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Trends in Black-White Disparities in HIV Diagnosis by Selected Characteristics, 2017–2021—United States

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Abstract

Objective(s): To identify trends in HIV diagnosis disparities among subpopulations of Black/African American and White persons by selected characteristics (i.e., sex assigned at birth, age group, and region of residence) in the United States during 2017–2021.

Methods: Four-year estimated annual percent change (EAPC) during 2017–2021, 2020 was excluded due to the impact of COVID-19 on HIV diagnoses, was used to assess temporal trends in diagnosis rates and disparities by selected characteristics for Black and White persons aged ≥ 13 years with a diagnosis of HIV infection. Data reported through December 2022 to the National HIV Surveillance System (NHSS) were used.

Results: Among 74,161 Black persons and 44,641 White persons with HIV diagnosed during 2017–2021, there was an overall increase in HIV diagnosis rates among White females (EAPC = 2.0; CI = 0.3, 3.8), White males aged 35–44 years (EAPC = 1.8; CI = 0.2, 3.5) and whose infection was attributed to injection drug use (EAPC = 7.5; CI = 4.6, 10.4), White females aged 35–44 years (EAPC = 5.3; CI = 1.9, 8.9) and residing in the Midwest (EAPC = 5.5; CI = 1.4, 9.7). Among both Black and White males, we observed increases in relative disparities in HIV diagnosis for males aged 13–24 years (EAPC = 7.4; CI = 7.0, 7.7) and residing in the West (EAPC = 2.0; CI = 1.1, 2.9).

Conclusions: Efforts should prioritize eliminating disparities in treatment and prevention services by taking a comprehensive approach and actively mitigating the social determinants contributing to HIV disparities.

Keywords

HIV; Disparities; Black/African American; Social determinants of health

Introduction

HIV continues to disproportionately affect Black/African American (hereafter referred to as Black) populations in the United States (US) [1–5]. In 2021, among persons aged ≥ 13

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years, Black persons had the highest number (14,522; 41%) and rate (34.8 per 100,000 population per year) of HIV diagnoses in the United States [6]. Additionally, Black persons had a rate that was 7.9 times as high as White persons, and if Black persons had a similar rate as White persons, HIV diagnoses could have been reduced by 37 cases per 100,000 population per year [6]. These racial/ethnic disparities persist due to the effects of social determinants of health (SDOH) which drive as much as half of health outcomes, including HIV [7].

SDOH are conditions in which people are born, grow, live, work, and age and are closely linked with social, economic, and/or environmental disadvantages that adversely affect select groups of people who have systematically experienced greater obstacles to health based on their race/ethnicity group or other characteristics (e.g., religion, socioeconomic status, age, mental health, sexual orientation, gender identity, geographic location) historically linked to discrimination or exclusion [8, 9]. Owing to a history of racial discrimination and residential segregation, some Black persons in the United States reside in areas with the highest social vulnerability (i.e., areas where the potential negative health effects on communities caused by external stressors are highest) [9]. The disproportionate impact of HIV on some Black subpopulations might be due to racial segregation and discrimination which have both been found to be more prevalent in socially vulnerable areas [7]. A study by the Centers for Disease Control and Prevention (CDC) found that in 2018, more than half of Black (52.2%) adults compared to 24.4% of White adults lived in the most socially vulnerable areas at the time of HIV diagnosis [7]. The development and prioritization of interventions that address health disparities associated with SDOH are critical, particularly for persons at higher risk for HIV infection living in areas with high levels of social vulnerability.

To address health disparities, current federal health initiatives include a focus on health equity—the attainment of the highest level of health for all people [10–13]. One of the four goals of The National HIV/AIDS Strategy (NHAS) (2022–2025) includes reducing HIV-related disparities and health inequities by improving the social circumstances of individuals and communities to support equitable health outcomes [14]. A resource critical for informing NHAS planning is the US Playbook to Address SDOH released in November 2023 [15]. The Playbook highlights ongoing and new actions that federal agencies are taking to support health and align investments to finance community infrastructure, empower communities to address SDOH, and encourage coordinated use of resources and data to improve health outcomes. To reduce disparities, it is important to address SDOH which provide the contexts that shape health behaviors and health itself [9].

Measuring health disparities is essential to advancing health equity [11]. When measuring health disparities, both absolute and relative measures of disparity should be reported and considered in the assessment of progress toward health equity – as absolute disparities provide some indication of how many lives could be improved if the difference between two rates were eliminated or reduced (i.e., preventable cases) and relative disparities measures the magnitude of the disparity [16]. To advance the goals of federal initiatives, assessing trends in Black-White HIV diagnosis disparities will help identify subgroups of people disproportionately affected by health disparities. We selected White persons as the reference

group for two reasons: 1) they make up the majority population, influencing numbers of HIV diagnoses more than smaller groups, and 2) their historical sociopolitical advantages likely result in better health outcomes compared to racial and ethnic minorities [17].

