Journal of Health, Medicine and Nursing
ISSN 2422-8419 An International Peer-reviewed Journal
Vol.120, 2026

Intersectional Determinants of HIV Disparities Between African Americans and Caucasians in the United States: A Negative Binomial Regression Analysis

Natang Pascaline Mbzibain
Department of Public Policy, Nelson Mandela College of Government and Social Sciences, Southern University and A & M College, Baton Rouge, Louisiana

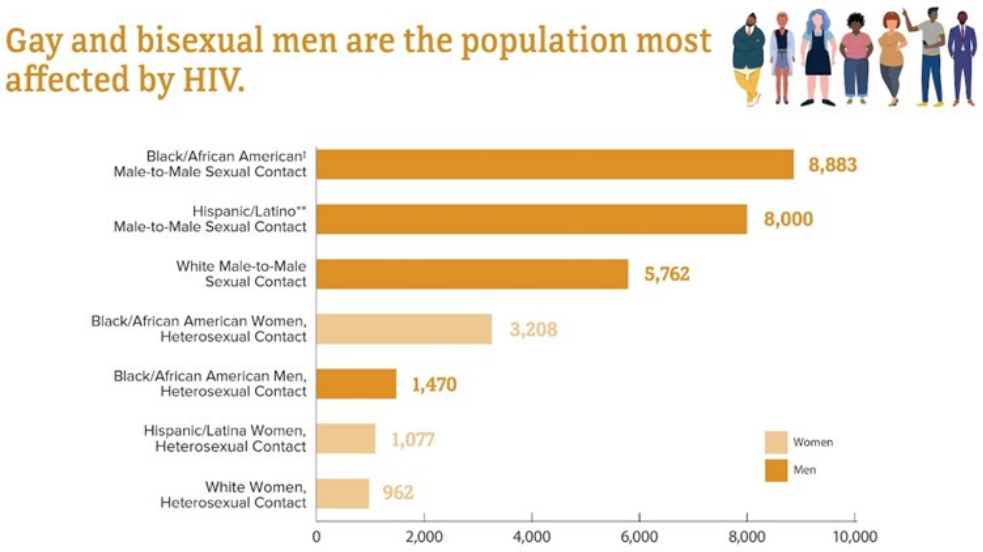
ABSTRACT
HIV continues to disproportionately affect African Americans in the United States, reflecting persistent racial, socioeconomic, and healthcare inequities. While prior research has identified key determinants of HIV outcomes, limited studies have examined how these factors interact simultaneously. This study applies an intersectionality framework to assess how gender, age, income, and healthcare access jointly influence HIV disparities between African Americans and Caucasians. This study employed a quantitative research design using secondary data from the CDC spanning 2000–2023. A Negative Binomial Regression model was utilized to analyze overdispersed count data on HIV prevalence. The model incorporated main effects (gender, age, income, healthcare access, and socioeconomic status) and higher-order interaction terms to capture intersectional influences. Descriptive statistics and regression analyses were conducted to compare outcomes between the African American and Caucasian populations. Findings reveal significant racial disparities in HIV outcomes, with African Americans experiencing substantially higher prevalence rates than Caucasians. Main effects indicate that gender, age, income, and healthcare access are significant predictors of HIV exposure ($p < .001$). Specifically, African American males, females, and children are over three times more likely to be affected compared to their Caucasian counterparts. Higher income and improved healthcare access demonstrate protective effects, reducing HIV risk by 3.9% and 76%, respectively. Interaction analyses further show that combinations such as income × healthcare access and gender × income significantly reduce HIV exposure, highlighting the importance of intersectional dynamics. Intersectional factors play a critical role in shaping HIV disparities in the United States. Policies aimed at reducing HIV burden must address overlapping social and structural inequalities, particularly by improving economic conditions and healthcare access among vulnerable populations.
KEYWORDS: HIV disparities; Intersectionality; Negative binomial regression; African Americans; Healthcare access; Caucasians; Socioeconomic factors
DOI: 10.7176/JHMN/120-05
Publication date: April 30th 2026

INTRODUCTION

HIV remains a persistent public health challenge in the United States, characterized by pronounced disparities across racial, demographic, and socioeconomic groups. Despite significant advances in prevention, diagnosis, and treatment, approximately 1.2 million individuals are living with HIV in the U.S., with an estimated 13% unaware of their status (HIV.gov, 2022). The burden of HIV is not evenly distributed; rather, it reflects deeply rooted structural inequities shaped by race, gender, age, income, and access to healthcare (Centers for Disease Control and Prevention [CDC], 2020; Sutton et al., 2021).

African Americans, who comprise roughly 12% of the U.S. population, account for a disproportionately high share of new HIV infections, highlighting enduring gaps in health equity (HIV.gov, 2022). The epidemiology of HIV further reveals that transmission patterns are closely linked to demographic and behavioral factors. Male-to-male sexual contact remains the predominant mode of transmission among males, while heterosexual contact accounts for the majority of infections among females (see Figure 1 for more details).

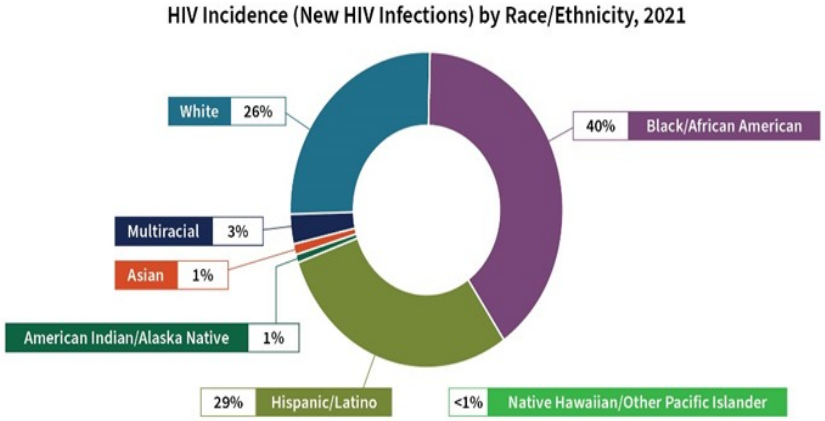
Figure 1
HIV diagnoses in the US and Dependent Areas 2021



Source: CDC (2022).

Additionally, Figure 1 revealed that men who have sex with men (MSM) and transgender individuals remain at high risk and often encounter barriers to healthcare access and discrimination. Women, particularly those from minority groups, face heightened vulnerability due to factors like intimate partner violence and economic dependency. In addition, younger populations—particularly individuals aged 13–34—represent a substantial proportion of new infections, indicating the ongoing vulnerability of adolescents and young adults. Racial disparities are especially pronounced, with African American and Hispanic/Latino populations experiencing significantly higher rates of HIV infection compared to Caucasians.

