

HIV Prevalence December 31, 2022

Data as of July 2023



The HIV Prevalence Report includes diagnosed persons with HIV (PWH) in Michigan. This slide set highlights key observations related to HIV prevalence and transmission and is meant to guide care and prevention strategies. To view the tables used to create this slide set, Stage 3 data, HIV transmission rate information, STD diagnoses among prevalent persons, and other geographic and demographic breakdowns, please see the HIV Prevalence Report Tables.

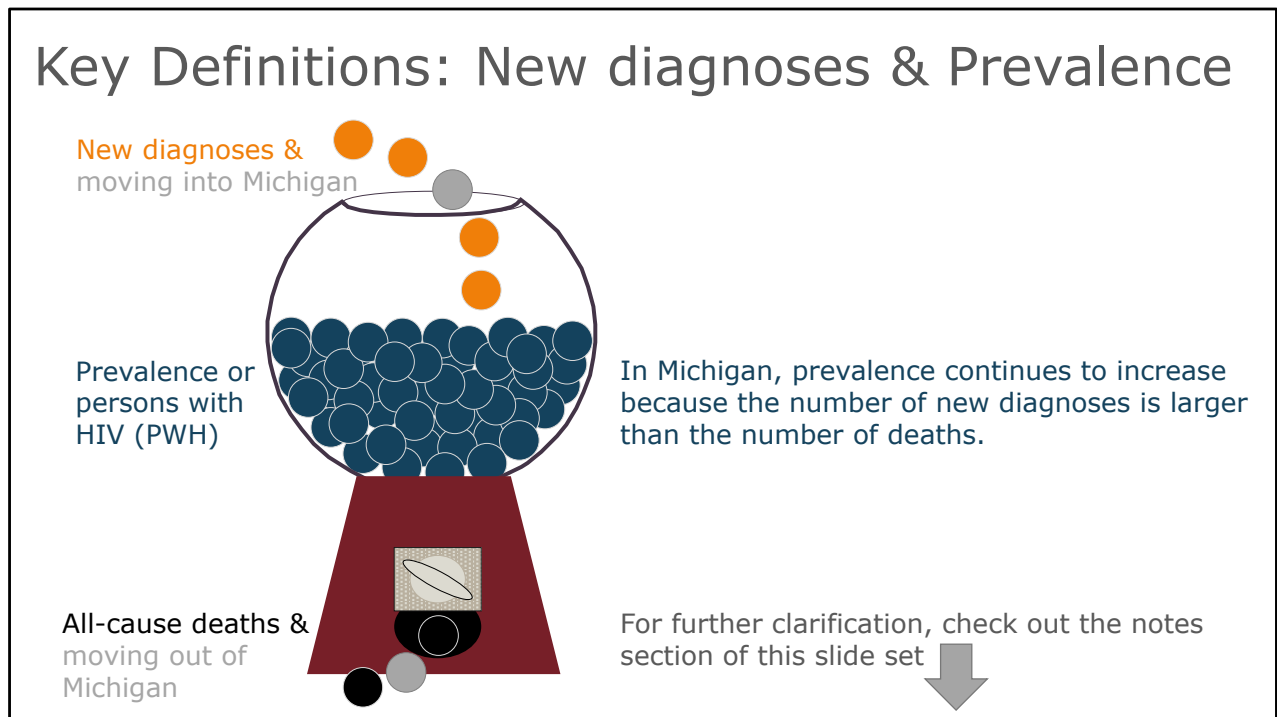
For care-related assessments (estimated undiagnosed, care, viral suppression, and maintained undetectable), see the Continuum of Care Report. For Linkage-related assessments see the Trends Report.

