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HIV Testing Services Outcomes in CDC-Funded Health Departments During COVID-19

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Abstract

Background: Organizations offering HIV prevention services have reported interruptions during the COVID-19 pandemic. The national extent of these interruptions and their public health impact remain largely unexplored.

Methods: Using data from 60 state and local health departments, we compared HIV testing services outcomes in calendar years 2019 and 2020, including the number of CDC-funded HIV tests conducted, the percentage of persons with newly diagnosed HIV infection (i.e., HIV positivity), and the percentage linked to HIV medical care within 30 days after new diagnoses (i.e., linkage to care) using Chi-square and robust Poisson models. We also assessed the independent associations between the pandemic period (i.e., March—December 2020) and the number of COVID-19 cases with monthly HIV testing services outcomes using multivariable robust Poisson models.

Results: There was a 46.0% ($p<0.001$) reduction in the number of CDC-funded HIV tests conducted in 2020 (n=1,255,895) compared with 2019 (n=2,324,421). Although there were fewer persons with newly diagnosed HIV in 2020 (n=5,581 vs. n=7,739 in 2019), HIV positivity was greater in 2020 (0.4% vs. 0.3% in 2019; aPR=1.33, 95% CI: 1.05-1.69). When adjusting for the monthly number of COVID-19 cases, the pandemic period was associated with a 56% reduction in the number of monthly CDC-funded HIV tests (aRR=0.44, 95% CI: 0.37-0.52) but 28% higher monthly HIV positivity (aPR=1.28 95% CI: 1.16-1.41) and 10% higher linkage to care (aPR=1.10, 95% CI: 1.02-1.18).

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Discussion: Despite increased HIV positivity, a drastic reduction in the number of CDC-funded HIV tests was observed in 2020, impacting the ability to identify persons with newly diagnosed HIV. CDC and health departments will need to expand testing strategies to cover tests not conducted in 2020 while adapting to the continuing pandemic.

Keywords

HIV testing; COVID-19; health departments

INTRODUCTION

In the United States, the Centers for Disease Control and Prevention (CDC) funds state and local health departments, community-based organizations, and other partners to conduct HIV prevention services, surveillance, and demonstration projects [1]. HIV prevention services consist of activities to increase individual knowledge of HIV status and reduce HIV acquisition and transmission. Such activities include HIV testing, linkage to HIV medical care, and referral to and provision of essential support services. These activities play an important role in the *Ending the HIV Epidemic in the U.S.* (EHE) initiative [2, 3]. However, many organizations offering HIV prevention services have reported interruptions in their capacity to provide these services during the COVID-19 pandemic.

During the March 23–June 7, 2020 stay-at-home order, the New York City Department of Health and Mental Hygiene found that reported positive tests for HIV declined markedly in March 2020, reached a low point in April 2020, and rebounded slowly beginning in May 2020 [4]. Compared with the same period in 2019, there was a 59% reduction in the number of new HIV diagnoses in 2020.

To better understand the extent to which these interruptions in HIV prevention services have occurred in the United States and the impact on the annual performance of CDC-funded HIV programs, we describe the changes in annual CDC-funded HIV testing and testing services outcomes experienced by health departments in 2020 compared to 2019. We also assess associations between the pandemic period (i.e., March—December 2020) and monthly COVID-19 cases with monthly CDC-funded HIV tests or testing services outcomes.

METHODS

Data Sources

National HIV Prevention Program Monitoring & Evaluation (NHM&E) System— CDC funds 60 state and local health departments in the United States, Puerto Rico, and the U.S. Virgin Islands through “Notice of Funding Opportunity PS18-1802: Integrated HIV Surveillance and Prevention Programs for Health Departments” [5]. Funded health departments report program data semiannually to CDC via the National HIV Prevention Program Monitoring & Evaluation (NHM&E) system. We analyzed annual 2019 and 2020 HIV test-level data submitted by September 15, 2021 from health departments.

Data collection through the NHM&E system is designated as a public health program activity and does not contain any personally identifiable information; therefore, institutional review board approval was not required.

CDC COVID-19 Case Surveillance Public Use Data—CDC provides COVID-19 surveillance datasets for public use. These data are considered public health data and therefore do not require institutional review board approval. For our analysis, we used the "COVID-19 Case Surveillance Public Use Data with Geography" updated as of December 21, 2021 [6].

