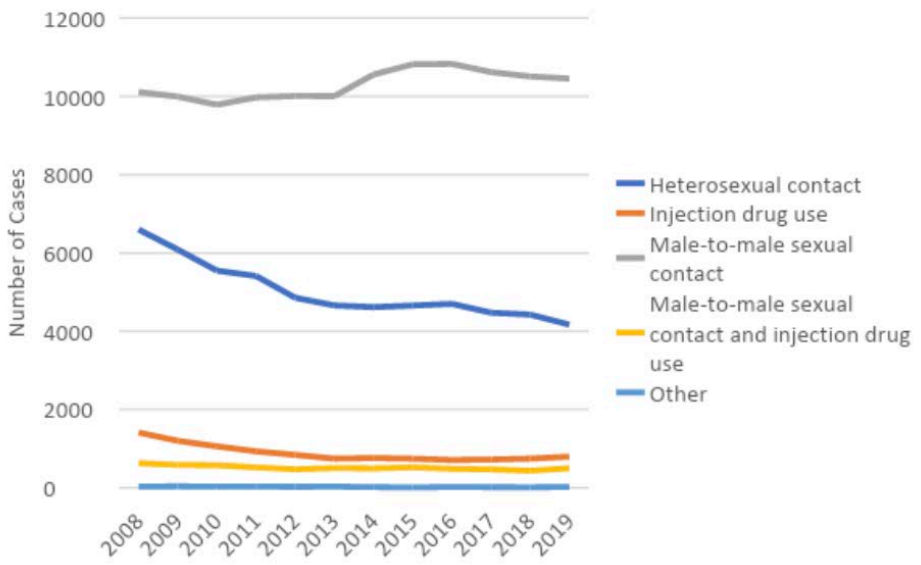
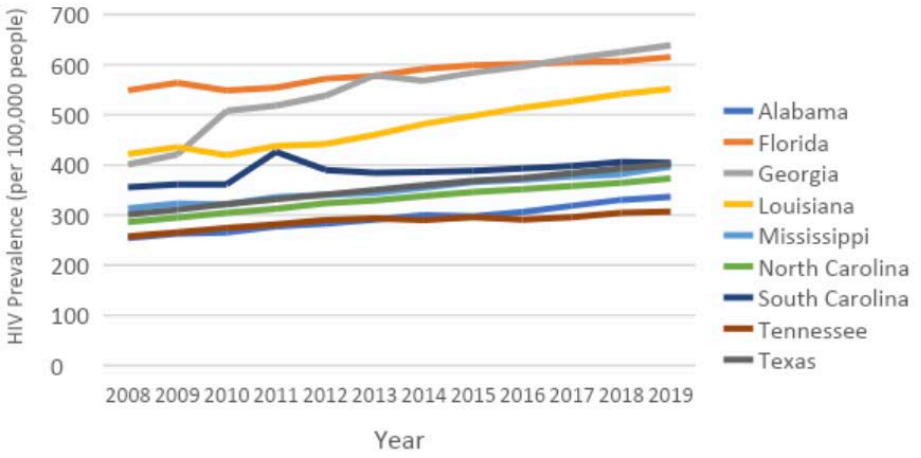


Figure 7: HIV Prevalence by Deep South State, 2008-2019



HIV Prevalence

The Deep South had both the highest number and percentage of individuals living with HIV of any region from 2008-2019. However, HIV prevalence rates, which are the number of individuals estimated to be living with HIV per 100,000 population were highest in the Northeast from 2008-2018, followed by the Deep South.

Within the Deep South, Florida and Georgia consistently had the highest HIV prevalence rates between 2008 and 2019 (ranging from 548.9- 615.0 and 400.8-638.5 respectively). Alabama and Tennessee consistently reported the lowest HIV prevalence rates during the same period. (Figure 7)

"The Deep South had both the highest number and percentage of individuals living with HIV of any region from 2008-2019."

