



ANNUAL REVIEW OF HIV TRENDS IN MICHIGAN (2013 - 2017)

Michigan Department of Health & Human Services

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Overall trends in new Michigan HIV diagnoses

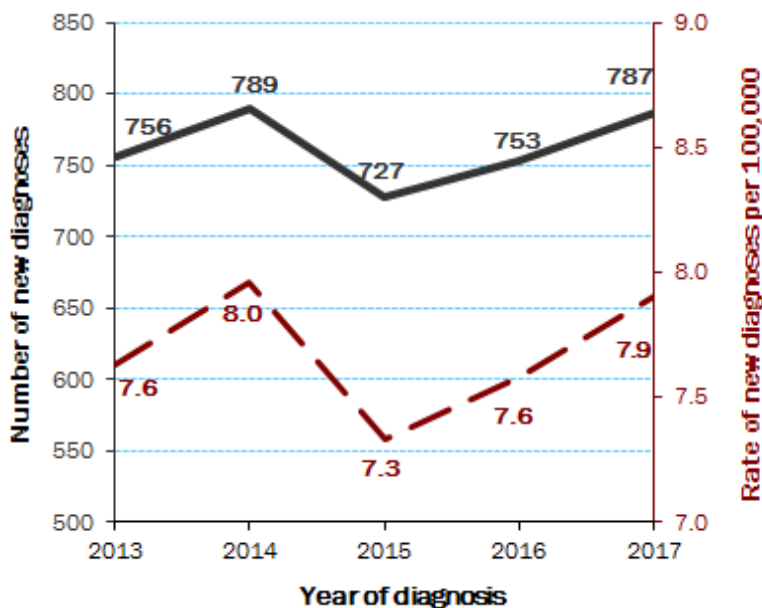
METHODS. To evaluate trends in new HIV diagnoses in Michigan over time, we estimated the number of persons newly diagnosed with HIV infection between 2013 and 2017 by adjusting the number of reported cases to account for those who may not have been reported to the health department by July 1, 2018. These adjustments were made by weighting the data.

Unless otherwise noted, numbers cited include persons living with all stages of HIV infection*. We used regression modeling on the adjusted data to assess significant changes in annual rates of new diagnoses overall and by race, sex, and age. Rates for race and sex subgroups were calculated using annual population estimates released by the Census Bureau in mid-2018. Rates for age at diagnosis were calculated using the 2017 Bridged-Race Population Estimates produced by the Population Estimates Program of the U.S. Census Bureau in collaboration with the National Center for Health Statistics. For risk groups, we analyzed annual counts since there are no reliable denominator data available for rate calculation. Trends overall and in subgroups are described using *average annual percent changes* in rates (or counts) of new diagnoses. Only significant trends and their corresponding percent changes are shown. "Significant" indicates statistical significance assessed at $p < 0.05$.

For concurrent diagnoses, defined as progression to stage 3 HIV infection within 30 days of HIV diagnosis, we used the Chi Square Mantel-Haenszel test for trend to assess changes over time. This test allows us to assess increases and decreases in the *proportion* of new diagnoses that are concurrent for a particular race/sex combination.

The date of new HIV *diagnosis* does not tell us when persons were first *infected*, because HIV diagnosis may take place months or years after infection. From 2005 to 2016, the Michigan Department of Health and Human Services (MDHHS) conducted incidence surveillance, which estimates new infections rather than new diagnoses using the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS). All STARHS Incidence reports are available on our website, including the most recent report encompassing new HIV infections from 2010 - 2014.

Figure 1. Number and rate of new HIV diagnoses in Michigan, 2013–2017



KEY FINDINGS

- Overall Rates of new diagnoses in Michigan are increasing slightly but statistically, remained **stable**.
- Diagnoses by **age**, **sex**, and **race** have remained **stable** overall
- **Concurrent** diagnoses have **decreased** in **men** overall, specifically in **black** and men of **other** race.
- Rates of new diagnoses remained **stable** among persons living in **SE MI** and in **Out-state** Michigan.

