

The 2020 National HIV/AIDS Strategy (NHAS) Indicators Assessment of Michigan's Progress 2010 - 2015



data as of January 1, 2017

The indicators/objectives used to measure the National HIV/AIDS Strategy's (NHAS) goals were updated in 2015. The indicators now measure improvements between baseline, 2010, and 2020. The three main NHAS goals are the same: 1) Reduce new HIV infections, 2) Increase access to care and improve health outcomes for people living with HIV, and 3) Reduce HIV-related health disparities.

The indicators have been updated to reflect current need among persons over 12 years old living with HIV (PLWH).

Progress Key:

Met - 2020 goal is met.

On Track - Most recent annual goal was met.

Needs Improvement - Most recent annual goal was not met, but numbers are stable or heading in the right direction.

Worsening - Most recent annual goal was not met, and numbers are heading in the wrong direction.

N/A - Indicator not relevant or no Michigan specific data available at this time.

NHAS Goal 1 Indicators relevant to Michigan:

Indicator	Progress
1) Increase the percentage of PLWH who know their status to 90%	N/A
2) Reduce the number of new diagnoses by 25%	Needs Improvement
3) Reduce the percentage of young gay and bisexual men who have engaged in HIV-risk behaviors by 10%	Unknown

NHAS Goal 2 Indicators relevant to Michigan:

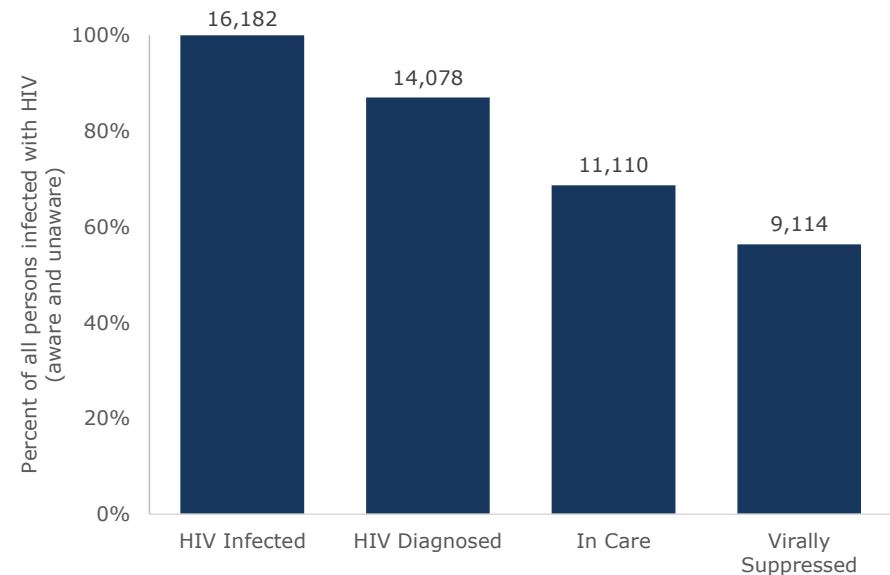
4) Increase one month linkage to care rates to 85%	N/A
5) Increase care rates among PLWH to 90%	N/A
6) Increase the proportion of virally suppressed PLWH to 80%	On Track
7) Reduce homelessness among PLWH to no more than 5%	N/A
8) Reduce the death rate among PLWH by 33%	On Track

NHAS Goal 3 Indicators relevant to Michigan:

9) Reduce new diagnosis rate disparities by 15% among:	
gay and bisexual men	Worsening
young black gay men	Worsening
black females	Met
10) Increase to 80% the proportion of virally suppressed:	
youth (13-24 year olds)	On Track
persons who inject drugs	Needs Improvement

The HIV Care Continuum (aka Treatment Cascade) was developed by the CDC to assess gaps in care. It is presented here in order to provide context to many of the NHAS goals. The largest gap is between 'HIV Diagnosed' and 'In Care' meaning Michigan struggles to keep PLWH in care during the years following diagnosis. The data show, once Michiganders are in care, the vast majority achieve viral suppression, and viral suppression rates continue to improve every year. Therefore, Michigan should focus on improving the proportion in care as viral suppression will likely follow.

Michigan HIV Care Continuum, 2015



Select Care Stages of the HIV Care Continuum

HIV Infected - Persons aware and unaware of their infection.

Diagnosed - Persons diagnosed with HIV.

In Care - PLWH with at least 1 CD4, viral load, or genotype lab test.

