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## HIV stigma among a national probability sample of adults with diagnosed HIV—United States, 2018–2019

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### Abstract

HIV stigma is a barrier to achieving the goals of the U.S. Ending the HIV Epidemic initiative. We analyzed data from the Medical Monitoring Project (MMP) collected during 6/2018–5/2019 from 4,050 U.S. adults with diagnosed HIV. We reported national estimates of HIV stigma and assessed their associations with sociodemographic and clinical characteristics. Disclosure concerns and stigma related to negative public attitudes were common. Stigma was higher among younger age groups, women and transgender people, Black and Hispanic/Latino men and women, and Black and Hispanic/Latino men who have sex with men. Stigma was associated with lower antiretroviral therapy use and adherence, missed HIV care visits, and symptoms of depression or anxiety. The estimates presented provide a benchmark from which the nation can monitor its progress. The findings suggest the need for enhanced stigma-reduction efforts among specific groups and the importance of addressing stigma around disclosure and community attitudes.

### Keywords

Human Immunodeficiency Virus; HIV; Stigma; Social Determinants of Health; Viral Suppression

### Introduction

The goals of the U.S. Ending the HIV Epidemic: A Plan for America (EHE) initiative are to reduce new HIV infections by at least 75% by 2025 and 90% by 2030 (1). Identifying and addressing barriers to HIV testing, knowledge of status, and treatment are keys to the success of EHE. HIV stigma is a multi-dimensional social process whereby people with HIV are devalued and discriminated against, both interpersonally as well as structurally, for example through laws concerning HIV disclosure (2). HIV stigma is a recognized barrier to HIV testing, medical care engagement, and treatment outcomes (3–5). Consequently, reducing HIV stigma is essential to achieve the goals of EHE.

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Ethics approval:

MMP data collection is part of routine public health surveillance and was determined to be non-research.

Consent to participate:

Informed consent was obtained from all interviewed participants.

The vision of the HIV National Strategic Plan for the United States: A Roadmap to End the HIV Epidemic (hereafter referred to as the Plan) is that people with HIV live free of stigma and discrimination (6). The Plan will monitor stigma using a 10-item HIV stigma scale developed by Wright et al that encompasses 4 stigma domains: personalized stigma in the past 12 months (e.g., feeling hurt by others' reactions to or losing friends due to one's HIV status), disclosure concerns (e.g., being careful about who one tells about one's HIV status or fearing others will disclose one's status), negative self-image (e.g., feeling that one is not as good as others or is a bad person due to one's status), and perceived public attitudes about people with HIV (e.g., feeling that most people think that a person with HIV is disgusting or that most people with HIV are rejected when people become aware of their status) (7). The stigma scale that will be used by the Plan is a slightly modified version of the Wright et al measure in that it assesses personalized stigma over the past 12 months in order to better capture current stigma; Wright et al's original personalized stigma statement asked about experiences at any time in the past. The other domains in the Plan's measure reflect current experiences and feelings, as was the case in the Wright et al measure. The source for the Plan's HIV stigma measure is the Medical Monitoring Project (MMP), a national population-based HIV surveillance system that produces annual, cross-sectional estimates of behavioral and clinical characteristics of adults with diagnosed HIV in the United States.

While the Plan will establish and monitor the prevalence of stigma among people with HIV, identifying subpopulations most negatively affected by HIV stigma and understanding how stigma affects clinical outcomes and health-related behaviors are important to achieving the goals of EHE. Further, understanding which dimensions of stigma are most prevalent—and which groups are most affected—can also inform stigma-reduction efforts. While research has found that HIV stigma is higher among groups such as youth, non-whites, women, transgender persons, and persons living in the Southern United States, few recent studies have assessed differences in HIV stigma between groups using large national datasets (8–10).

In order to fill these gaps, we analyzed data collected during June 2018 through May 2019 from MMP and report national HIV stigma scores, overall and by domain, and assess their associations with sociodemographic and clinical characteristics.

## Methods

Data for this analysis were extracted and analyzed from the MMP, a nationally representative surveillance system of individuals diagnosed with HIV. Detailed methods for MMP data collection are reported elsewhere (11, 12). MMP uses a 2-stage sampling design. During the first stage, 16 states and 1 territory were sampled from all U.S. states, the District of Columbia, and Puerto Rico. During the second stage, simple random samples of people with diagnosed HIV aged 18 years and older were drawn for each participating state/territory from the National HIV Surveillance System (NHSS), a census of people with diagnosed HIV in the United States. Data from 4,050 people with HIV were collected via phone or face-to-face interviews and medical record abstractions during June 2018 through May 2019. All sampled states/territories participated and 45% of sampled persons participated. Data were weighted on the basis of known probabilities of selection and

were adjusted for non-response (13). For the non-response adjustment, weighting classes were based on variables related to person-level response: sex at birth, age of most recent contact information in NHSS, and the person's frequency of receipt of care (as indicated by HIV-related laboratory test results in NHSS). Further, the data were post-stratified to NHSS population totals by age, race/ethnicity, and sex at birth. MMP data collection is part of routine public health surveillance and was determined to be non-research. Informed consent was obtained from all interviewed participants.