*Michigan discontinued use of the term 'AIDS' in January 2012 in accordance with the language in the 2008 HIV Case Definition released by the CDC. HIV infection is now classified by stage of disease, with stage 3 representing AIDS.

OVERVIEW OF TRENDS. Figure 1 shows the number and rate of new HIV diagnoses in Michigan by year for 2013 to 2017. The number and rate of new HIV diagnoses in Michigan remained stable during this time period for the eighth consecutive trend report. There was an average of 762 new cases per year and an average rate of 7.9 cases per 100,000 population.

Each year, there are more new diagnoses of HIV infection than deaths. As a result, the reported number of persons living with HIV in Michigan is increasing. MDHHS estimates that 18,650 persons were living with HIV infection in Michigan as of July 2018.

New HIV diagnoses by age at diagnosis

Between 2013 and 2017, rates in all age groups remained stable (Table 1).

This represents a return to normal diagnoses rates for the 13-19 year old group. While the rates among 25-29 year olds do not show a statistically significant increase the overall number of new diagnoses do show that 25-29 year olds make up approximately 25% of new diagnoses. Past trend reports have also shown decreases among 40-44 year olds but rates have remained stable in recent years. Almost three quarters (68%) of teen and young adult cases combined are residents of Southeast (SE) Michigan. Of these cases, 55% were residents of the city of Detroit at the time of HIV diagnosis.

In the state of Michigan rates among 20-24, 25-29, and 30-34 year olds are consistently higher than other groups. These trends reflect the national data that suggest young adults represent the majority of the HIV burden in the United States compared to other age groups. It is important to note that, although not significant, rates have been decreasing for these younger age groups since 2012.

Of all teens diagnosed in the last five years, 80% are black compared to 59% of persons diagnosed at older ages. Furthermore, teens are much more likely to be black males who have sex with males (MSM) compared to adults 20 years and older (66% vs. 33%, respectively) (figure 2, page 3). This underscores a continued need for prevention campaigns tailored to young black MSM as the rates in this group have widened the already large racial gap among persons living with HIV.

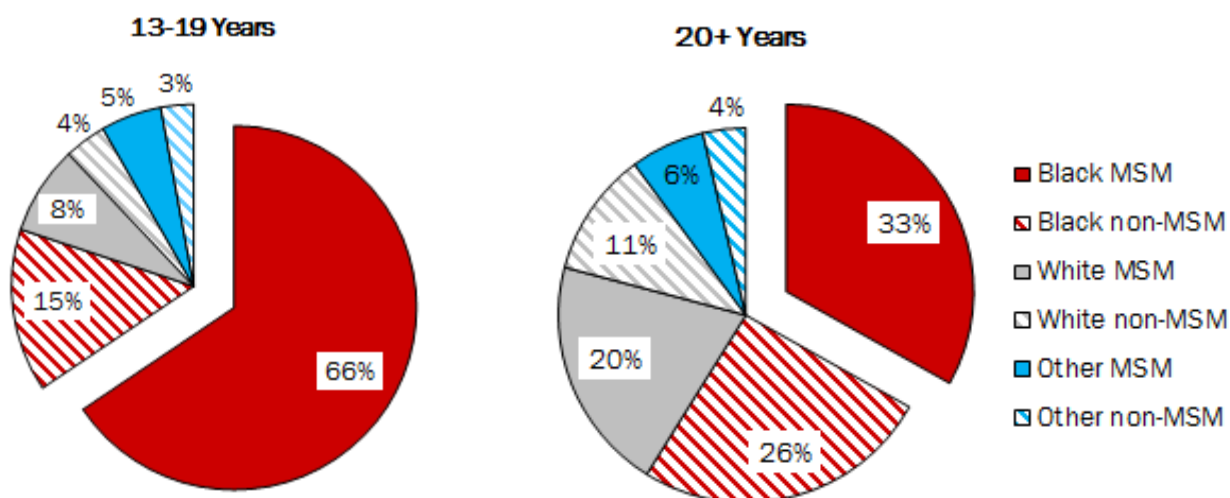
Table 1. New HIV diagnoses by age at diagnosis, 2013-2017