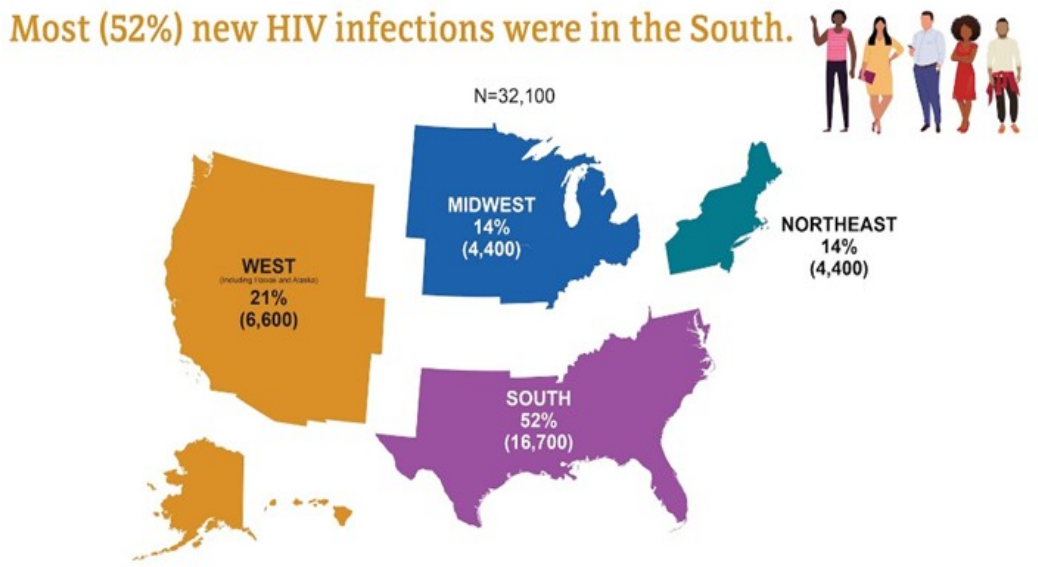
Figure 2
HIV Incidence/Infection Rate by Race/Ethnicity



Source: HIV.gov (2022)

Figure 2 illustrates that racial and ethnic minorities, especially African Americans and Hispanics, are disproportionately affected by HIV. This disparity is partly due to socioeconomic inequities, limited healthcare access, and higher rates of co-occurring conditions that exacerbate HIV transmission and progression. Geographic variation further compounds these disparities, as the Southern United States accounts for more than half of all new HIV infections. This regional concentration is associated with higher poverty levels, limited healthcare infrastructure, and persistent stigma surrounding HIV testing and treatment (see Figure 3 for more details).

Figure 3
HIV Transmission Disparities by Geographic Region



Source: HIV.gov (2021)

To better understand these disparities, scholars have increasingly turned to the intersectionality framework, rooted in critical race theory and Black feminist thought. Intersectionality emphasizes that health outcomes are not shaped by single factors in isolation but rather by the interaction of multiple, overlapping identities and structural conditions (Bauer, 2014; Bowleg, 2012). In the context of HIV, this perspective highlights how race, gender, age, socioeconomic status, and healthcare access jointly influence exposure, vulnerability, and treatment outcomes. For example, individuals who identify as both racial minorities and members of marginalized gender or sexual orientation groups may experience compounded risks due to stigma, discrimination, and systemic barriers to care.

Socioeconomic determinants such as income, education, employment, and housing stability further play a critical role in shaping HIV outcomes. Lower income levels and limited healthcare access are consistently associated with reduced testing, delayed diagnosis, and poorer treatment adherence (Adimora & Auerbach, 2010). While national initiatives such as the *Ending the HIV Epidemic in the U.S. (EHE)* program have aimed to reduce new infections through targeted strategies of diagnosis, treatment, prevention, and response, significant gaps remain in addressing the underlying structural and intersectional drivers of HIV disparities (Giroir, 2020; Glenshaw et al., 2022).

Although prior research has identified key demographic and socioeconomic predictors of HIV, much of the existing literature has focused on individual-level behaviors or single-variable effects, often neglecting the combined and interactive influence of multiple determinants. Consequently, the pathways through which intersectional factors contribute to racial disparities in HIV prevalence—particularly between African Americans and Caucasians—remain insufficiently understood (Millett et al., 2006; Miller et al., 2021). This limitation restricts the development of targeted, evidence-based interventions capable of addressing the root causes of inequities in HIV outcomes.

To address this gap, the present study applies an intersectional analytical framework combined with a Negative Binomial Regression model, which is particularly well-suited for overdispersed count data such as HIV case counts. By incorporating both main effects (gender, age, income, and healthcare access) and higher-order interaction terms, this approach enables a more comprehensive examination of how overlapping social identities and structural conditions jointly shape HIV disparities. Therefore, this current study seeks to investigate how

gender, age, income, healthcare access, and their intersectional combinations influence HIV outcomes across these racial groups. By identifying statistically significant determinants and interaction effects, the study aims to provide deeper insight into the structural drivers of HIV disparities and to inform more equitable and targeted public health policies and interventions in the United States.

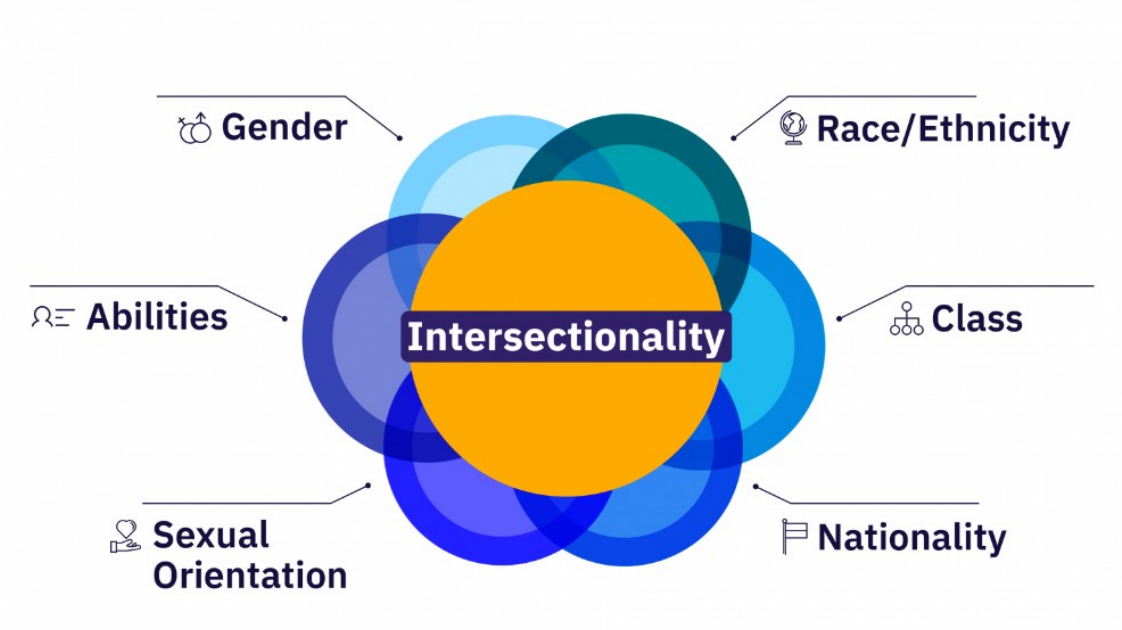
LITERATURE REVIEW

Intersectionality Framework in HIV Disparities

The intersectionality framework is essential for understanding HIV disparities between African Americans and Caucasians because it explains how overlapping social identities—such as race, gender, socioeconomic status, sexual orientation, nationality, and disability—combine to shape unequal health outcomes (see Figure 4 for more details). Rather than acting independently, these factors interact to influence both vulnerability to HIV and access to healthcare services. This study focuses specifically on race/ethnicity, gender, sexual orientation, and social class, as these are the most relevant and data-available factors for analyzing HIV disparities in the United States.