Measures

HIV Tests and Testing Services Outcomes—An HIV test was defined as a sequence of ≥1 HIV tests conducted to determine a person's HIV status. We examined two HIV testing services outcome measures: new diagnosis of HIV infection and linkage to HIV medical care. Persons newly diagnosed with HIV were defined as persons who tested positive on the current HIV test and had no indication of a previous positive test result, as determined by self-report and checking HIV surveillance (when possible). Persons newly diagnosed with HIV were considered linked to care if they attended their first HIV medical care appointment within 30 days after HIV diagnosis based upon either self-report or verified by the CDC-funded health department.

Demographic Characteristics, Region, and Test Setting—CDC-funded HIV tests and testing services outcomes were stratified by the following: age at test (<13, 13-19, 20-29, 30-39, 40-49, ≥50 years); gender (male, female, transgender, another gender); race/ethnicity (Hispanic/Latino of any race, White, Black/African American, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, two or more races); U.S. census region (Northeast, Midwest, South, West, U.S. Dependent Areas); test setting (healthcare, non-healthcare, mobile unit); and population group in non-healthcare settings (hierarchically assigned based upon self-reported behaviors in the past five years and gender identification): men who have sex with men [MSM], persons who inject drugs [PWID], transgender persons, heterosexual persons, and other/population group unknown including women who have sex with women, sex with transgender persons, no sexual contact or injection drug use, or unknown/unreported). Data on population groups are included in this analysis only for non-healthcare settings as healthcare settings are not required to collect these data for all tests.

COVID-19 Cases & Pandemic Period—Using the case definition for COVID-19 from the Council of State and Territorial Epidemiologists, we classified cases as laboratory-confirmed or probable [7] and included case month and case jurisdiction in our analysis. We categorized county-level COVID-19 case data to align geographically with CDC-funded jurisdictions. Counties comprising metropolitan statistical areas associated with directly-funded cities were aligned with those areas; all other counties were associated with state-level jurisdictions.

A dichotomous variable was created to designate the COVID-19 pre-pandemic (i.e., January 2019—February 2020) and pandemic (i.e., March—December 2020) periods in the United States.

Statistical Analysis

We conducted two analyses: 1) to compare HIV tests and testing services outcomes overall and by demographic and other characteristics in 2020 to 2019 to assess the potential impact of the COVID-19 pandemic on annual HIV testing and testing services outcomes data from CDC-funded health departments; and 2) to assess the independent associations between the pandemic period and the monthly number of COVID-19 cases in each jurisdiction with monthly HIV tests and testing services outcomes.

We first calculated the percentage changes in the annual number of CDC-funded HIV tests conducted in 2020 compared with 2019, and applied Chi-square analyses to analyze differences both overall and by subgroups; a p-value of <0.05 was considered statistically significant. We compared the annual percentages of persons with newly diagnosed HIV (i.e., HIV positivity) and the annual percentages of persons with newly diagnosed HIV linked to HIV medical care within 30 days (i.e., linkage to care) between 2019 and 2020 using robust Poisson regression to calculate prevalence ratios (PR) and 95% confidence intervals (CIs). Chi-square and Poisson regression analyses were adjusted for multiple testing using Bonferroni correction.

Second—to elucidate the role of the pandemic at large versus the burden of COVID-19 case numbers on CDC-funded HIV tests and testing services outcomes—we used multivariable robust Poisson models to assess the independent associations of the pandemic period and the monthly number of COVID-19 cases with the monthly number of CDC-funded HIV tests, monthly HIV positivity, and monthly linkage to care. Generalized estimating equations were used to analyze associations to account for repeated measures for jurisdictions. We provided adjusted rate ratios (aRR), 95% CIs, and p-values for the associations with monthly number of CDC-funded HIV tests, and adjusted prevalence ratios (aPR), 95% CI, and p-values for the associations with monthly HIV positivity and monthly linkage to care. The parameter for COVID-19 cases represents the effect size for each 100,000 COVID-19 cases (i.e., the number of COVID-19 cases was divided by 100,000 prior to entering the variable into the model to estimate the effect size per 100,000 cases of COVID-19, thus making the parameter easier to interpret).

All analyses were conducted in SAS version 9.4 (SAS Institute, Cary, NC).

