

HIV Trends

New diagnoses 2010-2019

Data as of July 2020

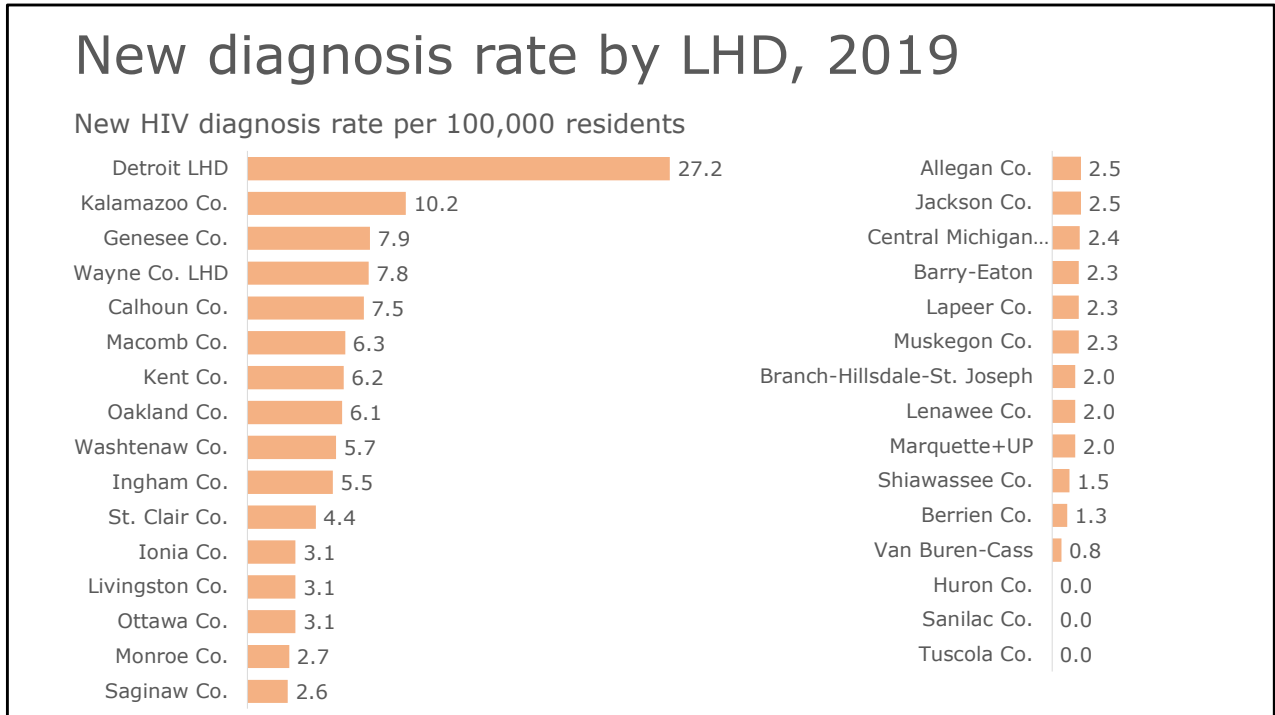


The HIV Trend Report includes persons diagnosed with HIV while living in Michigan. This slide set highlights key HIV diagnosis trends over the past 10 years and is meant to guide care and prevention strategies. Changes in short term trends - such as an outbreak - are monitored by the HIV Surveillance Program monthly. To view the tables used to create this slide set, confidence intervals, and other geographic and demographic breakdowns, please see the HIV Trends Tables.

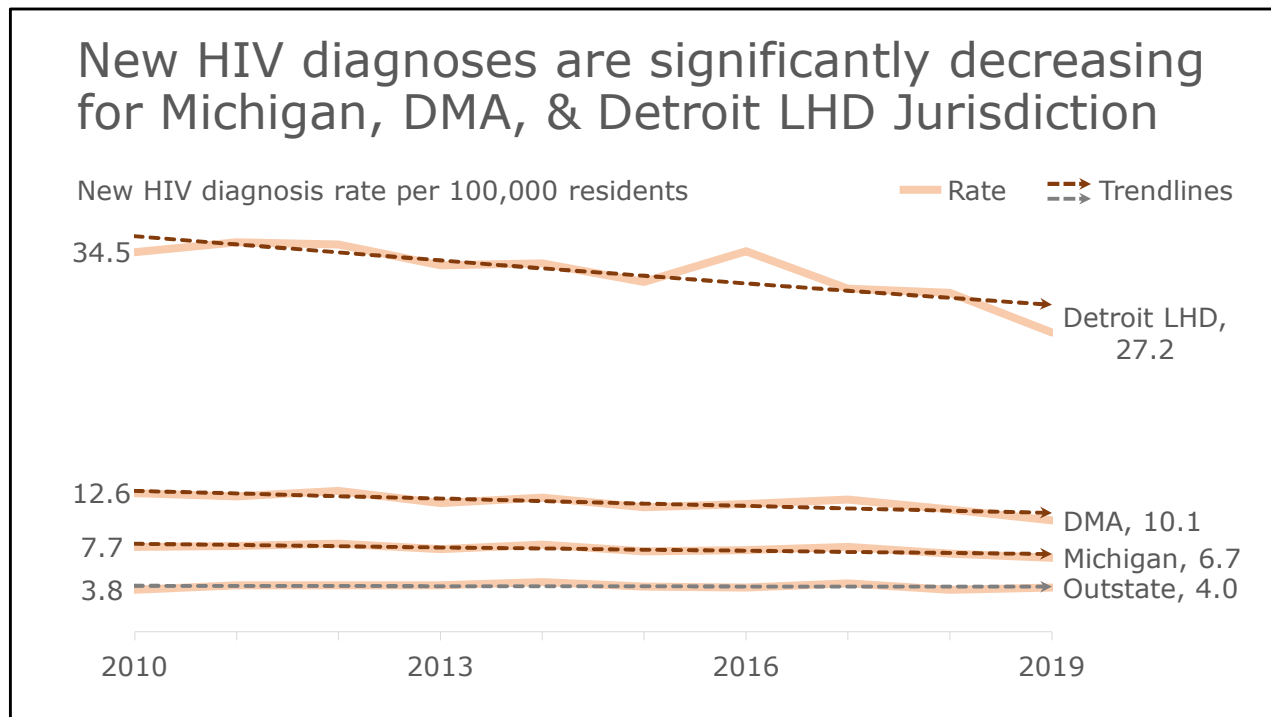
When available, census data are used to calculate rates of new diagnoses. For populations where census data are not available (for example, number of persons who inject drugs), the proportion of newly diagnosed persons who fall into a given category are assessed. Using rates and proportions (rather than counts) when comparing regions, demographic groups, or changes over time is critical. For further explanation, see our 5 minute [Epidemiology 101 video](#).

Negative binomial regression and Poisson distributions are utilized to determine statistically significant changes in new diagnoses over the preceding 10 years. For simplicity, statistically significant changes ($p < 0.05$) are referred to as "significant" increases or decreases. Important trends where $0.05 \leq p \leq 0.1$ are referred to as "marginally significant". Often non-significant trends that visually appear significant are due to large variability year to year. When something is "significant" it means we are 95% sure the upward or downward trend is real. When there's a lot of variability we can't be sure - for example it's possible there were a couple fluke years and there's not really a change. Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).

Geographic Trends



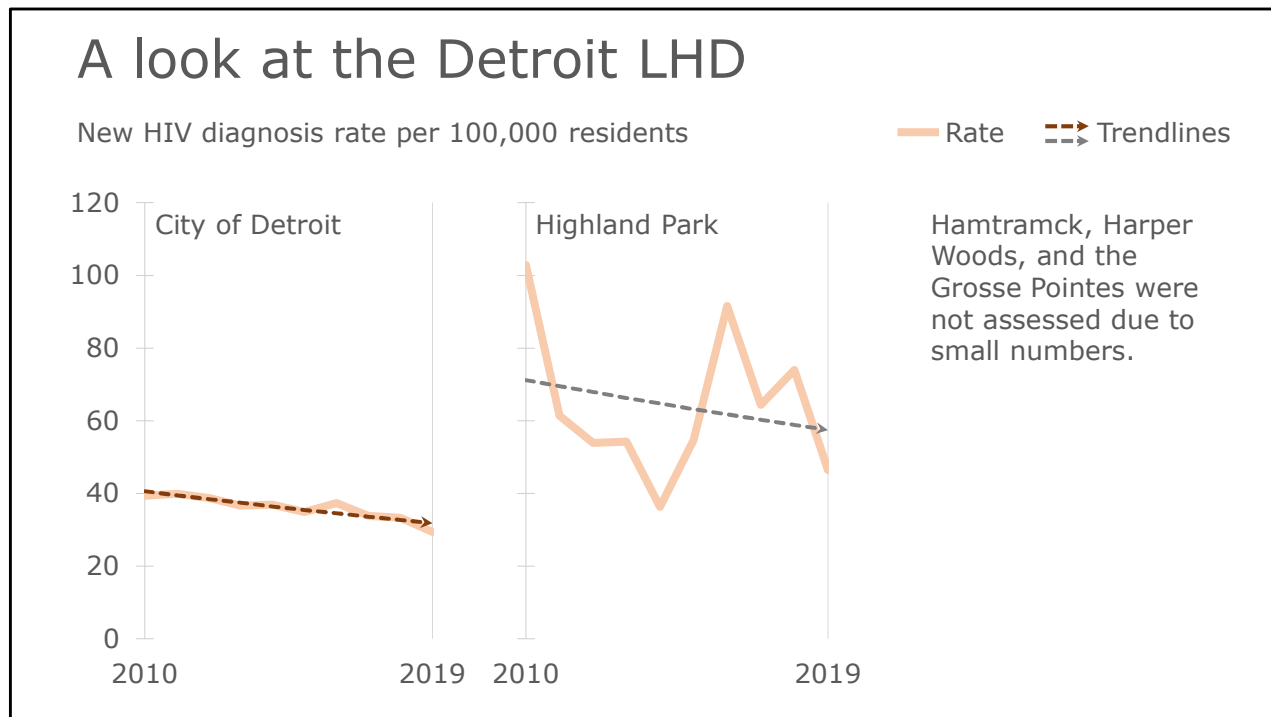
The **Detroit Local Health Department** (LHD) jurisdiction includes persons living in the cities of Detroit, Highland Park, Hamtramck, Harper Woods, or the Grosse Pointes. The **Wayne Co. LHD** includes person living in Wayne County outside the Detroit LHD.