All reports may be found on the website: <https://www.Michigan.gov/HIVSTI>

Prevalence Summary

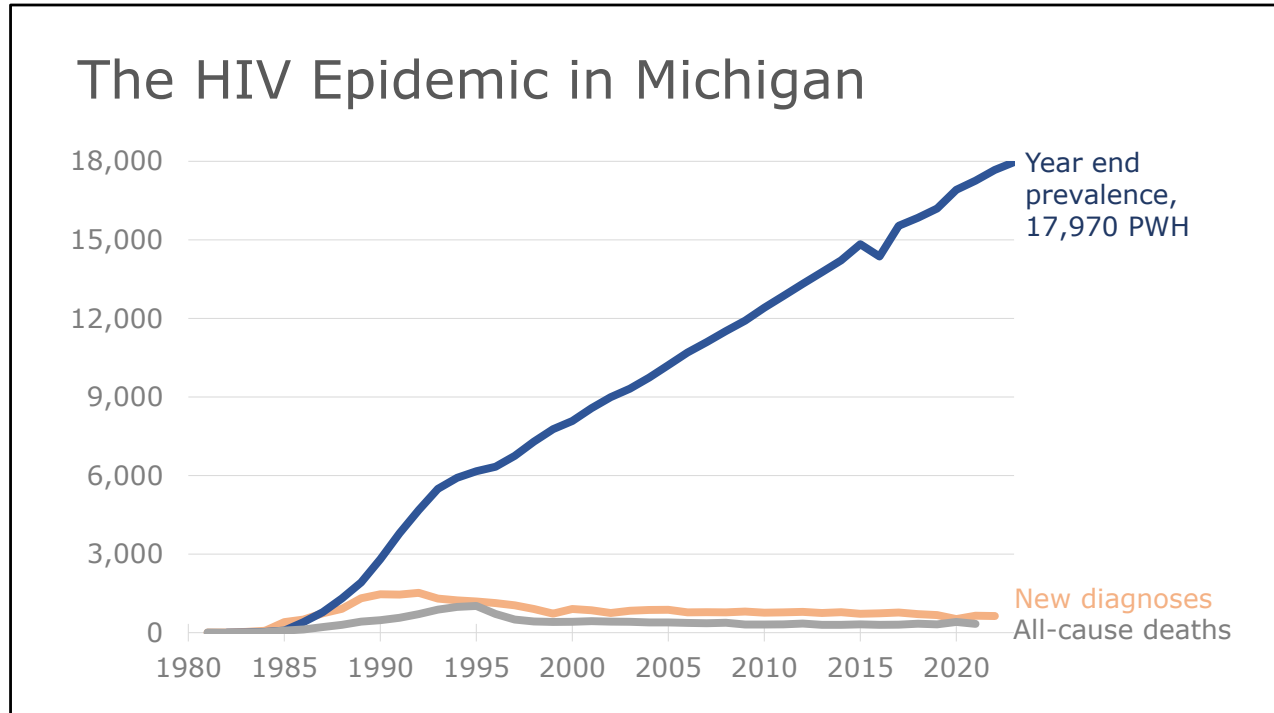
- Detroit has the highest HIV prevalence rates in the state. *(slide 11)*
- The population of persons with HIV (PWH) is aging, but persons 24-39 have the highest transmission rates - especially Black/African American (AA) men. *(slides 14-19)*
- Sex with men is the most common transmission route for persons 20 years and older. *(slide 21)*

Key Definitions & History



New Diagnoses: The number of cases newly diagnosed over a given period of time, usually a year. During years prior to 2020, new diagnoses were a relatively good estimate of new infection. However, testing decreases due to COVID-19 resulted in an HIV diagnosis decline, and new diagnoses underrepresented the likely number of persons newly living with HIV. See the Trends Report and special COVID-19 reports for more information.

Prevalence: The total number of persons currently with HIV (PWH).



In Michigan, prevalence continues to increase because the number of new diagnoses is larger than the number of deaths. Before 2014, prevalence counts were calculated by adding new diagnoses to the previous year's prevalence and subtracting total deaths. This method ignores movement. Historically (pre-1998), movement was minimal as most PWH did not survive long after diagnosis. Therefore, residence at diagnosis was the focus. Beginning in 2014, efforts to update current address began, and prevalence counts switched from calculations based on residence at diagnosis to current address. All the movement among PWH that occurred up until that point was included in the prevalence count in 2015. That is why there is a dip in 2015.

Key Definitions: Population rate

A rate is a count compared to an underlying population (usually per 100,000). By presenting data as a rate (rather than a count), comparisons may be made across various geographic and demographic groups.

Prevalence rate: For every 100,000 people in a population, the number living with HIV.

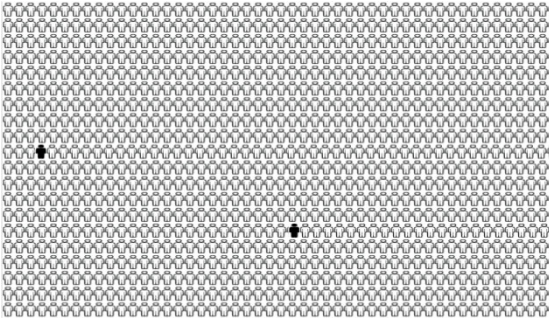
New diagnosis rates are calculated the same way: For every 100,000 people in a population, the number of new HIV diagnoses during a given year.

The importance of assessing rates is explored in a subsequent slide. For now, here is the calculation for Michigan's HIV prevalence rate:

- There are 10,034,113 people living in Michigan. 17,970 of them are diagnosed with HIV.
- $\frac{17,970}{10,034,113} = 0.001791$
- That means for every 1 Michigan resident, 0.001791 have HIV – obviously, this does not make any practical sense, so population rates are generally calculated per 100,000 residents:
- $0.001791 \times 100,000 = 179.1$ which means for every 100,000 Michigan residents 179.1 (or 179) are diagnosed with HIV.

What does this actually look like at a population level?