Virally Suppressed - PLWH with less than or equal to 200 copies of HIV virus per milliliter of blood (≤ 200 copies/mL).

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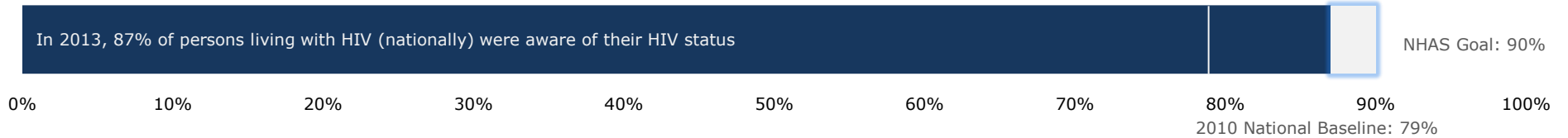
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Goal 1: Reducing New HIV Infections

Indicator 1: By 2020, increase the proportion of PLWH who know their HIV status to 90%

A Michigan specific estimate will be available in 2018. To estimate HIV prevalence, the CDC-developed methodology depends heavily on accurate current address and requires three years reporting delay. Due to the large population decline in Michigan, accurate current residence data were not available until the end of 2015.



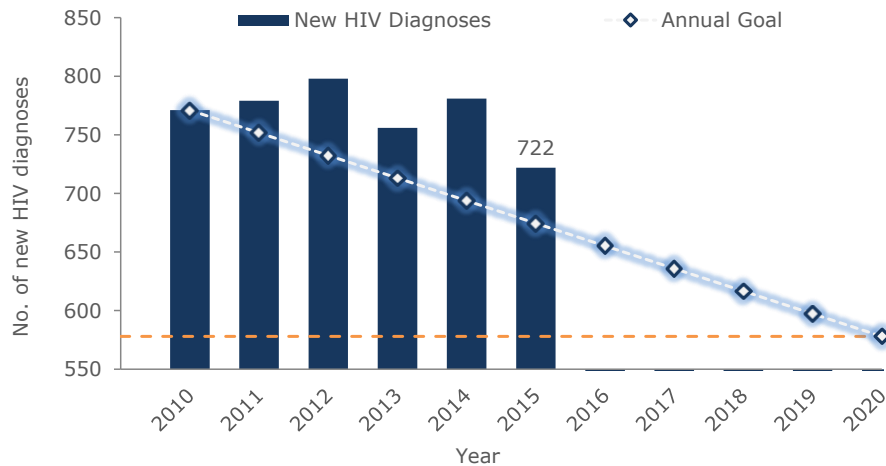
Indicator 2: By 2020, reduce the annual number of new HIV infections by 25%

To reach this goal, Michigan needs to reduce the annual number of new HIV infections from 744 (in 2010) to 581 by 2020. During 2015, there were 722 new diagnoses. In order to reach the 2020 goal, a reduction of 29 new cases per year is needed.

It is important to note that this objective does not account for HIV prevalence (higher prevalence rates increase the probability of new infections). Prevalence in Michigan has been climbing since the beginning of the epidemic, but the number of new diagnoses has remained stable in recent years¹ resulting in an 22% drop in the transmission rate.

This indicator, however, measures reported case counts, not transmission rate. Unfortunately, Michigan failed to meet the annual goal between 2011 and 2015.

The number of new HIV diagnoses in Michigan has remained relatively stable since 2010



Indicator 3: By 2020, reduce the percentage of young gay and bisexual men who have engaged in HIV-risk behaviors by at least 10%

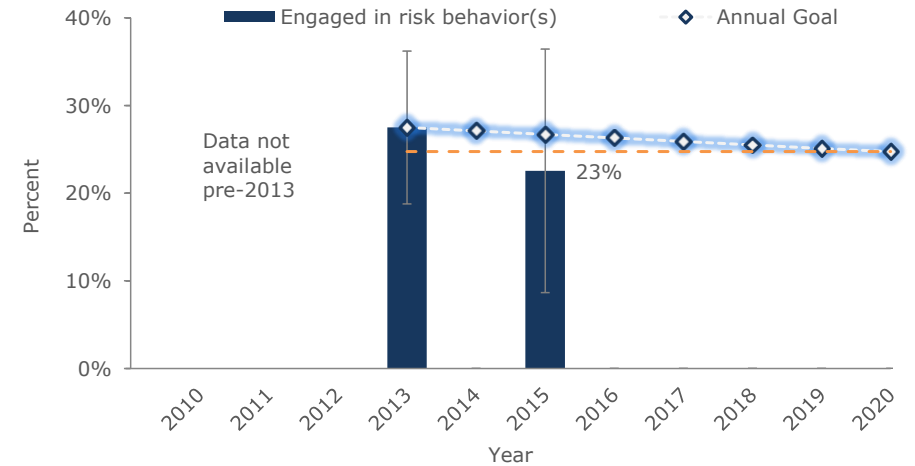
A sample of Michigan high school students (grades 9 - 12) participate in the Youth Risk Behavioral Surveillance System (YRBSS) survey biannually. Responses from male participants who have had sex with a male or identify as gay or bisexual are included in this indicator calculation. Gender identity data were not collected pre-2013; therefore data are not available for the years 2010 - 2012.