The **Detroit Local Health Department** (LHD) jurisdiction includes persons living in the cities of Detroit, Highland Park, Hamtramck, Harper Woods, or the Grosse Pointes. **DMA** is the Detroit Metro Area and includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne (including Detroit) counties. **Outstate** includes persons living in Michigan outside the DMA.

The rate of new diagnoses significantly declined among residents of the Detroit LHD jurisdiction, the DMA, and the state of Michigan as a whole. There was no significant change in the Outstate region as a whole. New diagnoses decreased an average of 2.1% per year in the Detroit LHD and 1.9% per year in the DMA. The significant drop among City of Detroit residents drove these declines along with a significant decrease among Oakland County residents. Because the majority of persons diagnosed with HIV in Michigan reside in the DMA, the decrease at the state level is primarily due to the decrease in the DMA, however outstate counties also contributed with significant declines observed in Berrien and Ingham counties.

Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).

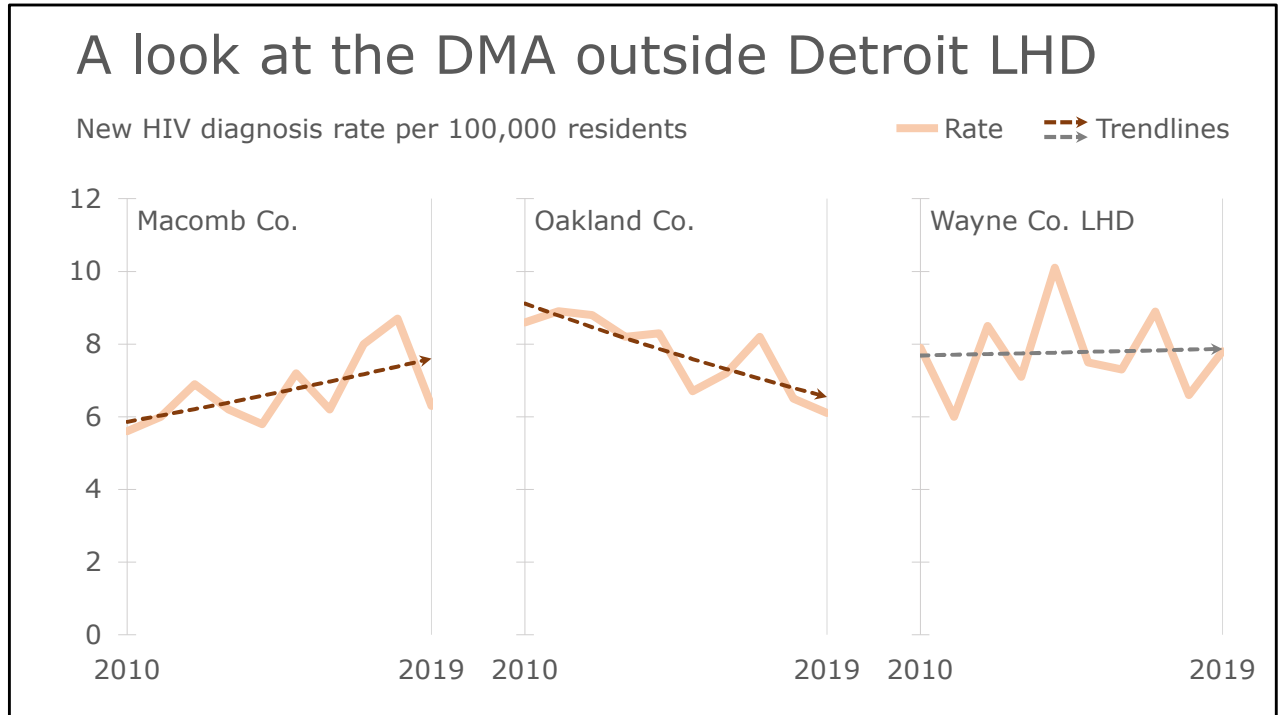


NOTE: The y-axis scale is the same for all graphs.

The **Detroit Local Health Department** (LHD) jurisdiction includes persons living in the cities of Detroit, Highland Park, Hamtramck, Harper Woods, or the Grosse Pointes.

- The new diagnosis rate in the city of Detroit decreased significantly by 2.7% per year.
- The change observed in Highland Park was not statistically significant. In other words, the variability in the rate of new diagnoses each year was too great to confidently determine directionality of a trend or if there's any trend at all.
- To be eligible for a trend analysis, cities must have had at least 50 new diagnoses over the 10-year period. The other cities in the Detroit LHD did not meet this threshold.

Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).

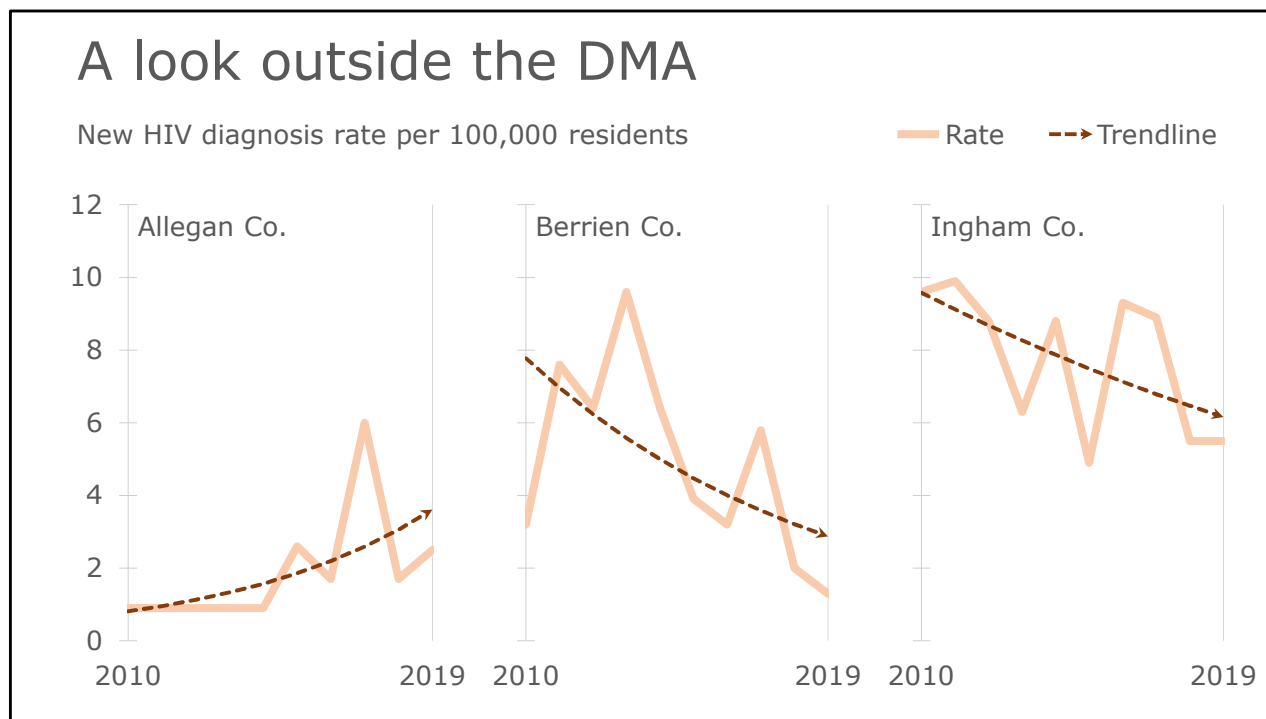


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- The new diagnosis rate significantly increased among Macomb County residents by 2.9% per year.
- Oakland County significantly decreased by 3.6% per year.
- No change was observed among residents of the Wayne County LHD jurisdiction (Wayne Co. outside the Detroit LHD jurisdiction).

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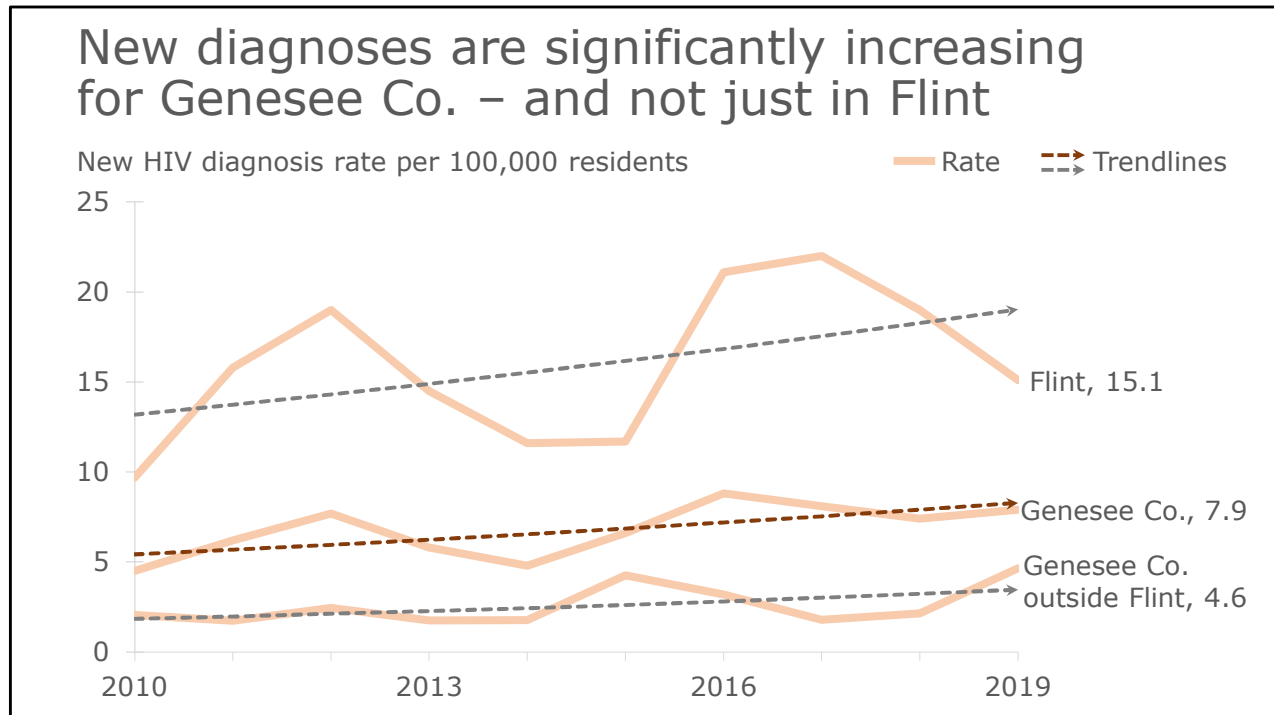


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DMA is the Detroit Metro Area and includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne (including Detroit) counties.