Age at diagnosis	Year of diagnosis														
	2013			2014			2015			2016			2017		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
0 - 12 yrs	1	<1%	0.1	5	1%	0.3	1	<1%	0.1	1	<1%	0.1	1	<1%	0.1
13 -19 yrs	59	8%	6.2	46	6%	4.9	35	5%	3.8	56	7%	6.1	46	6%	5.0
20 -24 yrs	159	21%	21.7	189	24%	25.6	183	25%	25.0	168	22%	23.5	150	19%	21.3
25 -29 yrs	130	17%	22.1	152	19%	25.2	133	18%	21.3	149	20%	22.8	190	24%	28.1
30 -34 yrs	83	11%	14.0	96	12%	16.3	87	12%	14.8	75	10%	12.8	87	11%	14.7
35 -39 yrs	62	8%	11.0	67	9%	11.8	56	8%	9.8	68	9%	11.7	82	10%	13.8
40 -44 yrs	64	8%	10.0	56	7%	9.0	63	9%	10.6	60	8%	10.5	56	7%	9.9
45 -49 yrs	72	10%	10.7	65	8%	9.9	58	8%	9.0	48	6%	7.4	60	8%	9.3
50 -54 yrs	59	8%	7.9	46	6%	6.3	59	8%	8.2	62	8%	8.9	43	5%	6.3
55 -59 yrs	29	4%	4.0	42	5%	5.7	26	4%	3.6	37	5%	5.1	49	6%	6.7
60 and over	37	5%	1.8	24	3%	1.1	25	3%	1.1	27	4%	1.2	25	3%	1.1
Total	756	100%	7.6	789	100%	8.0	727	100%	7.3	753	100%	7.6	787	100%	7.9

TABLE FOOTNOTES:

- The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.
- **Bold/Colored text** indicates that statistically significant trends occurred in that group. The arrow indicates the direction of change in rates over the 5-year period, while the percentage is the *average change per year* in the rates, as calculated using regression modeling.
- Rates are per 100,000 population.

Figure 2. MSM vs. non-MSM risk by race and age at HIV diagnosis, 2013-2017



New HIV diagnoses by race/sex

Rates among all race and sex groups remained stable between 2013 and 2017. This is the fourth of six trend reports that does not show increased rates among black females. The rate of new diagnoses remained highest among black persons of both sexes compared to all other race/sex groups. In 2017, the rate among black males was approximately 11 times that of white males, and the rate among black females about 13 times that of white females. These disparities have persisted since we began analyzing HIV trends in MI, and although we've seen some decreases in new diagnoses among black males and females over the years, the rate difference between black and white females and between black and white males seems to have remained relatively stable.