Death Rates

Death Rates Among PLWH

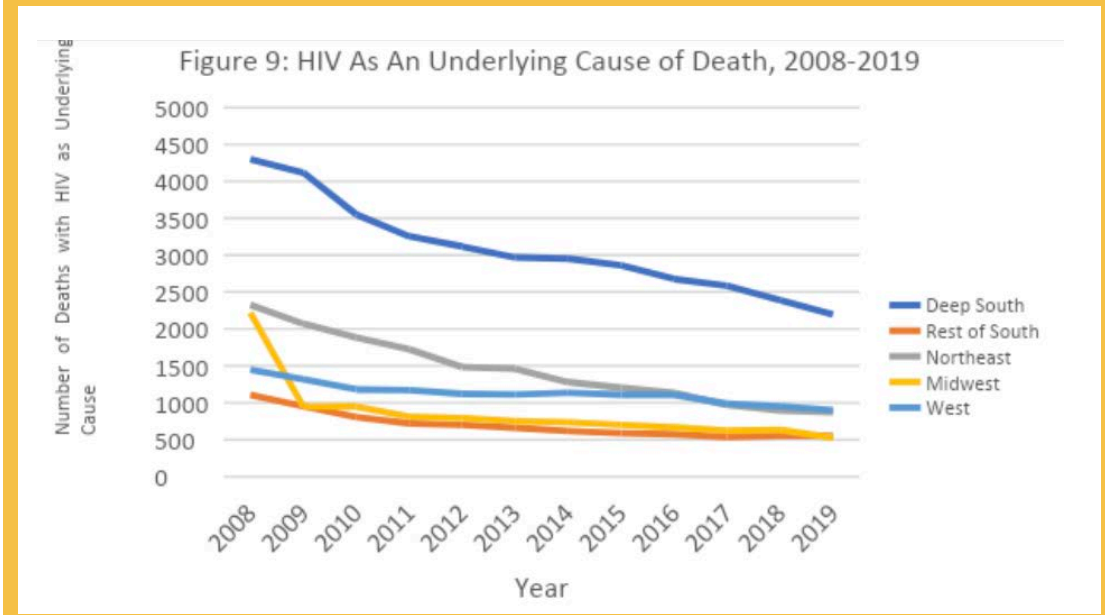
Death rates among individuals diagnosed with HIV differ from conventional death rate calculations, which include both individuals living with and without HIV in the denominator to describe HIV mortality in the population overall. HIV death rates among individuals diagnosed with HIV may reflect the extent to which individuals living with HIV are not engaged and/or retained in medical care or provided with other life sustaining services.

From 2008–2019, the death rates among individuals diagnosed with HIV declined in all regions of the U.S. However, for the entire time period, death rates remained highest in the Deep South region, followed by the Northeast and the Rest of the South (Figure 8).

The Deep South States had the largest number of PLWH who died in 2019 (n=6,017; 38.9% of all deaths of PLWH in the U.S. in 2019). HIV death rates have decreased over time in all Deep South states consistent with the overall U.S. trend. Of the Deep South states, Alabama, Louisiana, and Mississippi have generally experienced the highest death rates (2008–2019) among individuals diagnosed with HIV.

Death Rates Where HIV is Reported as the Underlying Cause of Death

From 2008–2019, 36,967 individuals in the Deep South states died having HIV as the underlying cause of death; this total represents 47% of deaths where HIV was the underlying cause in the U.S. CDC data regarding death rates due to HIV indicated that all Deep South states had higher death rates than the U.S. overall from 2008–2015, although Tennessee dropped below the U.S. overall rate in 2016. Florida, Georgia, Louisiana, South Carolina, Mississippi, and Texas all appear in the top 10 highest states for deaths with HIV as the underlying cause, with all Deep South states appearing in the top 20. (Figure 9)