This study aims to identify increasing trends in HIV diagnosis disparities among subpopulations of Black and White persons to assess where substantial improvements are needed to reach federal initiative goals. A descriptive intersectional analysis framework is used to identify disparities among different Black and White subpopulations with increasing disparities [18]. HIV diagnosis numbers and rates among Black and White persons are used to assess absolute and relative disparity trends.

Methods

Study Design

For this ecologic study, we focus on the comparison of two groups (Black and White persons with an HIV diagnosis). To characterize trends in Black-White disparities, diagnosed HIV infections reported to the CDC's National HIV Surveillance System (NHSS) were assessed. Numbers and rates of Black and White persons aged ≥ 13 years with a diagnosis of HIV infection in the United States during 2017–2019 and 2021 based on cases reported to NHSS through December 2022 were analyzed. This ecologic analysis excludes 2020 data in the assessment of trends because of the impact of the COVID-19 pandemic on access to HIV testing, care-related services, and case surveillance activities in state/local jurisdictions, which resulted in a 17% decline in HIV diagnoses in the United States in 2020 when compared to 2019 [19]. Rates are per 100,000 population per year.

Two measures are used to assess disparities in HIV diagnosis rates among Black and White persons by age and region of residence stratified by assigned sex at birth:

- absolute disparity (absolute difference)—the arithmetic difference between Black and White rates, and
- relative disparity (relative ratio)—the ratio of the Black and White rates.

Analysis

Estimated annual percent change (EAPC) over a 5-year period (2017–2021) was used to assess temporal trends in disparities. EAPCs indicate the per-year change, on average, in the rate or number of HIV diagnoses from 2017–2021. We calculated EAPCs and 95% confidence intervals (CIs) using Poisson regression with a log link and population offset term for Black and White HIV diagnosis rates and lognormal regression for Black-White disparities. Population data are not available for transmission categories; therefore, EAPCs were estimated using Poisson regression based on the number of annual diagnoses and rates could not be calculated for disparity measures. EAPCs were calculated stratified by race (Black or White persons) and sex assigned at birth (male or female), by age group (aged 13–24, 25–34, 35–44, 45–54, and ≥ 55 years), transmission category (male-to-male sexual contact [MMSC], injection drug use [IDU], MMSC/IDU, and heterosexual contact), and region of residence (U.S. census regions Northeast, Midwest, South, and West) using the geometric mean of the proportional changes in the rates and numbers for each of four years

(i.e., 2017, 2018, 2019, and 2021). The Poisson regression model is robust enough to handle skipped years (e.g., 2020) and automatically provides a linear estimate for the skipped year based on rates from the previous year (i.e., 2019) and following year (i.e., 2021) [20]. Since the 2020 data impacted by the COVID-19 pandemic were not used for calculating EAPCs, the estimated annual trends were based on four years of data with a linear estimation of 2020 data. It was necessary to exclude the 2020 outlier point and use a linear estimation as not doing so would have been misleading given the pandemic's distortive effect on HIV diagnoses reported in 2020. A sensitivity analysis was conducted where we found that the 4-year EAPCs, although conservative, produced similar estimates as the 5-year EAPCs. We analyzed the data using SAS version 9.4 (SAS Institute, Cary NC). Trends were deemed significant when the 95% CI for the EAPC excluded 0. Trends not statistically significant were described as having little to no detectable change.

Results

HIV Diagnoses and Estimated Annual Percent Changes

Table 1 presents annual HIV diagnosis numbers and rates and EAPCs for Black and White persons stratified by sex assigned at birth. There were a total of 74,161 Black persons and 44,641 White persons with HIV diagnosed during 2017–2021. There was an overall decrease per year, on average, in HIV diagnosis rates among Black persons (males: EAPC = -3.0 ; CI = $-3.6, -2.4$; females: EAPC = -5.1 ; CI = $-6.1, -4.1$) and White males (EAPC = -2.1 ; CI = $-2.8, -1.4$); and an overall increase among White females (EAPC = 2.0 ; CI = $0.3, 3.8$).

Among males, we observed an increase per year, on average, in HIV diagnosis rates for White males aged 35–44 years (EAPC = 1.8 ; CI = $0.2, 3.5$) and White males whose infection was attributed to IDU (EAPC = 7.5 ; CI = $4.6, 10.4$). Little to no detectable changes were observed for Black males with infection attributed to IDU and MMSC/IDU, Black males residing in the West, White males aged 25–34 and ≥ 55 years, White males with infection attributed to MMSC/IDU, and White males residing in the Midwest. Trends in HIV diagnosis rates, or numbers for transmission categories, decreased per year, on average, for all other groups.