- New diagnoses are significantly increasing in Allegan County. The historically low new diagnosis rate means any increase is a proportionally large increase. From 2010-2014, one new diagnosis occurred each year (rate: 0.9/100,000 residents). In 2017 there were seven new diagnoses (rate: 6/100,000 residents), and in 2019, three persons were diagnosed (rate: 2.5/100,000 residents). Because of the unusually high number of new diagnosis in 2017, the trendline indicates an annual increase of 18.0%. It's unlikely Allegan will follow this steep trend, however the modest increases in new diagnoses should not be ignored.
- A significant decline was observed among Berrien County residents at a rate of 10.5% per year.
- The new diagnosis rate also declined in Ingham County by 4.8% per year.

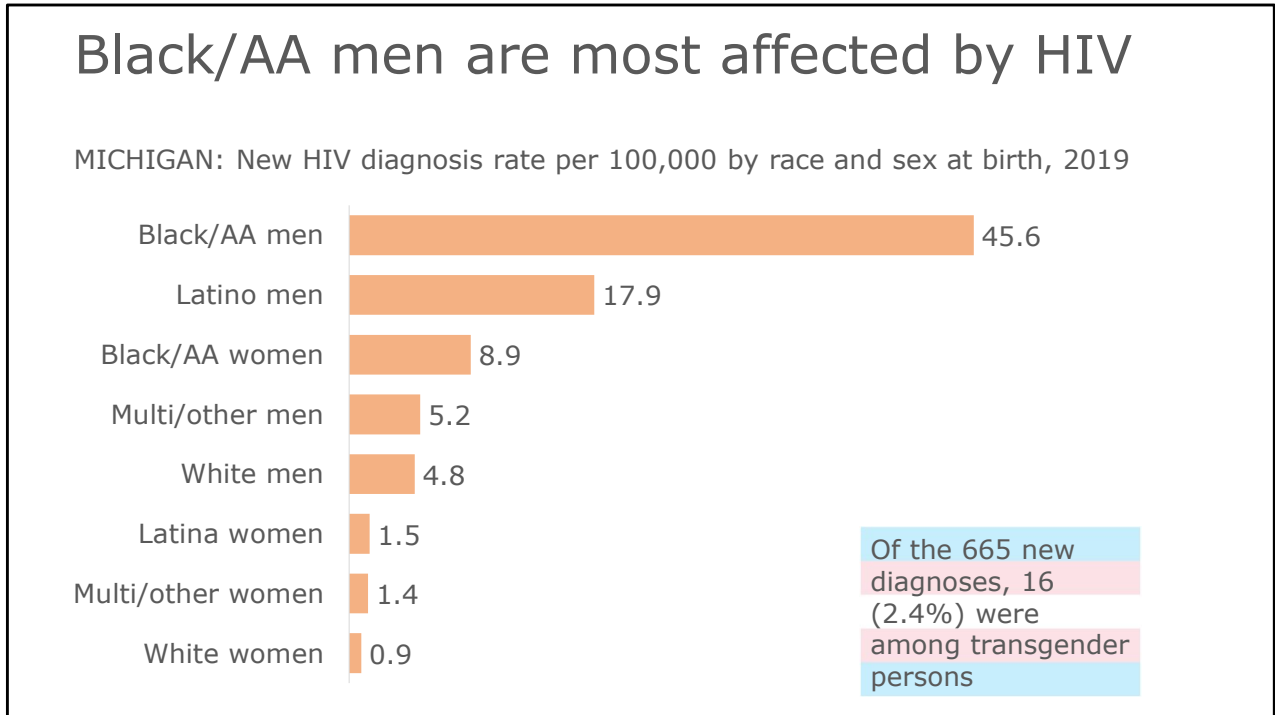
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The new diagnosis rate in Genesee County significantly increased by 4.8% per year over the past 10 years. This increase is not solely driven by Flint. New diagnoses appear to be increasing in Flint (though a significant trend could not be determined due to the high variability in diagnoses year to year), and new diagnoses in Genesee outside Flint are also increasing. The trend outside of Flint was marginally significant: $p=0.09$, estimated increase: 7.3% per year (95%CI: -1.0%, 16.3%).

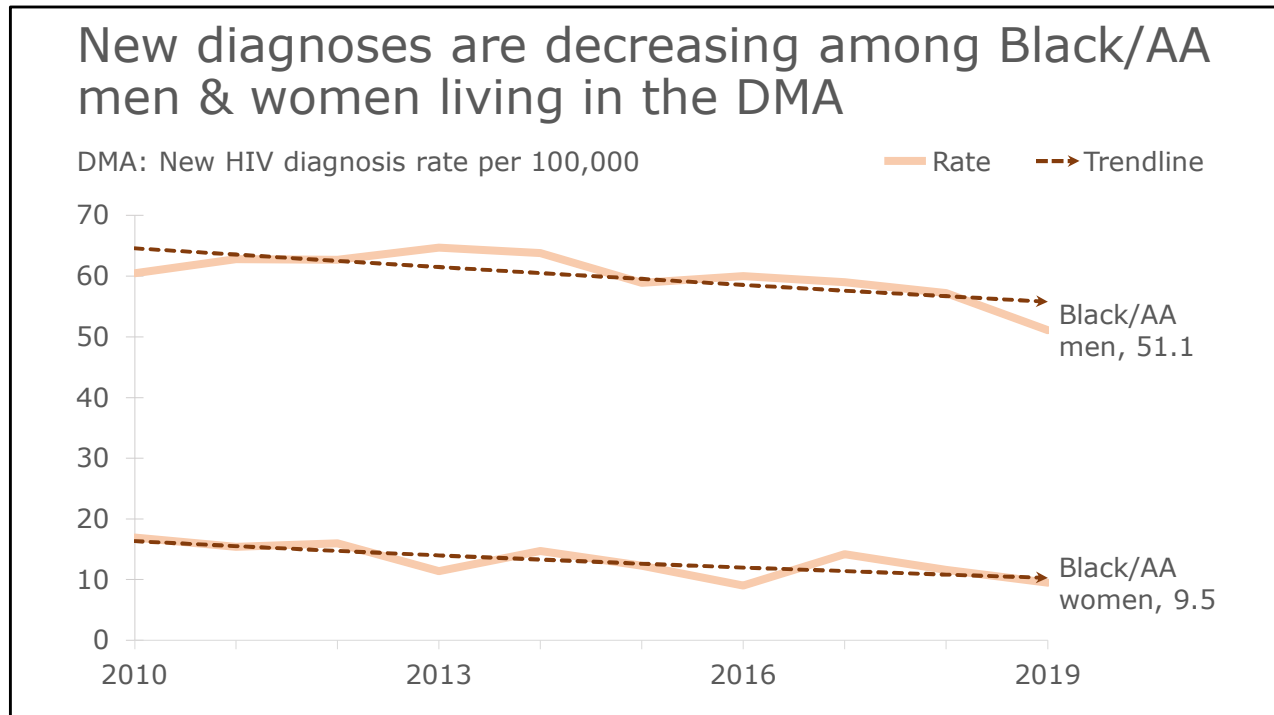
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Demographic Trends



There were no significant changes among race/sex groups living in Michigan outside the DMA. Significant changes among DMA and Detroit LHD residents are displayed in the next slides.

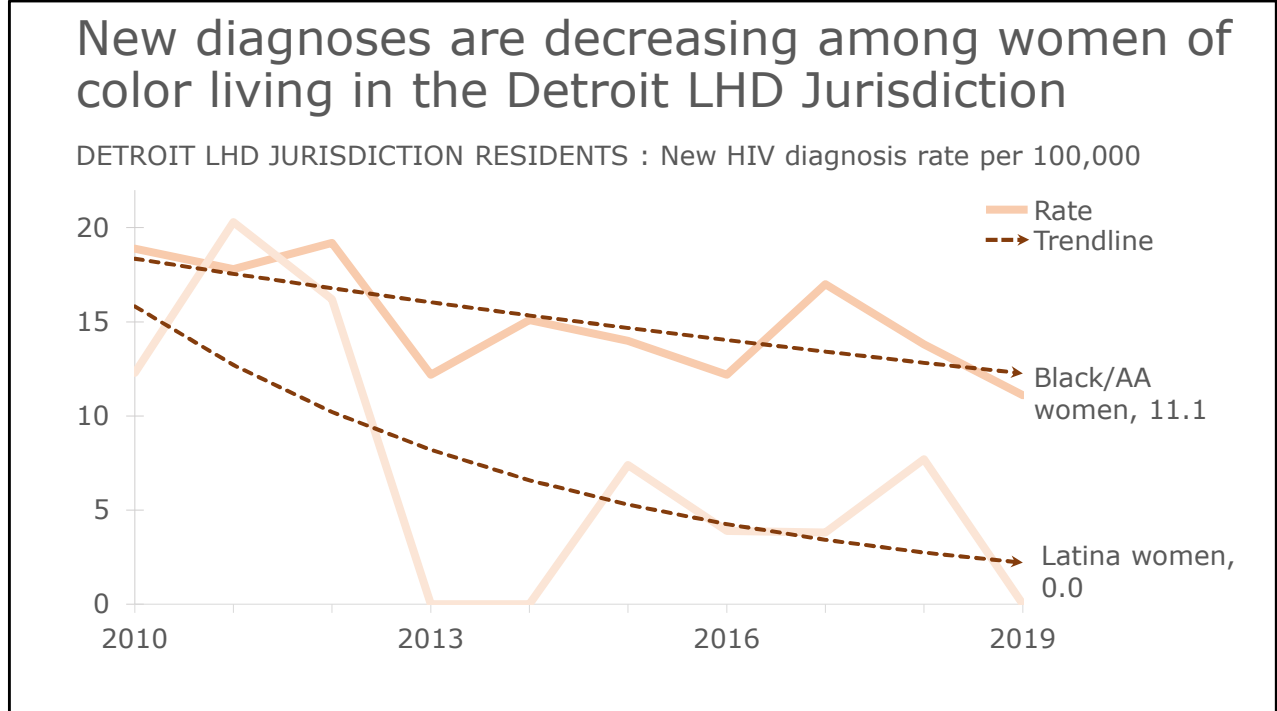
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DMA is the Detroit Metro Area and includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne (including Detroit) counties.