Overall HIV stigma was measured using a ten-item scale that measures 4 dimensions of HIV stigma: personalized stigma (3 items), disclosure concerns (2 items), negative self-image (3 items), and perceived public attitudes about people living with HIV (2 items) (7). The stigma items and possible responses are presented in Figure 1. As mentioned above, for consistency with the HIV National Strategic Plan stigma indicator, which focuses on current experiences of HIV stigma, the personalized stigma domain measured experiences that took place over the past 12 months; all other domain items have a current time frame, as was the case in Wright's measure. Following Wright, the response to each stigma item was a 5-point Likert scale; for the overall stigma score, responses were summed and standardized (i.e., 0, 2.5, 5, 7.5, 10) to a score ranging from 0 (no stigma) to 100 (high stigma). The ranges of domain stigma scores were: personalized 0–30, disclosure 0–20, negative self-image 0–30, and public attitudes 0–20, where 0 indicates no stigma within each domain. While the overall stigma score was relatively normally distributed, the domain stigma scores were not standardized to a 0–100 range because the distribution of domain scores were highly skewed. We calculated mean stigma scores and 95% confidence intervals (CI) that were weighted to account for MMP's complex sample design, overall and for each domain. Because the domain stigma scores for the whole population were highly skewed to the right, we calculated mean stigma scores within each domain among people who did not strongly disagree with all items within that domain. Therefore, the domain stigma scores are measured among people experiencing any degree of stigma within that domain. The overall stigma scores are measured among all people.

All examined covariates were self-reported and measured over the 12 months prior to interview, except where otherwise noted. Because the gender distribution within racial/ethnic groups varies and more detailed information on the prevalence of stigma among specific groups may be useful for tailoring stigma-reduction interventions, in addition to looking at gender and race/ethnicity, we also examined gender-stratified racial groups where numbers were sufficient (i.e., Black men and women, Hispanic/Latino men and women, White men and women). People were classified as men who have sex with men (MSM), women who only have sex with men (WSM) and men who only have sex with women (MSW) based on sexual behavior among the sexually active and reported sexual orientation among the non-sexually active. All people not classified as MSM, WSM, or MSW were grouped into the "other" category. People currently taking antiretroviral therapy (ART) were asked about their adherence to ART in the 30 days before the interview using questions from a 3-item scale that ranges from 0–100, with a score of 100 indicating perfect adherence (14). The first item was, "In the past 30 days, on how many days did you miss at least one dose of any of your HIV medicines." (response options: 0–30). The second item was, "In the past 30 days, how good a job did you do at taking your HIV medicines in the way you were supposed

to?” (response options: very poor, poor, fair, good, very good, excellent). The third item was, “During the past 30 days, how often did you take your HIV medicines in the way you were supposed to?” (response options: never, rarely, sometimes, usually, almost always, always). We created a 3-level variable that measured no current ART use, ART use with an adherence scale score of <85, or ART use with an adherence scale score  $\geq$  85. Clinical characteristics captured by medical record abstraction at the person’s most frequent source of HIV care included recent viral suppression (last viral load measurement documented undetectable or <200 copies/mL) and sustained viral suppression (all viral load measurements in the past 12 months documented undetectable or <200 copies/mL). Retention in HIV care was defined as having received at least two elements of outpatient HIV care at least 90 days apart during the past 12 months. Receipt of outpatient HIV care was measured through medical record abstraction and defined as any documentation of the following: encounter with an HIV care provider (could also be self-reported), viral load test result, CD4 test result, HIV resistance test or tropism assay, ART prescription, PCP prophylaxis, or MAC prophylaxis. Responses to the items on the Patient Health Questionnaire (PHQ-8) were used to assess symptoms indicative of “major or other depression” over the past 2 weeks according to criteria from the DSM-IV (15). The Generalized Anxiety Disorder Scale (GAD-7), a validated 7-item scale used to screen for and measure the severity of GAD symptoms over the past 2 weeks was utilized (16).

We calculated Cronbach’s alphas to measure reliability of the overall and within-domain stigma scores. Because the overall stigma score was relatively normally distributed and the within-domain stigma scores were roughly normally distributed after removal of persons who strongly disagreed with all items in a domain, we used t-tests to compare overall and within-domain mean scores among groups based on sociodemographic and care characteristics. T-tests were also used to assess the associations between overall and within-domain stigma scores and clinical characteristics. For overall stigma, we fit logistic regression models to calculate odds ratios (OR) and adjusted odds ratios (aOR) to assess the effect of overall HIV stigma on outcomes while adjusting for potential confounders. The ORs and aORs reflect the odds of the event with each 10 unit increase in the overall stigma scale score. All analyses accounted for the complex sample design and weights.

## Results

Responses to the 10-item stigma scale are presented in Figure 1. The weighted standardized Cronbach’s alpha for the overall stigma score was 0.81. Within domain, the Cronbach’s alpha were personalized 0.87, disclosure 0.49, negative self-image 0.82, and public attitudes 0.69. Over three-quarters of people with HIV strongly agreed with the statement “I am very careful who I tell that I have HIV;” this was the most highly endorsed statement. Over 80% of people with diagnosed HIV strongly disagreed with the statement “Having HIV makes me feel that I’m a bad person;” this was the least endorsed statement (Figure 1). The mean stigma score for overall stigma was 35.9 (CI: 35.0–36.9). Among all responses except “strongly disagree,” the mean score for personalized stigma was 14.8 (CI: 14.3–15.3), disclosure stigma was 15.6 (CI: 15.4–15.9), negative self-image stigma was 13.7 (CI: 13.3–14.1), and public attitudes stigma was 12.6 (CI: 12.3–13.0) (Table 1).

Overall, stigma was higher among persons aged <50 years compared with those aged 50 years and among women and transgender people compared with men (Table 1). Stigma was higher among Black and Hispanic/Latino men and women and White women compared with White men, and among Black and Hispanic/Latino MSM compared with White MSM. Stigma was higher among people who more recently received their HIV diagnosis compared with those who received their diagnosis 10 or more years ago, and among people whose most frequent source of HIV care was funded by the Ryan White HIV/AIDS Program. These associations were generally consistent when examining stigma by domain, with the public attitudes stigma domain associations being the most closely similar to those found for overall stigma.

