

ANNUAL REVIEW OF HIV TRENDS IN
SE MICHIGAN (2008 - 2012)Bureau of Disease Control, Prevention and Epidemiology
HIV/STD/VH/TB Epidemiology Section, April 2014

Overall trends in new HIV diagnoses in SE Michigan

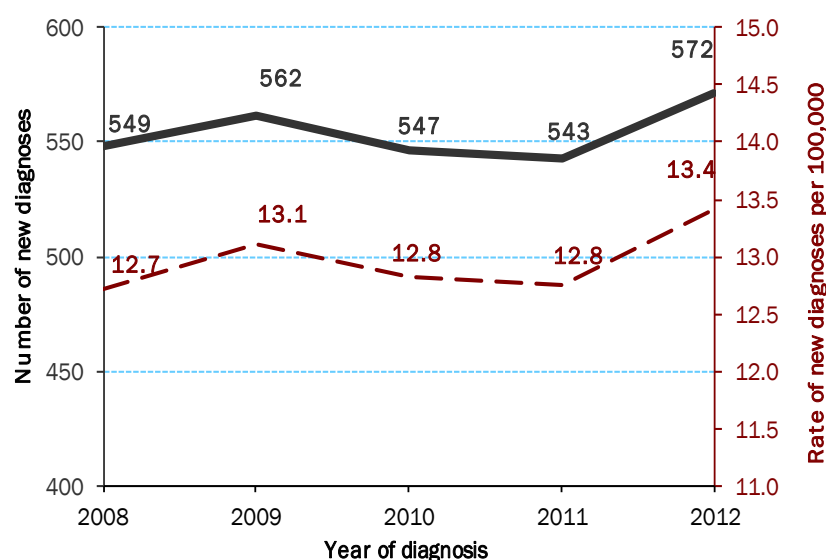
METHODS. To evaluate trends in new HIV diagnoses in Southeast Michigan (Lapeer, Macomb, Monroe, St. Clair, Oakland, and Wayne counties) over time, we estimated the number of persons newly diagnosed with HIV infection between 2008 and 2012 by adjusting the number of reported cases to account for those who may not have been reported to the health department by January 1, 2014. 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 intercensal annual population estimates released by the Census Bureau in 2012 and based on the 2010 Census, the most recent year for which 2008-2010 data were available. Rates for age at diagnosis were calculated using the 2012 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. In 2005, MDCH began incidence surveillance, which estimates new *infections* rather than new *diagnoses* using the Serologic Testing Algorithm for Recent HIV Seroconversion (STARHS). Last year, we released estimated rates of recent infections for 2006-2010. Updated data for 2007-2011 will also be released this year. All STARHS Incidence reports are available on our website.

Figure 1. Number and rate of new HIV diagnoses in SE Michigan, 2008–2012



OVERVIEW OF TRENDS. Figure 1 shows the number and rate of new HIV diagnoses in Southeast Michigan from 2008 to 2012. The rate of new HIV diagnoses remained stable during this time period. There were an average of 554 new cases per year, with an average rate of 13 cases per 100,000.

Each year, there are more new diagnoses of HIV infection than deaths. As a result, the reported number of persons living with HIV in SE Michigan is also increasing. MDCH estimates that 12,980 people were living with HIV infection in SE Michigan as of January 2013. This number is almost two-thirds of all cases in Michigan, despite the fact that the population of SE Michigan is just 43% of the state population.

*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.

New HIV diagnoses by age at diagnosis

For the fourth consecutive trend report, the rate of new HIV diagnoses increased among 20-24 year olds by 7% per year (table 1). The largest number and highest rates of new diagnoses are now among 20-29 year olds, and rates continue to increase among young adults while rates in older age groups remain stable. The average rate among 20-24 year olds is now 44.6 cases per 100,000 population, almost twice the average rate among 30-34 year olds.