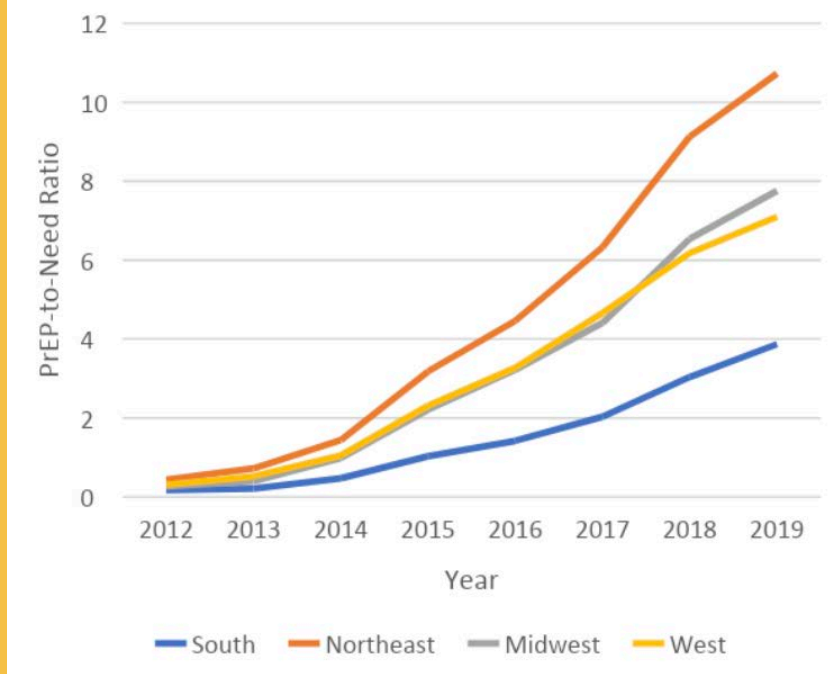


PrEP Use

Pre-exposure prophylaxis (PrEP) is a medication regimen taken by individuals at risk for HIV that if taken daily as prescribed is 99% effective at preventing HIV.[17] From 2017–2019, the number of PrEP users was highest in the West and the Northeast region had the second highest number of PrEP users from 2017–2018. From 2017–2019, the Deep South region had a significant increase in the number of PrEP users. By 2019, the number of PrEP users in the Deep South surpassed the Northeast and was approximately equal to the number of those taking PrEP in the Western region. (Figure 10) However, when taking into consideration the PrEP-to-Need Ratio (PNR) data, which measures the number of PrEP users against the number of new HIV diagnoses in the region in the previous year, it becomes apparent that PrEP use within the entire Southern region (encompassing both Deep South states and the Rest of Southern states) is much lower when compared to the demonstrated need for PrEP services (Figure 11). Despite having over 94,000 users of PrEP in the entire Southern region in 2019, the region demonstrated a PNR of only 3.07, compared to a PNR of 10.73 for approximately 69,000 PrEP users in the Northeast region in 2019.

Within the Deep South region, the Deep South states were all among the 15 states with the lowest PrEP to need ratios in 2019, indicating less coverage of the population in need. Mississippi and South Carolina had the lowest coverage, followed by Louisiana, Georgia, and Alabama.

Figure 11: PrEP-to-Need Ratio (PNR), 2012-2019



"PrEP use within the entire Southern region (encompassing both Deep South states and the Rest of Southern states) is much lower when compared to the demonstrated need for PrEP services."

STI Diagnoses

Gonorrhea, syphilis, and chlamydia (Figure 12) have all been found to increase an individual's risk of acquiring HIV.[18] CDC epidemiological data indicate that rates of infection for chlamydia and gonorrhea were consistently higher for individuals living in the Deep South from 2008–2018 as compared to other U.S. regions.

The Deep South also had the highest rates of early latent syphilis from 2008–2018 and the highest primary and secondary syphilis levels from 2008–2012 (Figure 14). However, the West experienced a significant increase in primary and secondary syphilis diagnoses and surpassed the primary and secondary syphilis rates of the Deep South between 2012 and 2018. (Figure 13)

Hepatitis C and Syringe Exchange Availability

In 2019, four of the Deep South States (Florida, Tennessee, Alabama, North Carolina) had Hepatitis C rates higher than the U.S. average with Florida and Tennessee having rates among the 10 states with the highest Hepatitis C rates (seven states including Mississippi did not have data available in the CDC Atlas Plus database).[19] Examination of the Hepatitis C data for five years of data (2015–2019), identified a small but steady increase in rates in the U.S. overall and a general trend for small increases in Deep South states. Tennessee was among the 10 states with the highest Hepatitis C rates during the entire time period and experienced a slight increase in the diagnosis rate (2.6 in 2015 to 3.0 in 2019), while Florida's rate of diagnoses was nearly five times greater in 2019 (2.9/100,000) than in 2015 (.6).