Overall stigma was associated with lower ART use and adherence, and higher prevalence of missed HIV care visits, emergency room visits, and symptoms of depression or anxiety (Table 2). Overall stigma was not associated with recent or sustained viral suppression or with retention in HIV care. These associations remained after adjusting for age, race/ethnicity, sexual behavior/orientation, and time since HIV diagnosis (Table 3). Generally, associations between all examined stigma domains and lower ART use and adherence, missed HIV care visits, emergency room visits, and symptoms of depression or anxiety were consistent with those observed with overall stigma. However, higher public attitudes stigma was also associated with lower recent or sustained viral suppression and retention in HIV care among people reporting any stigma within that domain.

## Discussion

This study provides the first national estimates of recent experiences with stigma overall and by domain among adults with diagnosed HIV in the United States. Due to differences in scoring methods and the minor modification made to the Wright et al stigma scale, direct comparisons with other studies assessing stigma using the Wright measure were not possible (17–19). Regardless, these results indicate that there is considerable work to be done to reduce HIV stigma in the United States. This is of paramount importance because freedom from stigma and discrimination are basic human rights. In addition, because of the negative effect of stigma on HIV treatment and care outcomes, stigma reduction can improve the health of people with HIV and reduce the likelihood of HIV transmission (5, 17, 20–25).

Our findings show experiences of stigma among younger adults, women, transgender people, and Black and Hispanic/Latino people—including Black and Hispanic/Latino MSM—were consistently higher compared with other groups. The vision of the HIV National Strategic Plan, freedom from stigma and discrimination among persons with HIV, cannot be achieved without addressing the disproportionate HIV stigma experienced by these groups.

Considering the differences in their ranges, scores for the disclosure and public attitudes stigma domains were higher than those for the personalized and negative self-image domain among all groups, so enhanced effort to reduce stigma in these domains could benefit a wide range of people with HIV. There are many evidence-informed U.S.-based stigma-reduction interventions (26, 27), but no U.S.-based interventions meet the rigorous evidence-based intervention criteria established by the Centers for Disease Control and Prevention's

Compendium of Evidence-Based Interventions and Best Practices for HIV Prevention (28). The sole evidence-based intervention identified was focused on reducing internalized HIV stigma among adolescents and young adults with HIV in Zambia (29). Additionally, many interventions are focused on people with HIV, but community and structural interventions are needed to address the public attitudes stigma domain (30). Acceptance Journeys is one example of a successful community-based intervention that used social media, print ads, a Web site, press releases, and story cards with integrated branding to address homophobia, which could be adapted to addressing HIV stigma (31). Recommendations to improve the scientific rigor of stigma-reduction interventions include use of longitudinal designs in order to accurately assess the intervention's durability and effect on care continuum outcomes, increased use of experimental designs or control groups, ensuring sufficient power to detect changes in stigma, and use of standardized, psychometrically evaluated instruments (32).

Stigma was associated with lack of ART use and adherence, missing HIV care visits, and emergency room visits, which is consistent with the literature (5, 17, 20–25). Although overall stigma was not associated with retention in HIV care, research has suggested that missing HIV care visits may be more consequential for important health outcomes (33). Only public attitudes stigma was associated with not being virally suppressed. We found evidence that public attitudes stigma was associated with lower retention in care, which could contribute to lower prevalence of viral suppression among those experiencing this type of HIV stigma. However, considering the association between stigma and ART use and adherence, the lack of an association between overall, personalized, disclosure, and negative self-image stigma and viral suppression is surprising. Findings related to the association between stigma and viral suppression have been mixed (8, 17, 20, 34–38), although direct comparisons are precluded because of differences in the types of stigma evaluated and measures used. Our findings of a lack of association between stigma and viral suppression could be explained by the relatively low proportion of people who were not taking ART and use of ART regimens that are more forgiving of nonadherence, which we cannot assess with MMP data. More exploration of the relationship between stigma and viral suppression is warranted.

Stigma was consistently associated with depression and anxiety symptoms. Higher stigma has often been found to be associated with depression (25), but the relationship between stigma and anxiety in the United States has not been extensively explored (39, 40). Interventions that address stigma and depression or anxiety symptoms concurrently among people with HIV may be needed (41, 42).

This analysis is subject to several limitations. First, the focus on current experiences with stigma does not address the possible effects of prior experiences with stigma on the current mental health and well-being of people with diagnosed HIV, and it is unclear if and how experiences of HIV stigma change over time. Second, the reliability of the disclosure domain was low ( $\alpha = 0.49$ ), although this is consistent with another study using the same stigma scale among young Black MSM (17), and other studies using different scales have also found lower reliability for disclosure-related stigma compared with other stigma domains (43, 44). Third, our study did not assess factors associated with resilience among people with HIV, such as social support, which are possible mediators



of the relationship between stigma and clinical outcomes. Further, we were unable to assess regional differences in stigma due to MMP's design. Finally, our data do not allow us to assess intersectional stigma, a concept that describes the convergence of multiple stigmatized identities within a person or group (45).

In order to fully realize the goals of EHE, the vision of a nation free from HIV stigma and discrimination must be achieved. The estimates presented in this analysis provide a benchmark from which the United States can monitor its progress towards this end. The findings suggest a particular need for enhanced stigma-reduction efforts among young adults, women, transgender people and Black and Hispanic/Latino people. Addressing disclosure stigma and community attitudes may require structural and community-based interventions.