RESULTS

Overall, just over half as many CDC-funded HIV tests were conducted annually by health departments in 2020 (n=1,255,895; percent change: −46.0%, $p<0.001$) as were conducted annually in 2019 (n=2,324,421) (Table). Fewer CDC-funded HIV tests were conducted in 2020 than in 2019 for every subgroup (all $p<0.001$). The following subgroups experienced the greatest reductions within each characteristic: persons aged 13 to 19 years (−52.2%); males (−45.9%) and females (−45.8%); American Indians/Alaska Natives (−53.8%) and

Asians (−53.5%); West (−54.2%); mobile units (−79.8%); and PWID (−56.9%) and other/population group unknown (−56.9%) in non-healthcare settings.

Although fewer CDC-funded HIV tests were conducted in 2020 and thus fewer persons with newly diagnosed HIV were identified (n=5,581 in 2020 vs. n=7,738 in 2019), the overall HIV positivity was greater in 2020 (0.4%) than in 2019 (0.3%) (RR=1.33, 95% CI: 1.05-1.69, p<0.01). HIV positivity was statistically significantly higher in 2020 than in 2019 for the following subgroups: persons aged 20-29 years (RR=1.37, 95% CI: 1.06-1.77, p<0.01), 30-39 years (RR=1.32, 95% CI: 1.02-1.71, p<0.05); male (RR=1.34, 95% CI: 1.08-1.65, p<0.001); Black/African American (RR=1.38, 95% CI: 1.06-1.81, p<0.01), Hispanic/Latino (RR=1.29, 95% CI: 1.08-1.53, p<0.001); Northeast (RR=1.24, 95% CI: 1.08-1.43, p<0.001), South (RR=1.46, 95% CI: 1.13-1.88, p<0.001), U.S. dependent areas (RR=1.32, 95% CI: 1.05-1.67, p<0.01); non-healthcare settings (RR=1.51, 95% CI: 1.18-1.93, p<0.001); and heterosexual persons (RR=1.72, 95% CI: 1.06-2.79, p<0.05) and MSM (RR=1.42, 95% CI: 1.10-1.84, p<0.001) in non-healthcare settings.

Compared to 2019 (68.5%), linkage to care was higher in 2020 (74.7%); however, this was not statistically significantly different (RR=1.09, 95% CI: 0.96-1.23). No statistically significant differences in linkage to care were observed among subgroups.

The monthly numbers of CDC-funded HIV tests, persons with newly diagnosed HIV, and persons linked to care were lower in 2020 during the COVID-19 pandemic compared with 2019 (Figure). When adjusting for the monthly number of COVID-19 cases, the pandemic period was associated with a 56% reduction in the number of monthly CDC-funded HIV tests compared with the pre-pandemic period (aRR=0.44, 95% CI: 0.37-0.52; p<0.001) (data not shown). However, there was no association between each 100,000 monthly COVID-19 cases and the number of monthly CDC-funded HIV tests (aRR=1.21, 95% CI: 0.91-1.59). The monthly HIV positivity was 28% higher (aPR=1.28, 95% CI: 1.16-1.41; p<0.001) during the pandemic period compared with the pre-pandemic period when adjusting for the monthly number of COVID-19 cases. For each 100,000 monthly COVID-19 cases, there was a 28% increase (aPR=1.28, 95% CI: 1.06-1.55; p<0.05) in the monthly HIV positivity. Monthly linkage to care was 10% higher (aPR=1.10, 95% CI: 1.02-1.18, p<0.05) during the pandemic period when adjusted for the monthly number of COVID-19 cases, but the monthly linkage to care was not associated with each 100,000 monthly COVID-19 cases (aPR=0.97, 95% CI: 0.92-1.04).

DISCUSSION

In 2020, over one million fewer CDC-funded HIV tests were conducted by health departments than in 2019—and the pandemic period itself was associated with reductions in the monthly number of CDC-funded tests. Fewer CDC-funded HIV tests were conducted in every subgroup, including subgroups with increased potential for acquiring HIV such as adolescents and young adults, MSM, PWID, and transgender persons [8]. Our findings align with analyses conducted in different settings, which have also shown decreases in HIV testing from 2019 to 2020 [4, 9, 10]. Results from a large commercial laboratory reported nearly 670,000 fewer HIV screening tests during March 13–September 30, 2020

compared with the same period in 2019 [9]. Among four major healthcare systems in large metropolitan U.S. areas, the number of HIV tests dropped from 40,620 in 2019 to 27,112 in 2020 [10]. These reductions in HIV testing are concerning, as they impact the ability to identify persons with newly diagnosed HIV, link them to care, and reduce overall transmission.