Among females, we observed increases per year, on average, in HIV diagnosis rates for White females aged 35–44 years (EAPC = 5.3 ; CI = $1.9, 8.9$) and White females residing in the Midwest (EAPC = 5.5 ; CI = $1.4, 9.7$). Little to no detectable changes were observed for Black females with infection attributed to IDU, Black females residing in the West, White females aged 13–24, 25–34, 45–54 and ≥ 55 years, White females with infection attributed to IDU and heterosexual contact, and White females residing in the Northeast, South and West. Trends in HIV diagnosis rates, or numbers for transmission categories, decreased per year, on average, for all other groups.

Disparities and Estimated Annual Percent Changes

Table 2 presents annual Black-White disparities in HIV diagnosis rates and EAPCs, stratified by sex assigned at birth. Overall, for both males and females, absolute disparities

in HIV diagnosis rates between Black persons and White persons decreased per year, on average, during 2017–2021 (males: from 65.7 to 57.6; EAPC = -3.2 ; CI = -3.6 , -2.7 ; and females: from 22.5 to 17.7; EAPC = -5.8 ; CI = -6.5 , -5.0). Whereas, among males, relative disparities in HIV diagnosis rates between Black males and White males remained the same per year, on average, during 2017–2021, and among females, the relative disparities decreased (EAPC = -7.2 ; CI = -8.4 , -5.9) per year, on average.

Among males, for absolute disparity in HIV diagnosis, little to no detectable change was observed per year, on average, only for males residing in the West. For relative disparities in HIV diagnosis, we observed increases per year, on average, for males aged 13–24 years (EAPC = 7.4 ; CI = 7.0 , 7.7) and males residing in the West (EAPC = 2.0 ; CI = 1.1 , 2.9). For relative disparities, we observed little to no detectable changes per year, on average, for males aged 45–54 and ≥ 55 years, and males residing in the Northeast and Midwest. Trends in absolute and relative disparities in HIV diagnosis decreased per year, on average, for all other subpopulations.

Among females, we observed little to no detectable increases per year, on average, in absolute disparities in HIV diagnosis and little to no detectable changes per year, on average, for females aged 35–44 years and females residing in the West. For relative disparities in HIV diagnosis, we observed little to no detectable increases per year, on average; and little to no detectable changes per year, on average, were observed for females residing in the Northeast. Trends in absolute and relative disparities in HIV diagnosis decreased per year, on average, for all other subpopulations.

Discussion

This analysis found that, from 2017–2021, most HIV diagnoses among Black persons decreased per year, on average, and many among White persons had little to no detectable changes. HIV diagnoses increased per year, on average, among a small number of White subpopulations and the overall Black-White disparities in HIV diagnosis rates decreased per year, on average, with the exception of relative disparities among males which showed little to no detectable change. We observed increases per year, on average, in HIV diagnoses rates among White persons aged 35–44 years, White males who inject drugs, and White females residing in the Midwest. Additionally, increases per year, on average, in Black-White relative disparities in HIV diagnosis rates were observed among persons aged 13–24 years and residing in the West.

This analysis found increases per year, on average, in HIV diagnosis among White persons aged 35–44 years. This age group is more likely than other age groups to receive an HIV diagnosis, as younger persons are less likely to be aware of their HIV infection and have low rates of HIV testing [6]. Older persons are not routinely asked about risk for HIV by healthcare providers, do not consider themselves to be at risk for HIV, or may mistake HIV symptoms for those of normal aging [21]. Greater awareness of their HIV status, higher testing rates, and higher likelihood of providers asking about risk for HIV among persons aged 35–44 years may explain the increase in HIV diagnosis for this age group, compared to other age groups where no change was observed. In addition, White persons are more

likely to receive a diagnosis sooner after HIV infection [3] and reside in more privileged areas with the benefits of greater access to resources and better infrastructure that provides greater protection to residents from adverse health conditions compared to persons of other race/ethnicities in the United States [22, 23]; this may explain why the increase in HIV diagnosis among persons aged 35–44 years was observed only among White persons.

We found an increase per year, on average, in HIV diagnoses among White males with infection attributed to IDU. White males account for the largest number of persons with diagnosed HIV infection attributed to injection drug use [6]. In recent years, the opioid (including prescription and synthetic opioids) and heroin crises have led to increased numbers of persons who inject drugs, with many communities experiencing increases in nonprescription use resulting in localized HIV outbreaks [24]. Rapid HIV transmission associated with opioid use is well documented [25–28]. The high percentage of White males who inject drugs and the risk of rapid HIV transmission associated with IDU may explain the increase in HIV diagnoses among White males with HIV attributable to IDU during the period analyzed.