Of the gay and bisexual male participants, those who reported one of the following are categorized as "engaging in HIV-risk behavior":

- 1) Multiple sex partners (3 or more) in the 3 months preceding the interview
- 2) Did not use a condom during last sexual encounter within 3 months
- 3) Ever injected an illegal drug

Large confidence intervals present in 2015 inhibit conclusive assessment of directionality.

23% of young gay/bi 2015 Michigan YRBSS participants engaged in HIV-risk behavior



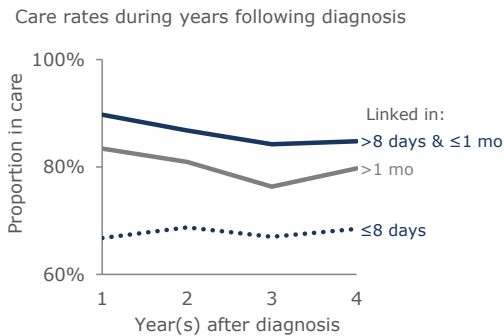
Goal 2: Increasing Access to Care and Improving Health Outcomes for People Living with HIV

Indicator 4: By 2020, increase the percentage of newly diagnosed persons linked to HIV medical care within one month of diagnosis to at least 85%

CD4, viral load (vl), and genotype lab tests are proxies for clinical care visits. The first of these lab tests collected is used to calculate the time between HIV diagnosis and linkage to care. The earlier persons are linked to care the more likely they are to be in care in the future and the better their prognosis as 82% are virally suppressed. This, in turn, reduces transmission risk to others.

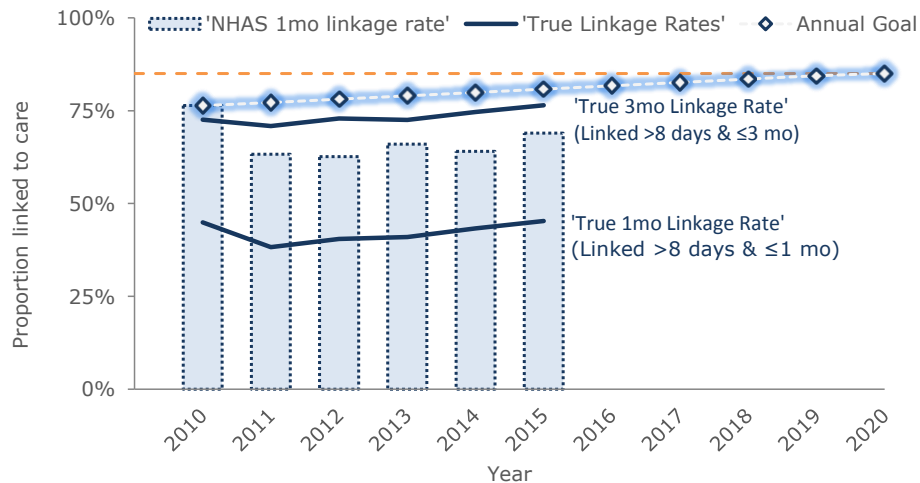
This NHAS indicator measures the proportion of persons newly diagnosed with HIV who received one of these lab tests within one month (≤ 1) of diagnosis. Tests run on the day of diagnoses are counted. The **'NHAS 1 month linkage rate'** is represented by the light blue bars below.

However, persons "linked" within 8 days of diagnosis have future care rates even lower than those linked after 1 month (right). The **'true linkage rate'** is the proportion linked more than ($>$) 8 days and ≤ 1 or ≤ 3 months. This is represented by the solid, dark blue lines below. These rates are not expected to reach 85%, however they are important to track.



Programs should focus on increasing the 'true linkage rates'.