Figure 12: Incidence of Chlamydia By Region, 2008-2018

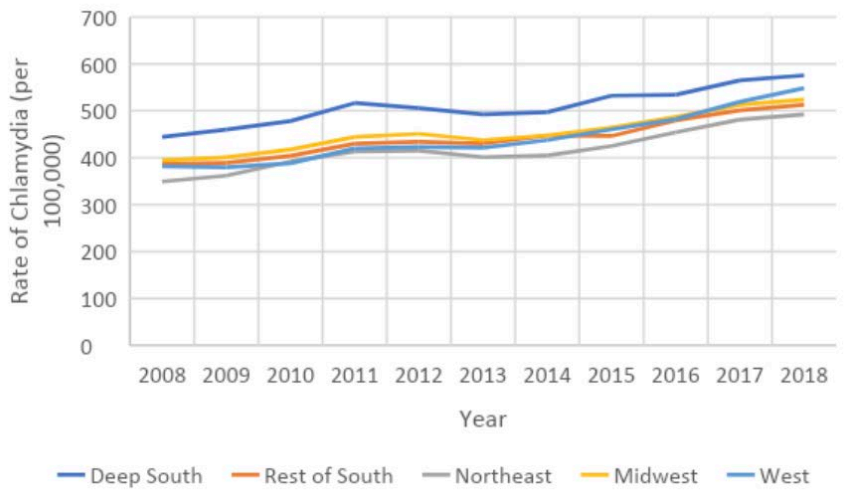
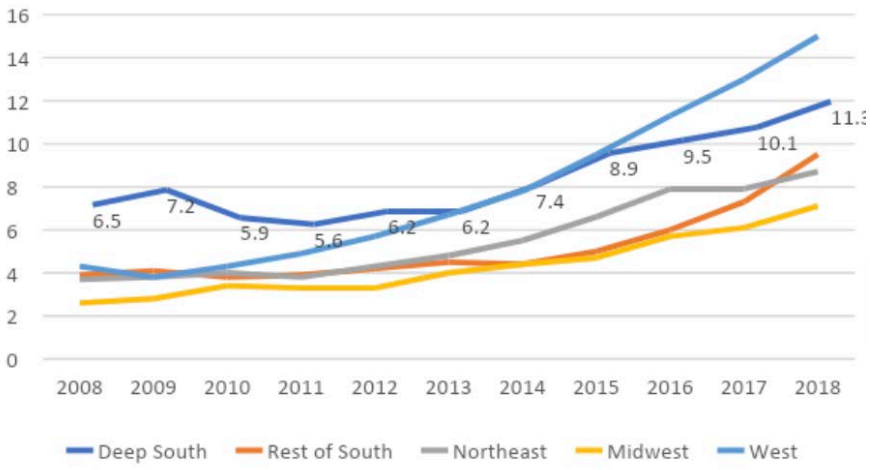


Figure 13: Incidence of Primary and Secondary Syphilis by Region, 2008-2018



Syringe exchange programs have been consistently documented as evidence based for preventing HIV disease transmission.[20,21] Historically most Deep South had not legalized this option.[22,23] However, changes in syringe program availability and legality have slowly occurred over the last decade. In 2021, only two Deep South states, Mississippi and Alabama, did not have any syringe exchange programs available. These states were two of only five states remaining in the U.S. without syringe exchange programs. The remaining seven Deep South states increased the number of programs available since 2018, with Texas going from have no syringe exchange programs in 2018 to seven in 2021.[24]

Health Care Utilization Indicators

Data compiled through AIDSVu (2018) on the population that had ever received an HIV test in the Deep South ranged between 37.3% (Tennessee) and 46.7% (North Carolina), figures which were at or above the median proportion for the US.[25] Similar results were found when the data were broken down by race/ethnicity (White, Black, Hispanic); offering no indication of lower engagement in HIV testing by race/ethnicity in the Deep South compared to other U.S. regions. In addition, the proportions of HIV diagnoses that were considered late diagnoses (defined as receiving a stage 3 HIV diagnosis within 3 months of initial HIV diagnosis) in the Deep South were similar or below the median for the U.S. with the exception of Mississippi, which was among the 10 states with the highest late diagnosis percentages (27.5%) in 2018. The lowest percentage of late diagnoses in the Deep South region was found in North Carolina (17.4%).

Data on linkage to care (2018) (defined as a CD4 or viral load within 1 month of diagnosis) reveal that among the states with available data (n=41), half of the 10 states with the lowest linkage to care rates were in the Deep South. These rates ranged from 73.4% linked to care in Tennessee to 78.6% in Georgia. Only South Carolina had a linkage rate over 85% (86.3%). For individuals receiving HIV care, viral suppression (defined as when the most recent viral load is less than 200) varied among the Deep South States, although all were lower than 70%. Mississippi had the lowest proportion of PLWH who were virally suppressed in the U.S. (50%) and of the Deep South states, South Carolina had the highest percentage at 68.2% virally suppressed. Georgia and Texas were also among the 10 states in the US with the lowest viral suppression rates.

Table 1: Health Care Utilization and Outcomes (2018)

	HIV Test (Ever) %	Late HIV Diagnosis %	Linkage to Care %	Virally Suppressed %
Alabama	39.4	20.9	80.4	65.9
Florida	45.0	20.6	82.4	65.8
Georgia	46.4	20.0	78.6	59.6
Louisiana	42.5	19.1	78.9	66
Mississippi	41	27.5	74.8	50.3
North Carolina	45.7	17.4	78.5	66.9
South Carolina	37.8	24.5	86.3	68.2
Tennessee	37.3	19.0	73.4	63.7
Texas	42.3	19.5	75.4	62.1