The intersectionality framework is used to explain how overlapping social identities—such as race, gender, class, sexual orientation, nationality, and disability—collectively shape HIV disparities between African Americans and Caucasians. Rather than operating independently, these factors interact to create compounded vulnerabilities and unequal access to HIV prevention, testing, and treatment services (Crenshaw, 1989; Bowleg, 2012; Caiola et al., 2014). This study adopts this framework to better understand how structural inequalities contribute to HIV outcomes across populations.

Figure 4
Tenets of Intersectionality Framework



Source: Crenshaw (1989) and Caiola et al. (2014)

Race and ethnicity are central drivers of HIV disparities, with African Americans experiencing disproportionately higher infection rates compared to Caucasians (CDC, 2023; HIV.gov, 2022). However, race alone does not fully explain these outcomes, as systemic racism, historical trauma, cultural mistrust, and intersecting identities—such as Black men who have sex with men (MSM)—further intensify vulnerability and limit healthcare access (Town, 2024; Monroe et al., 2023; Brandt, 2023).

Gender also plays a critical role, as women—particularly African American women—face heightened HIV vulnerability due to gender inequality, healthcare discrimination, and unequal power in relationships (Nyein

et al., 2021; Sohler et al., 2009). Transgender women of color experience even greater risk due to overlapping discrimination related to race, gender identity, and economic marginalization (Menza et al., 2021; Ferlatte et al., 2022).

Socioeconomic status (class) strongly influences HIV outcomes by shaping access to healthcare, education, housing, and prevention resources. Poverty and unemployment disproportionately affect African Americans, increasing exposure risk and delaying diagnosis (Gandhi et al., 2022; Nutakor et al., 2023). Class interacts with race and gender to deepen health inequities and reinforces structural disadvantage (Menza et al., 2021). **Sexual orientation** further contributes to disparities, as LGBTQ+ individuals—especially Black MSM and transgender persons—face stigma, discrimination, and barriers to care, leading to delayed testing and higher infection rates (Arreola et al., 2023; Miller et al., 2021; Ferlatte et al., 2022).

Nationality affects access to healthcare among immigrants and undocumented populations, who often face legal, linguistic, and financial barriers that limit HIV prevention and treatment services (American Psychological Association, 2022; Guilamo-Ramos et al., 2019; Vitsupakorn et al., 2023). **Disability (abilities)** adds another layer of inequality, as individuals with physical or mental disabilities encounter structural, financial, and stigma-related barriers to HIV care (Nutakor et al., 2023).

Overall, the literature shows that HIV disparities are not caused by single factors but by the intersection of multiple social identities and structural inequalities (Corus & Saatcioglu, 2015; Town, 2024). Intersectionality therefore provides a comprehensive framework for understanding these disparities and designing more equitable, targeted public health interventions, a perspective that directly informs the analytical approach of this study.

Application of Intersectionality Framework in Healthcare Access and Community-Based Interventions

The intersectionality framework is widely used in public health to explain how overlapping social identities—such as race, gender, class, and sexual orientation—shape unequal access to healthcare and contribute to HIV disparities. Individuals experiencing multiple forms of marginalization face compounded barriers that include financial hardship, geographic isolation, discrimination, and institutional bias (Bauer et al., 2021; Kelly et al., 2021). Black women, particularly those from low-income backgrounds, experience reduced healthcare access due to intersecting racial, gender, and economic disadvantages. Transgender women of color and LGBTQ+ individuals also face heightened barriers, including stigma, lack of culturally competent care, and discrimination in healthcare settings, which increases their vulnerability to HIV and delays treatment (Heino et al., 2022).

Black men who have sex with men (MSM) are especially affected by the combined impact of racism, homophobia, and socioeconomic inequality, resulting in reduced access to HIV prevention tools such as PrEP and testing services (Kelly et al., 2021). These patterns highlight the importance of cultural competence in healthcare delivery, as provider bias and lack of training can further worsen disparities. The literature also emphasizes the importance of community-based interventions (CBIs) in addressing HIV disparities. CBIs improve prevention through culturally tailored education, peer-led outreach, and increased PrEP awareness, particularly in African American communities where uptake remains low despite high risk (Gandhi et al., 2022; Liu et al., 2020). They also play a key role in reducing HIV-related stigma by engaging trusted community leaders and creating safe spaces for dialogue (Rintamaki et al., 2019).

In addition, CBIs expand access to care through mobile clinics, patient navigation services, and telehealth support, helping to overcome transportation, financial, and systemic barriers (Rimmler et al., 2022; Klein et al., 2020). These programs also improve treatment adherence and viral suppression through peer support, counseling, and community health worker engagement (Kingsley et al., 2024). Finally, CBIs contribute to policy advocacy by promoting equitable healthcare funding, Medicaid expansion, and anti-discrimination policies. They also address intersectional stigma affecting African American LGBTQ+ populations through tailored, inclusive interventions. Overall, the literature shows that HIV disparities cannot be understood through single social categories alone. Instead, intersectionality provides a comprehensive framework for understanding how structural inequalities interact, while community-based interventions offer practical strategies for reducing these disparities and improving equitable access to HIV prevention and treatment services.

METHODOLOGY

This study employs a **quantitative comparative research design** to examine intersectional factors influencing HIV prevalence between African Americans and Caucasians in the United States. Specifically, the study investigates whether the number of HIV cases significantly differs by race across key social determinants, including median income, access to healthcare, and socioeconomic class, as well as by demographic subgroups such as children, males, females, and LGBTQ+ populations. This design is appropriate for identifying and comparing disparities in HIV prevalence by race and other intersecting demographic and social factors where manipulation or random assignment is neither feasible nor ethical (Creswell & Creswell, 2022).

The study population for this research comprises African American and Caucasian individuals in the United States diagnosed with HIV. The sample captures these unique group's socioeconomic characteristics between 2000 and 2023 for comparison and analysis. These two demographic groups are the focus of this study due to their disproportionate representation in HIV prevalence statistics and the significant socioeconomic disparities that influence their health outcomes (Harrison et al., 2022). By analyzing these populations, the research aims to uncover how socioeconomic determinants contribute to the observed disparities in HIV and /AIDS prevalence rates, offering insights for targeted public health interventions and policy measures. This study primarily relies on secondary data obtained from the Centers for Disease Control and Prevention (CDC), a reputable source recognized for its comprehensive and standardized datasets widely used in public health and epidemiological research. The data analysis for this study was performed using SPSS version 20.0 to process the secondary data. The dependent variable is HIV prevalence (count of cases), while the key independent variable is race (African American vs. Caucasian), alongside other covariates. Statistical analyses were conducted using SPSS, incorporating Negative Binomial Regression.