'True linkage rates' are steadily increasing among persons diagnosed in Michigan



Linked to Care: At least 1 CD4, vl, or genotype test within given timeframe

Indicator 5: By 2020, increase the percentage of persons with diagnosed HIV infection who are retained in HIV medical care to at least 90%

CD4, viral load (vl), and genotype lab tests are proxies for clinical care visits. Persons who received at least one of these lab tests within one calendar year are **'in care'**. Persons who received at least two of these tests are **'retained in care'**. Receiving HIV care is extremely important in improving individuals' prognoses and, in turn, reducing transmission risk to others by achieving high levels of viral suppression. 'Retention in care' is not necessary in achieving viral suppression. In fact, 67% of persons 'in care' but not 'retained in care' are already virally suppressed. Therefore **programs should focus on increasing the 'in care' rate.**

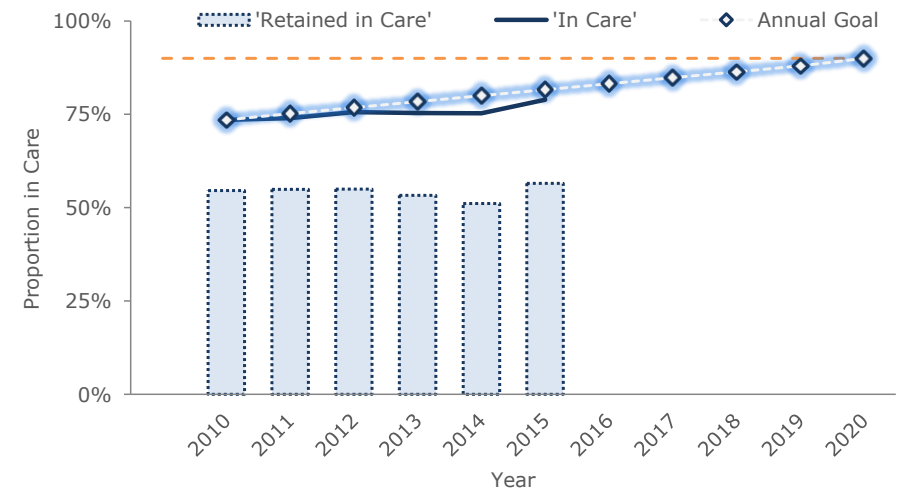
In 2015, the care rate among PLWH increased to 79%. Of the stages included in the care continuum (diagnosed, in care, and viral suppression) 'in care' needs the most attention.

There are four groups with care rates substantially lower than the state average of 79%:

- 1) Persons who inject drugs - 68% in care
- 2) Persons of Hispanic/Latino descent - 71% in care
- 3) Persons who have never progressed to stage 3 HIV - 72% in care
- 4) Residents of the Upper Peninsula - 72% in care

Respectively, these groups account for 11%, 5%, 46%, and 1% of all PLWH in Michigan (persons may occupy more than one group). New initiatives on the horizon hope to improve care rates in the state.

The rate of Michiganders living with HIV 'in care' increased during 2015 for the first time since 2010



In Care: At least 1 CD4, vl, or genotype lab test within the given calendar year

Goal 2: Increasing Access to Care and Improving Health Outcomes for People Living with HIV (continued)

Indicator 6: By 2020, increase the percentage of persons with diagnosed HIV infection who are virally suppressed to at least 80%

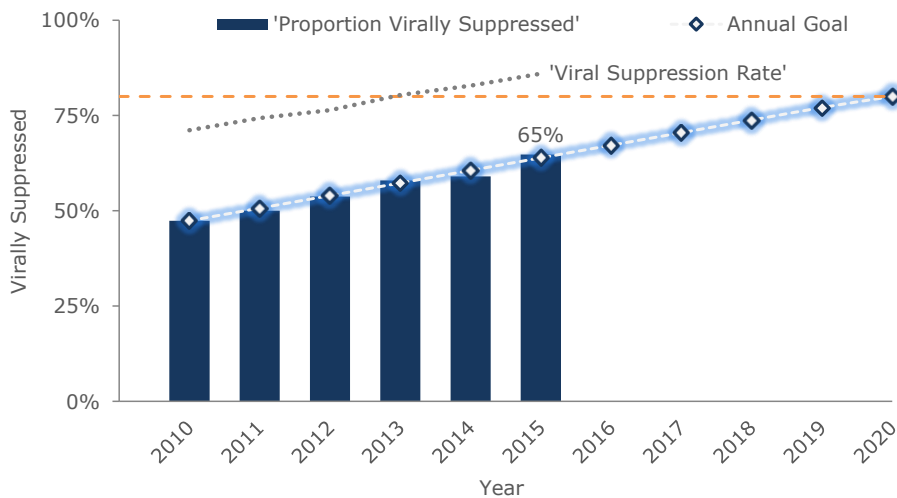
Viral suppression is the final stage in the HIV care continuum. An individual is considered to be virally suppressed if he/she has less than or equal to 200 copies of HIV virus per milliliter of blood (≤ 200 copies/mL).