- The new diagnosis rate among Black/AA men significantly decreased by 1.6% per year.
- The new diagnosis rate among Black/AA women significantly decreased by 5.0% per year.

Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).



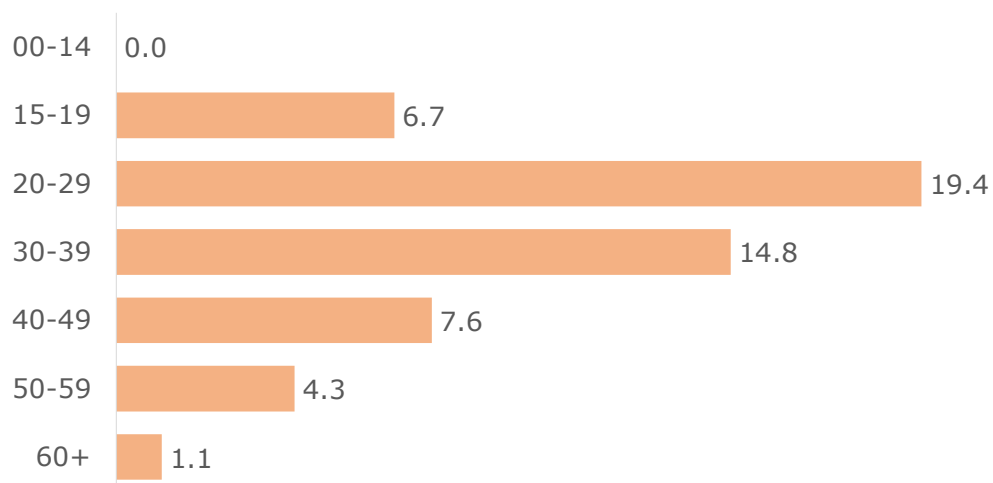
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- The new diagnosis rate among Black/AA women significantly decreased by 4.4% per year.
- The new diagnosis rate among Latina women significantly decreased by 19.7% per year. There were no new diagnoses among Latina women living in the Detroit LHD jurisdiction during 2019.

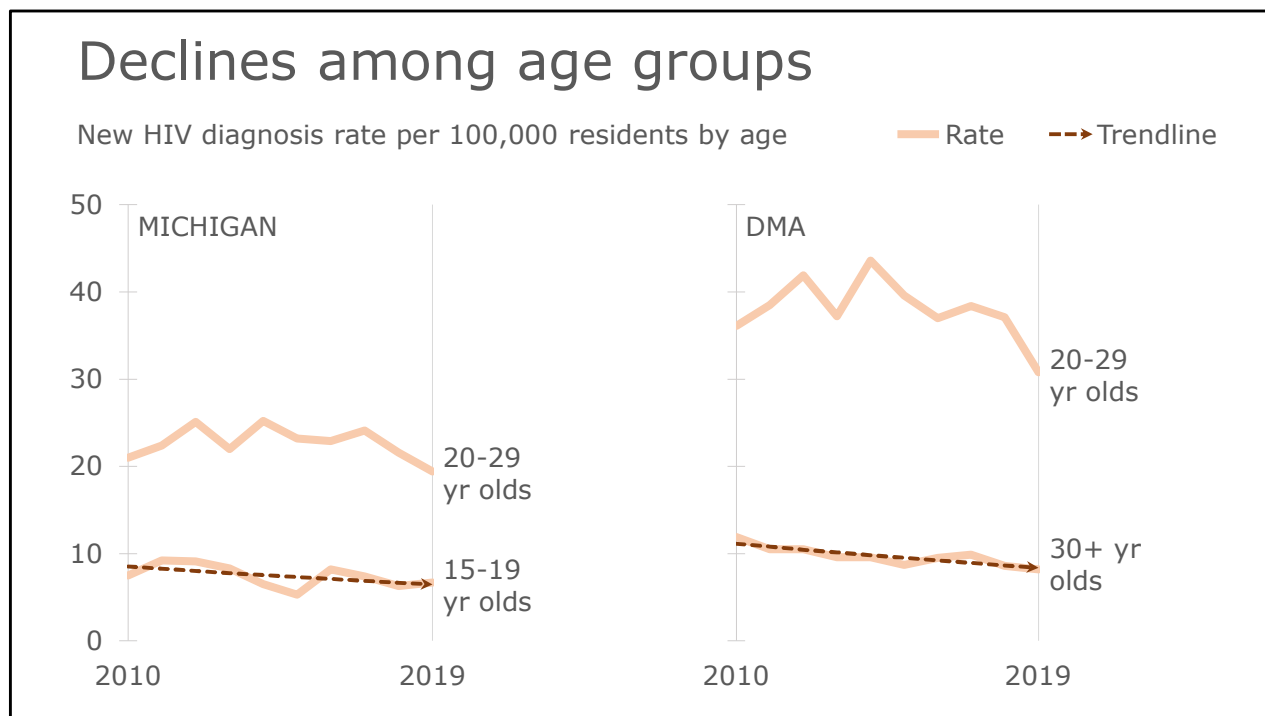
Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).

High diagnosis rate among 20-29 yr olds

MICHIGAN: New HIV diagnosis rate per 100,000 by age, 2019



There were no new diagnoses among those aged 0-14 during 2019.



NOTE: The y-axis scale is the same for all graphs.

DMA is the Detroit Metro Area and includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne (including Detroit) counties.

Outstate includes persons living in Michigan outside the DMA.

- New diagnoses among 20-29 year olds did not change at the state level in the DMA or Outstate.
- At the statewide level, new diagnoses declined significantly (3.0% per year) among persons 15-19 years old. This group's new diagnosis rate is $\sim 1/3$ that of the 20-29 year olds.
- In the DMA, new diagnoses significantly declined (3.1%) among those over 30 years old. This group's new diagnosis rate is $\sim 1/4$ that of the 20-29 year olds.

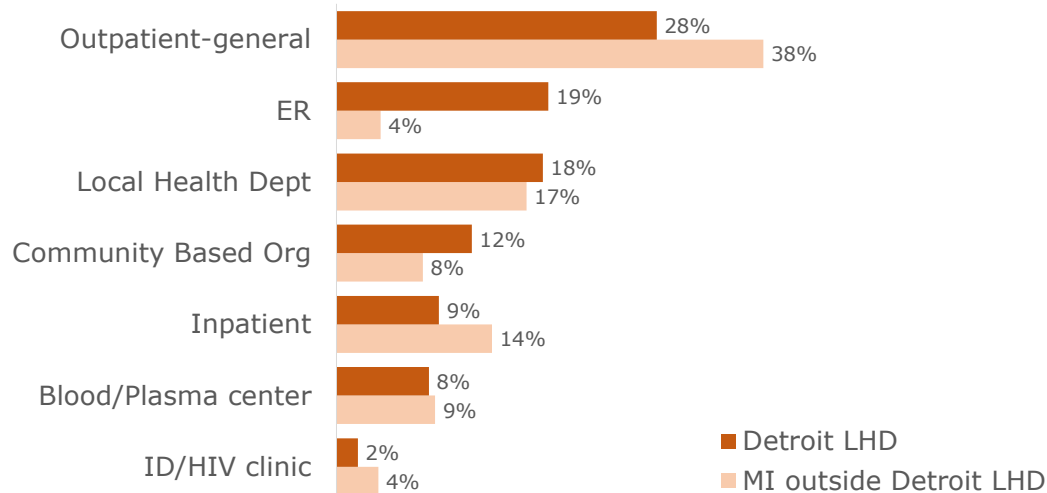
Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).

Testing & Linkage Trends

Future reports aim to include state-funded testing and Partner Service data.

Detroit residents are more likely to get diagnosed at an ER

Facility of diagnosis, 2019



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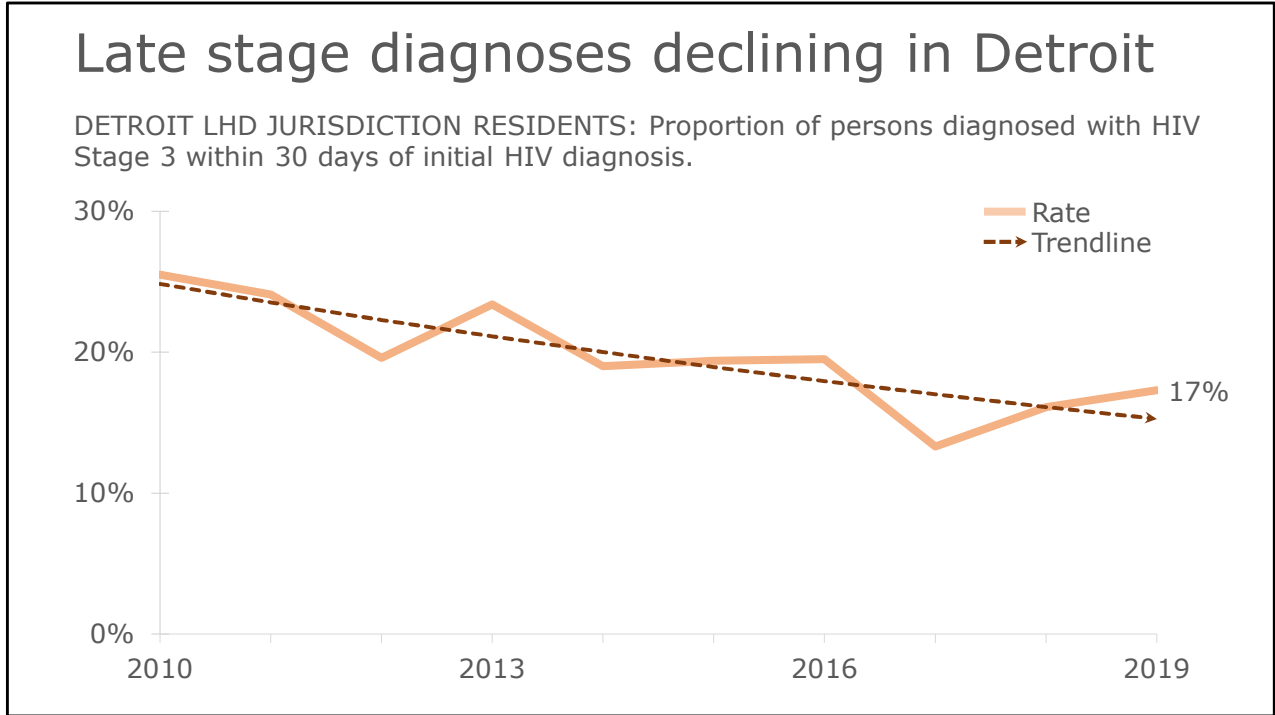
Outstate includes persons living in Michigan outside the DMA.