Our analysis found increases per year, on average, in HIV diagnoses among White females residing in the Midwest. Although regional differences are varied and complex, some possible reasons that may contribute to our findings include White females in the Midwest being more likely to live in metro fringe areas (i.e., low-population-density areas that fall within metropolitan areas) and having access to more affordable healthcare, compared to White females residing in the Northeast and West [29]. These metro fringe areas allow for persons to be more connected socially and to a larger regional economy, increasing residents' access to a broader range of healthcare, employment opportunities, education, and other services [29]. While the Southern region has more persons living in metro fringe areas, many Southern states have not expanded Medicaid coverage, hindering access to care, utilization of health services, and the affordability of care [30]. White females in the Midwest may have increased diagnoses likely because of fewer barriers, such as living in metro fringe areas, better access to and affordable healthcare, and residing in Medicaid expansion states which may explain their increase in HIV diagnoses. White males in the Midwest experienced no change in HIV diagnoses which may be partially explained by their healthcare seeking behavior, as males tend to seek healthcare services less often than females [31].

Although no increases per year, on average, in Black-White absolute disparity trends for HIV diagnoses were found, we did observe increases in Black-White relative disparity trends among some subpopulations. Among Black and White males aged 13–24 years, the absolute disparity trend decreased per year, on average, while the relative disparity trend increased. This occurred because, although the HIV diagnosis rate declined in both groups, the rate of improvement was smaller for Black males aged 13–24 years. Persons aged 13–24 years are the least likely of any age group to be aware of their HIV infection, retained in care, or have a suppressed viral load [1, 6] demonstrating the many missed opportunities for access to the information and tools needed to make healthy decisions. Additionally, the disparity in HIV prevention strategies, like the prescription of PrEP (11% among Black

persons vs 78% among White persons) [1, 32], may also contribute to the increase in the Black-White relative disparity.

Among Black and White males residing in the West, the absolute disparity trend did not change, per year, on average, while the relative disparity trend increased. This may have occurred because, while the HIV diagnosis rate significantly declined among White males residing in the West, the decrease of a similar magnitude among Black males was not significant, in part due to the relatively higher rates. Thus, the rate of improvement was smaller for Black males residing in the West and only an increase in relative disparity was observed. Several states in the West are ranked among the highest for uptake of PrEP relative to their PrEP needs [33]. Additionally, previous research has shown disparities in the uptake of PrEP between Black and White males [34]. The high uptake of PrEP in the West may exacerbate the disparities that already exist and may explain the increase in the Black-White relative disparity among males residing in the West.

Limitations

This analysis was subject to several limitations. First, persons with diagnosed HIV were included in this analysis based on their residence at diagnosis. A person's residence at the time they received an HIV diagnosis may not correlate with where HIV transmission occurred or where they obtain medical care. Second, the findings from this analysis may not be representative of all persons with HIV because not all infected persons have been (1) tested or (2) tested at a time when the infection could be detected and diagnosed. Also, some states offer anonymous HIV testing, and some persons complete self-testing at home or in a private location; the results of anonymous tests and of self-tests are not reported to the confidential, name-based HIV registries of state and local health departments [35, 36]. Therefore, reports of confidential test results may not represent all persons who tested positive for HIV infection. In addition, testing patterns are influenced by many factors, including the extent to which testing is routinely offered to specific groups and the availability of, and access to, medical care and testing services. Third, differences in testing patterns exist by race/ethnicity, with higher testing and longer delays between infection and diagnosis among Black persons than among White persons [3, 37]; however, the effect of testing patterns on HIV disparities is unknown. Fourth, there was no adjustment for confounding variables. The Black-White disparity changes between 2018–2022 could reflect differences among unmeasured SDOH factors, which vary systematically by race/ethnicity group and are important in explaining health differences across racial/ethnic groups [38, 39]. Fifth, because this ecologic study focuses on the comparison of groups (i.e., Black and White persons diagnosed with HIV), rather than individuals; individual-level interpretations are not possible due to ecological fallacy. Finally, data for the year 2020 were excluded from EAPC analyses due to the impact of COVID-19 pandemic on HIV testing in the United States.