The **Negative Binomial model** is central to the analysis because it effectively handles overdispersed count data typical of HIV cases. The model estimates HIV prevalence as a function of key predictors and their interaction terms, allowing for the examination of **intersectional effects** (e.g., gender × income, income × healthcare access). By including both main and higher-order interactions, the model captures how overlapping social and structural factors jointly shape HIV disparities. The analysis focuses on how race, in conjunction with other factors such as income, gender, sexual orientation, and access to healthcare, contributes to disparities in HIV prevalence rates. All statistical models were assessed using p-values at 10%, 5%, and 1% significance levels to ensure robust interpretations and evidence-based policy recommendations.

Model Specification: Negative Binomial Regression

The Negative Binomial Regression model is the most appropriate specification for this study because it effectively handles count data with overdispersion—where the variance exceeds the mean—commonly observed in epidemiological outcomes such as HIV prevalence (Hilbe, 2011). The model estimates the logarithm of the expected number of HIV cases (μ_i) as a function of key demographic and socioeconomic predictors, including gender, age, income, healthcare access, and socioeconomic status (SES), along with their interaction terms.

Distributional Assumption

The dependent variable follows a Negative Binomial (NB) distribution:

$$Y_i \sim NB(\mu_i, \theta)$$

- $\boldsymbol{\theta}$ = Dispersion parameter accounting for overdispersion (variance > mean)

To examine the intersectional determinants of HIV disparities, the study specifies the Negative Binomial Regression model as follows:

$$\log(Y_i) = \beta_0 + \beta_1 \text{Gender}_i + \beta_2 \text{Age}_i + \beta_3 \text{Income} + \beta_4 \text{Healthcare}_i + \beta_5 \text{SES}_i + \Omega(\text{Interactions}) + \varepsilon_i$$

Where:

- Y_i = HIV prevalence (count) in the i^{th} population unit
- Gender_i = proportion of females or males in population i
- Age_i = proportion of children, adults, or seniors in population i
- Income_i= median income of population i

- HealthcareAccess$_i$ = measure of healthcare access in population *i*
- SES*i* = Socioeconomics status/class of population i
- X*i*= vector of covariates including main effects and interaction terms
- Y_i= expected count of HIV cases in population *i*
- i= racial group (African Americans and Caucasians)
- log (Y_i): Log link function ensures predicted counts are non-negative.
- B_1……. B_5 *Coefficients of the Main Effects*
- B_0 intercept or constant term
- Ω interaction effect
- **Interaction Terms** = Two-way and higher-order terms capturing intersectionality, such as:
    - Gender × Income
    - Race × Healthcare Access
    - SES × Income × Healthcare Access
    - Race × Gender × Age
- ε_i = Error-Term

RESULTS AND DATA ANALYSIS

Descriptive Analysis of the Study Variables

Table 1
Descriptive Statistics for African Americans

	N	Minimum	Maximum	Mean	Std. Deviation
Number of HIV cases	24	921	1062	978.21	30.957
Number of Children (below 18 years) with HIV	24	6230	7146	6609.12	204.987
Number of Adults (≥18 years) with HIV	24	408220	470753	433584.54	13739.341
Number of Males with HIV	24	281835	325027	299365.00	9460.558
Number of Females with HIV	24	132615	152872	140828.67	4485.501
Median Income by Individuals with HIV	24	20793	53895	35827.79	10516.060
Socioeconomic Status/Class by Individuals with HIV	24	13%	54%	30%	18.55
Healthcare Access by Individuals with HIV	24	47.3	98.4	75.725	12.0326
LGBTQ with HIV	24	34%	83%	60.33%	12.97
Valid N (listwise)	24				

Table 1 shows that African Americans experience a consistently high burden of HIV across the 2000–2023 period, with a mean prevalence of 978.21 per 100,000, indicating persistent and stable infection levels. Adults carry the greatest burden, followed by males, with females also significantly affected. Children account for a smaller but still important share of cases, highlighting intergenerational impact. Socioeconomic indicators reveal substantial vulnerability. Median income among individuals living with HIV is relatively low (mean = $35,827.79) with wide variation, reflecting economic instability within the population. Similarly, only about 30% are classified in higher socioeconomic status groups, reinforcing widespread disadvantage.

Healthcare access shows moderate but uneven coverage (mean = 75.73%), with notable disparities indicated by a relatively large standard deviation. This suggests unequal access to prevention, testing, and treatment services. Additionally, a relatively high proportion of individuals identify as LGBTQ (mean = 60.33%), highlighting the presence of intersecting vulnerabilities related to stigma, discrimination, and healthcare barriers. Overall, Table 1 illustrates that African Americans living with HIV face higher prevalence, lower income, weaker healthcare access, and greater structural vulnerability, reinforcing strong intersectional disadvantage.

Table 2
Descriptive Statistics for Caucasians

	N	Minimum	Maximum	Mean	Std. Deviation
Number of HIV cases	24	158	253	207.88	22.361
Number of Children (below 18 years) with HIV	24	3029	4940	4084.67	436.457
Number of Adults (≥18 years) with HIV	24	308231	493470	405429.08	43621.041
Number of Males with HIV	24	217606	348771	286634.88	30895.613
Number of Females with HIV	24	93654	149639	122878.88	13158.442
Median Income by Individuals with HIV	24	47988	110634	71666.58	17683.373
Socioeconomic Status/Class by Individuals with HIV	24	25%	87%	50.71%	17.697
Healthcare Access by Individuals with HIV	24	72.5%	99.6%	89.00%	8.0814
LGBTQ with HIV	24	19%	86%	56.04%	16.75%
Valid N (listwise)	24				

Table 2 indicates a significantly lower and more stable HIV prevalence among Caucasians, with a mean of 207.88 per 100,000, substantially below that of African Americans. Although adults also account for the

majority of cases, overall infection levels remain comparatively lower across all demographic groups. Socioeconomic conditions are notably stronger in this population. Median income is substantially higher (mean = $71,666.58), and over half of individuals fall into higher socioeconomic categories (mean = 50.71%), indicating greater economic stability. Healthcare access is also high and consistent (mean = 89.00%), suggesting fewer structural barriers to care and better treatment coverage. LGBTQ representation is slightly lower on average (56.04%) but remains substantial, reflecting continued diversity within the population. Overall, Table 2 shows that Caucasians living with HIV experience lower prevalence, higher income, stronger healthcare access, and greater socioeconomic stability, which may contribute to improved health outcomes relative to African Americans.

Together, both tables highlight clear racial disparities in HIV outcomes. African Americans experience higher infection rates, greater economic disadvantage, and reduced healthcare access, while Caucasians show lower prevalence and stronger socioeconomic and healthcare advantages. These patterns strongly support the need for intersectional, structurally informed public health interventions.

Analysis of Negative Binomial Regression Results

This section presents the results of the Negative Binomial Regression analysis, which was used to examine how overlapping social identities and structural conditions jointly shape HIV disparities between African Americans and Caucasians. Rather than isolating demographic and socioeconomic factors, the model adopts an intersectional approach that recognizes how race, gender, age, income, and healthcare access interact to influence HIV outcomes. The results indicate that HIV disparities are significantly driven by the **combined effects of demographic and socioeconomic factors**, rather than any single variable alone. The model confirms persistent and statistically significant racial inequities in HIV exposure, with African Americans—particularly males, females, and children—showing a substantially higher risk of HIV compared to Caucasians. This pattern highlights the enduring influence of structural inequality in shaping population-level health outcomes. The findings demonstrate that HIV risk is best understood through an **intersectional framework**, where multiple social and structural determinants operate simultaneously to produce unequal health outcomes across racial groups.