1,000 people in Michigan



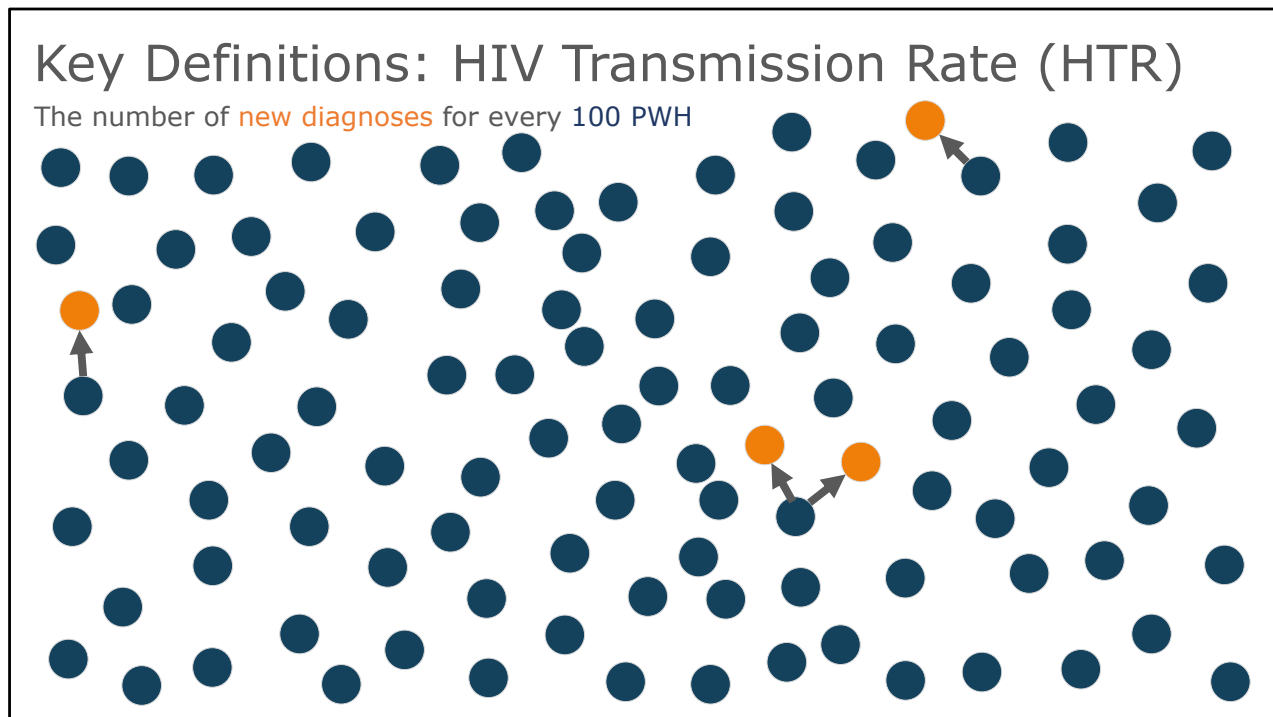
Living with HIV



HIV negative

What does “per 100,000” really look like? If 100,000 people icons were included on this slide, it’d be impossible to differentiate between those diagnosed with HIV and those who are not (imagine each of the blocks of men above copy and pasted 100 times). For visual purposes, the prevalence rate here is scaled back to per 1,000 population level and rounded.

This is what the HIV prevalence rate in Michigan looks like.