Facilities of diagnosis among Outstate residents and residents of the DMA outside the Detroit LHD jurisdiction were very similar. Therefore, these groups were combined into one (MI outside the Detroit LHD).

Compared to the rest of the state, in 2019 a higher proportion of Detroit LHD jurisdiction residents were diagnosed at ER's and Community Based Organizations and a lower proportion were diagnosed at general outpatient facilities (such as a primary care provider) and inpatient facilities.

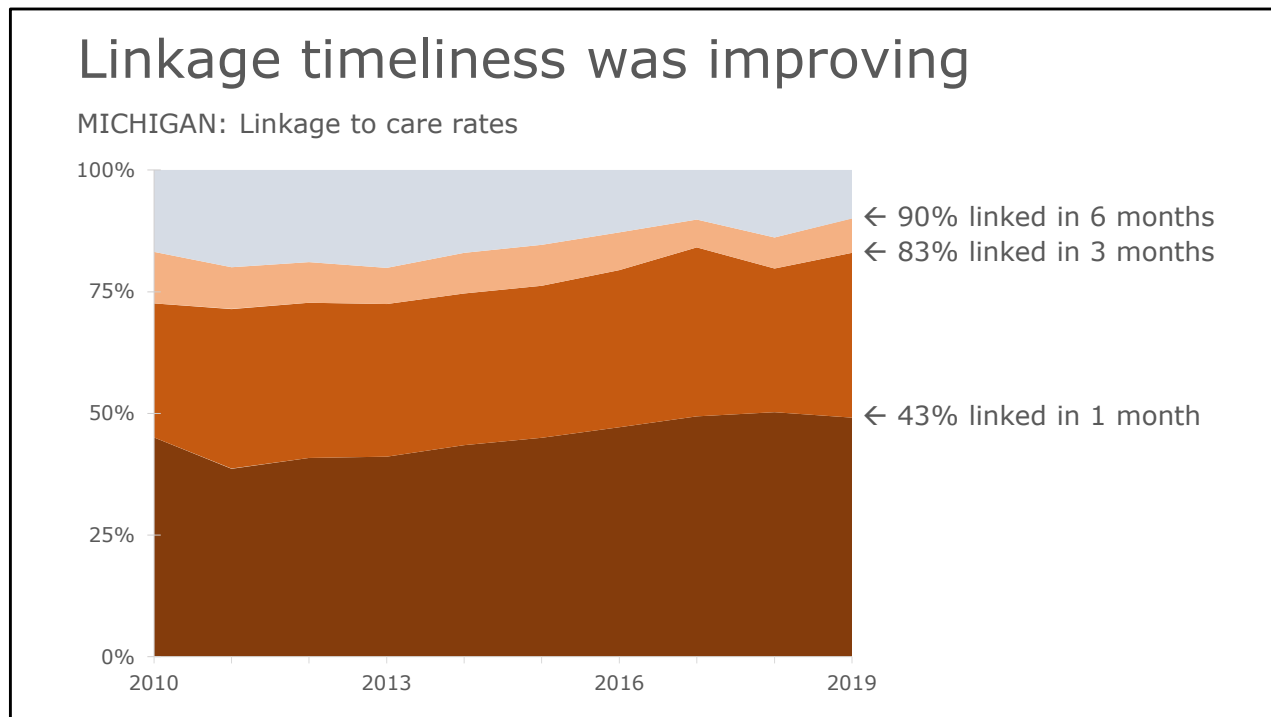
Over the past 10 years:

- Across the state, the proportion of persons diagnosed at blood/plasma centers and at general outpatient facilities has significantly increased.
- In the Detroit LHD jurisdiction, the proportion of persons diagnosed at an HIV/ID clinic has significantly declined.
- In Michigan outside the Detroit LHD, diagnoses at LHD's have significantly declined.



The **Detroit Local Health Department** (LHD) jurisdiction includes persons living in the cities of Detroit, Highland Park, Hamtramck, Harper Woods, or the Grosse Pointes. Late stage diagnosis refers to persons diagnosed with HIV Stage 3 (aka AIDS) within 30 days of initial HIV diagnosis. Stage 3 is defined as CD4 count < 200.

Late stage diagnoses are only decreasing among Detroit LHD jurisdiction residents. No other moderate to high morbidity areas in Michigan are declining.



An individual is **"linked to care"** when they receive their first CD4, viral load, or genotype lab test at least 8 days following diagnosis.

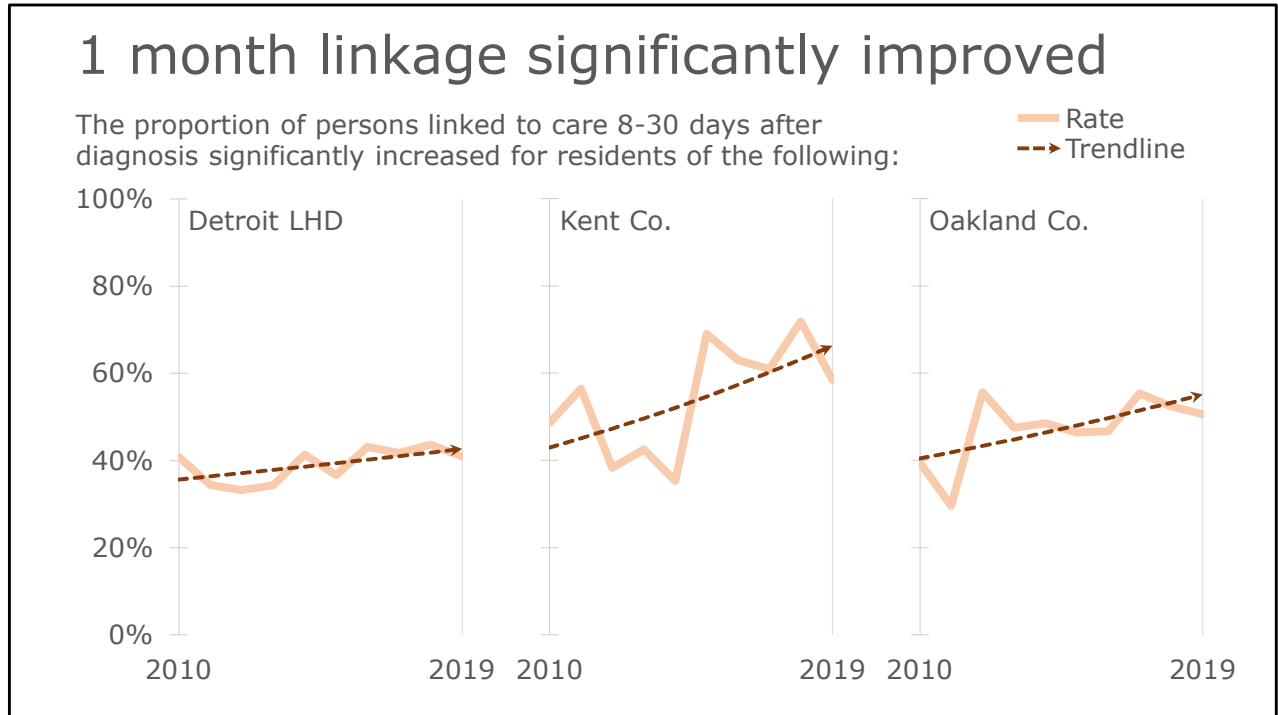
Linked in 1 month = CD4, viral load, or genotype lab 8-30 days following diagnosis.

Linked in 3 months = CD4, viral load, or genotype lab 8-90 days following diagnosis.

Linked in 6 months = CD4, viral load, or genotype lab 8-180 days following diagnosis.

Between 2010 and 2017, there were significant improvements in 1 and 3 month linkage rates. The proportion linked 3-6 months after diagnoses decreased from 11% in 2010 to 6% in 2017. Those linked after 6 months or not at all has nearly been cut in half decreasing from 17% in 2010 to 10% in 2017. Unfortunately, during the last three years linkage improvements have stagnated. It is essential that programs continue to chip away at the remaining 17% of new diagnoses who remain unlinked more than 3 months after diagnosis.