Selected Social Determinants of Health

Poverty

The South has higher rates of poverty in both metropolitan and nonmetropolitan areas, a higher number of people living in rural areas, lower median incomes, and higher food insecurity rates compared to other regions.[26-28] Further, Black people experience the highest incidence of poverty both in metropolitan and nonmetropolitan areas in the South. The Deep South states have historically experienced some of the highest levels of poverty in the country and this trend has continued, as 2019 data indicated that all Deep South states had higher than U.S. average percentages of people living at less than 100% of the federal poverty level.[29] All but one of the Deep South states was among the 15 states with the highest percentage of people living in poverty (nearly 1 in 5) and Mississippi and Louisiana had the first and second highest percentage of the population living in poverty respectively. Areas where more than 18% of the residents live below the federal poverty line account for the highest HIV diagnosis rates and have the lowest rates of linkage to care and viral suppression regardless of gender identity, age, race/ethnicity, or transmission category.[30]

Housing Stability

Poverty and the ability to secure adequate housing are closely aligned; resulting in housing difficulties being one of the challenges for many people living in the Deep South who experience poverty. Neighborhoods that are under-resourced and impoverished have been associated with higher crime, substance use, and sex work, all of which have been associated with higher HIV prevalence.[31] Black communities in the South experience poverty at higher levels, which may be due in part to systematic institutional discrimination that contributes to the deprivation of economic and social resources including health care and is in a factor in the disproportionate impact of HIV for this population in the region.[32]

The National Low Income Housing Coalition conducted an analysis of affordable rental housing for extremely low-income households (defined as having less than 30% of median income) and found that two Deep South states, Texas and Florida, were among seven states with housing available for less than 30% of lowest income households.[33] Housing instability, as well as homelessness and the inability to afford, acquire, and maintain rental properties, disproportionately affects minority communities, in particular Black and Latinx communities throughout the country. These disparities in housing confidence and retention by race have been maintained or exacerbated during the COVID-19 pandemic, even with eviction moratoriums enacted by the CDC.[34] Furthermore, housing instability has been consistently associated with poorer health outcomes for PLWH as it acts as a barrier to accessing HIV medical care, medication adherence, and viral suppression; increases risk of transmission; and has been linked to increased urgent care and emergency department visits, and hospitalizations.[35-37] Researchers found that among unstably housed Ryan White clients, 71% were virally suppressed compared to 86% of all Ryan White clients.[37]

Selected Social Determinants of Health *(Continued)*

Health Insurance

The Southern states fall behind other states in insurance coverage, with less of their populations having health insurance; the region comprises of 97% of adults in the "coverage gap", which occurs when an individual has an income above that for Medicaid eligibility, but below poverty levels.[38] Currently, 12 states have yet to adopt Medicaid expansion, and of those 8 are in the Deep South.[39] Louisiana is the only Deep South state to adopt and implement Medicaid expansion to date. Of the Deep South states, Texas has continuously experienced the highest percentage of people who are uninsured in the US. (Figure 14)

Incarceration Rates

Incarceration has been consistently associated with HIV and HIV prevalence among prison populations is four times that of the general population. Incarceration is a social determinant of health that disrupts social networks and has been linked to diminished mental health, increased drug use, risky sexual behaviors, and transmission of HIV and other STIs.[40] Incarceration rates are higher than U.S. averages in the South, with Southern states comprising 8 of 10 states with the highest incarceration rates in 2018; Six were in the Deep South.[29]

Immigration

As indicated by the data above, the proportion of HIV diagnoses that are among Hispanic/Latinx individuals has increased. The immigration system in the U.S. creates substantial barriers for health care including HIV treatment and prevention as well as social services. Immigration policies under the Trump administration have contributed to increased fears among immigrant communities in seeking and using health care and social service programs and services.[41] In the U.S., noncitizens (including lawfully present and undocumented immigrants) are more likely to be uninsured than citizens.[42] Among noncitizens in 2019, 25% of lawfully present immigrants and nearly half (46%) of undocumented immigrants were uninsured compared to less than 9% of U.S. citizens.[42] Uninsured individuals are more likely to suffer from poor health outcomes and experience greater financial hardship.[43] Among immigrant communities, lack of insurance, discriminatory laws against immigrant communities, stigma, and fear of deportation likely contribute to the high number of Hispanic/Latinx immigrants who are unaware of their status and who delay HIV treatment in the Deep South.[44,45] Among the top ten states of residence for undocumented immigrant populations, four are in the Deep South (Texas, Florida, Georgia, North Carolina).[46]

Spotlight Section

HIV & COVID-19

Recent research has shown that PLWH commonly reside in counties that have high rates of COVID-19. Furthermore, researchers found that among 75 U.S. counties that were identified as HIV/COVID-19 co-existing hotspots, 17 (23%) were in Florida, 14 (19%) in Georgia, ten (13%) in Louisiana, and eight (11%) in Mississippi (total n=49; 65%).[47] Each of these co-existing hotspots are priority EHE jurisdictions, though only two are prioritized for funding.47 Vaccination rates for COVID-19 in these states and other Deep South states are some of the lowest in the country.[48]