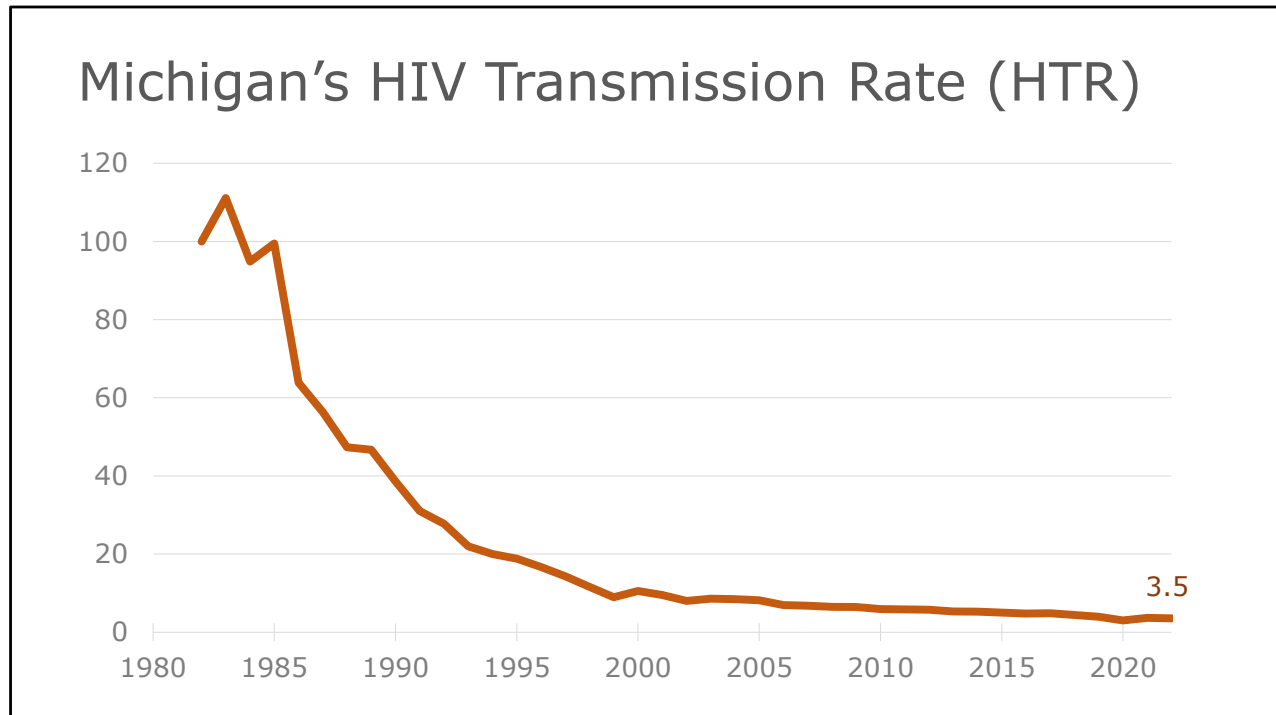


The HTR assesses the number of new diagnoses for every 100 PWH (new diagnoses/PWH x 100). In Michigan during 2022, there were 634 new diagnoses and 17,970 PWH. Michigan's HTR is $634/17,970 \times 100 = 3.5$. Keep in mind, testing has not fully recovered from 2020, and new diagnoses are still low. In 2019, Michigan's HTR was 3.9.

Michigan's HTR is represented on this slide. The 100 blue circles represent 100 PWH, and the 4 orange circles represent 4 new diagnoses (3.5 rounded up).

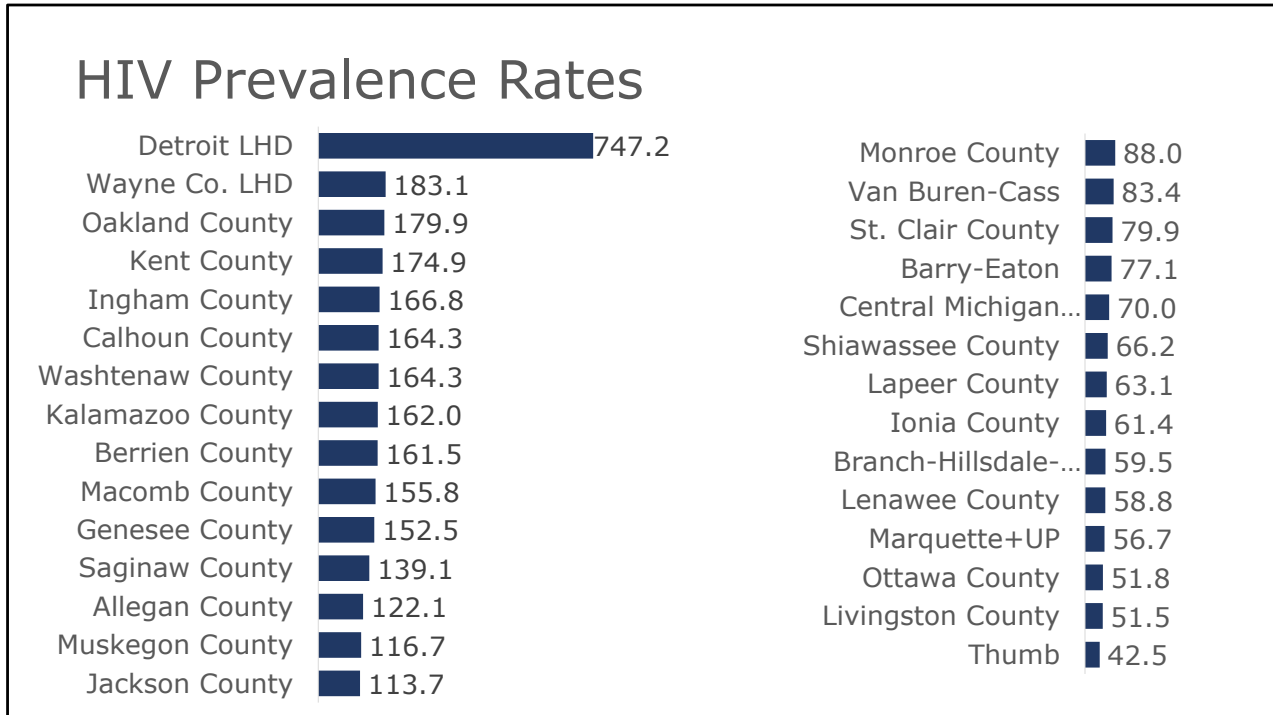
The HTR is useful for two main reasons:

- 1) It may help identify which communities have higher or lower new diagnosis rates than expected. Everything held equal (risk behavior, care access, etc.) HTR's would be the same in every community, every year (the number of new diagnoses would only be affected by the number of PWH). Communities with high prevalence rates would have high new diagnosis rates solely because individuals in that community are more likely to encounter someone living with HIV and vice versa. However, other factors such as risk behavior, testing, and care access are not equal and affect transmission and new diagnosis rates. High HTR's are an indication of differing underlying factors in a community – is there a large number of undiagnosed individuals, did care access change, was there a testing event, etc..?
- 2) A decreasing HTR means transmissions are decreasing. New diagnosis trends don't always reflect this important measure.



The HTR continues to decrease in Michigan. However, it's likely testing has not fully recovered from 2020 as new diagnoses during 2021 were still hovering around the lower limit of what was expected. It's likely there are elevated numbers of undiagnosed persons living with HIV in addition to the normal levels pre-2020. In 2019, Michigan's HTR was 3.9.

Geographic Distribution



Branch-Hillsdale-... also includes St. Joseph County

Central Michigan includes all otherwise unlisted counties in the lower peninsula.