Conclusion

Achieving national goals and ending the HIV epidemic in the United States will not be fully realized unless HIV disparities associated with SDOH are addressed and every person with

or at risk for HIV, benefits from effective treatment and prevention services (i.e., eliminating disparities in treatment and prevention services) [40]. By analyzing trends in disparities that focus on populations known to be disproportionately affected by HIV, we can monitor progress toward NHAS goals and assess if additional interventions are needed to achieve health equity. For example, while community engagement may be a useful strategy that involves local communities in planning and implementing HIV programs to ensure services meet the needs of all Black and White subpopulations; education and outreach developed to provide information about HIV prevention and treatment tailored to White persons aged 35–44 years, White females residing in the Midwest, or Black-White disparities among males aged 13–24 years may be needed. For White males who inject drugs, creating integrated health services that addresses HIV along with other health and social issues, such as mental health and substance use may be needed. Also, for Black-White disparities among persons residing in the West, culturally competent care training for providers to improve communication and trust with diverse populations may be needed. Efforts should prioritize eliminating disparities in treatment and prevention services by taking a comprehensive approach and actively mitigating the social determinants contributing to HIV disparities.

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Table 1

Diagnoses of HIV infection among Black/African American and White persons aged ≥ 13 years, by year of diagnosis and selected characteristics, 2017–2021—United States

	2017		2018		2019		2021		EAPC (95% CI)
	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	
Black/African American Persons									
Male sex at birth ^c									
Age at diagnosis (yr)									
13–24	3,607	97.6	3,41	95.2	3,41	94.7	3,25	88.5	– 2.4 (– 3.5, – 1.2)
25–34	4,396	142.7	4,430	139.7	4,376	134.6	4,270	130.8	– 2.2 (– 3.2, – 1.2)
35–44	1,724	70.0	1,696	68.0	1,682	66.5	1,700	63.4	– 2.4 (– 4.0, – 0.8)
45–54	1,185	48.2	1,148	47.3	1,081	45.2	875	36.5	– 6.7 (– 8.7, – 4.8)
≥ 55	949	23.5	886	21.3	936	21.9	918	20.3	– 3.0 (– 5.1, – 0.9)
Transmission category ^d									
Male-to-male sexual contact (MMSC) ^e	9,405	79.3	9,205	79.2	9,145	79.7	8,879	80.9	– 1.4 (– 2.1, – 0.7)
Injection drug use (IDU) ^f	385	3.2	413	3.6	389	3.4	371	3.4	– 1.5 (– 5.7,2.9)
MMSC ^e /IDU ^f	303	2.6	292	2.5	314	2.7	244	2.2	– 4.8 (– 9.4,0.0)
Heterosexual contact ^g	1,752	14.8	1,695	14.6	1,606	14.0	1,470	13.4	– 4.4 (– 6.2, – 2.5)
Other ^h	16	0.1	16	0.1	22	0.2	14	0.1	– 3.8 (– 21.9,18.5)
Region of residence ⁱ									
Northeast	1,611	65.3	1,497	60.4	1,503	60.4	1,389	53.6	– 4.5 (– 6.1, – 2.9)
Midwest	1,807	66.4	1,776	64.9	1,696	61.5	1,625	57.5	– 3.7 (– 5.2, – 2.1)
South	7,481	82.7	7,358	80.5	7,322	79.2	6,998	73.8	– 2.8 (– 3.6, – 2.0)
West	962	63.7	990	64.6	955	61.5	966	60.7	– 1.5(– 3.5, 0.7)
Subtotal	11,861	75.4	11,621	73.1	11,476	71.5	10,978	66.5	– 3.0 (– 3.6, – 2.4)
Female sex at birth ^c									
Age at diagnosis (yr)									
13–24	608	16.9	578	16.3	532	15.2	482	13.6	– 5.5 (– 8.2, – 2.7)
25–34	1,132	35.8	1,015	31.5	992	30.3	949	28.9	– 4.9 (– 6.9, – 2.9)
35–44	956	34.9	943	34.1	881	31.5	867	30.0	– 3.9 (– 6.0, – 1.8)