Unsurprisingly—given that fewer tests were conducted—fewer persons were newly diagnosed with HIV in 2020 compared with 2019. However, HIV positivity overall and in some subgroups was higher in 2020 than in 2019, and both the pandemic period and each 100,000 COVID-19 cases were associated with HIV positivity. Moitra et al. found non-significantly increased HIV positivity rates at a majority of their sites [10]. As they noted, this could have been driven by selection bias in that persons seeking out testing may have been symptomatic or assessed themselves to be at high risk for HIV infection. Thus, a greater proportion of those tested in 2020 was identified as positive.

The annual percentage of newly diagnosed persons linked to care did not differ significantly between 2019 and 2020, but the monthly percentage was positively associated with the pandemic period. Although the COVID-19 pandemic has presented challenges with respect to medical care access, having fewer newly diagnosed individuals may have enabled health departments to support linkage to care among those individuals. We cannot, however, ascertain if individuals remained engaged in care as NHM&E does not collect related data. It is possible that individuals who were initially linked to care may not have been able to obtain antiretroviral (ARV) treatment, as one study predicted a 9.6% decrease in the number of ARV users by September 26, 2020 compared with the number of ARV users in the absence of the pandemic [11].

Our results are based on CDC-funded HIV testing data from 60 health departments and therefore are not generalizable to all HIV testing in the United States, as there are many sources of HIV testing (e.g., other publicly funded programs, commercial laboratories). Our results, however, provide a national-level overview of changes in HIV testing services outcomes among CDC-funded health departments, which are an important source of HIV testing and related services—especially among persons at higher risk for HIV acquisition.

CDC, health departments, and other organizations offering HIV prevention services will need to implement various strategies to ramp up testing in future years to cover the number of HIV tests not conducted in 2020 while adapting to the continuing COVID-19 environment. One such strategy may be expanding HIV self-testing, in which health departments could distribute self-test kits to persons who are not able to access in-person testing or who prefer the privacy to test at home [12]. Other strategies may include offering opt-in HIV testing in conjunction with COVID-19 testing [13], incorporating routine HIV screening in healthcare settings, and campaigns highlighting the importance of returning to HIV prevention services. Increasing HIV testing and thus identifying more persons with HIV and linking them to care will help to achieve the goals of EHE [2].

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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REFERENCES