Table 3 presents the results of the Negative Binomial Regression analysis examining how intersecting demographic, socioeconomic, and structural factors influence HIV outcomes among African Americans compared to Caucasians. The model includes both main effects and higher-order interaction terms to capture intersectional patterns of HIV risk and protection.

Main Effects: The results show persistent and statistically significant racial disparities in HIV exposure. African American males and females are approximately **3.3 times more likely to be exposed to HIV** than their Caucasian counterparts (Exp(B) = 3.34 and 3.36, $p < .001$), highlighting strong race and gender-based inequities. Similarly, African American children are significantly more likely to be exposed to HIV than Caucasian children (Exp(B) = 3.07, $p < .001$), indicating an intergenerational burden of risk.

Socioeconomic factors also play a key role. **Income has a significant protective effect**, with each unit increase associated with a 3.9% reduction in HIV exposure (Exp(B) = 0.961, $p < .001$). Likewise, **healthcare access significantly reduces HIV risk**, as individuals with access are about 76% less likely to be exposed (Exp(B) = 0.24, $p < .001$). In contrast, socioeconomic status (SES) is not statistically significant ($p = .209$), suggesting it may influence HIV outcomes indirectly through other variables rather than independently.

Interaction (Intersectional) Effects: The interaction results highlight the importance of intersectionality in shaping HIV outcomes. Significant protective effects are observed for key combinations of identity and resources. For example, **Black female × income** shows a significant reduction in HIV exposure (Exp(B) = 0.967, $p = .002$), indicating that higher income reduces risk among Black women. Similarly, **income × healthcare access** also demonstrates a protective effect (Exp(B) = 0.993, $p = .001$), showing that these structural factors work together to reduce vulnerability.

Table 3

Negative Binomial Test Results for Test Intersectionality Among the Study Variables for African-Americans Compared to Caucasians with HIV

Parameter	Estimate	SE	Exp (B)	Exp (B) 95% Wald Confidence Intervals	
				Lower	Upper
Main Effects					
(Intercept)	4.606	2.9361	99.63	-1.148	10.361
Black_Females_HIV	1551.889	183.554	3.34	-1.558	6.637
Black_Males_HIV	1342.547	172.348	3.36	-1.618	8.31
Black_Children_HIV	495.220	37.083	3.0687	0.558	5.891
Black_Median Income_HIV	-0.040	0.008	0.961	0.946	0.976
Black_Healthcare Access_HIV	-97.658	18.295	0.2423	-3.558	8.624
Black_SES_HIV	151.152	120.164	3.84	-84.366	386.670
Interaction Effect					
Black_Females_HIV* Black_Males_HIV	3.117	2.345	1.000	-1.479	7.713
Black_Females_HIV* Black_Children_HIV	2.210	6.872	1.000	-3.558	8.624
Black_Females_HIV*Black_Median Income_HIV	-3.423	1.124	0.967	-0.065	-0.012
Black_Children_HIV * Black_Male_HIV	1.299	1.465	1.000	-1.572	4.169
Black_Median Income_HIV * Black_Healthcare Access_HIV	-0.007	0.002	0.993	-0.011	-0.003
Black_SES_HIV * Black_Healthcare Access_HIV	-0.011	0.030	0.989	-0.070	0.047
Black_Male_HIV * Black_Median Income_HIV*Black_Female_HIV	-7.662	1.676	1.000	-4.051	2.519
Black_SES_HIV * Black_Male_HIV * Black_Median Income_HIV	9.399	3.035	1.000	-5.009	6.889

However, more complex or higher-order interactions, including those involving SES and multi-factor combinations, are not statistically significant. This suggests that not all intersecting factors produce measurable effects in a linear or additive manner. Overall, the findings confirm that HIV disparities are driven by a **complex interaction of race, gender, age, income, and healthcare access**. The results support the rejection of the null hypotheses and reinforce the importance of **intersectional, multi-level interventions** aimed at reducing structural inequities and improving HIV outcomes among African Americans.

DISCUSSION

The results of the Negative Binomial Regression analysis demonstrate that the intersection of **gender, age, income, healthcare access, and race** significantly shapes HIV outcomes between African Americans and Caucasians in the United States. By incorporating both main effects and interaction terms, the model provides strong evidence that HIV disparities are not driven by single risk factors in isolation, but by **structural and overlapping social inequalities**, consistent with the intersectionality framework (Crenshaw, 1989; Bowleg, 2012).

Main Effects and Comparison with Existing Literature

The findings show that African Americans experience significantly higher HIV exposure than Caucasians across gender and age groups. Specifically, Black males and females are more than three times as likely to be exposed to HIV compared to their White counterparts (OR = 3.34 and 3.36, $p < .001$), while Black children also show significantly elevated risk (OR = 3.07, $p < .001$). These results are consistent with CDC surveillance reports (CDC, 2023), which document persistent racial disparities in HIV incidence, particularly among African American communities. Similar patterns have been reported by Millett et al. (2012), who found that Black men who have sex with men (MSM) experience disproportionately higher HIV infection rates not explained solely by individual behavior but by network-level and structural factors. Likewise, Adimora and Auerbach (2010) argue that racial disparities in HIV are largely driven by contextual factors such as poverty, limited healthcare access, and high-risk sexual networks rather than biological differences.

From a socioeconomic perspective, the current study confirms that income and healthcare access are strong protective factors. Higher income significantly reduces HIV exposure (OR = 0.961, $p < .001$), while healthcare access reduces risk by approximately 76% (OR = 0.24, $p < .001$). These findings align with Pellowski et al. (2013), who emphasize that socioeconomic disadvantage is a major driver of HIV vulnerability due to reduced access to prevention tools such as PrEP, delayed testing, and lower treatment adherence. Similarly, KFF (2019) reports that uninsured or underinsured populations are more likely to experience late HIV diagnosis and poorer outcomes. However, the non-significant effect of socioeconomic status (SES) contradicts some studies suggesting SES as a direct predictor of HIV risk. For example, Vohra-Gupta et al. (2022) found a strong association between area-level deprivation and HIV incidence. The current finding suggests that SES may operate indirectly through income and healthcare access, rather than as an independent predictor, supporting the argument by American Psychological Association (2022) that SES effects are often mediated by structural healthcare barriers.

Intersectional (Interaction) Effects, and Comparison with Existing Literature

The interaction results further strengthen the intersectionality argument by showing that combined social positions significantly shape HIV outcomes. The interaction between Black female identity and income is significantly protective (OR = 0.967, $p = .002$), indicating that economic improvements have a particularly strong effect for Black women. This aligns with Edwards and Collins (2014), who argues that Black women experience compounded vulnerability due to the intersection of race, gender, and class, but also benefit disproportionately from economic empowerment and healthcare access. Similarly, the interaction between income and healthcare access is also significant (OR = 0.993, $p = .001$), reinforcing findings by Embleton et al. (2023), which highlight that structural supports work synergistically to reduce HIV risk through improved prevention uptake and earlier diagnosis.