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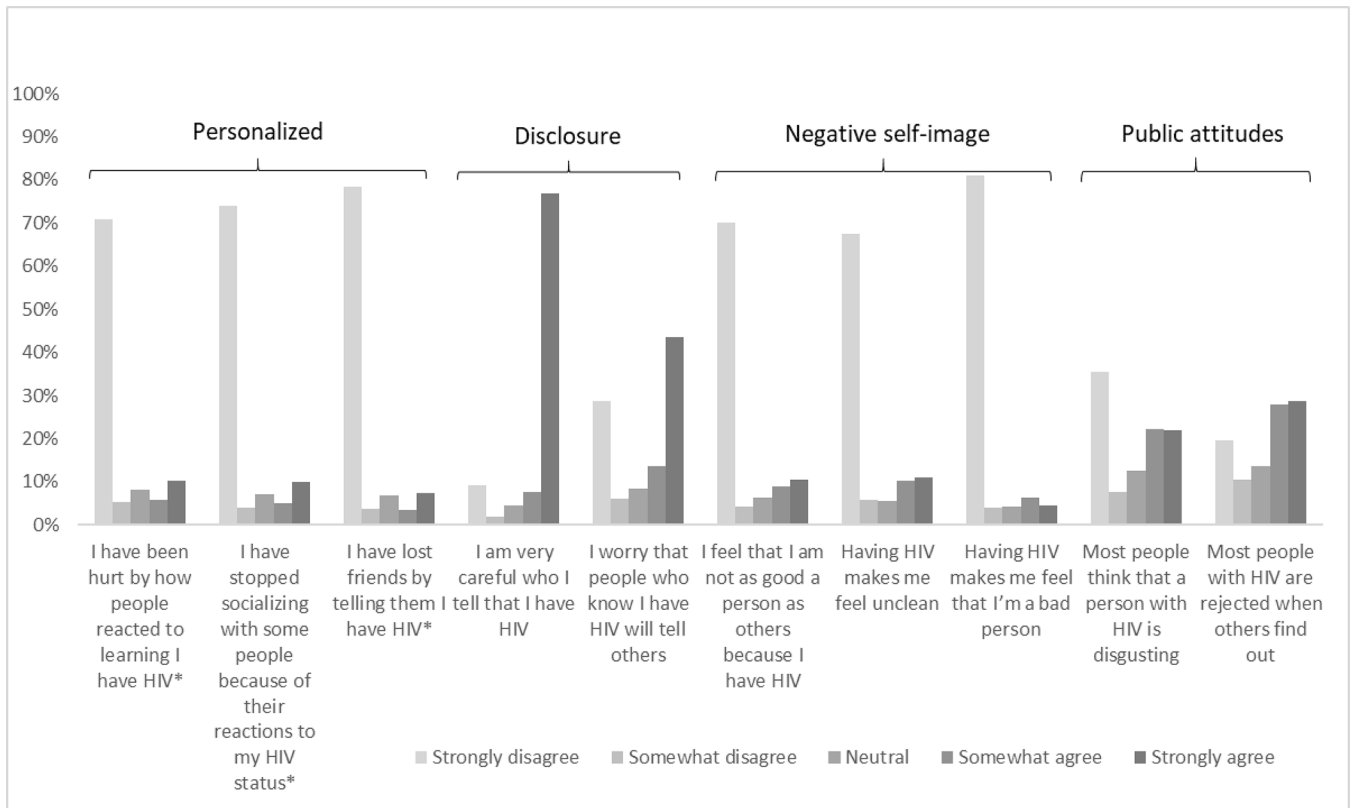
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**Figure 1.** HIV stigma scale responses among adults with diagnosed HIV—United States, 2018–2019  
 \*During the past 12 months; the other stigma responses focus on current experiences.

**Table 1.**

Overall and by domain mean HIV stigma scale score among people with diagnosed HIV by sociodemographic characteristics—United States, 2018–2019 (N=4,050)

Characteristics	Overall stigma Range [0–100]				Personalized domain <sup>a</sup> Range (0–30)				Disclosure domain <sup>a</sup> Range (0–20)				Negative self-image domain <sup>a</sup> Range (0–30)				Public attitudes domain <sup>a</sup> Range (0–20)			
	Weighted mean score (CI)	T-statistic	DF	P-value	Weighted mean score (CI)	T-statistic	DF	P-value	Weighted mean score (CI)	T-statistic	DF	P-value	Weighted mean score (CI)	T-statistic	DF	P-value	Weighted mean score (CI)	T-statistic	DF	P-value
<b>Total</b>	35.9 (35.0–36.9)				14.8 (14.3–15.3)				15.6 (15.4–15.9)				13.7 (13.3–14.1)				12.6 (12.3–13.0)			
<b>Age (years)</b>																				
18–29	41.6 (38.2–45.0)	4.4	2448	<.001	15.0 (13.5–16.5)	0.8	2448	0.414	15.9 (15.1–16.6)	1.4	2448	0.154	14.6 (13.3–16.0)	1.9	2448	0.056	13.8 (13.1–14.4)	4.9	2448	<.001
30–39	39.3 (37.6–41.1)	5.8	2448	<.001	15.3 (14.1–16.5)	1.4	2448	0.151	15.8 (15.3–16.3)	1.7	2448	0.097	14.8 (13.6–16.0)	2.0	2448	0.049	13.4 (12.8–14.1)	4.2	2448	<.001
40–49	36.9 (35.0–38.9)	3.8	2448	<.001	15.5 (14.4–16.6)	1.6	2448	0.109	16.0 (15.5–16.5)	2.1	2448	0.040	13.1 (12.2–14.0)	0.5	2448	0.654	12.9 (12.4–13.3)	3.5	2448	<.001
>=50	33.4 (32.4–34.5)			Ref	14.3 (13.5–15.1)			Ref	15.4 (15.0–15.7)			Ref	13.3 (12.8–13.9)			Ref	12.0 (11.7–12.4)			Ref
<b>Gender</b>																				
Male	34.3 (33.5–35.2)			Ref	13.9 (13.3–14.6)			Ref	15.4 (15.1–15.7)			Ref	13.2 (12.8–13.7)			Ref	12.1 (11.8–12.4)			Ref
Female	40.8 (38.6–42.9)	6.0	2447	<.001	17.0 (16.1–17.9)	5.1	2447	<.001	16.4 (16.1–16.7)	4.5	2447	<.001	15.1 (14.0–16.2)	3.1	2447	0.002	14.3 (13.9–14.7)	9.7	2447	<.001
Transgender <sup>b</sup>	41.7 (36.0–47.3)	2.6	2447	0.011	16.7 (13.7–19.7)	1.8	2447	0.078	16.2 (15.2–17.2)	1.7	2447	0.085	15.7 (12.5–19.0)	1.5	2447	0.148	14.2 (12.9–15.4)	3.3	2447	0.001
<b>Race/ethnicity</b>																				
White <sup>c</sup>	33.2 (31.8–34.6)			Ref	14.1 (13.1–15.1)			Ref	14.8 (14.4–15.2)			Ref	13.3 (12.4–14.2)	1.0	2448	0.298	11.4 (11.0–11.8)			Ref