1. Centers for Disease Control and Prevention. HIV Funding and Budget. https://www.cdc.gov/hiv/funding/index.html. Updated December 21, 2021. Accessed January 18, 2022.
2. Office of Infectious Disease and HIV/AIDS Policy. Ending the HIV Epidemic in the U.S.: Overview. https://www.hiv.gov/federal-response/ending-the-hiv-epidemic/overview. Updated June 2, 2021. Accessed January 18, 2022.
3. Centers for Disease Control and Prevention. Ending the HIV Epidemic in the U.S. (EHE) https://www.cdc.gov/endhiv/overview.html. Updated September 7, 2021. Accessed January 18, 2022.
4. Braunstein SL, Slutsker JS, Lazar R, et al. Epidemiology of reported HIV and other sexually transmitted infections during the COVID-19 pandemic, New York City. J Infect Dis. 2021 Sep 1;224(5):798–803. [PubMed: 34134130]
5. Centers for Disease Control and Prevention. Funding Opportunity Announcement (FOA) PS18:1802: Integrated Human Immunodeficiency Virus (HIV) Surveillance and Prevention Programs for Health Departments. https://www.cdc.gov/hiv/funding/announcements/ps18-1802/index.html. Updated April 11, 2019. Accessed January 18, 2022.
6. Centers for Disease Control and Prevention. COVID-19 Case Surveillance Public Use Data with Geography. https://data.cdc.gov/Case-Surveillance/COVID-19-Case-Surveillance-Public-Use-Data-with-Ge/n8mc-b4w4. Updated January 18, 2022. Accessed December 22, 2021.
7. Centers for Disease Control and Prevention. FAQ: COVID-19 Data and Surveillance. https://www.cdc.gov/coronavirus/2019-ncov/covid-data/faq-surveillance.html. Updated July 23, 2021. Accessed January 18, 2022.
8. Centers for Disease Control and Prevention. HIV Surveillance Report, 2019; vol.32. http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html. Published May 2021. Accessed January 18, 2022.
9. Delaney KP, Jayanthi P, Emerson B, et al. Impact of COVID-19 on commercial laboratory testing for HIV in the United States [CROI Abstract 739]. Abstracts from the virtual 2021 Conference on Retroviruses and Opportunistic Infections. Top Antivir Med. 2021;29(1):483.
10. Moitra E, Tao J, Olsen J, et al. Impact of the COVID-19 pandemic on HIV testing rates across four geographically diverse urban centres in the United States: An observational study. Lancet Reg Health Am. 2022 Mar;7:100159. [PubMed: 34961858]
11. Zhu W, Huang Y-I, Fanfair R, et al. Effect of COVID-19 pandemic on antiretroviral treatment use for HIV in the United States, 2020. Presented at: International AIDS Society (IAS) 2021; July 18-21, 2021; virtual.
12. Hecht J, Sanchez T, Sullivan PS, DiNenno EA, Cramer N, Delaney KP. Increasing access to HIV testing through direct-to-consumer HIV self-test distribution—United States, March 31, 2020-March 30, 2021. MMWR Morb Mortal Wkly Rep. 2021 Sep 24;70(38):1322–1325. [PubMed: 34555001]
13. Olsen J, Conner K, Onujiogu C. HIV and COVID-19 Testing Innovations; A Year of Program Results. Poster presented at: 2021 United States Conference on HIV/AIDS (USCHA); December 2-3, 2021; virtual.

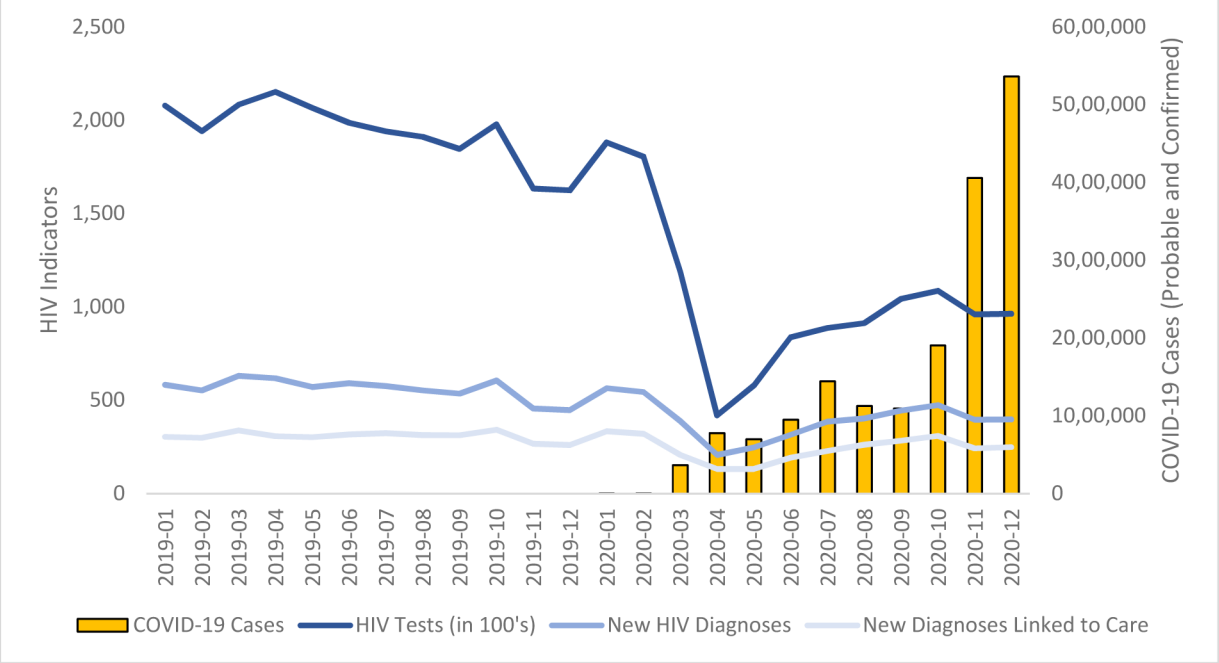

FIGURE.