Detroit LHD includes the cities of Detroit, Hamtramck, Harper Woods, Highland Park, & the Grosse Pointes.

Marquette includes the entire upper peninsula.

The Thumb includes Huron, Sanilac, and Tuscola Counties

Wayne Co. LHD includes residents of Wayne Co. outside the Detroit LHD Jurisdiction

Demographic Distribution

Why rates are important

At the end of 2022, there were **7,319** Black/AA men and **5,310** white men living with HIV in Michigan. For every 2 white men living with HIV, there are 3 Black/AA men.

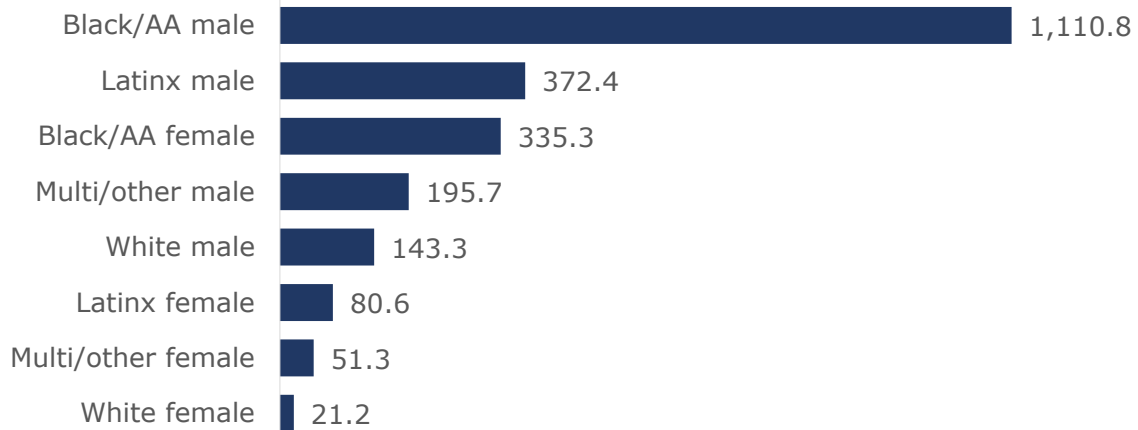
The count among Black/AA men is higher, but it's not *that* much higher.

To understand disparities, we must take into account the entire population – i.e. calculate a prevalence rate.

The HIV **prevalence rate** per 100,000 Black/AA men in Michigan is **1,110.8**. For **white men it's 143.3** per 100,000. For every 2 white men living with HIV per 100,000, there are 15 Black/AA men – a very large disparity.

For more detail on rates, please see our 5-minute [Epidemiology 101 video](#)

Persons of color, especially Black/AA men, are most affected by HIV

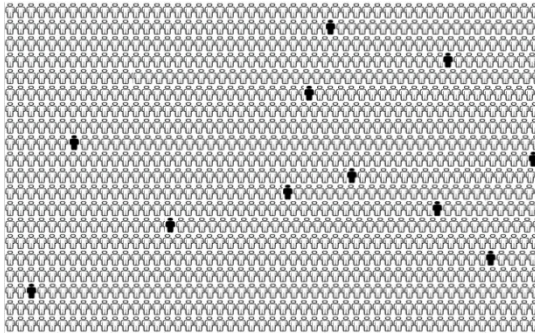


Prevalence rate per 100,000 Michiganders in each population

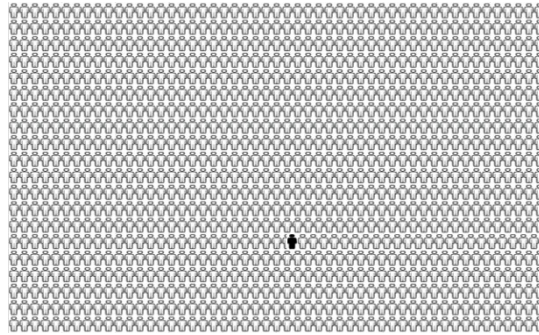
In Michigan, Black/AA men carry the burden of a generalized epidemic, meaning over 1% of Black/AA men in Michigan are living with HIV.

What does this actually look like at a population level?