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Characteristics	Overall stigma Range [0–100]				Personalized domain <sup>d</sup> Range (0–30)				Disclosure domain <sup>d</sup> Range (0–20)				Negative self-image domain <sup>d</sup> Range (0–30)				Public attitudes domain <sup>d</sup> Range (0–20)			
	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value
Black <sup>c</sup>	37.4 (35.8–39.0)	4.6	2448	<.001	15.3 (14.6–16.0)	2.0	2448	0.041	16.1 (15.9–16.3)	5.3	2448	<.001	14.4 (13.8–15.1)	3.7	2448	<.001	13.6 (13.2–14.0)	6.6	2448	<.001
Hispanic/Latinx	36.0 (34.5–37.6)	2.7	2448	0.008	14.7 (13.9–15.5)	0.9	2448	0.387	15.8 (15.5–16.2)	3.7	2448	<.001	12.6 (11.9–13.3)			Ref	12.6 (12.2–13.0)	4.0	2448	<.001
Other/ Multiracial <sup>cd</sup>	38.4 (35.3–41.4)	2.9	2448	0.004	15.2 (13.6–16.8)	1.3	2448	0.197	15.4 (14.7–16.1)	1.8	2448	0.076	14.9 (13.6–16.3)	3.0	2448	0.003	12.3 (11.5–13.2)	2.1	2448	0.037
<b>Gender- stratified racial/ethnic group</b>																				
White men <sup>c</sup>	32.3 (30.7–33.8)			Ref	13.2 (12.2–14.2)			Ref	14.6 (14.2–15.0)			Ref	13.0 (11.8–14.1)	0.8	2237	0.419	11.1 (10.8–11.4)			Ref
Black men <sup>c</sup>	35.6 (33.8–37.3)	2.6	2237	0.009	14.3 (13.3–15.3)	1.7	2237	0.099	15.9 (15.6–16.2)	4.9	2237	<.001	13.9 (13.0–14.8)	2.5	2237	0.014	13.0 (12.4–13.6)	4.8	2237	<.001
Hispanic/Latino men	35.3 (33.6–37.0)	2.5	2237	0.014	14.5 (13.6–15.5)	1.9	2237	0.058	15.7 (15.3–16.1)	3.4	2237	0.001	12.4 (11.6–13.2)			Ref	12.2 (11.8–12.7)	3.7	2237	<.001
White women <sup>c</sup>	39.7 (35.0–44.4)	2.8	2237	0.005	19.2 (17.2–21.3)	5.2	2237	<.001	16.1 (15.3–16.8)	3.5	2237	0.001	15.5 (12.8–18.1)	2.1	2237	0.033	13.5 (12.3–14.6)	4.3	2237	<.001
Black women <sup>c</sup>	41.3 (38.4–44.2)	7.0	2237	<.001	17.0 (15.9–18.2)	4.8	2237	<.001	16.5 (16.1–16.9)	5.3	2237	<.001	15.4 (14.1–16.7)	3.7	2237	<.001	14.8 (14.2–15.3)	11.5	2237	<.001
Hispanic or Latina women	37.9 (34.9–41.0)	3.3	2237	0.001	14.2 (12.5–15.8)	1.0	2237	0.335	16.2 (15.5–16.9)	3.7	2237	<.001	13.5 (11.3–15.8)	0.9	2237	0.356	13.6 (12.7–14.5)	5.2	2237	<.001
<b>Sexual behavior/ orientation<sup>e</sup></b>																				
Men who have sex with men	33.6 (32.5–34.6)			Ref	13.5 (12.8–14.2)			Ref	15.2 (14.8–15.5)			Ref	13.1 (12.4–13.8)			Ref	11.8 (11.4–12.1)			Ref