In addition, vaccination rates are below average for all racial/ethnic groups except for Asian Americans (though disparities exist by state) in nearly all Deep South states. This is particularly the case in Florida, where 51% of the White population, 42% of the Hispanic population, and 26% of the Black population are vaccinated for COVID-19.[29]

Demographic characteristics have also been associated with higher rates of COVID-19 susceptibility among PLWH. For example, people of color have been disproportionately impacted by both COVID-19 and HIV and the LGBTQ+ community has experienced higher rates of job loss, more serious financial problems, increased challenges to accessing healthcare, and have reported more significant negative mental health outcomes due to COVID-19 compared to people who do not identify as LGBTQ+.[49-51]

According to Ryan White providers, HIV-services declined during the pandemic, as some patients were harder to reach through telemedicine, however providers noted that because of telemedicine, some patients reconnected who had been out of care.[49] The CDC reported that HIV testing and viral load monitoring declined during the pandemic and Gilead Sciences reported that at the beginning of 2020, HIV medication sales (presumably both prevention and treatment medications) had declined and have yet to fully regain pre-pandemic levels.[49] Further, the CDC found PrEP prescriptions in the U.S. declined 21% and that there was a 28% drop in new PrEP initiation between March and September 2020.[49]

Discussion

This manuscript expands on findings from a previous compilation of HIV epidemiologic data in the Deep South (2008–2016) by including recent data from 2017–2019. Based on epidemiological data now available for over a decade, the Deep South has consistently experienced a disproportionate burden of HIV. The Deep South region has consistently experienced the highest HIV diagnosis rates and the highest number of individuals diagnosed with HIV.[1,10] In 2019, nearly 44% of all HIV diagnoses in the U.S. were in the Deep South, which comprises only 29% of the U.S. population.

Differences in HIV epidemiology between Deep South states exist. For example, Georgia had the highest HIV diagnosis rate followed closely by Florida and Louisiana throughout the eleven-year period. STIs in the Deep South region have also continued to remain higher compared to other U.S. regions. Research has shown that a history of STIs increases one's risk of transmitting HIV.[18]

Although there have been overall declines in HIV diagnosis rates over the past eleven-years, these declines have not been equitable across demographic groups. For example, in the U.S. overall and in the Deep South, HIV diagnoses have steadily decreased among most age groups with the exception of the 25–34 age group. HIV diagnosis rates among the 25–34 age group have stayed relatively constant during this time period. Declines in HIV diagnosis rates have also been smaller among the Hispanic/Latinx population compared to Black and mixed-race populations during the 11-year time period in the Deep South and U.S. overall. Furthermore, there have been changes in the demographic composition of new HIV diagnoses in the Deep South. The percentage of individuals diagnosed with HIV who identified as MSM increased as did the percentage that were Hispanic/Latinx from 2008–2019.

Advances in HIV treatment medications have led to a decline in HIV death rates over time in all U.S. regions. However, the Deep South region continues to have the highest death rates among PLWH and the highest death rates attributable to HIV (deaths of individuals where HIV was the identified to be the underlying cause of death/100,000 population) followed by the Northeast and the Rest of the South. From 2008–2019, 36,967 individuals died as a result of HIV in the Deep South. In addition, although HIV testing and late diagnoses rates are comparable to other regions in the Deep South, some of the Deep South states have the lowest linkage to care rates

and viral suppression rates, indicating a need to strengthen systems of care and address identified barriers to care such as HIV stigma and discrimination and less available medical care.[52]

Interconnected social determinants of health contribute to health disparities and inequities that are pervasive throughout the South and contribute to the higher HIV diagnosis and death rates. Systemic racism and economic inequities are widespread in the Deep South and contribute to the disproportionate impact of HIV in the region. Systemic racism affects the experience of minority individuals throughout every facet of life, from structural components such as discriminatory legislation, employment and hiring practices, and inequitable distribution of resources, to more individual experiences that include generational trauma and mistrust of health care systems.[53] Added historical significance of racial inequities and current cultural and political climate in the US South exacerbate the effects of systemic racism and translate into poorer health outcomes for minority communities including HIV in the region.[54]

Furthermore, the region has some of the highest poverty rates in the nation along with the highest proportion of the population who are uninsured.[38] Furthermore, 8 of the 12 states that have yet to adopt Medicaid expansion are located in the Deep South.[38] Failure to adopt Medicaid Expansion in the Deep South has resulted in PLWH remaining uninsured and dependent on Ryan White for basic HIV health services, potentially infiuencing early detection and diagnosis of HIV and timely treatment. Further, lack of coverage results in less access to HIV prevention services. The South also has the highest rate of HIV in rural areas, which poses additional challenges to addressing HIV including reduced access to care and culturally competent providers.[1] Further, stigma, discrimination, and cultural factors contribute to the disproportionate burden of HIV in the region by reducing peoples' willingness to seek HIV care and treatment and prevention services.