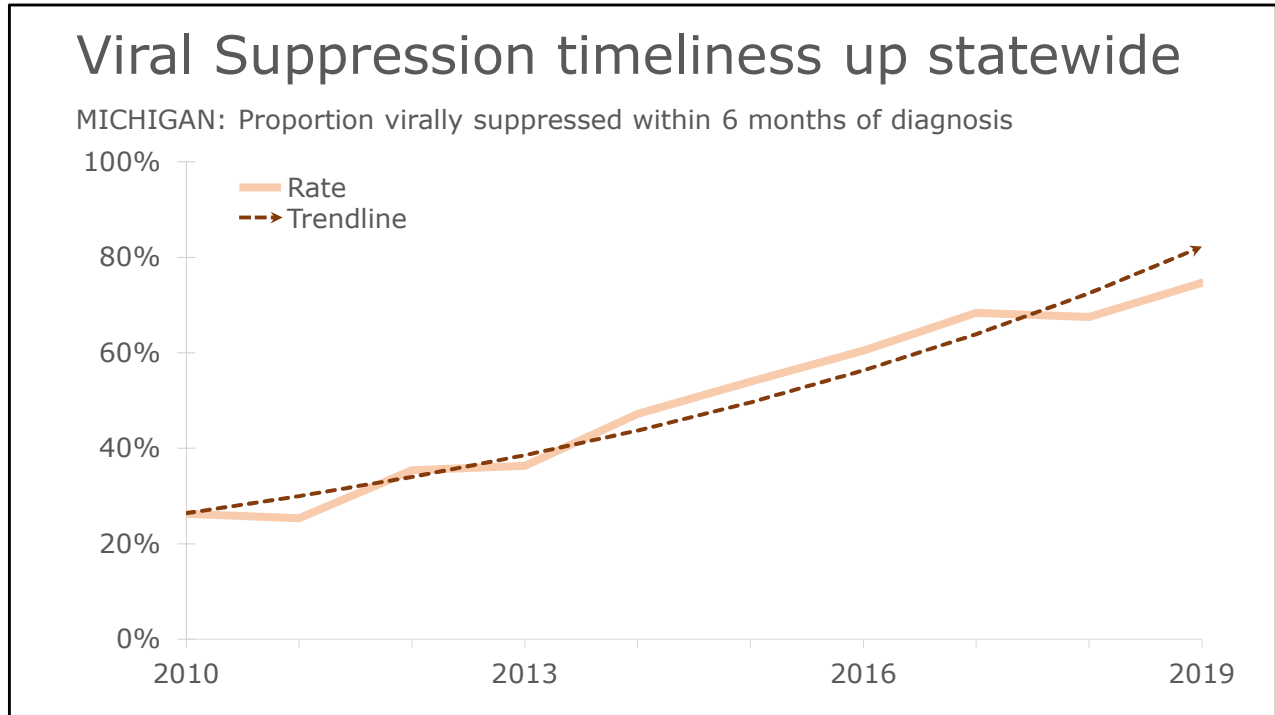
The 1 month linkage improvements were driven by faster linkage for residents of the Detroit LHD jurisdiction, Oakland County and Kent County (see following slide). Additionally 90 day linkage was significantly improved among residents of the Detroit LHD jurisdiction. The **Detroit Local Health Department** (LHD) jurisdiction includes persons living in the cities of Detroit, Highland Park, Hamtramck, Harper Woods, or the Grosse Pointes.



NOTE: The y-axis scale is the same for all graphs.

An individual is **“linked to care”** when they receive their first CD4, viral load, or genotype lab test at least 8 days following diagnosis.

The **Detroit Local Health Department (LHD)** jurisdiction includes persons living in the cities of Detroit, Highland Park, Hamtramck, Harper Woods, or the Grosse Pointes. This is for residents of each spot (not how people at the LHD were linked)



Viral suppression: having a viral load of <200 copies of virus per mL of blood (<200c/mL).


This slide displays the proportion of persons with a viral load test result of <200c/mL within six months of diagnosis. Not all persons remain virally suppressed. Only one suppressed result was required for inclusion.


Young (15-29) Black/AA Men (YBM)

Priority population

Most YBM are YBMSM

Of all YBM diagnosed with HIV 2010-2019,

 85% were MSM

 12% did not have an identified transmission risk (maybe MSM, maybe not)

 Only 3% were not MSM

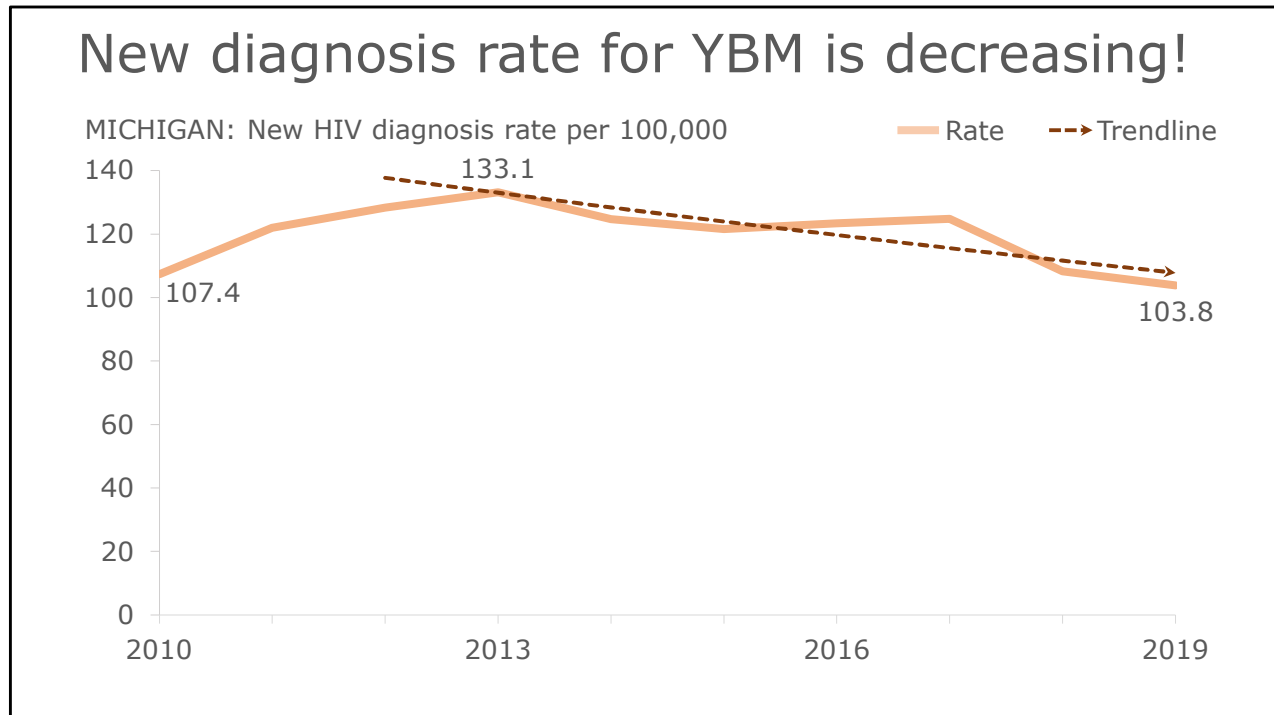


YBM: young (15-29 year old) Black/AA men

YBMSM: young (15-29 year old) Black/AA men who have sex with men

Of all geographic and demographic groups in Michigan, young (15-29 year old) Black/AA men who have sex with men (YBMSM) have the highest risk for HIV infection. In 2019, the diagnosis rate for this group was estimated at 1,455.2/100,000, **255 times higher** than the diagnosis rate among other youth 15-29. Because the denominator (total population) of YBMSM is an estimate based on the total number of 15-29 year old Black/AA men (YBM), and because the vast majority of YBM diagnosed with HIV are YBMSM, the trends presented on the following slides depict rates for all YBM. This yields more accurate assessments of trends. However, it is good to keep in mind that the diagnosis rate for YBMSM is ~10 times that of YBM.

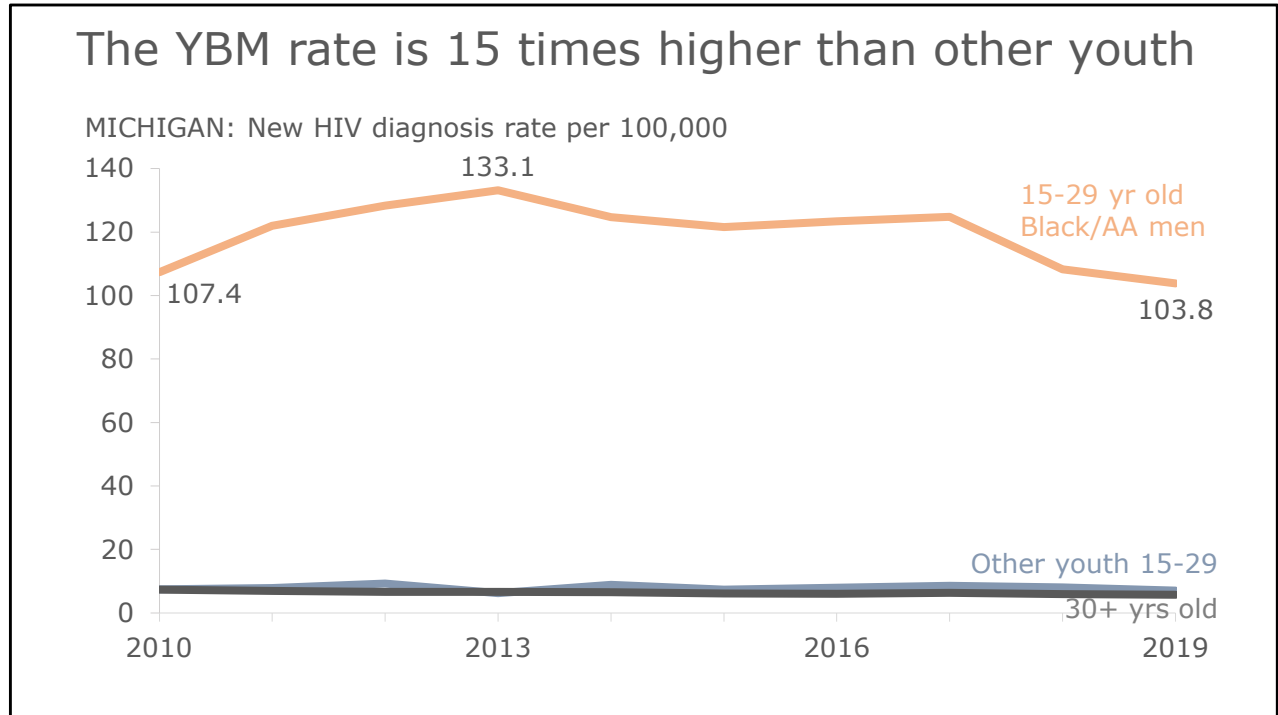
YBMSM specific counts and estimated rates can be found in the tables.