1,000 Black/AA men in Michigan



1,000 white men in Michigan



Living with HIV



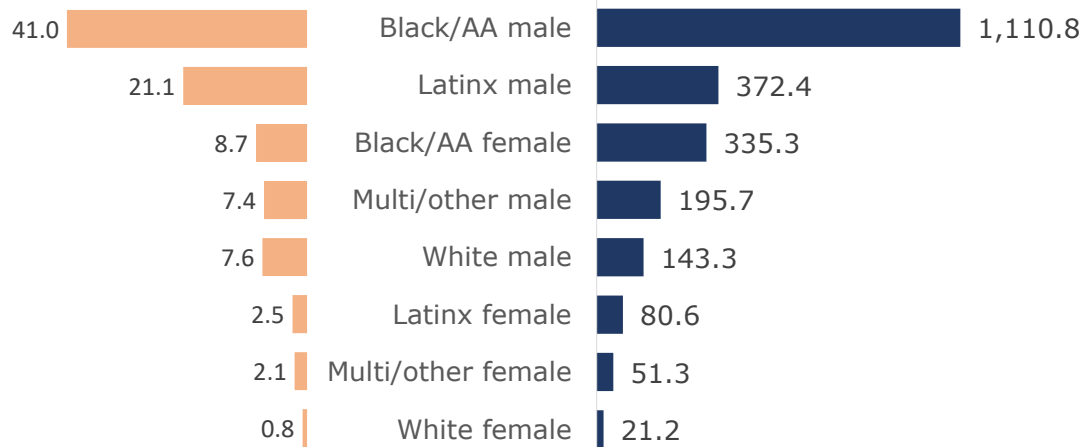
HIV negative

What does “per 100,000” really look like? If 100,000 people icons were included on this slide, it’d be impossible to differentiate between those living with HIV and those who are HIV negative (imagine each of the blocks of men above copy and pasted 100 times). For visual purposes, the prevalence rate here is scaled back to per 1,000 population level and rounded.

This is what the HIV Prevalence rate in Michigan looks like for Black/AA men and white men.

Visually it is clear the Black/AA male population is much more affected than the white male population. Immediately we can assume two things: 1) More care resources are needed in the Black/AA community, and 2) all other aspects held equal (risk behavior, care access, etc.), persons in the Black/AA community are more likely to contract HIV solely because they are more likely to encounter someone living with it. Therefore, more prevention resources are also needed in this community. Note: all other aspects, such as care access, are *not* equal.

Groups with high prevalence rates experience high HIV diagnosis rates as well

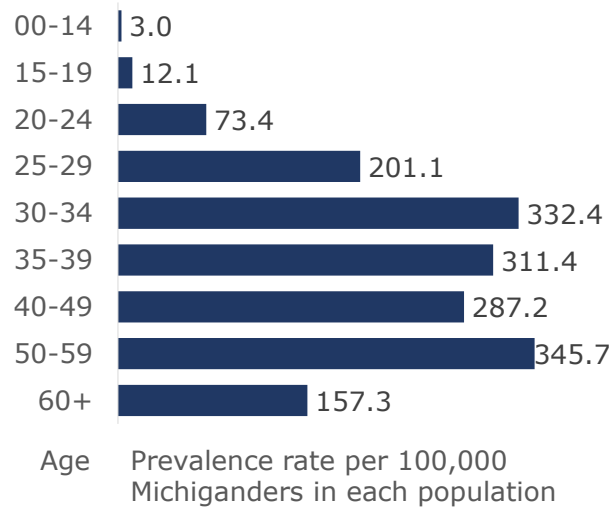


New diagnosis rate per 100,000 Michiganders in each population

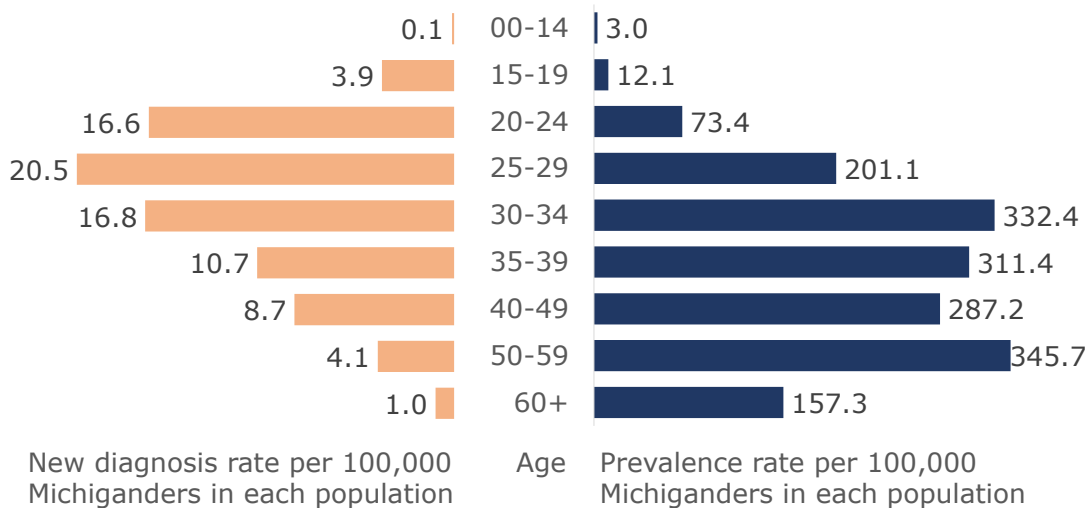
Prevalence rate per 100,000 Michiganders in each population

Prevalence rates and new diagnosis rates are correlated. As discussed, persons in communities with high prevalence rates are more likely to contract HIV solely because there is more of it in the community.

Prevalence rates are highest for persons 30-59 years old...



...but new diagnoses are highest for persons 20-34.