Numbers of CDC-funded HIV tests in U.S. health departments, persons with newly diagnosed HIV, persons with newly diagnosed HIV linked to HIV medical care within 30 days, and COVID-19 cases, 2019-2020 by month. CDC-funded HIV tests presented in 100's of tests for scaling purposes. COVID-19 cases excludes cases with missing jurisdiction or missing month.

Table.

Annual HIV Tests and Testing Outcomes among CDC-Funded Health Departments During the COVID-19 Pandemic in 2020 vs. 2019, by Demographic and Other Characteristics, National HIV Prevention Program Monitoring & Evaluation System

		CDC-Funded HIV Tests			Persons with Newly Diagnosed HIV			Persons with Newly Diagnosed HIV Linked to HIV Medical Care within 30 days		
		2019 No.	2020 No.	% change[a]	2019 No. (%)	2020 No. (%)	Prevalence ratio[b], 2020/2019 (95% CI)	2019 No. (%)	2020 No. (%)	Prevalence ratio[b], 2020/2019 (95% CI)
OVERALL		2,324,421	1,255,895	−46.0***	7,738 (0.3)	5,581 (0.4)	1.33 (1.05-1.69)**	4,286 (68.5)	3,377 (74.7)	1.09 (0.96-1.23)
Age Group	<13	4,589	3,035	−33.9***	9 (0.2)	10 (0.3)	1.68 (0.25-11.25)	6 (75.0)	4 (57.1)	0.76 (0.22-2.62)
	13-19	152,741	73,039	−52.2***	286 (0.2)	174 (0.2)	1.27 (0.81-2.00)	188 (73.7)	107 (78.1)	1.06 (0.85-1.32)
	20-29	836,193	441,721	−47.2***	3,205 (0.4)	2,315 (0.5)	1.37 (1.06-1.77)**	1,820 (68.4)	1,475 (75.9)	1.11 (0.99-1.25)
	30-39	589,461	323,769	−45.1***	2,244 (0.4)	1,623 (0.5)	1.32 (1.02-1.71)*	1,228 (68.6)	981 (74.4)	1.08 (0.95-1.24)
	40-49	326,494	178,929	−45.2***	1,065 (0.3)	768 (0.4)	1.32 (0.99-1.76)	552 (67.2)	443 (74.2)	1.10 (0.90-1.35)
	50+ (50-98)	394,254	218,445	−44.6***	901 (0.2)	652 (0.3)	1.31 (0.92-1.85)	476 (67.6)	349 (70.1)	1.04 (0.85-1.26)
Gender	Male	1,209,593	654,681	−45.9***	6425 (0.5)	4649 (0.7)	1.34 (1.08-1.65)***	3612 (69.7)	2839 (75.1)	1.08 (0.96-1.21)
	Female	1,086,431	589,208	−45.8***	1116 (0.1)	787 (0.1)	1.30 (0.90-1.88)	571 (63.2)	449 (72.4)	1.15 (0.93-1.42)
	Transgender	13,019	8,035	−38.3***	170 (1.3)	121 (1.5)	1.15 (0.65-2.04)	82 (56.9)	72 (70.6)	1.24 (0.75-2.06)
	Another Gender	1,643	1,350	−17.8***	9 (0.5)	8 (0.6)	1.08 (0.15-7.56)	6 (66.7)	6 (85.7)	1.29 (0.57-2.89)
Race/Ethnicity	White	653,680	359,154	−45.1***	1,592 (0.2)	1,182 (0.3)	1.35 (0.95-1.92)	952 (71.3)	702 (73.6)	1.03 (0.89-1.20)
	Black/African American	915,751	501,493	−45.2***	3,484 (0.4)	2,641 (0.5)	1.38 (1.06-1.81)**	1,892 (65.1)	1,520 (71.8)	1.10 (0.98-1.25)
	Hispanic/Latino	540,077	285,673	−47.1***	2,158 (0.4)	1,467 (0.5)	1.29 (1.08-1.53)***	1,196 (73.4)	987 (81.0)	1.10 (0.94-1.30)
	Asian	55,787	25,921	−53.5***	128 (0.2)	94 (0.4)	1.58 (0.88-2.84)	68 (68.7)	57 (83.8)	1.22 (0.79-1.88)
	American Indian/Alaska Native	16,261	7,511	−53.8***	59 (0.4)	29 (0.4)	1.06 (0.44-2.57)	37 (74.0)	17 (65.4)	0.88 (0.52-1.49)
	Native Hawaiian/Pacific Islander	4,361	2,307	−47.1***	16 (0.4)	14 (0.6)	1.65 (0.45-6.12)	11 (84.6)	8 (72.7)	0.86 (0.47-1.56)
	Two or more races	18,698	8,808	−52.9***	87 (0.5)	48 (0.5)	1.17 (0.65-2.10)	48 (67.6)	30 (65.2)	0.96 (0.73-1.28)
Region	Northeast	360,080	192,766	−46.5***	1,021 (0.3)	680 (0.4)	1.24 (1.08-1.43)***	835 (85.3)	568 (85.9)	1.01 (0.95-1.07)
	Midwest	255,331	125,657	−50.8***	656 (0.3)	402 (0.3)	1.25 (0.61-2.53)	410 (77.7)	278 (76.0)	0.98 (0.80-1.20)