YBM: young (15-29 year old) Black/AA men

YBMSM: young (15-29 year old) Black/AA men who have sex with men

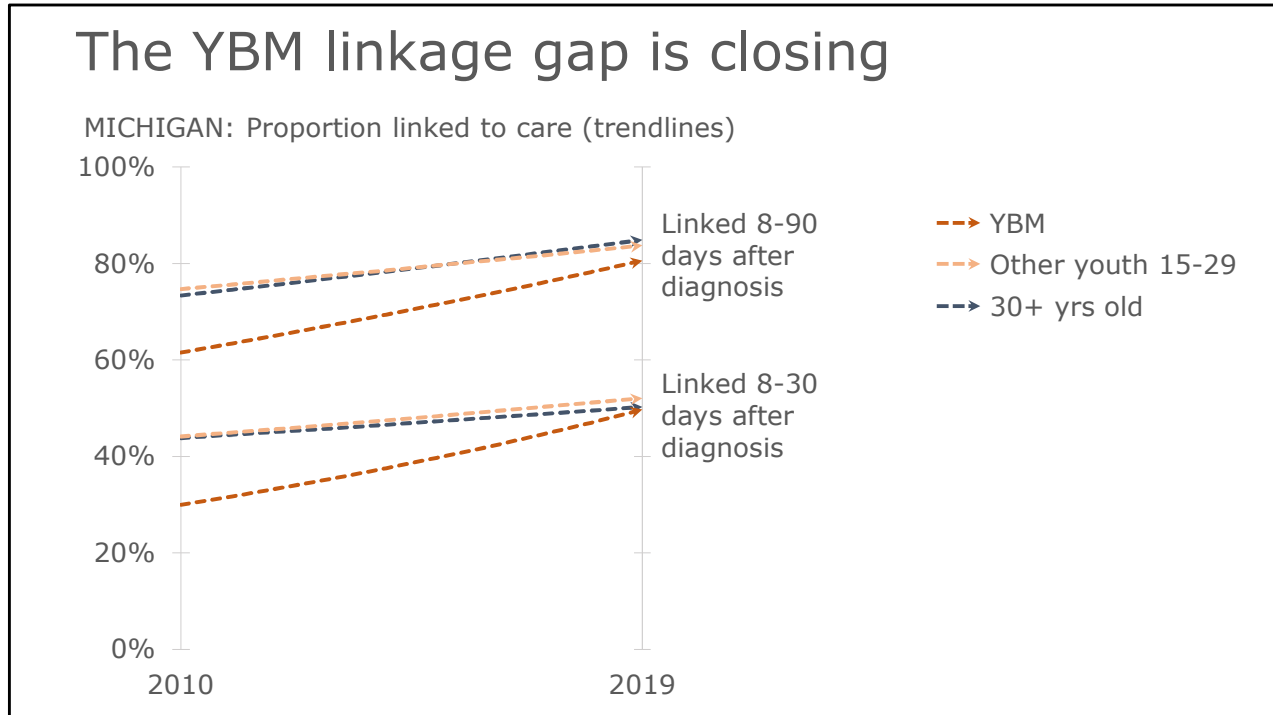
New diagnoses began increasing among young (15-29 year old) Black/AA men (YBM) statewide by the year 2000 and appear to have peaked in 2013. The steady, statistically significant decline across Michigan since 2013 is a promising sign for YBM. It is important to keep in mind that in 2019 the estimated new diagnosis rate among YBMSM was 1,455.2/100,000, over 10 times higher than the 103.8/100,000 among YBM in general.



YBM: young (15-29 year old) Black/AA men

YBMSM: young (15-29 year old) Black/AA men who have sex with men

Trends aside, the diagnosis rate among YBM continues to be the highest rate of any geographic or demographic group in the state. YBM currently have a diagnosis rate 15 times higher than other 15-29 year olds and 18 times higher than those over 30. Care and prevention efforts should remain focused on this group as they continue to shoulder a disproportionate burden. While YBM are linked to care and achieving viral suppression more quickly than ever before (see following slides), they are less likely to remain in care and virally suppressed compared to other youth and persons over 30 years old (See Care Continuum reports).

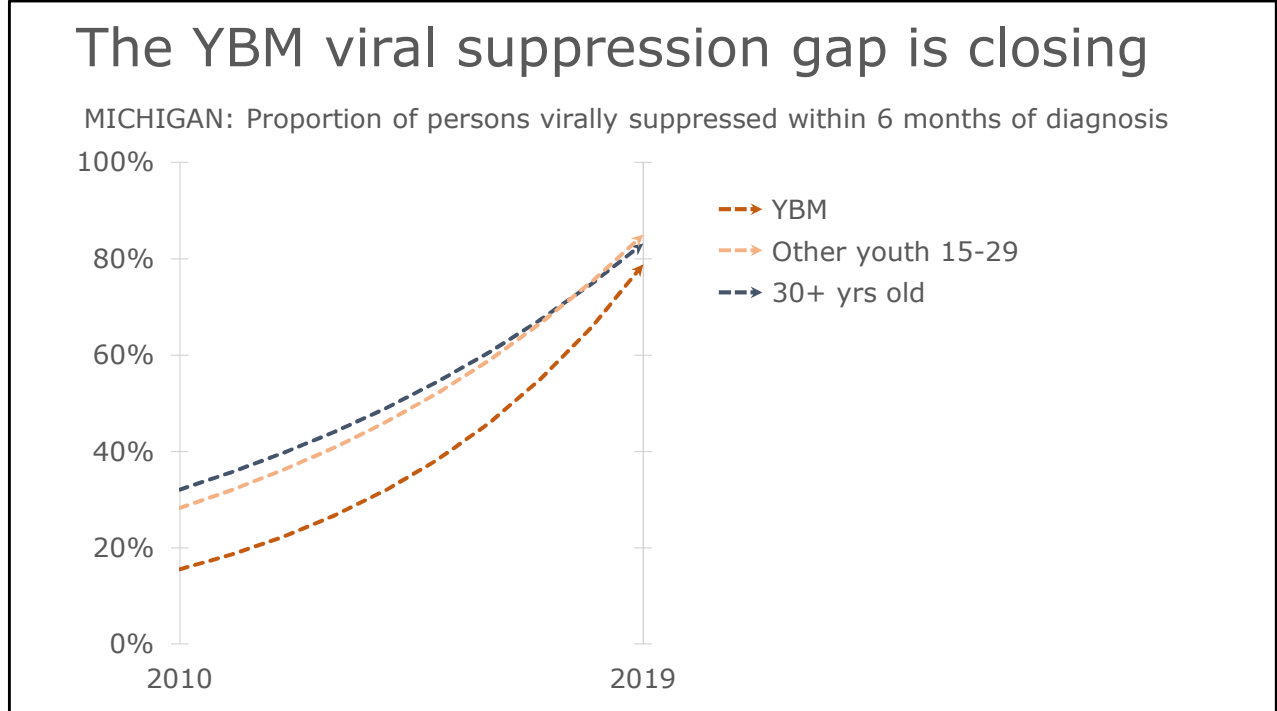


YBM: young (15-29 year old) Black/AA men

YBMSM: young (15-29 year old) Black/AA men who have sex with men

An individual is "**linked to care**" when they receive their first CD4, viral load, or genotype lab test at least 8 days following diagnosis.

1 month (8-30 day) and 3 month (8-90 day) linkage improved significantly for both YBM and persons over 30. While linkage improvements stagnated for most groups over the last three years, YBM linkage continues to improve.



YBM: young (15-29 year old) Black/AA men

YBMSM: young (15-29 year old) Black/AA men who have sex with men

Viral suppression: having a viral load of <200 copies of virus per mL of blood (<200c/mL).

This slide displays the proportion of persons with a viral load test result of <200c/mL within six months of diagnosis. Not all persons remain virally suppressed. Only one suppressed result was required for inclusion.

Viral suppression within 6 months of diagnosis has significantly increased statewide across all geographic and demographic groups. While YBM are linked to care and achieving viral suppression more quickly than ever before, they are less likely to remain in care and virally suppressed compared to other youth and persons over 30 years old (See Care Continuum reports).

Trends among persons who inject drugs (PWID)

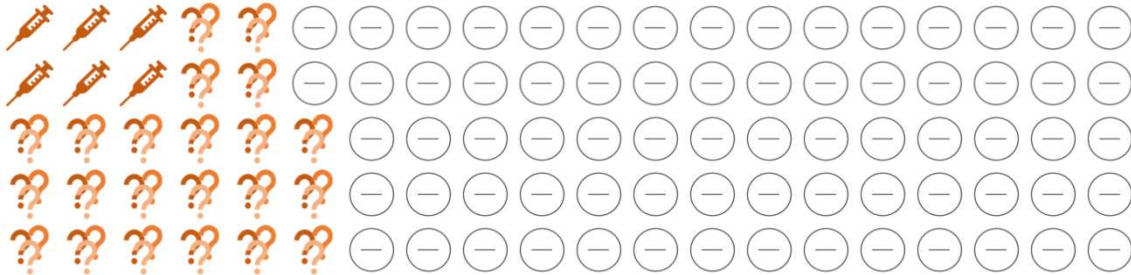
Few new HIV diagnoses are among PWID

Of all persons newly diagnosed with HIV 2010-2019,

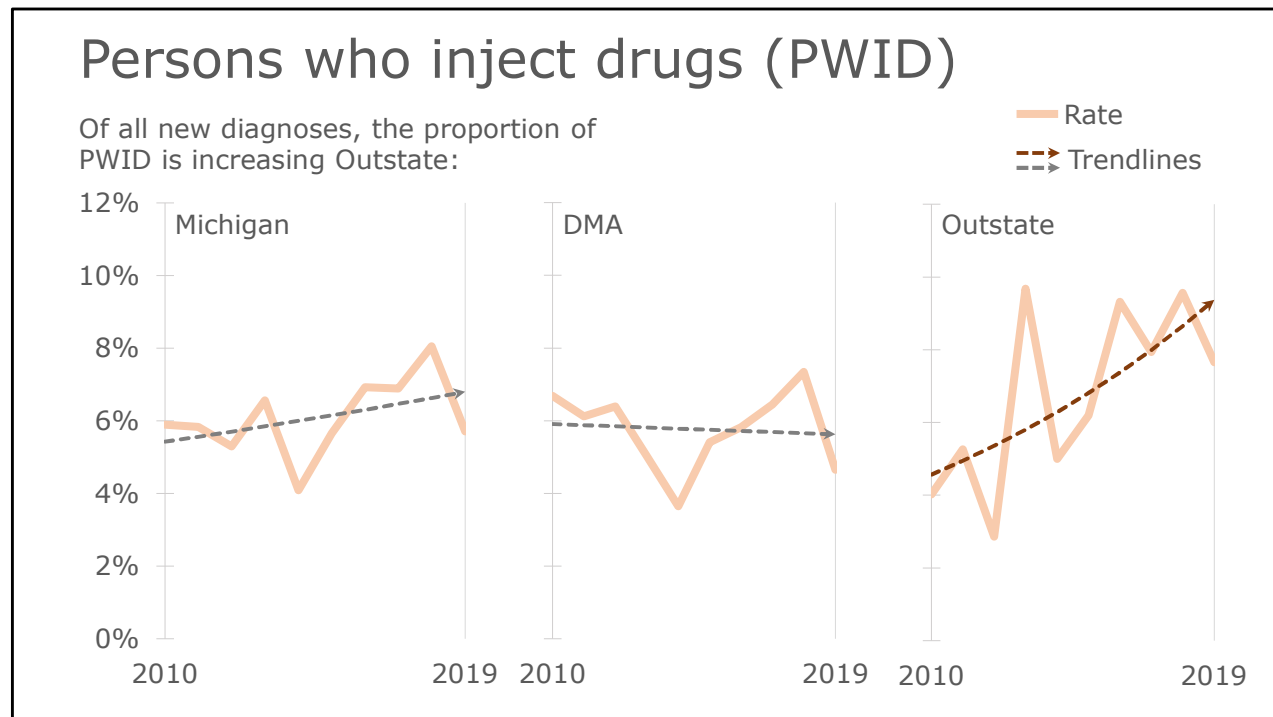
 6% were among persons who inject drugs (PWID)