Table 1.* New HIV diagnoses by age at diagnosis, SE MI, 2008-2012

	Year of diagnosis														
Age at diagnosis	2008			2009			2010			2011			2012		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
0 - 12 yrs	3	1%	0.4	2	<1%	0.3	2	<1%	0.3	1	<1%	0.1	1	<1%	0.1
13 -19 yrs	60	11%	13.3	57	10%	12.9	42	8%	9.8	51	9%	12.1	46	8%	11.3
20 -24 yrs	95	17%	38.4	110	20%	44.3	105	19%	41.0	128	24%	48.2	140	25%	51.1 ↑7%
25 -29 yrs	74	14%	28.2	87	16%	34.2	83	15%	32.9	79	15%	31.4	91	16%	35.9
30 -34 yrs	58	11%	22.4	47	8%	18.5	75	14%	29.6	54	10%	20.9	62	11%	23.8
35 -39 yrs	68	12%	22.3	62	11%	21.2	61	11%	21.9	48	9%	17.9	47	8%	18.3
40 -44 yrs	59	11%	18.5	62	11%	20.2	47	9%	15.6	46	8%	15.0	59	10%	19.5
45 -49 yrs	52	9%	15.3	41	7%	12.3	50	9%	15.3	53	10%	16.4	45	8%	14.4
50 -54 yrs	37	7%	11.1	53	9%	15.8	47	9%	14.0	39	7%	11.4	40	7%	12.1
55 -59 yrs	19	3%	6.7	26	5%	9.1	16	3%	5.5	20	4%	6.7	19	3%	6.0
60 and over	23	4%	3.0	12	2%	1.5	17	3%	2.1	26	5%	3.2	22	4%	2.5
Total	549	100%	12.7	562	100%	13.1	547	100%	12.8	543	100%	12.8	572	100%	13.4

*TABLE FOOTNOTES:

- The number of new diagnoses are estimates based on the number of reported cases adjusted to account for reporting delay. As a result, summed counts will not always match the column total due to rounding error.
- **Bold/Colored text** indicates statistically significant trends for 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 race/sex

Table 2.* New HIV diagnoses by race/sex, SE MI, 2008-2012

	Year of diagnosis														
	2008			2009			2010			2011			2012		
Race/Sex	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
Male	417	76%	20.0	447	80%	21.5	435	80%	21.1	434	80%	21.0	456	80%	22.1
Black	298	54%	65.5	304	54%	67.4	289	53%	64.0	300	55%	66.8	304	53%	67.8
White	84	15%	5.8	114	20%	8.0	117	21%	8.3	105	19%	7.5	119	21%	8.4
Other	35	6%	18.0	28	5%	14.3	29	5%	14.6	28	5%	13.9	34	6%	16.1
Female	131	24%	5.9	115	20%	5.2	112	20%	5.1	109	20%	5.0	115	20%	5.2
Black	100	18%	18.8	97	17%	18.5	92	17%	17.4	83	15%	15.8	88	15%	16.8
White	20	4%	1.3	10	2%	0.7	12	2%	0.8	17	3%	1.2	19	3%	1.3
Other	11	2%	5.6	7	1%	3.5	8	1%	4.0	9	2%	4.4	8	1%	3.9
All	549	100%	12.7	562	100%	13.1	547	100%	12.8	543	100%	12.8	572	100%	13.4
Black	398	73%	40.4	402	72%	41.0	381	70%	38.9	383	71%	39.3	392	69%	40.3
White	104	19%	3.5	125	22%	4.3	129	24%	4.5	122	23%	4.3	137	24%	4.8
Other	46	8%	11.8	35	6%	8.9	37	7%	9.3	37	7%	9.1	42	7%	9.9

*TABLE FOOTNOTES:

- The number of new diagnoses are estimates based on the number of reported cases adjusted to account for reporting delay. As a result, summed counts will not always match the column total due to rounding error.
- **Bold/Colored text** indicates statistically significant trends for 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 **race/sex** (cont.)