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Characteristics	Overall stigma Range [0–100]				Personalized domain <sup>a</sup> Range (0–30)				Disclosure domain <sup>a</sup> Range (0–20)				Negative self-image domain <sup>a</sup> Range (0–30)				Public attitudes domain <sup>a</sup> Range (0–20)			
	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value
Men who only have sex with women	36.2 (34.8–37.7)	3.2	2448	0.002	14.9 (14.0–15.9)	2.5	2448	0.013	15.9 (15.5–16.2)	2.9	2448	0.004	13.4 (12.5–14.2)	0.4	2448	0.709	12.8 (12.4–13.3)	3.7	2448	<.001
Women who have sex with men	40.8 (38.7–43.0)	6.5	2448	<.001	17.1 (16.1–18.0)	6.1	2448	<.001	16.4 (16.1–16.7)	4.5	2448	<.001	15.1 (13.9–16.3)	2.7	2448	0.007	14.3 (13.9–14.7)	12.0	2448	<.001
Others	37.2 (33.6–40.8)	2.0	2448	0.051	15.4 (13.0–17.8)	1.5	2448	0.132	15.4 (14.7–16.2)	0.7	2448	0.482	15.5 (12.9–18.1)	1.7	2448	0.087	13.2 (12.2–14.3)	2.8	2448	0.006
<b>MSM by race/ethnicity</b>																				
White MSM <sup>c</sup>	30.9 (29.4–32.4)			Ref	12.6 (11.4–13.9)			Ref	14.3 (13.8–14.8)			Ref	12.5 (11.2–13.8)	0.1	1075	0.947	10.7 (10.3–11.1)			Ref
Black MSM <sup>c</sup>	36.3 (34.0–38.6)	3.9	1075	<.001	14.1 (12.9–15.3)	1.7	1075	0.096	16.1 (15.7–16.6)	6.4	1075	<.001	14.4 (13.1–15.7)	2.4	1075	0.019	13.1 (12.5–13.7)	5.8	1075	<.001
Hispanic/Latino MSM	35.3 (33.4–37.1)	3.6	1075	<.001	14.1 (12.9–15.4)	1.7	1075	0.084	15.6 (15.1–16.2)	3.4	1075	0.001	12.4 (11.4–13.5)			Ref	12.3 (11.7–12.8)	4.1	1075	<.001
<b>Time since HIV diagnosis f</b>																				
<5 years	40.0 (38.1–41.9)	6.3	2446	<.001	14.5 (13.6–15.4)			Ref	15.6 (15.1–16.1)	0.8	2446	0.451	14.8 (13.9–15.7)	3.2	2446	0.001	13.0 (12.4–13.6)	2.0	2446	0.046
5–9 years	39.3 (37.2–41.3)	3.9	2446	<.001	15.6 (14.5–16.7)	1.5	2446	0.139	16.2 (15.8–16.6)	3.0	2446	0.003	14.1 (13.1–15.2)	1.4	2446	0.166	13.4 (12.8–13.9)	3.5	2446	<.001
>=10 years	34.2 (33.0–35.3)			Ref	14.7 (14.0–15.4)	0.3	2446	0.768	15.5 (15.2–15.7)			Ref	13.3 (12.7–13.8)			Ref	12.4 (12.1–12.7)			Ref
<b>Ryan White HIV/AIDS Program-funded facility as most frequent source of care</b>																				

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Characteristics	Overall stigma Range [0–100]			Personalized domain <sup>d</sup> Range (0–30)				Disclosure domain <sup>d</sup> Range (0–20)				Negative self-image domain <sup>d</sup> Range (0–30)				Public attitudes domain <sup>d</sup> Range (0–20)				
	Weighted mean score (CI)	T- statistic	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	
Yes	36.7 (35.7–37.7)	3.4	2293	0.001	15.2 (14.6–15.9)	2.1	2293	0.033	15.8 (15.6–16.0)	2.2	2293	0.025	14.1 (13.5–14.7)	2.0	2293	0.042	13.0 (12.6–13.3)	3.1	2293	0.002
No	34.2 (32.9–35.5)			Ref	13.8 (12.8–14.8)			Ref	15.2 (14.9–15.6)			Ref	13.3 (12.7–13.9)			Ref	12.0 (11.5–12.5)			Ref

Notes: HIV, human immunodeficiency virus; CI, confidence interval; all variables measured by self-report except where otherwise noted.

<sup>a</sup> Among people who did not strongly disagree with all items within that domain.

<sup>b</sup> People were classified as transgender if sex at birth and gender reported by the person were different, or if the person chose “transgender” in response to the question about self-identified gender.

<sup>c</sup> Non-Hispanic/Latino.

<sup>d</sup> Includes American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, or multiple races.

<sup>e</sup> People were classified based on sexual behavior among the sexually active and reported sexual orientation among the non-sexually active.

<sup>f</sup> As reported to the National HIV Surveillance System.



**Table 2.**

Overall and by domain mean HIV stigma scale score among people with diagnosed HIV by clinical characteristics—United States, 2018–2019 (N=4,050)