	2017			2018			2019			2021			EAPC (95% CI)	
	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent		
45–54	819	29.4	757	27.5	717	26.4	649	24.3	649	24.3	649	24.3	– 4.6 (– 6.9, – 2.2)	
≥ 55	731	13.7	679	12.4	698	12.4	597	10.3	597	10.3	597	10.3	– 6.6 (– 9.0, – 4.1)	
Transmission category ^d														
Injection drug use (IDU) ^f	362	8.5	318	8.0	358	9.4	300	8.5	300	8.5	300	8.5	– 3.6 (– 9.2, 2.4)	
Heterosexual contact ^g	3,853	90.7	3,621	91.2	3,433	89.9	3,207	90.5	3,207	90.5	3,207	90.5	– 4.4 (– 5.6, – 3.3)	
Other ^h	31	0.7	34	0.9	29	0.8	37	1.0	37	1.0	37	1.0	2.1 (– 14.8, 22.4)	
Region of residence ⁱ														
Northeast	733	26.0	636	22.5	623	22.0	562	19.4	562	19.4	562	19.4	– 6.6 (– 9.1, – 4.1)	
Midwest	569	18.8	534	17.6	534	17.5	469	15.2	469	15.2	469	15.2	– 5.0 (– 7.8, – 2.2)	
South	2,665	25.8	2,488	23.8	2,368	22.4	2,244	20.9	2,244	20.9	2,244	20.9	– 5.1 (– 6.4, – 3.8)	
West	279	19.2	314	21.4	295	19.8	269	18.0	269	18.0	269	18.0	– 2.5 (– 6.2, 1.4)	
Subtotal	4,246	24.1	3,972	22.3	3,820	21.3	3,544	19.5	3,544	19.5	3,544	19.5	– 5.1 (– 6.1, – 4.1)	
Total	16,107	48.3	15,593	46.3	15,296	45.0	14,522	41.8	14,522	41.8	14,522	41.8	– 3.5 (– 4.0, – 3.0)	
White Persons														
Male sex at birth ^c														
Age at diagnosis (yr)														
13–24	1,230	8.7	1,090	7.8	998	7.2	816	5.9	816	5.9	816	5.9	– 9.1 (– 11.1, – 7.2)	
25–34	2,618	20.4	2,683	20.9	2,560	20.0	2,636	21.1	2,636	21.1	2,636	21.1	0.5 (– 0.8, 1.8)	
35–44	1,587	13.6	1,605	13.6	1,539	13.0	1,810	14.6	1,810	14.6	1,810	14.6	1.8 (0.2, 3.5)	
45–54	1,584	11.9	1,370	10.6	1,267	10.1	1,180	9.6	1,180	9.6	1,180	9.6	– 5.1 (– 6.8, – 3.3)	
≥ 55	1,109	3.5	1,117	3.4	1,109	3.4	1,094	3.2	1,094	3.2	1,094	3.2	– 1.6 (– 3.6, 0.4)	
Transmission category ^d														
Male-to-male sexual contact (MMSC) ^e	6,454	79.4	6,113	77.7	5,710	76.4	5,758	76.4	5,758	76.4	5,758	76.4	– 2.8 (– 3.7, – 2.0)	
Injection drug use (IDU) ^f	497	6.1	574	7.3	610	8.2	679	9.0	679	9.0	679	9.0	7.5 (4.6, 10.4)	
MMSC ^e /IDU ^f	721	8.9	734	9.3	742	9.9	714	9.5	714	9.5	714	9.5	– 0.3 (– 2.8, 2.3)	
Heterosexual contact ^g	447	5.5	438	5.6	404	5.4	379	5.0	379	5.0	379	5.0	– 4.3 (– 7.6, – 0.8)	
Other ^h	8	0.1	6	0.1	8	0.1	6	0.1	8	0.1	6	0.1	– 4.6 (– 30.2, 30.4)	