Consistent suppression of the virus in an individual is an indication that he/she has routine access to care and is adherent to treatment. Those who maintain low viral loads also have the best long term prognosis. Additionally, transmission of the HIV virus is extremely low among virally suppressed individuals - less than 1 transmission per 100 PLWH per year. The transmission rate among persons diagnosed, but not in care is over 13 times higher².

The percent of virally suppressed PLWH in an HIV positive population is the 'virally suppressed proportion'. The percent of virally suppressed PLWH in an HIV positive population who received a viral load (aka 'in care') is the 'viral suppression rate'. Both of these measures are shown in the graph below. The NHAS is interested in the 'virally suppressed proportion' (not the 'viral suppression rate'). The 'viral suppression rate', however, is a good indication that once Michiganders with HIV are in care, the likelihood of viral suppression is high. This is why it is so important to reduce the number of PLWH out of care.

Michigan is on track to meet this 2020 goal.

'Viral Suppression' and 'Viral Suppression Rate' continue to rise

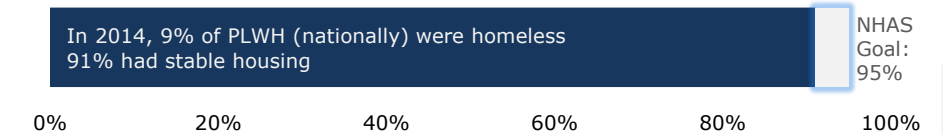


Virally Suppressed: ≤ 200 copies/mL at last lab during given year (of all PLWH)
Viral Suppression Rate: ≤ 200 copies/mL at last lab during given year of PLWH who received a viral load

Indicator 7: By 2020, reduce the percentage of persons in HIV medical care who are homeless to no more than 5%

At this time, Michigan does not have an estimate of how many PLWH are homeless. Until an estimate can be calculated, the national rate is displayed - In 2014, 9% of PLWH were homeless (91% had stable housing).

Homelessness has increased from 7.7% of PLWH (nationally) in 2010.

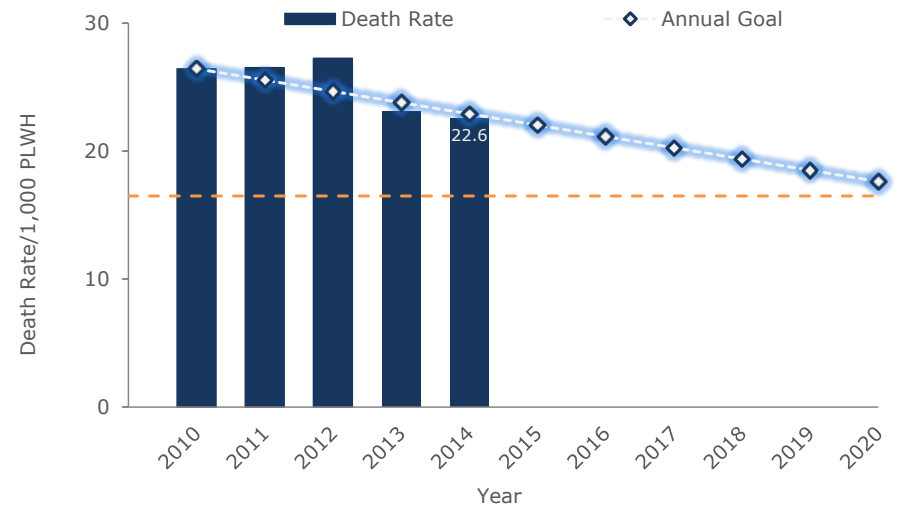


Indicator 8: By 2020, reduce the all-cause death rate among persons with diagnosed HIV infection by at least 33%

Michigan conducts three death matches each year with the Social Security and National Death Indices, and Michigan Vital Records. Michigan's death data is very complete, however, a lag in death data reporting causes underestimates for recent years. Only years with complete data are displayed below.