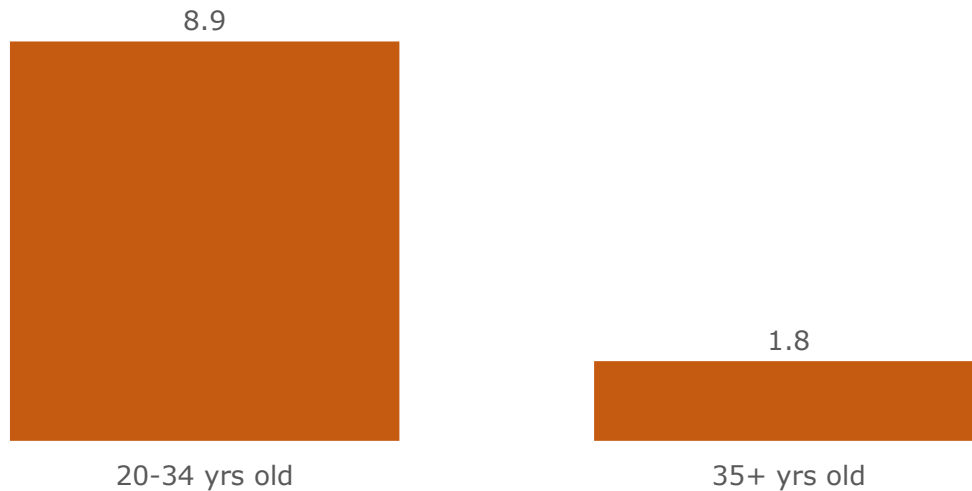


Groups with high prevalence rates tend to also have the highest new diagnosis rates because individuals in that group are more likely to encounter PWH. However, an exception to this pattern occurs when broken down by age group. Younger persons are more at risk for new HIV infection despite having lower prevalence rates. A major measurable factor is the difference in community level viral suppression. When an individual maintains and monitors a suppressed viral load, they cannot transmit HIV sexually. When a large proportion of a community is virally suppressed, the transmission rate of the entire community drops. The older the age group, the higher the community viral suppression, and the lower the transmission and new diagnosis rates (see Continuum of Care report for numbers and charts related to viral suppression).

Additionally, prevalence rates are larger for older populations simply because they've been alive longer. They've had more years of potential risk compared to the younger populations.

HTR's are high among persons 20-34

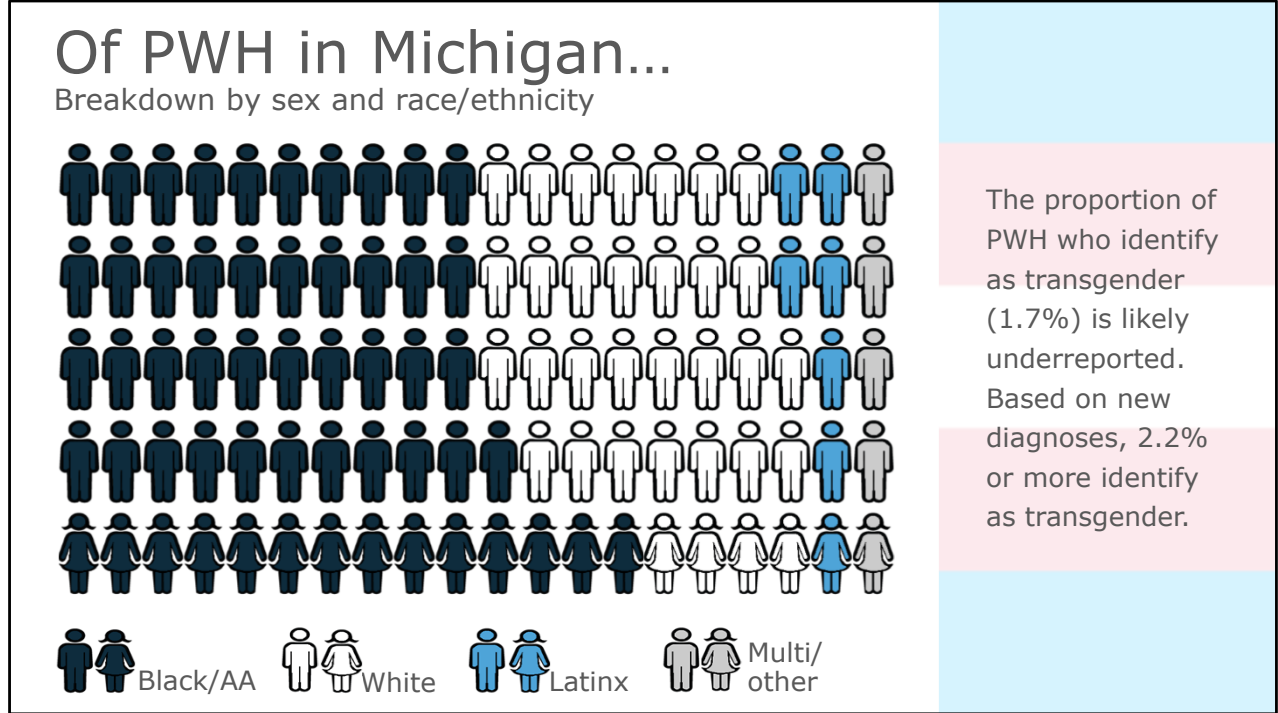
Michigan HIV Transmission Rates (HTR) by age



The high new diagnosis rate among young persons given their prevalence rate is demonstrated in the HIV Transmission Rate (HTR). As discussed, this is likely due to differences in behavior and viral suppression rates. If the HIV Transmission Rate (HTR) of those 20-34 year olds matched the HTR of persons 35 years and older, it would result in a reduction of new diagnoses by 46%.