However, higher-order interaction terms (e.g., Black female × income × SES × healthcare access) were not statistically significant. This partially contradicts theoretical expectations in intersectionality research, which suggests that multiple marginalities should intensify health disparities (Bowleg, 2012). Yet, similar non-significant or weak higher-order effects have been reported by Bauer et al. (2014), who note that intersectional effects are often non-linear, context-dependent, and difficult to detect statistically due to measurement limitations and sample constraints.

Overall, the findings strongly support the argument that HIV disparities in the United States are shaped by interlocking systems of inequality rather than isolated risk factors. While African Americans—particularly males, females, and children—bear a disproportionate burden of HIV, this risk is significantly mitigated by income and healthcare access, reinforcing the importance of structural determinants of health. These results are consistent with a large body of HIV disparity literature emphasizing structural inequality (Adimora & Auerbach, 2010; Millett et al., 2012), while also contributing new evidence that intersectional interactions between gender, race, and socioeconomic resources produce measurable differences in HIV outcomes. At the same time, the mixed findings regarding SES and higher-order interactions highlight the complexity of operationalizing intersectionality in quantitative models.

CONCLUSION AND POLICY IMPLICATIONS

This study demonstrates that HIV disparities between African Americans and Caucasians in the United States are not the result of isolated demographic or behavioral factors, but rather the product of intersecting structural and social determinants. The Negative Binomial Regression results confirm that race, gender, age, income, and healthcare access jointly shape HIV outcomes, with African Americans consistently experiencing significantly higher exposure risk. In particular, Black males, Black females, and Black children exhibit more than three times the likelihood of HIV exposure compared to their white counterparts, highlighting the persistent and intergenerational nature of these inequities.

At the structural level, income and healthcare access emerged as strong protective factors. Higher income significantly reduced HIV exposure, while access to healthcare was associated with a substantial reduction in risk, reinforcing the importance of economic stability and healthcare availability in shaping health outcomes. Although socioeconomic status (SES) alone was not statistically significant, interaction effects revealed that income and healthcare access jointly reduce HIV risk, particularly among African American females. These findings emphasize that socioeconomic factors do not operate independently, but instead function through interconnected systems of advantage and disadvantage.

The interaction results further support an intersectional understanding of HIV disparities. Significant effects observed among Black females, children, and income-related interactions suggest that HIV vulnerability is shaped by compounded identities and structural conditions rather than single risk factors. While some higher-order interactions were not statistically significant, this does not negate the importance of intersectionality; rather, it indicates that structural inequality may operate in complex, non-linear ways that are not fully captured by additive statistical models.

Policy Implications and Recommendations

Integrating Economic Policy into HIV Prevention Strategy: The findings strongly support the argument that economic inequality is a key driver of HIV disparities. Policies aimed at reducing poverty should be considered central to HIV prevention efforts. Expanding Medicaid eligibility, increasing funding for low-income HIV prevention programs, and reducing out-of-pocket costs for PrEP, testing, and antiretroviral therapy (ART) are critical steps. In addition, income-support programs such as housing vouchers, food assistance, and employment training should be explicitly recognized as HIV prevention tools, not only social welfare programs.

Strengthening Healthcare Access and Infrastructure: Healthcare access emerged as one of the strongest protective factors in this study, reinforcing the need to expand equitable healthcare delivery. Policymakers should prioritize the expansion of community-based clinics, mobile testing units, and telehealth services in underserved African American communities. Increasing insurance coverage alone is insufficient unless it is paired with geographic, transportation, and provider availability improvements.

Addressing Structural Racism in Healthcare Systems: Consistent with prior research (e.g., Braveman & Gottlieb, 2014; Bernard et al., 2021; Bloland et al., 2019), this study reinforces that structural racism is a fundamental driver of racial health disparities. Policy responses must therefore extend beyond access to care and directly address discrimination within healthcare systems. Mandatory anti-racism training, accountability frameworks for provider bias, and increased representation of African Americans in healthcare leadership are essential reforms. Supporting Black-led health organizations can also improve trust and service utilization in historically marginalized communities.

Targeted Interventions for High-Risk Subpopulations: Findings highlight that Black females, Black children, and low-income African American populations are disproportionately affected. Targeted interventions should include school-based HIV education, youth-focused prevention programs, and gender-responsive healthcare services. For African American women, integrated services addressing HIV prevention alongside reproductive health, intimate partner violence, and economic empowerment are especially important.

Expanding Community-Based and Intersectional Approaches: Community-based interventions should be expanded as they are uniquely positioned to address intersectional barriers such as stigma, mistrust, and cultural exclusion. Programs led by community health workers and faith-based organizations have demonstrated effectiveness in improving testing, treatment adherence, and prevention uptake. Policymakers should increase funding for community-based organizations and formally integrate them into national HIV response strategies.

Moving Beyond Behavioral-Only HIV Models: The findings challenge traditional HIV prevention strategies that focus primarily on individual behavior change. While education and awareness remain important, they are insufficient without addressing upstream determinants such as poverty, housing instability, and healthcare inequities. A shift toward structural prevention models—where social policy is treated as public health policy—is essential for long-term reduction of HIV disparities.

Overall, this study reinforces the importance of intersectionality as a guiding framework for both research and policy. Effective HIV reduction strategies must move beyond single-factor explanations and instead address the interconnected systems of race, class, gender, age, and healthcare access that shape vulnerability. Only through coordinated structural, economic, and healthcare reforms can meaningful progress be made toward reducing HIV disparities in the United States.

REFERENCES

Adimora, A. A., & Auerbach, J. D. (2010). Structural interventions for HIV prevention in the United States. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *55*(02), S132–S135. https://doi.org/10.1097/qai.0b013e3181fbcb38

Adimora, A. A., Ramirez, C., Poteat, T., Archin, N. M., Averitt, D., Auerbach, J. D., Agwu, A. L., Currier, J., & Gandhi, M. (2021). HIV and women in the USA: What we know and where to go from here. *The Lancet*, *397*(10279), 1107–1115. https://doi.org/10.1016/S0140-6736(21)00396-2

AIDSVu. (2023). *United States.* https://aidsvu.org/local-data/united-states/

American Psychological Association. (2022, April). *HIV and socioeconomic status*. https://www.apa.org/pi/ses/resources/publications/hiv-aids

Arreola, S., Santos, G.-M., Solares, D., Tohme, J., & Ayala, G. (2023). Barriers to and enablers of the HIV services continuum among gay and bisexual men worldwide: Findings from the Global Men's Health and Rights Study. *PLOS ONE*, *18*(5), e0281578–e0281578. https://doi.org/10.1371/journal.pone.0281578

Bauer, G. R., Churchill, S. M., Mahendran, M., Walwyn, C., Lizotte, D., & Villa-Rueda, A. A. (2014). Intersectionality in quantitative research: A systematic review of its emergence and applications of theory and methods. *SSM - Population Health*, *14*(1), 100–798. https://doi.org/10.1016/j.ssmph.2021.100798