Table 2. New HIV diagnoses by race/sex, 2013-2017

Race/Sex	Year of diagnosis														
	2013			2014			2015			2016			2017		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
Male	628	83%	13.0	643	81%	13.2	598	82%	12.3	634	84%	13.0	644	82%	13.1
Black	398	53%	60.7	372	47%	56.7	358	49%	54.7	361	48%	55.2	358	45%	54.8
White	175	23%	4.7	202	26%	5.4	182	25%	4.9	201	27%	5.4	213	27%	5.7
Other	54	7%	11.0	69	9%	13.7	58	8%	11.2	72	10%	13.6	73	9%	13.3
Female	128	17%	2.5	146	19%	2.9	129	18%	2.6	119	16%	2.4	144	18%	2.8
Black	85.1	11%	11.7	107	14%	14.8	88	12%	12.2	72	10%	10.0	98	12%	13.6
White	33	4%	0.9	28	4%	0.7	31	4%	0.8	35	5%	0.9	33	4%	0.9
Other	10	1%	2.0	11	1%	2.2	10	1%	1.9	11	1%	2.1	12	2%	2.2
All	756	100%	7.6	789	100%	8.0	727	100%	7.3	753	100%	7.6	788	100%	7.9
Black	483	64%	35.0	479	61%	34.7	446	61%	32.4	433	58%	31.5	456	58%	33.1
White	208	28%	2.8	230	29%	3.1	213	29%	2.8	236	31%	3.2	246	31%	3.3
Other	76	10%	6.5	80	10%	7.9	68	9%	6.6	83	11%	7.8	85	11%	7.7

TABLE FOOTNOTES:

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- **Bold/Colored text** indicates that statistically significant trends occurred in that group. The arrow indicates the direction of change in rates over the 5-year period, while the percentage is the *average change per year* in the rates, as calculated using regression modeling.
- Rates are per 100,000 population.

New HIV diagnoses by risk

Between 2013 and 2017, the number of newly diagnosed individuals who used injection drugs (PWID) has remained stable. The number of MSM who inject drugs has increased in recent years. However, it is important to note the overall number of MSM who inject drugs is small and the increase is not statistically significant.

There were no significant changes in diagnoses among any other risk groups. This is the fifth trend consecutive report that shows no decreases among heterosexuals in the past eight reports.

New diagnoses among persons with no identified risk (NIR) remained stable between 2013 and 2017. There is a targeted effort to reduce the number of new diagnoses with NIR. Risk information is important information for prevention efforts; thus, it is crucial that risk questions be answered on the adult case report form (ACRF). Protocols and partnerships are currently in place to achieve better risk ascertainment.

Figure 3 illustrates trends among MSM by race. MSM were more than half of all new diagnoses between 2013 and 2017 (59%). Of these newly diagnosed MSM, 69% are black. The number of MSM cases remained stable among all race groups between 2013 and 2017. Although there was no significant increase in the number of black MSM cases, as has been seen in past reports, black males continue to make up the largest proportion of all MSM HIV cases in Michigan.

Concurrent diagnoses

Between 2013 and 2017, the proportion of people diagnosed with stage 3 HIV infection within 30 days of diagnosis (concurrent) significantly decreased among black individuals and those who identify as other races (9% and 20% respectively). Specifically, both black men and men of other races accounted for the significant decrease in the proportion of concurrent diagnoses. There was a 9% decrease of concurrent cases in black men between 2013 and 2017. Concurrent cases in men of other races also decreased 25% between 2013 and 2017. There was no change in the proportion of concurrent cases among white males. Additionally, there were no changes in concurrent cases between 2013 and 2017 in females overall or in females by race. Concurrent diagnoses represent a failure to diagnose HIV

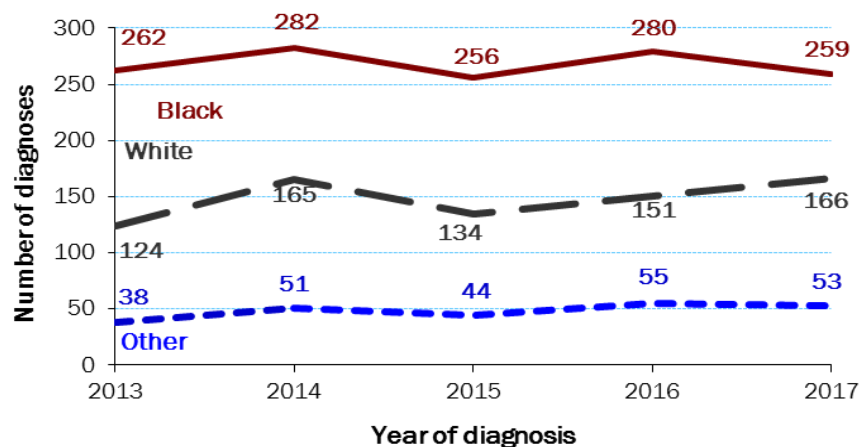
Table 3. New HIV diagnoses by risk, 2013-2017