The rate of new diagnoses increased in white males by an average of 6% per year (table 2). The rate among all white persons increased by 6% per year for the second time in a row since we have started analyzing trends in 2003. Despite the increase in rate among white persons, rates of new HIV diagnoses are consistently highest among black individuals. In 2012, the rate of new diagnoses among black persons was 10 times higher than the rate among white persons. The rate of new diagnoses among black males was over 8 times higher than among white males, a trend that has not changed since 2003. This disparity is even more pronounced among females, with the rate among black females nearly 16 times that of white females. While the rates among persons of other race are lower than those among black persons, they are almost twice as high as those of white persons. "Other" race is composed of Hispanics, Asian Hawaiian/Pacific Islander, American Indian/Alaska Native, multiracial persons, and individuals of unknown or other race. Hispanics make up 54% of this group. These racial disparities are not unique to SE Michigan. Statewide and nationwide, communities of color continue to be disproportionately impacted by HIV.

New HIV diagnoses by **risk**

Between 2008 and 2012, the number of newly diagnosed persons remained stable among persons in every risk group (Table 3). This is the first report in the last 5 reports showing no decreases in new diagnoses among persons with Heterosexual risk and the first in the last 9 reports showing no decreases among IDU. Though stable, there is a targeted effort to reduce the number of new diagnoses with NIR. New diagnoses among persons with no identified risk (NIR) remained stable between 2008 and 2012. Risk information is important information for prevention efforts; thus, it is crucial that risk questions be answered on the adult case report form (ACRF).

Table 3.^s New HIV diagnoses by risk, SE MI, 2008-2012

Risk	Year of diagnosis									
	2008		2009		2010		2011		2012	
	Num	%	Num	%	Num	%	Num	%	Num	%
MSM	286	52%	309	55%	302	55%	310	57%	310	54%
IDU	23	4%	23	4%	28	5%	21	4%	22	4%
MSM/IDU	12	2%	8	1%	5	1%	9	2%	11	2%
Heterosexual	108	20%	104	19%	98	18%	83	15%	92	16%
Other known	3	1%	1	<1%	2	<1%	1	<1%	1	<1%
No identified risk	116	21%	116	21%	112	20%	118	22%	136	24%
Total	549	100%	562	100%	547	100%	543	100%	572	100%

TABLE FOOTNOTES:

- The number of new diagnoses are estimates based on the number of reported cases adjusted to account for reporting delay. As a result, summed counts will not always match the column total 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 and females categorized as "high-risk" heterosexuals (persons who knew they had one or more partners that were an IDU, bisexual for females, a recipient of HIV infected blood, or a person infected with HIV) as well as females who reported sex with males of unknown risk/HIV status as their only risk. 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.

New HIV diagnoses by **residence at diagnosis**

The rate of new diagnoses remained stable in all counties of SE MI with the exception of Wayne County excluding the city of Detroit, which increased by an average of 7% per year (table 4).

The rate of new diagnoses in Detroit remains the highest of any location, and it is over four times as high as the rate in Wayne County outside the city of Detroit, the location with the second highest rate in SE Michigan. The population of the city of Detroit decreased by over 200,000 people between the 2000 and 2010 censuses, and Detroit now represents just 18% of SE MI's and 8% of the state's population. Despite this, residents of Detroit represent 53% of SE Michigan's and 36% of the state's new HIV cases.

Table 4.† New HIV Diagnoses* by residence at diagnosis, SE MI, 2008-2012

Residence	Year of diagnosis									
	2008		2009		2010		2011		2012	
	Num (%)	Rate	Num (%)	Rate	Num (%)	Rate	Num (%)	Rate	Num (%)	Rate
Detroit	324 59%	45.0	295 53%	41.2	282 52%	39.5	294 54%	41.3	278 49%	39.0
Oakland Co.	90 16%	7.5	125 22%	10.4	106 19%	8.8	108 20%	8.9	115 20%	9.4
Wayne Co. (excl Detroit)	73 13%	6.4	82 15%	7.3	92 17%	8.3	76 14%	7.0	104 18%	9.6 ↑8%
Macomb Co.	48 9%	5.7	52 9%	6.2	49 9%	5.9	53 10%	6.2	64 11%	7.5
St. Clair Co.	7 1%	4.2	3 1%	1.8	9 2%	5.6	5 1%	3.1	4 1%	2.5
Monroe Co.	4 1%	2.6	3 1%	2.0	5 1%	3.3	5 1%	3.3	6 1%	4.1
Lapeer Co.	2 <1%	2.2	1 <1%	1.1	4 1%	4.6	2 <1%	2.3	1 <1%	1.2
Total	549 100%	12.7	562 100%	13.1	547 100%	12.8	543 100%	12.8	572 100%	13.4