Bernard, E. J., Beyrer, C., Cameron, E., Clayton, M., & Volgina, A. (2021). Ending unjust HIV criminalization: Leave no-one behind. *Journal of the International AIDS Society*, *24*(2), e25681. https://doi.org/10.1002/jia2.25681Bloland, P., Simone, P., Burkholder, B., Slutsker, L., & De Cock, K. M. (2019). The role of public health institutions in global health system strengthening efforts: The US CDC's perspective. *PLoS Medicine*, *9*(4), e1001199. https://doi.org/10.1371/journal.pmed.1001199

Bowleg, L. (2012). The problem with intersectional stigma and HIV equity research. *American Journal of Public Health*, *112*(S4), S344–S346. https://doi.org/10.2105/ajph.2022.306729

Bradley, E. L. P., Geter, A., Lima, A. C., Sutton, M. Y., & Hubbard McCree, D. (2018). Effectively addressing human immunodeficiency virus disparities affecting us Black women. *Health Equity*, *2*(1), 329–333. https://doi.org/10.1089/heq.2018.0038

Brandt, E. J. (2023). *Social determinants of racial health inequities*. *8*(6), e396–e397. https://doi.org/10.1016/s2468-2667(23)00100-7

Braveman, P., & Gottlieb, L. (2014). The social determinants of health: It's time to consider the causes of the causes. *Public Health Reports*, *129*(Suppl 2), 19–31. https://doi.org/10.1177/00333549141291S206

Caiola, C., Docherty, S. L., Relf, M., & Barroso, J. (2014). Using an intersectional approach to study the impact of social determinants of health for African American mothers living with HIV. *Advances in Nursing Science*, *37*(4), 287–298. https://doi.org/10.1097/ans.0000000000000046

Centers for Disease Control and Prevention. (2020, July 30). *Let's stop HIV together*. https://www.cdc.gov/stophivtogether/hiv-stigma/ways-to-stop.html

Centers for Disease Control and Prevention. (2022, December 1). *Issue brief: The role of housing in ending the HIV epidemic*. https://www.cdc.gov/hiv/policies/data/role-of-housing-in-ending-the-hiv-epidemic.html

Centers for Disease Control and Prevention. (2023, September 1). *Socioeconomic factors*. https://www.cdc.gov/dhdsp/health_equity/socioeconomic.htm

Centers for Disease Control and Prevention. (2024, May 14). *Fast facts: HIV in the United States*. https://www.cdc.gov/hiv/data-research/facts-stats/index.html

Centers for Disease Control and Prevention. (2022). *HIV among gay and bisexual men*. https://www.cdc.gov/nchhstp/newsroom/docs/factsheets/cdc-msm-508.pdf

Centers for Disease Control and Prevention. (2022, June 30). *About HIV*. https://www.cdc.gov/hiv/basics/whatishiv.html

Centers for Disease Control and Prevention. (2019). *HIV surveillance*. https://www.cdc.gov/hiv/library/reports/hiv-surveillance.html

Corus, C., & Saatcioglu, B. (2015). An intersectionality framework for transformative services research. *The Service Industries Journal*, *35*(7-8), 415–429. https://doi.org/10.1080/02642069.2015.1015522

Crenshaw, K.W. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine. *University of Chicago Legal Forum, 1989. (1989)* 139-168. https://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8

Creswell, J.W. & Creswell, J. D. (2022). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (6th edition)*. Sage Publications, Inc. ISBN-10:1071817949

Edwards, A. E., & Collins, C. B. (2014). Exploring the influence of social determinants on HIV risk behaviors and the potential application of structural interventions to prevent HIV in women. *Journal of Health Disparities Research and Practice*, *7*(SI2), 141–155. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4848455/

Embleton, L., Logie, C. H., Ngure, K., Nelson, L. E., Kimbo, L., Ayuku, D., Turan, J.M., & Braitstein, P. (2023). Intersectional stigma and implementation of HIV prevention and treatment services for adolescents living with and at risk for HIV: Opportunities for improvement in the HIV continuum in sub-Saharan Africa. *AIDS and Behavior*. *27*(Suppl 1), 162–184. https://doi.org/10.1007/s10461-022-03793-4

Ferlatte, O., Handlovsky, I., Ridge, D., Chanady, T., Knight, R., & Oliffe, J. L. (2022). Understanding stigma and suicidality among gay men living with HIV: A photovoice project. *SSM - Qualitative Research in Health*, *2*, 100112. https://doi.org/10.1016/j.ssmqr.2022.100112

Gandhi, R.T., Bedimo, R., Hoy, J. F., Landovitz, R. J., Smith, D. M., Eaton, E. F., Lehmann, C., Springer, S. A., Sax, P. E., Thompson, M. A., Benson, C. A., Buchbinder, S. P., del Rio, C., Eron, J. J., Jr, Günthard, H. F., Molina, J.-M., Jacobsen, D. M., & Saag, M. S. (2022). Antiretroviral drugs for treatment and prevention of HIV infection in adults: 2022 recommendations of the International Antiviral Society–USA Panel. *JAMA*, *329*(1), 63-84. https://doi.org/10.1001/jama.2022.22246

Giroir, B. P. (2020). The time is now to end the HIV epidemic. *American Journal of Public Health*, *110*(1), 22–24. https://doi.org/10.2105/ajph.2019.305380

Glenshaw, M. T., Gaist, P., Wilson, A., Cregg, R. C., Holtz, T. H., & Goodenow, M. M. (2022). Role of NIH in the ending the HIV epidemic in the US initiative: Research improving practice. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *90*(S1), S9. https://doi.org/10.1097/QAI.0000000000002960

Guilamo-Ramos, V., Thimm-Kaiser, M., & Benzekri, A. (2023). Is the USA on track to end the HIV epidemic? *The Lancet HIV*, *10*(8), e552–e556. https://doi.org/10.1016/S2352-3018(23)00142-X

Guilamo-Ramos, V., Thimm-Kaiser, M., Benzekri, A., Chacón, G., López, O. R., Scaccabarrozzi, L., & Rios, E. (2019). The invisible US Hispanic/Latino HIV crisis: Addressing gaps in the national response. *American Journal of Public Health*, *110*(1), e1–e5. https://doi.org/10.2105/ajph.2019.305309

Harrison, Muessig, K., Poteat, T., Koester, K., Vecchio, A., Paton, M., Miller, S. J., Pereira, N., Harris, O., Myers, J., Campbell, C., & Hightow-Weidman, L. (2022). Addressing racism's role in the US HIV epidemic: Qualitative findings from three ending the HIV epidemic prevention projects. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, *90*(S1), S46–S55. https://doi.org/10.1097/qai.0000000000002965

Heino, E., Kara, H., Tarkiainen, L., & Tapola-Haapala, M. (2022). Master's-level social work students' definitions of intersectionality in relation to social work practice in Finland. *Nordic Social Work Research*, 1–14. https://doi.org/10.1080/2156857x.2022.2130407

Hilbe, J. (2011). *Negative Binomial Regression (2nd edition)*. Cambridge University Press. ISBN: 9780521198158. Negative Binomial Regression, 2nd Edition | Cambridge University Press

HIV.gov. (2021, June 2). *U.S. statistics*. https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics

HIV.gov. (2022). *Timeline of the HIV and AIDS epidemic*. https://www.hiv.gov/hiv-basics/overview/history/hiv-and-aids-timeline/

HIV.gov. (2022, October 27). *HIV & AIDS trends and U.S. statistics overview*. https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics/