Risk	Year of diagnosis									
	2013		2014		2015		2016		2017	
	Num	%	Num	%	Num	%	Num	%	Num	%
MSM	411	54%	486	62%	421	58%	459	61%	458	58%
PWID	36	5%	17	2%	24	3%	26	3%	30	4%
MSM/PWID	13	2%	13	2%	13	2%	26	3%	19	2%
Heterosexual	128	17%	139	18%	106	15%	114	15%	129	16%
Other known	4	1%	7	1%	1	<1%	3	<1%	1	<1%
No identified risk	163	22%	127	16%	161	22%	125	17%	149	19%
Total	756	100%	789	100%	727	100%	753	100%	787	100%

TABLE FOOTNOTES:

- The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.
- **Bold/Colored text** indicates that statistically significant trends occurred in that group. The arrow indicates the direction of change in number of new diagnoses over the 5-year period, while the percentage is the average change per year in the the number of new diagnoses, as calculated using regression modeling.
- The heterosexual category includes males whose female sexual partners are known to be HIV-infected or at high risk for HIV and females who reported sex with males regardless of what is known about their partners' HIV status or risk. The "other known" risk category includes perinatal and blood product transmission. The NIR category includes males who reported sex with females of unknown risk/HIV status as their only risk and males and females for whom no risk has yet been reported.

Figure 3. Race among MSM, 2013-2017



(Continued on page 5)

(Continued from page 4)

Concurrent diagnoses (cont.)

early in the course of the infection and/or a failure to initiate early treatment. The decrease of concurrent cases among males, specifically black males may indicate that early testing is occurring and individuals are learning about their HIV diagnosis early enough to get into care promptly and prevent progression to stage 3. This is a positive trend and ideally we will see the number of concurrent diagnoses continue to decrease.

Table 4. Concurrent HIV diagnoses by race/sex, 2013-2017

Race/Sex	Year of diagnosis										Total			
	2013		2014		2015		2016		2017				Num	%
	Num	%	Num	%	Num	%	Num	%	Num	%				
Male	170	27%	125	19%	112	19%	134	21%	108	17%	650	21%	↓10%	
Black	97	24%	60	16%	49	14%	63	17%	55	15%	324	18%	↓9%	
White	54	31%	44	22%	52	29%	51	25%	47	22%	248	25%		
Other	19	35%	21	30%	11	19%	20	28%	7	10%	78	24%	↓25%	
Female	29	23%	32	22%	29	22%	25	21%	22	15%	137	21%		
Black	20	24%	26	24%	18	20%	16	22%	14	14%	94	21%		
White	8	24%	6	21%	9	29%	7	20%	6	18%	36	22%		
Other	1	10%	0	0%	2	20%	2	18%	2	17%	7	13%		
All	199	26%	157	20%	141	19%	159	21%	130	17%	787	21%		
Black	117	24%	86	18%	67	15%	79	18%	69	15%	418	18%	↓9%	
White	62	30%	50	22%	61	29%	58	25%	53	21%	284	25%		
Other	20	31%	21	26%	13	19%	22	26%	9	11%	85	22%	↓20%	

TABLE FOOTNOTES:

- The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.
- Percentages reflect the number of concurrent diagnoses for a race/sex/year combination divided by the total diagnoses for that race/sex/year combination.
- **Bold/Colored text** indicates that statistically significant trends occurred in that group. Significance was assessed using the Mantel-Haenszel chi-square test. The arrow indicates the direction of change while the accompanying percentage is the *change in proportion*

New HIV diagnoses by residence at diagnosis

The rate of new HIV diagnoses remained relatively stable in Southeast Michigan (Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne counties), as well as the rest of the state between 2013 and 2017 (table 5). It is also important to note that the burden of new diagnoses continues to disproportionately affect Southeast Michigan (SE MI).