	2017			2018			2019			2021			EAPC (95% CI)
	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	No	Rate ^d or Percent	
Region of residence ^j													
Northeast	1,080	6.9	1,014	6.5	908	5.9	925	5.9	925	5.9	925	5.9	- 4.1 (- 6.2, - 2.1)
Midwest	1453	6.7	1391	6.4	1276	5.9	1398	5.9	1398	5.9	1398	6.4	- 1.2 (- 2.9, 0.6)
South	3552	11.9	3500	11.7	3403	11.4	3435	11.4	3435	11.4	3435	11.4	- 1.2 (- 2.3, - 0.1)
West	2043	12.1	1960	11.6	1886	11.1	1778	10.5	1778	10.5	1778	10.5	- 3.4 (- 4.9, - 1.9)
Subtotal	8128	9.7	7865	9.4	7473	8.9	7536	8.9	7536	8.9	7536	8.9	- 2.1 (- 2.8, - 1.4)
Female sex at birth ^c													
Age at diagnosis (yr)													
13–24	180	1.3	176	1.3	173	1.3	155	1.2	155	1.2	155	1.2	- 3.2 (- 8.0, 1.9)
25–34	424	3.4	429	3.5	447	3.6	428	3.5	428	3.5	428	3.5	0.9 (- 2.2, 4.2)
35–44	321	2.8	382	3.3	391	3.3	429	3.6	429	3.6	429	3.6	5.3 (1.9, 8.9)
45–54	284	2.1	289	2.2	293	2.3	287	2.4	287	2.4	287	2.4	2.9 (- 1.0, 7.0)
> 55	206	0.6	182	0.5	208	0.6	223	0.6	223	0.6	223	0.6	2.7 (- 1.9, 7.5)
Transmission category ^d													
Injection drug use (IDU) ^f	513	36.3	543	37.2	574	38.0	553	36.3	553	36.3	553	36.3	1.7 (- 1.3, 4.8)
Heterosexual contact ^g	898	63.5	909	62.3	932	61.6	962	63.2	962	63.2	962	63.2	1.8 (- 0.5, 4.1)
Other ^h	4	0.3	6	0.4	6	0.4	8	0.5	8	0.5	8	0.5	14.2 (- 18.0, 59.3)
Region of residence ^j													
Northeast	205	1.2	196	1.2	189	1.2	168	1.0	168	1.0	168	1.0	- 4.6 (- 9.1, 0.2)
Midwest	241	1.1	272	1.2	278	1.2	302	1.4	302	1.4	302	1.4	5.5 (1.4, 9.7)
South	723	2.3	715	2.3	765	2.4	783	2.5	783	2.5	783	2.5	2.3 (- 0.1, 4.8)
West	246	1.4	275	1.6	280	1.6	269	1.6	269	1.6	269	1.6	2.0 (- 2.0, 6.2)
Subtotal	1415	1.6	1458	1.7	1512	1.7	1522	1.8	1522	1.8	1522	1.8	2.0 (0.3, 3.8)
Total	9,543	5.6	9,323	5.4	8,985	5.2	9,058	5.3	9,058	5.3	9,058	5.3	- 1.3 (- 2.0, - 0.6)

EAPC, estimated annual percentage change; CI, confidence interval. Due to the impact of COVID-19 pandemic on 2020 data, EAPCs were based on four years of data with a linear estimation of 2020 data. EAPCs were significant when the 95% CI excluded 0

^a Rates are per 100,000 population per year

^b Estimated percentage change based on annual rates for age group and region of residence, and number of diagnoses for transmission category

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c_j Data include transgender and additional gender identity persons

p_j Transmission category is classified based on a hierarchy of the risk factors most likely responsible for HIV transmission; classification is determined based on the person's assigned sex at birth. Data have been statistically adjusted to account for missing transmission category; therefore, values may not sum to column subtotals and total. Since population data is not available, percentages are presented rather than rates and EAPC estimates are based on the number of annual diagnoses

p_g Includes individuals assigned male sex at birth, regardless of current gender identity, who have had sexual contact with other males, and individuals assigned male sex at birth who have had sexual contact with both males and females (i.e., bisexual contact)

f_j Includes persons who injected nonprescription drugs or who injected prescription drugs for nonmedical purposes. Also includes injection of drugs prescribed to persons if there is evidence that injection equipment was shared (e.g., syringes, needles, cookers)

g_h Heterosexual contact with a person known to have, or with a risk factor for, HIV infection

h_j Other risk factors, including perinatal, hemophilia, blood transfusion, and risk factor not reported or not identified

i_j Data are based on residence at time of diagnosis of HIV infection

Table 2

Trends in Black-White disparities in diagnoses of HIV infection among persons aged ≥ 13 years, by year of diagnosis and selected characteristics, 2017–2021—United States