HIV.gov. (2023, January 13). *What are HIV and AIDS?* https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/what-are-hiv-and-aids

Kaiser Family Foundation. (2019, February 7). *Black Americans and HIV: The basics*. https://www.kff.org/hivaids/fact-sheet/black-americans-and-hivaids-the-basics/

Kelly, C., Kasperavicius, D., Duncan, D., Etherington, C., Giangregorio, L., Presseau, J., Sibley, K. M., & Straus, S. (2021). "Doing" or "using" intersectionality? Opportunities and challenges in incorporating

intersectionality into knowledge translation theory and practice. *International Journal for Equity in Health*, *20*(1), 1–7. https://doi.org/10.1186/s12939-021-01509-z

Kingsley O., O'Brien, O., & Ozo-Eson, P. I. (2024). Barriers and enabling structural forces affecting access to antiretroviral therapy in Nigeria. *BMC Public Health*, *24*(1). https://doi.org/10.1186/s12889-023-17271-6

Klein, G.W., Geiger, T., Chavis, N. S., Cohen, S. M., Ofori, A. B., Umali, K. T., & Hauck, H. (2020). The Health Resources and Services Administration's Ryan White HIV Program in rural areas of the United States: Geographic distribution, provider characteristics, and clinical outcomes. *PLOS ONE*, *15*(3), e0230121. https://doi.org/10.1371/journal.pone.0230121

Liu, Y., Li, L., Wang, Y. Y., Wilkinson, M. R., Ren, Y.-M., Wang, C.-C., Zhang, F.-B., Gao, J., & Liu, S. (2020). Effects of health education on HIV related knowledge among first year university students in China. *African Health Sciences*, *20*(4), 1582–1590. https://doi.org/10.4314/ahs.v20i4.10

Menza, T. W., Hixson, L. K., Lipira, L., & Drach, L. (2021). Social determinants of health and care outcomes among people living with HIV in the United States. *Open Forum Infectious Diseases*, *8*(7). https://doi.org/10.1093/ofid/ofab330

Metin Dinçer, Nezir Köse, & Emre Ünal. (2024). The role of socioeconomic and behavioral factors in HIV-related deaths. *Humanities and Social Sciences Communications*, *11*(1). https://doi.org/10.1057/s41599-024-04121-y

Miller, R. L., Rutledge, J., & Ayala, G. (2021). Breaking down barriers to HIV care for gay and bisexual men and transgender women: The advocacy and other community tactics (ACT) project. *AIDS and Behavior*, *25*. https://doi.org/10.1007/s10461-021-03216-w

Millett, G. A., Honermann, B., Jones, A., Lankiewicz, E., Sherwood, J., Blumenthal, S., & Sayas, A. (2020). White counties stand apart: The primacy of residential segregation in COVID-19 and HIV diagnoses. *AIDS Patient Care and STDs*, *34*(10), 417–424. https://doi.org/10.1089/apc.2020.0155

Millett, G. A., Peterson, J. L., Wolitski, R. J., & Stall, R. (2006). Greater risk for HIV infection of Black men who have sex with men: A critical literature review. *American Journal of Public Health*, *96*(6), 1007–1019. https://doi.org/10.2105/ajph.2005.066720

Monroe, P., Campbell, J. A., Harris, M., & Egede, L. E. (2023). Racial/ethnic differences in social determinants of health and health outcomes among adolescents and youth ages 10–24 years old: a scoping review. *BMC Public Health*, *23*(1). https://doi.org/10.1186/s12889-023-15274-x

Nutakor, J. A., Zhou, L., Larnyo, E., Addai-Dansoh, S., Cui, Y., Kissi, J., Ama, N., & Alexander Kwame Gavu. (2023). A multiplicative effect of education and wealth associated with HIV-related knowledge and attitudes among Ghanaian women. *BMC Public Health*, *23*(1). https://doi.org/10.1186/s12889-023-16311-5

Nyein, P. P., Aung, E., Aung, N. M., Kyi, M. M., Boyd, M., Lin, K. S., & Hanson, J. (2021). The impact of gender and the social determinants of health on the clinical course of people living with HIV in Myanmar: an observational study. *AIDS Research and Therapy*, *18*(1). https://doi.org/10.1186/s12981-021-00364-w

Pellowski, J. A., Kalichman, S. C., Matthews, K. A., & Adler, N. (2013). A pandemic of the poor: Social disadvantage and the U.S. HIV epidemic. *American Psychologist*, *68*(4), 197–209. https://doi.org/10.1037/a0032694

Rimmler, S., Golin, C., Coleman, J., Welgus, H., Shaughnessy, S., Taraskiewicz, L., Lightfoot, A. F., Randolph, S. D., & Riggins, L. (2022). Structural barriers to HIV prevention and services: Perspectives of African American women in low-income communities. *Health Education & Behavior*, *49*(6), 1022–1032. https://doi.org/10.1177/10901981221109138

Rintamaki, K., K., Hogan, T., Scott, A. M., Dobmeier, C., Tingue, E., & Peek, D. (2019). The role of stigma management in HIV treatment adherence. *International Journal of Environmental Research and Public Health*, *16*(24). https://doi.org/10.3390/ijerph16245003

Sohler, N. L., Li, X., & Cunningham, C. O. (2009). Gender disparities in HIV health care utilization among the severely disadvantaged: Can we determine the reasons? *AIDS Patient Care and STDs*, *23*(9), 775–783. https://doi.org/10.1089/apc.2009.0041

Sutton, M. Y., Anachebe, N. F., Lee, R., & Skanes, H. (2021). Racial and ethnic disparities in reproductive health services and outcomes, 2020. *Obstetrics & Gynecology*, *137*(2), 225–233. https://doi.org/10.1097/aog.0000000000004224

Sutton, M. Y., Martinez, O., Brawner, B. M., Prado, G., Camacho-Gonzalez, A., Estrada, Y., Payne-Foster, P., Rodriguez-Diaz, C. E., Hussen, S. A., Lanier, Y., van den Berg, J. J., Malavé-Rivera, S. M., Hickson, D. A., & Fields, E. L. (2020). Vital Voices: HIV Prevention and Care Interventions Developed for Disproportionately Affected Communities by Historically Underrepresented, Early-Career Scientists.

Journal of Racial and Ethnic Health Disparities, *8*(6), 1456–1466. https://doi.org/10.1007/s40615-020-00908-2

Town, M. (2024). Racial and ethnic differences in social determinants of health and health-related social needs among adults — Behavioral Risk Factor Surveillance System, United States, 2022. *MMWR. Morbidity and Mortality Weekly Report*, *73*(9). https://doi.org/10.15585/mmwr.mm7309a3

Vitsupakorn, Pierce, N., & Ritchwood, T. D. (2023). Cultural interventions addressing disparities in the HIV prevention and treatment cascade among Black/African Americans: a scoping review. *BMC Public Health*, *23*(1). https://doi.org/10.1186/s12889-023-16658-9

Vohra-Gupta, S., Petruzzi, L., Jones, C., & Cubbin, C. (2022). An Intersectional Approach to Understanding Barriers to Healthcare for Women. *Journal of Community Health*, *48*(1). https://doi.org/10.1007/s10900-022-01147-8