The all-cause death rate among Michiganders living with HIV decreased to 22.6 deaths per 1,000 PLWH during 2014. Michigan is on track to reach the 2020 goal provided the death rate is reduced by 1 death per 1,000 per year.

The all-cause death rate among PLWH in Michigan decreased in 2013 and 2014



Goal 3: Reducing HIV-Related Health Disparities

Indicator 9: By 2020, reduce disparities in the rate of new diagnoses by at least 15% among gay/bisexual men, young gay/bisexual black men, and black women.

It is well known that the gay and black communities shoulder a disproportionate burden of the HIV epidemic. This goal aims to reduce the new diagnosis rate *disparity* (ratio) observed between these groups and the overall population by at least 15%.

Ratio calculation:

$$\text{New Diagnosis Rate Ratio} = \frac{\text{Rate of new diagnoses among group of interest}}{\text{Rate of new diagnoses among Michiganders}}$$

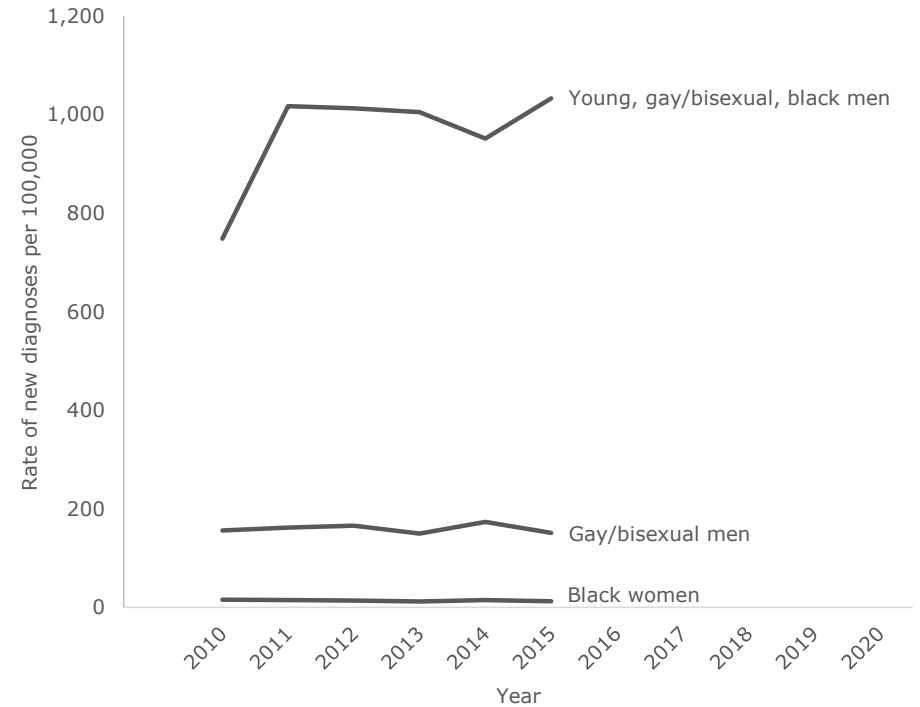
where the rate of new diagnoses = $\frac{\text{Number of new diagnoses in given group}}{\text{Total population of given group}}$

The total population of gay and bisexual men was estimated from Lieb *et al*, 2011³.