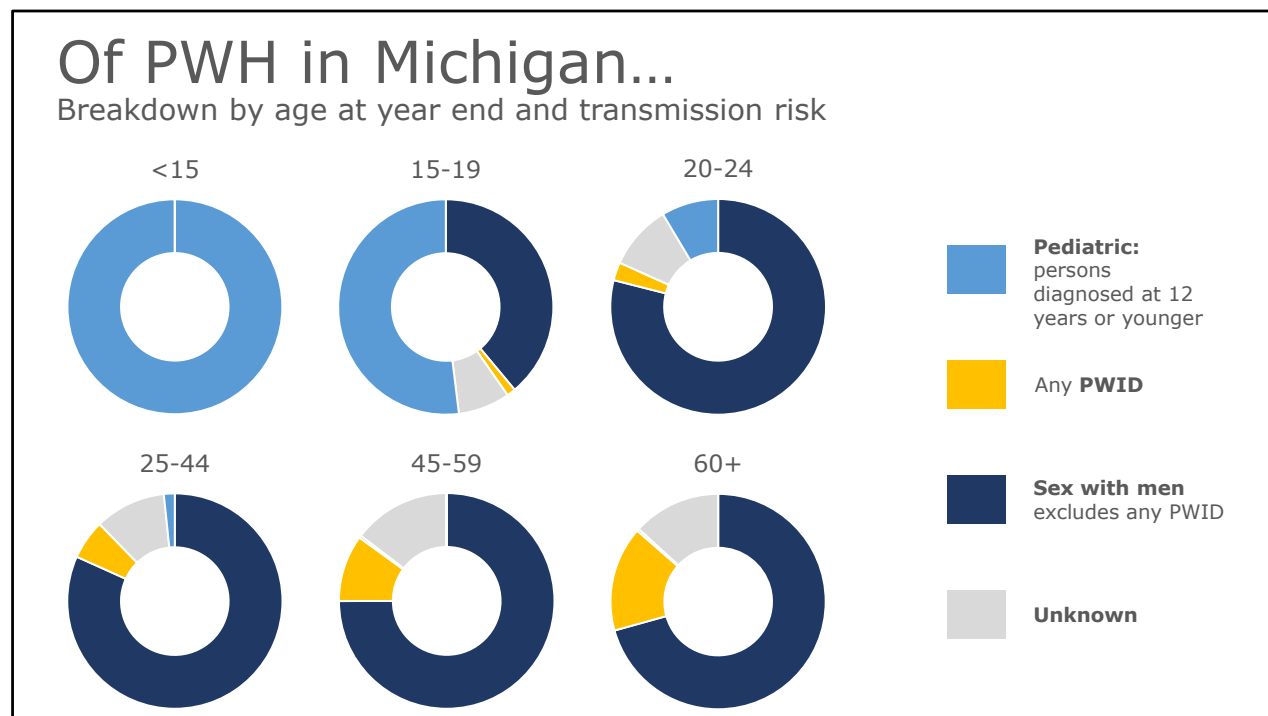
Of all 20-34 year olds with HIV, 68% are among Black/AA men (compared to 50% of persons 35+). This is why care and prevention activities must remain focused on the young Black/AA male population.

Note: Analyses of HIV strains among persons diagnosed in Michigan show transmissions occur within demographic groups. For example, the vast majority of new infections among young persons are from other young persons, not older populations. This further validates the high transmission rate observed in the younger age group.



Prevalence rates better portray disparities among various populations; however, it is sometimes helpful to view the population proportions of persons living with HIV.

To understand the burden faced by the Transgender community, it is more helpful to compare new diagnoses rather than prevalence. The primary data source did not capture gender identity until 2010. Therefore, gender identity is underreported among persons diagnosed before 2010. In 2022, 2.2% of persons newly diagnosed with HIV identified as transgender.



Transmission risk assessments are most useful when assessing new diagnoses as risk behavior is episodic¹. However, aggregated risk groups are correlated with age and care needs (see Continuum of Care Report). One can imagine persons who have lived with HIV their entire lives (pediatric cases) will have different needs compared to persons who acquired HIV through injection drug use and are in their 50's.

Note: the age groups displayed are based on natural breaks in risk proportion.

All PWH under 15 years old were infected perinatally (at birth) or before 12 years of age by some other transmission risk. Pediatric transmissions also make up a large portion of teens 15-19 years old. Non-perinatal pediatric transmissions are usually among foreign born children who were living with HIV when they came to the US. Unfortunately, specific risk cannot be confirmed for this group.

Sex is the major transmission method for everyone 20 years and older. The proportion of PWH who injected drugs at some point in their lives increases substantially with age.

¹Zhang X, Zhong L, Romero-Severson E, Alam SJ, Henry C, et al. (2012) Episodic HIV Risk Behavior Can Greatly Amplify HIV Prevalence and the Fraction of Transmissions from Acute HIV Infection Statistical Communications in Infectious Disease vol 4:1



For STI or HIV Data Requests or
Technical Assistance, visit
www.Michigan.gov/SHOARS