	2017	2018	2019	2021	EAPC (95% CI)
	No	No	No	No	
Male sex at birth ^a					
Absolute disparity (Rate difference)					
Age at diagnosis (yr)					
13–24	88.9	87.4	87.5	82.6	– 1.8 (– 2.3, – 1.2)
25–34	122.3	118.8	114.6	109.7	– 2.7 (– 3.0, – 2.4)
35–44	56.4	54.4	53.5	48.8	– 3.5 (– 4.0, – 2.9)
45–54	36.3	36.7	35.1	26.9	– 7.0 (– 10.2, – 3.7)
≥ 55	20.0	17.9	18.5	17.1	– 3.4 (– 5.4, – 1.3)
Region of residence ^g					
Northeast	58.3	53.9	54.6	47.7	– 4.5 (– 5.9, – 3.1)
Midwest	59.7	58.5	55.6	51.1	– 3.9 (– 4.4, – 3.4)
South	70.8	68.8	67.8	62.4	– 3.1 (– 3.6, – 2.5)
West	51.6	53	50.4	50.2	– 1.0 (– 2.1, 0.1)
Overall	65.7	63.7	62.6	57.6	– 3.2 (– 3.6, – 2.7)
Relative disparity (Rate ratio)					
Age at diagnosis (yr)					
13–24	11.2	12.2	13.2	15.0	7.4 (7.0, 7.7)
25–34	7.0	6.7	6.7	6.2	– 2.7 (– 3.6, – 1.8)
35–44	5.1	5.0	5.1	4.3	– 3.9 (– 6.0, – 1.7)
45–54	4.1	4.5	4.5	3.8	– 2.0 (– 5.8, 2.0)
≥ 55	6.7	6.3	6.4	6.3	– 1.5 (– 3.4, 0.4)
Region of residence ^g					
Northeast	9.4	9.3	10.3	9.1	– 0.4 (– 3.5, 2.7)
Midwest	9.9	10.1	10.4	9.0	– 2.4 (– 5.0, 0.4)
South	6.9	6.9	6.9	6.5	– 1.6 (– 2.6, – 0.6)
West	5.3	5.6	5.5	5.8	2.0 (1.1, 2.9)
Overall	7.8	7.8	8.0	7.5	– 0.9 (– 2.4, 0.5)
Female sex at birth ^a					
Absolute disparity (Rate difference)					
Age at diagnosis (yr)					
13–24	15.6	15.0	13.9	12.4	– 5.7 (– 6.2, – 5.1)
25–34	32.4	28	26.7	25.4	– 5.8 (– 8.4, – 3.2)
35–44	32.1	30.8	28.2	26.4	– 5.0 (– 6.0, – 4.0)
45–54	27.3	25.3	24.1	21.9	– 5.3 (– 6.0, – 4.6)
≥ 55	13.1	11.9	11.8	9.7	– 6.9 (– 8.6, – 5.3)
Region of residence ^g					

	2017	2018	2019	2021	EAPC (95% CI)
	No	No	No	No	
Northeast	24.7	21.3	20.9	18.4	- 6.8 (- 8.9, - 4.8)
Midwest	17.7	16.4	16.3	13.8	- 5.8 (- 7.0, - 4.5)
South	23.5	21.5	20	18.4	- 6.0 (- 7.1, - 4.9)
West	17.8	19.8	18.2	16.4	- 2.8 (- 6.1, 0.7)
Overall	22.5	20.6	19.6	17.7	- 5.8 (- 6.5, - 5.0)
Relative disparity (Rate ratio)					
Age at diagnosis (yr)					
13–24	13.0	12.5	11.7	11.3	- 2.4(- 3.6, - 1.1)
25–34	10.5	9.0	8.4	8.3	- 6.1 (- 9.1, - 3.1)
35–44	12.5	10.3	9.5	8.3	- 9.6 (- 12.5, - 6.7)
45–54	14.0	12.5	11.5	10.1	- 7.5 (- 9.0, - 6.0)
≥ 55	22.8	24.8	20.7	17.2	- 8.4 (- 11.8, - 4.8)
Region of residence^g					
Northeast	21.0	19.0	19.1	19.0	- 2.1 (- 4.2, 0.1)
Midwest	17.1	14.7	14.6	10.9	- 10.3 (- 12.6, - 8.0)
South	11.2	10.3	9.3	8.4	- 7.3 (- 8.6, - 6.0)
West	13.7	13.4	12.4	11.3	- 4.5 (- 5.7, - 3.3)
Overall	15.1	13.1	12.5	10.8	- 7.2 (- 8.4, - 5.9)

EAPC estimated annual percentage change, *CI* confidence interval. Due to the impact of COVID-19 pandemic on 2020 data, EAPCs were based on four years of data with a linear estimation of 2020 data. EAPCs were significant when the 95% CI excluded 0

Absolute disparity (Rate difference) is the difference between rates of Black persons and White persons (Rate Black persons — Rate White persons)

Relative disparity (Rate ratio) is the rates of Black persons divided by White persons (Rate Black persons / Rate White persons)

^aData include transgender and additional gender identity persons

^bTransmission category is classified based on a hierarchy of the risk factors most likely responsible for HIV transmission; classification is determined based on the person's assigned sex at birth. Data have been statistically adjusted to account for missing transmission category; therefore, values may not sum to column subtotals and total

^cIncludes individuals assigned male sex at birth, regardless of current gender identity, who have had sexual contact with other males, and individuals assigned male sex at birth who have had sexual contact with both males and females (i.e., bisexual contact)

^dIncludes persons who injected nonprescription drugs or who injected prescription drugs for nonmedical purposes. Also includes injection of drugs prescribed to persons if there is evidence that injection equipment was shared (e.g., syringes, needles, cookers)

^eHeterosexual contact with a person known to have, or with a risk factor for, HIV infection

^fOther risk factors, including perinatal, hemophilia, blood transfusion, and risk factor not reported or not identified

^gData are based on residence at time of diagnosis of HIV infection