Characteristics	Overall stigma Range [0–100]				Personalized domain <sup>a</sup> Range (0–30)				Disclosure domain <sup>a</sup> Range (0–20)				Negative self-image domain <sup>a</sup> Range (0–30)				Public attitudes domain <sup>a</sup> Range (0–20)			
	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value
<b>Total</b>	35.9 (35.0–36.9)				14.8 (14.3–15.3)				15.6 (15.4–15.9)				13.7 (13.3–14.1)				12.6 (12.3–13.0)			
<b>ART use and adherence, past 30 days<sup>b</sup></b>																				
Not taking ART	40.3 (36.0–44.7)	2.8	2426	0.005	17.3 (15.0–19.5)	2.6	2426	0.010	16.4 (15.3–17.5)	1.7	2426	0.086	14.6 (13.0–16.1)	1.7	2426	0.085	13.9 (13.1–14.6)	3.9	2426	<.001
Taking ART and <85 adherence scale score	39.9 (37.8–42.0)	4.7	2426	<.001	15.9 (15.1–16.8)	2.9	2426	0.004	16.0 (15.6–16.4)	2.9	2426	0.004	15.0 (14.1–15.9)	3.3	2426	0.001	13.2 (12.6–13.7)	2.9	2426	0.004
Taking ART and 85+ adherence scale score	34.3 (33.4–35.2)			Ref	14.1 (13.5–14.8)			Ref	15.4 (15.1–15.6)			Ref	13.1 (12.6–13.6)			Ref	12.3 (12.0–12.7)			Ref
<b>Recent viral suppression<sup>c</sup></b>																				
Yes	35.8 (34.9–36.6)			Ref	14.8 (14.1–15.5)			Ref	15.6 (15.3–15.9)			Ref	13.7 (13.2–14.2)			Ref	12.5 (12.1–12.8)			Ref
No	36.3 (34.3–38.3)	0.6	2448	0.568	14.9 (13.7–16.1)	0.2	2448	0.882	15.7 (15.3–16.1)	0.4	2448	0.712	13.8 (13.1–14.5)	0.2	2448	0.850	13.0 (12.6–13.4)	3.0	2448	0.003
<b>Sustained viral suppression<sup>c</sup></b>																				
Yes	35.4 (34.7–36.2)			Ref	14.6 (13.8–15.3)			Ref	15.6 (15.3–15.9)			Ref	13.6 (13.1–14.2)			Ref	12.4 (12.0–12.7)			Ref
No	36.8 (34.9–38.7)	1.4	2448	0.152	15.2 (14.2–16.2)	0.9	2448	0.382	15.7 (15.3–16.0)	0.4	2448	0.700	13.9 (13.2–14.5)	0.5	2448	0.595	13.1 (12.7–13.6)	4.3	2448	<.001

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Characteristics	Overall stigma Range [0–100]				Personalized domain <sup>a</sup> Range (0–30)				Disclosure domain <sup>a</sup> Range (0–20)				Negative self-image domain <sup>a</sup> Range (0–30)				Public attitudes domain <sup>a</sup> Range (0–20)				
	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	
<b>Retention in HIV care, past 12 months</b>																					
Yes	35.7 (34.9–36.6)			Ref	14.8 (14.3–15.3)	0.2	2310	0.884	15.6 (15.3–15.9)			Ref	13.9 (13.3–14.4)	0.2	2310	0.864	12.5 (12.2–12.8)				Ref
No	37.1 (35.0–39.2)	1.4	2310	0.176	14.7 (13.3–16.1)			Ref	15.7 (15.1–16.2)	0.2	2310	0.867	13.8 (12.9–14.7)				13.3 (12.5–14.0)	2.5	2310	0.012	
<b>Missed at least 1 HIV care visit, past 12 months</b>																					
Yes	40.0 (38.4–41.6)	5.8	2420	<.001	16.1 (15.2–16.9)	2.9	2420	0.004	16.3 (15.9–16.6)	4.5	2420	<.001	14.4 (13.6–15.2)	1.9	2420	0.062	13.5 (13.0–13.9)	4.0	2420	<.001	
No	34.6 (33.6–35.5)			Ref	14.3 (13.6–15.0)			Ref	15.4 (15.1–15.6)			Ref	13.4 (12.9–14.0)			Ref	12.4 (12.0–12.7)			Ref	
<b>Emergency room visits, past 12 months</b>																					
Yes	38.2 (36.7–39.7)	4.2	2432	<.001	16.0 (15.3–16.6)	4.1	2432	<.001	15.7 (15.4–16.0)	0.9	2432	0.387	14.6 (13.8–15.3)	3.1	2432	0.002	13.0 (12.6–13.3)	1.9	2432	0.056	
No	34.2 (33.1–35.3)			Ref	13.7 (12.8–14.5)			Ref	15.5 (15.2–15.9)			Ref	13.1 (12.6–13.6)			Ref	12.4 (11.9–12.9)			Ref	
<b>Depression, past 2 weeks</b>																					
No depression	33.3 (32.5–34.1)			Ref	13.9 (13.2–14.5)			Ref	15.4 (15.1–15.6)			Ref	12.6 (12.1–13.1)			Ref	12.2 (11.8–12.6)			Ref	
Major or other depression	47.9 (45.5–50.3)	12.6	2412	<.001	17.6 (16.4–18.8)	5.0	2412	<.001	16.6 (16.2–17.1)	4.7	2412	<.001	16.5 (15.7–17.3)	8.0	2412	<.001	14.3 (13.7–14.8)	5.6	2412	<.001	

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Characteristics	Overall stigma Range [0–100]				Personalized domain <sup>d</sup> Range (0–30)				Disclosure domain <sup>d</sup> Range (0–20)				Negative self-image domain <sup>d</sup> Range (0–30)				Public attitudes domain <sup>d</sup> Range (0–20)				
	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	Weighted mean score (CI)	T- statistic	DF	P- value	
<b>Anxiety, past 2 weeks<sup>h</sup></b>																					
No anxiety or mild anxiety	33.4 (32.7–34.1)			Ref	13.8 (13.2–14.5)			Ref	15.4 (15.2–15.7)			Ref	12.7 (12.1–13.3)			Ref	12.2 (11.9–12.6)			Ref	
Moderate or severe anxiety	48.9 (46.2–51.5)	12.4	2417	<.001	17.5 (16.4–18.7)	5.5	2417	<.001	16.5 (16.0–17.1)	3.3	2417	0.001	16.5 (14.8–18.2)	3.7	2417	<.001	14.4 (13.8–14.9)	8.1	2417	<.001	

Notes: HIV, human immunodeficiency virus; CI, confidence interval; ART, antiretroviral therapy; all variables measured by self-report except where otherwise noted.

<sup>a</sup> Among people who did not strongly disagree with all items within that domain.

<sup>b</sup> People currently taking ART were asked about their adherence to ART in the 30 days before the interview using questions from a 3-item scale that ranges from 0–100, with a score of 100 indicating perfect adherence.