 22% did not have an identified transmission risk (maybe PWID, maybe not)

 72% were not PWID



PWID: Person who injects drugs
 Currently, HIV primarily affects men who have sex with men, however with the growing opioid epidemic, the potential for HIV outbreaks among PWIDs is high. To avoid outbreaks, MDHHS HIV Surveillance monitors new diagnosis changes among this group monthly. The 10 year trends presented here paint a zoomed out view of what’s going on. Because there’s no denominator (not even an estimate) for the number of PWIDs living in Michigan, the trends assess the proportion of new diagnoses who are PWID (rather than the rate like all the other trends). This has advantages and limitations.



NOTE: The y-axis scale is the same for all graphs.

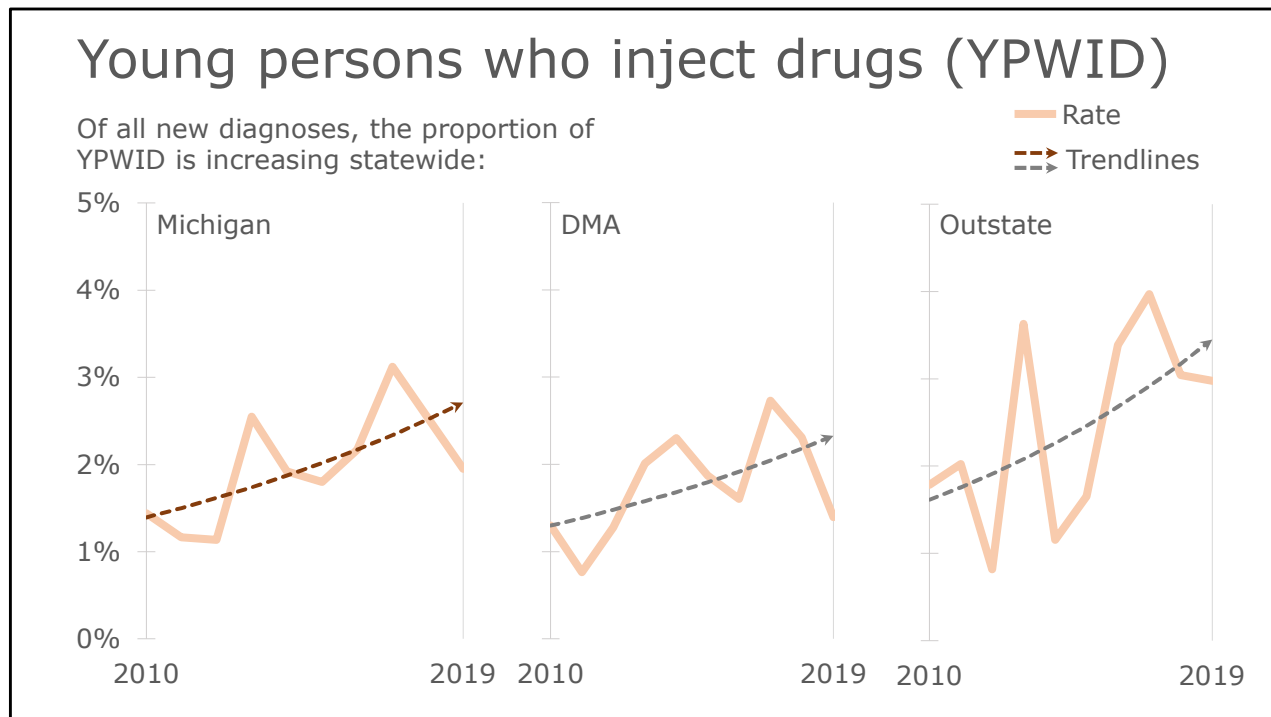
PWID: Persons who inject drugs. This includes persons with a transmission risk of only PWID as well as MSM/PWID.

DMA is the Detroit Metro Area and includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne (including Detroit) counties.

Outstate includes persons living in Michigan outside the DMA.

The proportion of new diagnoses who are PWID has significantly increased over the past decade outside the DMA. Unfortunately, without an estimate of the total number of PWID in the state, it is impossible to calculate a rate and therefore the reason behind this increase is unknown. It may be due to higher transmission rates among PWIDs, or transmission rates may be unchanged, and the increase is driven by an increase of injection drug use in general. This lack of denominator limits the conclusions that may be made regarding this population.

Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p < 0.05$).



NOTE: The y-axis scale is the same for all graphs.

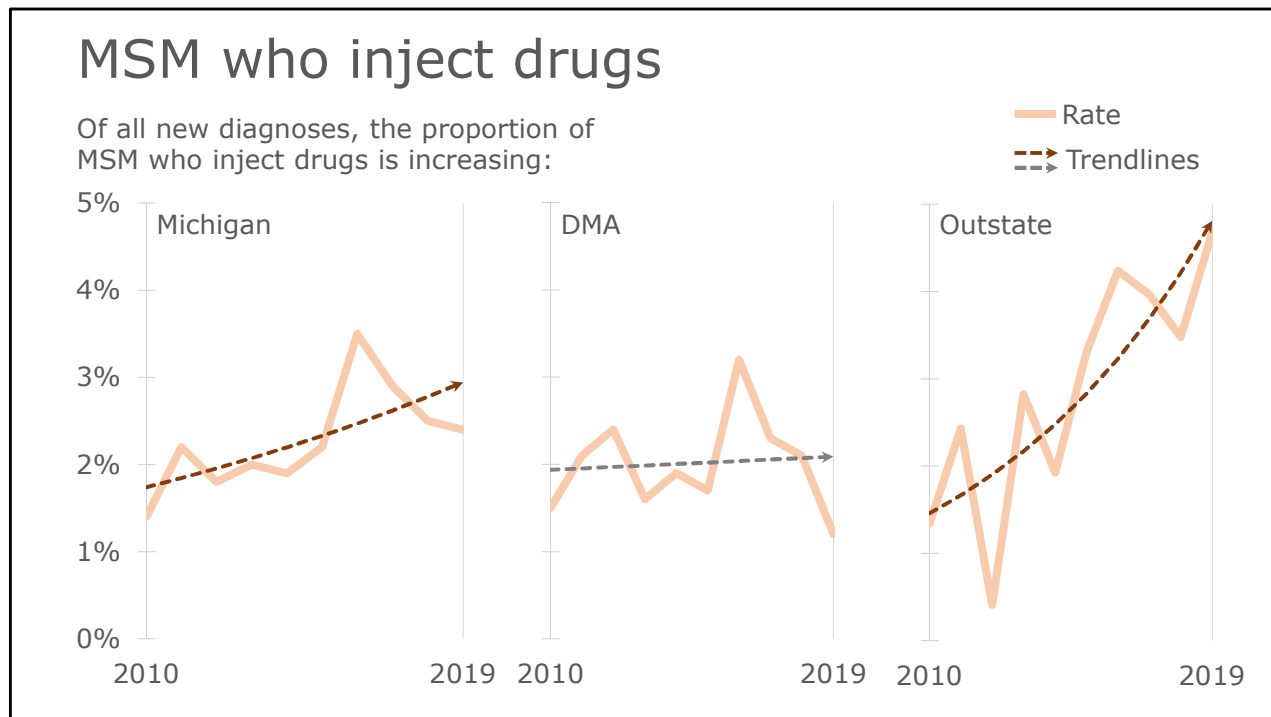
YPWID: Young (15-29 year old) persons who inject drugs. This includes persons with a transmission risk of only PWID as well as MSM/PWID.

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Outstate includes persons living in Michigan outside the DMA.

The proportion of new diagnoses who are YPWID has significantly increased over the past decade statewide. This increase was marginally significant in both the DMA ($p=0.08$, 95%CI: -0.9%, 14.9%) and Outstate ($p=0.07$, 95%CI: -0.7%, 19.2%). Unfortunately, without an estimate of the total number of YPWID in the state, it is impossible to calculate a rate and therefore the reason behind this increase is unknown. It may be due to higher transmission rates among young PWIDs, or transmission rates may be unchanged, and the increase is driven by an increase of injection drug use in general. This lack of denominator limits the conclusions that may be made regarding this population.

Brown trendlines indicate a significant change while the grey trendlines indicate changes not significantly different from zero ($p<0.05$).



NOTE: The y-axis scale is the same for all graphs.

MSMWID: Men who have sex with men & inject drugs.

DMA is the Detroit Metro Area and includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne (including Detroit) counties.

Outstate includes persons living in Michigan outside the DMA.

The proportion of new diagnoses who are men who have sex with men and inject drugs has significantly increased over the past decade outside the DMA. Unfortunately, without an estimate of the total number of MSMWIDs in the state, it is impossible to calculate a rate and therefore the reason behind this increase is unknown. It may be due to higher transmission rates among MSMWIDs, or transmission rates may be unchanged, and the increase is driven by an increase of injection drug use in general. This lack of denominator limits the conclusions that may be made regarding this population.

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2010-2019 Overview

- New HIV diagnoses are significantly declining especially in Detroit and Oakland County.
- Linkage to care timeliness significantly improved over the past decade, but has stagnated in recent years.
- New diagnoses among young (15-29 year old) Black/AA men significantly declined since 2013. Programs should continue to focus on this group as they still endure a disproportional burden.
- Keep an eye on diagnoses among persons who inject drugs and act quickly to curb transmissions at the first sign of a potential outbreak event.