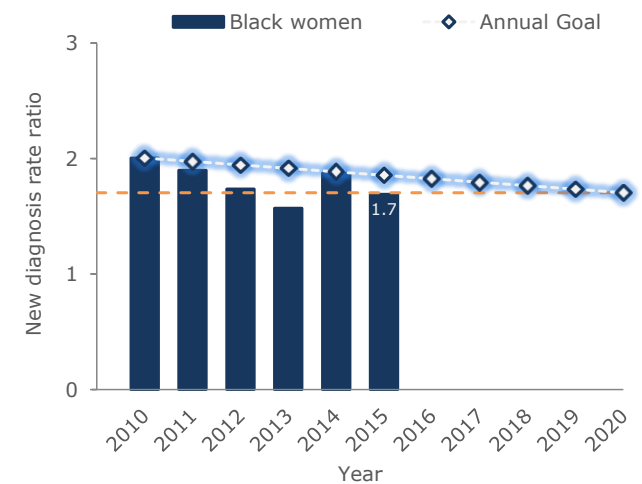
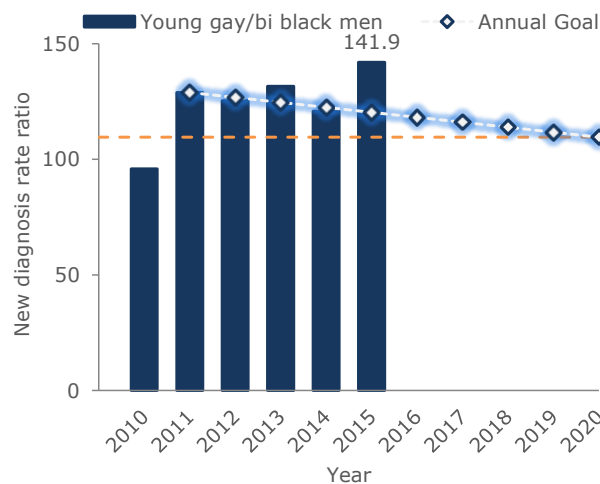
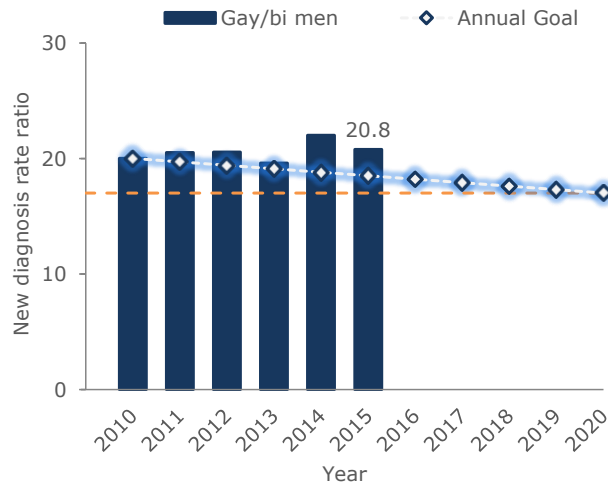
The graph to the right displays the rates of new diagnoses for each group of interest. Black women had a new diagnosis rate of 15.6 per 100,000 black women in Michigan during 2010. That rate was 2 times higher than the overall new diagnosis rate the same year. The disparity ratio (2 to 1) is to be reduced by 15%. The indicator is *not* looking to reduce the rate (15.6 per 100,000) by 15%.

Overall, diagnosis rate disparities among **gay/bisexual men** are unchanged. During 2015, there was a large increase in the diagnosis rate disparity among **young, gay/bisexual black men** (Note: as testing initiatives did not focus on this group until after 2010, baseline was calculated in 2011). Barring any future increases, Michigan met the 2020 disparity reduction goal for **black females** in 2015.

Young, gay/bisexual, black men have an extremely high rate of new diagnoses per 100,000 persons



Diagnosis rate disparities: Comparing diagnosis rates between the three groups to the overall population (note scale difference among groups).



Goal 3: Reducing HIV-Related Health Disparities (continued)

Indicator 10: By 2020, increase the percentage of youth and persons who inject drugs (PWID) with diagnosed HIV infection who are virally suppressed to at least 80%

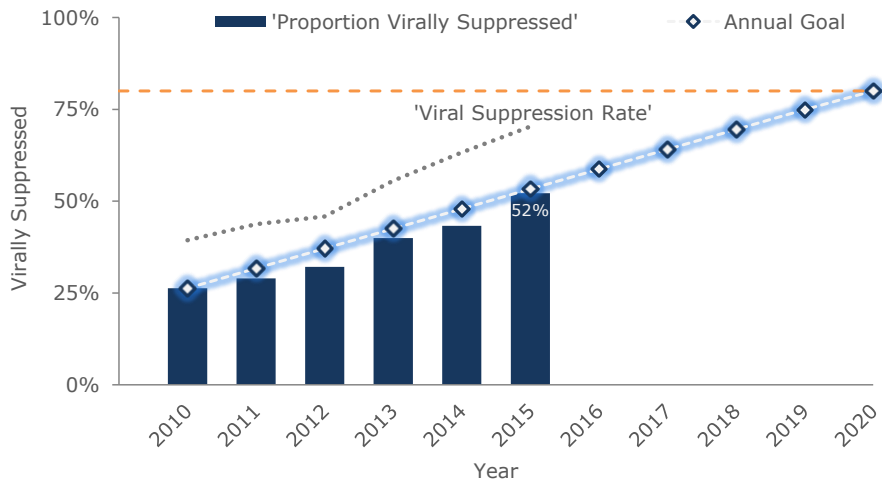
See Goal 2, Indicator 6 for an overview of viral suppression.