<sup>c</sup> Assessed by medical record abstraction.

<sup>d</sup> Most recent HIV viral load measurement documented undetectable or <200 copies/mL.

<sup>e</sup> All HIV viral load measurements in the past 12 months documented undetectable or <200 copies/mL.

<sup>f</sup> Retention in HIV care was defined as having received at least two elements of outpatient HIV care at least 90 days apart. Receipt of outpatient HIV care was measured through medical record abstraction and defined as any documentation of the following: encounter with an HIV care provider (could also be self-reported), viral load test result, CD4 test result, HIV resistance test or tropism assay, ART prescription, PCP prophylaxis, or MAC prophylaxis.

<sup>g</sup> Responses to the items on the PHQ-8 were used to define “major depression” and “other depression” according to criteria from the DSM-IV. “Major depression” was defined as having at least 5 symptoms of depression; “other depression” was defined as having 2–4 symptoms of depression.

<sup>h</sup> Responses to the GAD-7 were used to define “mild anxiety,” “moderate anxiety,” and “severe anxiety” according to criteria from the DSM-IV. “Severe anxiety” was defined as having a score of 15; “moderate anxiety” was defined as having a score of 10–14; and “mild anxiety” was defined as having a score of 5–9.

**Table 3.**

Factors associated with overall HIV stigma scale score among people with diagnosed HIV—United States, 2018–2019 (N=4,050)

Characteristics	OR <sup>e</sup> (CI)	T-statistic	P-value	aOR (CI) <sup>ab</sup>	T-statistic	P-value
<b>Total</b>						
<b>ART use and adherence, past 30 days <sup>c</sup></b>						
Not taking ART	1.14 (1.05–1.23)	3.1	0.002	1.09 (1.00–1.18)	1.9	0.056
Taking ART and <85 adherence scale score	1.13 (1.08–1.18)	5.2	<001	1.11 (1.06–1.16)	4.5	<001
Taking ART and 85+ adherence scale score	Ref			Ref		
<b>Recent viral suppression <sup>d e</sup></b>						
Yes	0.99 (0.95–1.03)	-0.6	0.562	1.01 (0.97–1.06)	0.4	0.679
No	Ref			Ref		
<b>Sustained viral suppression <sup>d f</sup></b>						
Yes	0.97 (0.93–1.01)	-1.5	0.141	0.99 (0.95–1.03)	-0.5	0.649
No	Ref			Ref		
<b>Retention in HIV care <sup>d g</sup></b>						
Yes	0.97 (0.93–1.01)	-1.4	0.172	0.99 (0.95–1.03)	-0.4	0.689
No	Ref			Ref		
<b>Missed at least 1 HIV care visit, past 12 months</b>						
Yes	1.12 (1.08–1.17)	6.1	<001	1.09 (1.05–1.14)	4.3	<001
No	Ref			Ref		
<b>Emergency room visits, past 12 months</b>						
Yes	1.09 (1.05–1.13)	4.6	<001	1.07 (1.03–1.12)	3.5	0.001
No	Ref			Ref		
<b>Depression, past 2 weeks <sup>h</sup></b>						
No depression	Ref			Ref		
Major or other depression	1.35 (1.29–1.41)	13.4	<001	1.35 (1.29–1.42)	12.2	<001
<b>Anxiety, past 2 weeks <sup>i</sup></b>						
No anxiety or mild anxiety	Ref			Ref		

Characteristics	OR <sup>d</sup> (CI)	T-statistic	P-value	aOR (CI) <sup>ab</sup>	T-statistic	P-value
Moderate or severe anxiety	1.37 (1.31–1.44)	13.7	<.001	1.39 (1.33–1.44)	15.5	<.001

Notes: HIV, human immunodeficiency virus; CI, confidence interval; OR, odds ratio; aOR, adjusted odds ratio; ART, antiretroviral therapy; all variables measured by self-report except where otherwise noted; all degrees of freedom = 1.

- <sup>a</sup>The ORs and aORs reflect the increased odds of the event with each 10 unit increase in the overall stigma score.
- <sup>b</sup>Adjusted for age, race/ethnicity, sexual behavior/orientation, time since diagnosis.
- <sup>c</sup>People currently taking ART were asked about their adherence to ART in the 30 days before the interview using questions from a 3-item scale that ranges from 0–100, with a score of 100 indicating perfect adherence.
- <sup>d</sup>Assessed by medical record abstraction.
- <sup>e</sup>Most recent HIV viral load measurement documented undetectable or <200 copies/mL.
- <sup>f</sup>All HIV viral load measurements in the past 12 months documented undetectable or <200 copies/mL.
- <sup>g</sup>Retention in HIV care was defined as having received at least two elements of outpatient HIV care at least 90 days apart. Receipt of outpatient HIV care was measured through medical record abstraction and defined as any documentation of the following: encounter with an HIV care provider (could also be self-reported), viral load test result, CD4 test result, HIV resistance test or tropism assay, ART prescription, PCP prophylaxis, or MAC prophylaxis.
- <sup>h</sup>Responses to the items on the PHQ-8 were used to define “major depression” and “other depression” according to criteria from the DSM-IV. “Major depression” was defined as having at least 5 symptoms of depression; “other depression” was defined as having 2–4 symptoms of depression.
- <sup>i</sup>Responses to the GAD-7 were used to define “mild anxiety,” “moderate anxiety,” and “severe anxiety” according to criteria from the DSM-IV. “Severe anxiety” was defined as having a score of 15; “moderate anxiety” was defined as having a score of 10–14; and “mild anxiety” was defined as having a score of 5–9.