		CDC-Funded HIV Tests			Persons with Newly Diagnosed HIV			Persons with Newly Diagnosed HIV Linked to HIV Medical Care within 30 days		
		2019 No.	2020 No.	% change[a]	2019 No. (%)	2020 No. (%)	Prevalence ratio[b], 2020/2019 (95% CI)	2019 No. (%)	2020 No. (%)	Prevalence ratio[b], 2020/2019 (95% CI)
	South	1,399,774	794,648	−43.2***	4,491 (0.3)	3,720 (0.5)	1.46 (1.13-1.88)***	2,267 (64.2)	1,957 (70.6)	1.10 (0.98-1.24)
	West	295,667	135,509	−54.2***	1,483 (0.5)	717 (0.5)	1.05 (0.82-1.35)	701 (62.0)	523 (79.1)	1.28 (0.84-1.94)
	U.S. dependent areas	13,569	7,315	−46.1***	87 (0.6)	62 (0.8)	1.32 (1.05-1.67)**	73 (84.9)	51 (82.3)	0.97 (0.87-1.08)
Test Setting	Health care	1,724,590	975,909	−43.4***	4,942 (0.3)	3,566 (0.4)	1.28 (0.99-1.65)	2,920 (70.3)	2,195 (76.1)	1.08 (0.96-1.22)
	Non-health care	532,718	267,818	−49.7***	2,539 (0.5)	1,929 (0.7)	1.51 (1.18-1.93)***	1,335 (69.1)	1,136 (72.4)	1.05 (0.93-1.19)
	Mobile Unit	54,531	11,003	−79.8***	248 (0.5)	67 (0.6)	1.34 (0.68-2.64)	28 (17.0)	34 (63.0)	3.71 (0.77-17.87)
Population Group[c]	Heterosexual	285,628	133,817	−53.1***	477 (0.2)	384 (0.3)	1.72 (1.06-2.79)*	250 (68.5)	229 (75.8)	1.11 (0.93-1.31)
	MSM	117,451	60,798	−48.2***	1651 (1.4)	1217 (2.0)	1.42 (1.10-1.84)***	909 (73.4)	763 (76.9)	1.05 (0.95-1.16)
	PWID	40,571	17,477	−56.9***	127 (0.3)	54 (0.3)	0.99 (0.53-1.84)	59 (59.0)	27 (64.3)	1.09 (0.72-1.65)
	Transgender persons	5,731	3,207	−44.0***	72 (1.3)	52 (1.6)	1.29 (0.77-2.17)	33 (55.0)	31 (72.1)	1.31 (0.89-1.93)
	Other/population group unknown	43,100	18,560	−56.9***	108 (0.3)	84 (0.5)	1.81 (0.42-7.69)	56 (65.9)	45 (78.9)	1.20 (0.79-1.81)

*p<.05

**p<.01

***p<.001

[a]Statistically tested difference in the number of tests for each group using a 1x2 chi-square analysis corrected for multiple testing (Bonferroni)

[b]Prevalence ratios estimated and statistically tested using a robust Poisson model for each group corrected for multiple testing (Bonferroni)

[c]Among tests conducted in non-health care settings