Another barrier to HIV prevention, HIV criminalization laws, are pervasive throughout the Southern region; seven of the Deep South states have specific laws or enhanced sentencing used to prosecute and punish PLWH for situations such as failing to disclose HIV status to partners or biting or spiting on another person.[6] Research examining the impact of HIV criminalization generally suggests that criminalization laws do not promote desired behavioral changes rather they discourage HIV testing and status disclosure, increase stigma, and exacerbate disparities.[55,56,57] Despite advancements in the understanding of HIV and treatment options and the lack of support for positive outcomes of criminalization, HIV criminalization laws have remained unchanged in much of the U.S. However, since 2014, five states have modernized their HIV criminalization laws, with one, North Carolina, being in the Deep South.[58] As of January 2018 in North Carolina, PLWH who are virally suppressed for at least six months do not have

Discussion

to disclose their status to sexual partners or use a condom.[59]

The South only makes up 27% of PrEP use despite the region having the highest number of new diagnoses.[1] This data suggests that although the number of PrEP users in the Deep South region (and the South as a whole) has increased significantly from 2017 to 2019, increased dissemination of PrEP is needed to meet the disease burden present in the region compared to that of other U.S. regions. Researchers have investigated the outcomes of Medicaid Expansion and found that in states where Medicaid has been expanded there has been an increase in the percentage of people aware of their HIV status and who have the general knowledge that PrEP can prevent HIV.[60]

The epidemiologic data cited in this report demonstrates the significant impact of HIV in the Deep South, which has been consistent over the last eleven years and indicates a critical need to strengthen efforts to reduce HIV transmission and mortality within the region. Low PrEP uptake in the Deep South also demonstrates a critical need for focused HIV prevention interventions, as this is a key strategy for reducing and ultimately eliminating HIV transmission.

Ongoing HIV surveillance data analysis will be needed, as this data allows for appropriate allocation of funds to concentrate on communities most affected by HIV and therefore most in need of interventions to address HIV treatment and prevention. In addition, community-based research to develop effective strategies to attenuate the effects of HIV on Southern communities will also continue to be necessary and can be performed in collaboration with public and private funding efforts in the Deep South.