The percent of virally suppressed PLWH in an HIV positive population is the 'virally suppressed proportion'. The percent of virally suppressed PLWH in an HIV positive population who received a viral load (aka 'in care') is the 'viral suppression rate'.

Youth (persons 13 - 24 years old) have achieved viral suppression significantly less often than their older peers regardless of other demographic factors⁴. This low rate among youth, in turn, means this is the only group with low 'viral suppression proportions' (52%) despite a relatively average proportion of the group receiving care (75%). This proportion (52%) is the indicator of interest.

Michigan is 1% short of the annual goal, however the proportion of virally suppressed youth is steadily improving. Additionally, the 'viral suppression rate' is improving rapidly. Efforts aimed to improve viral suppression among youth need two foci: 1) keep more youth in care - the rapidly improving 'viral suppression rate' indicates more youth in care should lead to more virally suppressed youth, and 2) reducing the viral load among youth already receiving care by ensuring treatment adherence.

The proportion of virally suppressed youth as well as their 'viral suppression rate' continue to increase

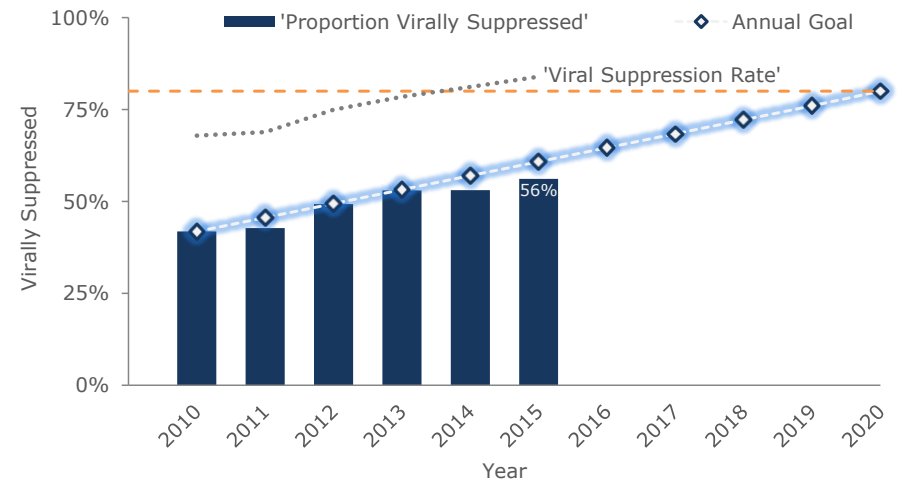


Virally Suppressed: ≤200 copies/mL at last lab during given year (of all PLWH)
Viral Suppression Rate: ≤200 copies/mL at last lab during given year of PLWH who received a viral load

Persons who inject drugs (PWID) are less likely to be in care and, therefore, less likely to be virally suppressed compared to non-PWIDs.

Michigan was on track to meet the 2020 goal among PWID until 2014. The high viral suppression rate (normal in Michigan) among PWID indicates that efforts meant to increase the proportion of PWID in care should increase the proportion virally suppressed as well.

Improvements in the viral suppression proportion among persons who inject drugs has slowed in recent years, but the viral suppression rate continues to grow



Virally Suppressed: ≤200 copies/mL at last lab during given year (of all PLWH)

Viral Suppression Rate: ≤200 copies/mL at last lab during given year of PLWH who received a viral load

References

- 1 MDHHS HIV/STD/TB/VH Epidemiology Section (2015). Annual Review of HIV Trends in Michigan (2010-2014). www.michigan.gov/hivstd
- 2 Skarbinski J, Rosenberg E, Paz-Bailey G, Hall I, Rose C, Viall A, et al. (2015) Human Immunodeficiency Virus Transmission at Each Step of the Care Continuum in the United States. *JAMA Intern Med*.doi:10.1001/jamainternmed.2014.8180
- 3 Lieb S, Fallon S, Friedman S, Thompson D, Gates G, Liberti T, et al. (2011) Statewide Estimation of Racial/Ethnic Populations of Men Who Have Sex with Men in the U.S. *ASPH Public Health Reports* vol 126 pg 60-
- 4 MDHHS HIV/STD/TB/VH Epidemiology Section (2014). HIV Infected Youth More Likely to be in Care but Less Likely to Achieve Viral Suppression. www.michigan.gov/hivstd