Table 5. New HIV diagnoses by residence at diagnosis, 2013-2017

Residence	Year of diagnosis														
	2013			2014			2015			2016			2017		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
SE MI	490	67%	11.5	522	67%	12.2	479	67%	11.2	508	69%	11.9	521	67%	12.2
Out-state	246	33%	3.3	256	33%	3.5	234	33%	3.2	229	31%	3.1	256	33%	3.4
Prison or Unknown	19	3%	N/A	11	1%	N/A	14	2%	N/A	16	2%	N/A	10	1%	N/A
Total*	737	100%	7.6	778	100%	8.0	713	100%	7.3	737	100%	7.6	777	100%	7.9

TABLE FOOTNOTES:

- The number of new diagnoses shown are not reported case counts. These are estimates based on the number of reported cases that are adjusted to account for reporting delay. As a result, summed counts will not always match the column total shown due to rounding error.
- Rates are per 100,000 population.

Summary

The number and rate of new HIV diagnoses in Michigan remained stable between 2013 and 2017 for the 8th consecutive trend report, with an average of 762 new cases per year and an average rate of 7.9 cases per 100,000 population.

- The highest rates (or counts) of new HIV diagnoses occurred among:
 - 20-24 and 25-29 year olds
 - Males
 - Black males and females
 - Men who have sex with men (MSM)*
 - SE MI residents
- Very few significant changes were found among the various subgroups analyzed, suggesting that new diagnoses overall are becoming increasingly stable each year.
- Almost three quarters of Michigan's new cases among 13-24 year olds were residents of SE MI at diagnosis. Of these SE MI young adults, 59% lived in the City of Detroit.
- 85% of new 13 - 19 year old cases are black (of whom 66% are MSM), whereas 49% of those aged 20 and older are black. This finding suggests that black teens and young adults in general, and young black MSM in particular, should continue to be the focus of aggressive prevention activities.
- Race and sex disparities in rates of new HIV diagnoses remain. Comparing the diagnosis rates of black persons and white persons in 2015:
 - **Overall:** The rate for black persons was over 11 times higher
 - **Males:** The rate for black males was over 11 times higher
 - **Females:** The rate for black females was over 13 times higher
- Concurrent diagnoses are decreasing overall. This is a new trend and could indicate that increased testing efforts have been able to identify people living with HIV earlier in the disease's progression and get them into care sooner to prevent progression to stage 3 HIV.
- The following groups have seen significant decreases in concurrent diagnoses:
 - Black males
 - Males of other races

*Annual counts were analyzed for risk groups since there are no reliable denominator data available for rate calculation.

For more information:

Michigan Department of Health and Human Services HIV Surveillance Program

(248) 424-7910
(517) 335-8165

(www.michigan.gov/hivstd) → HIV Case Reporting and Data → HIV
Statistics and Data Reports)
State of Michigan HIV Statistics and Reports

Michigan Department of Health and Human Services HIV Prevention and Care Section

(517) 241-5900

(www.michigan.gov/hivstd)
State of Michigan HIV/AIDS Programmatic Information

MI Counseling, Testing, & Referral Sites
www.miunified.org/Get-Help/Services

Michigan AIDS Hotline
1-800-872-2437

Centers for Disease Control & Prevention

www.cdc.gov/hiv
CDC HIV/AIDS Resources

AIDSInfo

www.aidsinfo.nih.gov
HIV/AIDS Treatment and Clinical Trial Resources

CDC National Statistics & Surveillance

www.cdc.gov/hiv/statistics
CDC HIV/AIDS Statistics and Reports

World Health Organization
www.who.int/topics/hiv_aids/en