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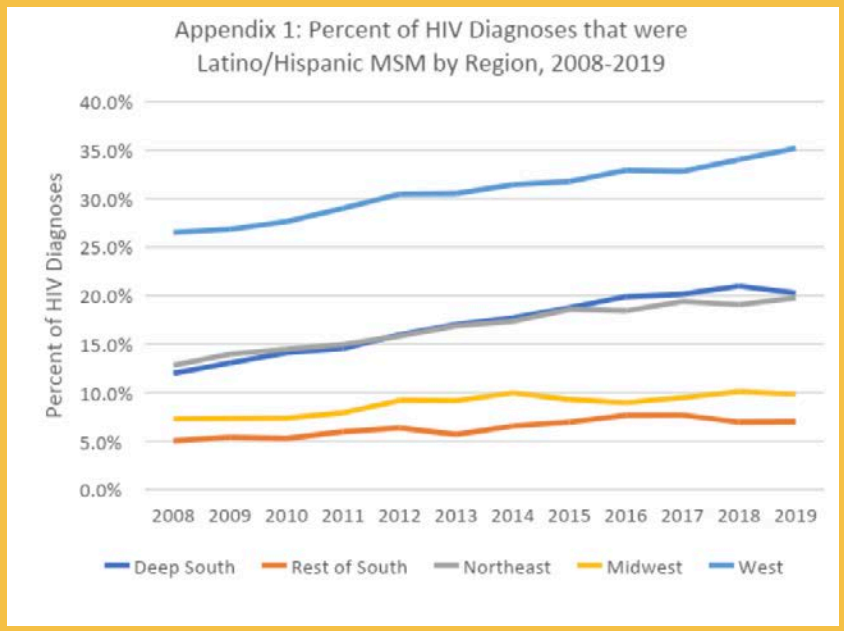
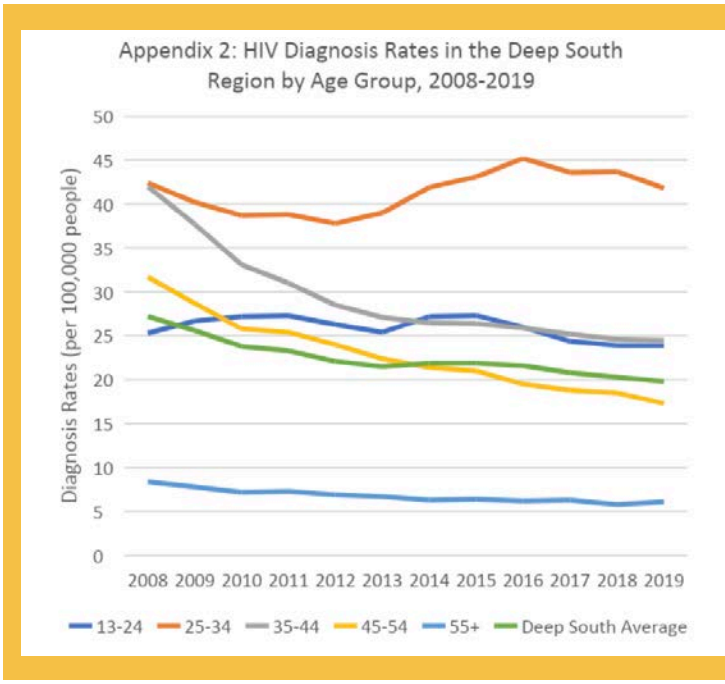
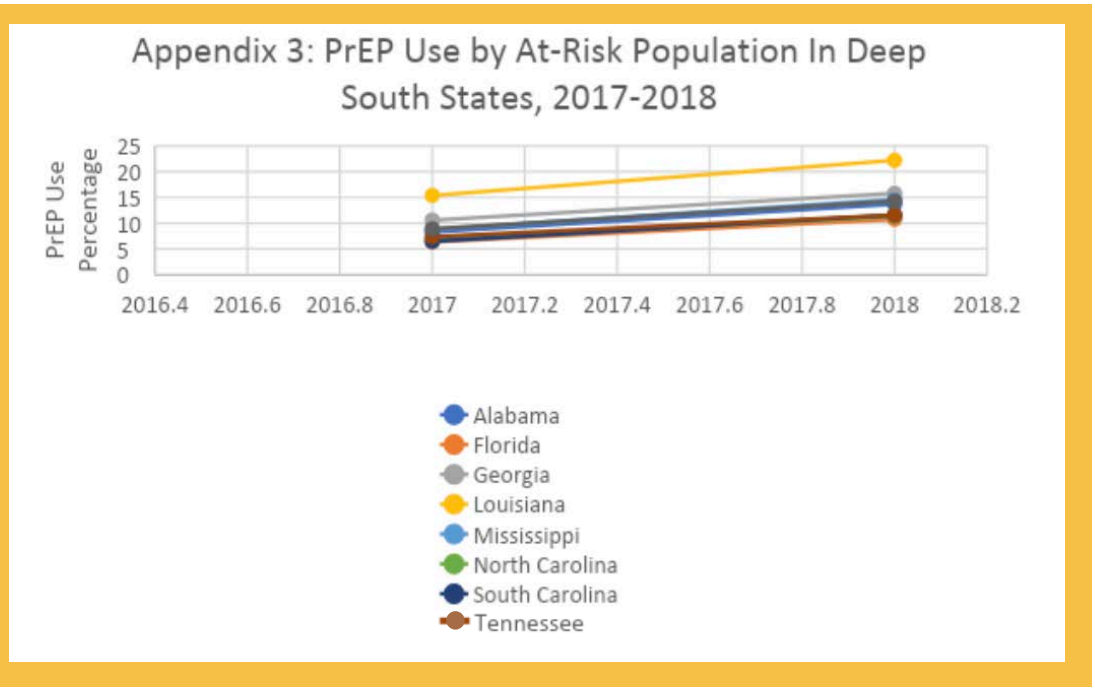
Appendix


Appendix 1: Percent of HIV Diagnoses that were Latino/Hispanic MSM by Region, 2008-2019
Percent of HIV Diagnoses
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Deep South
Rest of South
Northeast
Midwest
West


Appendix 2: HIV Diagnosis Rates in the Deep South Region by Age Group, 2008-2019
Diagnosis Rates (per 100,000 people)
50
45
40
35
30
25
20
15
10
5
0
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
13-24
25-34
35-44
45-54
55+
Deep South Average


Appendix 3: PrEP Use by At-Risk Population In Deep South States, 2017-2018
PrEP Use Percentage
25
20
15
10
5
0
2016.4 2016.6 2016.8 2017 2017.2 2017.4 2017.6 2017.8 2018 2018.2
Alabama
Florida
Georgia
Louisiana
Mississippi
North Carolina
South Carolina
Tennessee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INSTITUTE


SAC
SOUTHERN AIDS COALITION