†TABLE FOOTNOTES:

- The number of new diagnoses are estimates based on the number of reported cases 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.

Concurrent HIV and AIDS diagnoses

For the second report in six reports, the proportion of persons diagnosed with stage 3 HIV infection within 30 days of diagnosis (“concurrent”) did not significantly decrease (table 5). Proportions of concurrent diagnoses remain highest among white males, females of other race, and white persons overall.

Table 5.† Concurrent HIV diagnoses by race/sex group, SE MI, 2008-2012

Race/Sex	Year of diagnosis										Total	
	2008		2009		2010		2011		2012			
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
Male	93	22%	92	21%	92	21%	84	19%	88	19%	448	20%
Black	57	19%	59	19%	64	22%	50	17%	57	19%	285	19%
White	26	31%	26	23%	26	22%	32	31%	26	22%	137	25%
Other	10	29%	7	25%	2	7%	2	7%	5	15%	26	17%
Female	26	20%	21	18%	20	18%	25	23%	21	18%	113	19%
Black	23	23%	19	20%	15	17%	16	20%	17	20%	91	20%
White	1	5%	2	20%	3	25%	4	24%	1	6%	11	14%
Other	2	18%	0	0%	2	25%	5	56%	2	25%	11	26%
All	119	22%	113	20%	112	20%	109	20%	108	19%	561	20%
Black	80	20%	78	19%	79	21%	66	17%	74	19%	376	19%
White	27	26%	28	23%	29	23%	36	30%	27	19%	148	24%
Other	12	26%	7	20%	4	11%	7	19%	7	17%	37	19%

†TABLE FOOTNOTES:

- The number of new diagnoses are estimates based on the number of reported cases adjusted to account for reporting delay. As a result, summed counts will not always match the column total 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 of concurrent diagnoses* from 2005 to 2009, which do not take into account the fluctuations from year to year.

Summary

- Between 2008 and 2012, the rate of new diagnoses in Southeast Michigan remained stable with an average of 554 cases per year and an average rate of 13.
- The highest rates of new HIV diagnoses occurred among:
 - 20 - 24 year olds
 - Males
 - Black males and females and black persons overall
 - Men who have sex with men (MSM)*
 - Detroit residents
- INCREASES in rates occurred among:
 - 20 - 24 year olds for the 4th consecutive trend report
 - White males
 - White persons
 - Wayne County residents (excluding the city of Detroit)
- No DECREASES in rates occurred
- Race and sex disparities in rates of new HIV diagnoses remain. Comparing the diagnosis rates of black persons and white persons in 2012:
 - **Overall:** The rate for black persons was over 9 times higher
 - **Males:** The rate for black males was over 8 times higher
 - **Females:** The rate for black females was almost 16 times higher
- For the second report in six reports, decreases did not occur in concurrent diagnoses.

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

For more information:

Michigan Department of Community Health HIV/AIDS Surveillance Program

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

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

Michigan Department of Community Health HIV/AIDS Prevention and Intervention Services

(517) 241-5900

(www.michigan.gov/hivstd) → HIV/AIDS → Prevention and Care
State of Michigan HIV/AIDS Programmatic Information

MI Counseling, Testing, & Referral Sites

<http://www.aidspartnership.org/index.php/testing-and-locations/>

Michigan AIDS Hotline
1-800-872-2437

Centers for Disease Control & Prevention

<http://www.cdc.gov/hiv>
CDC HIV/AIDS Resources

AIDSInfo

<http://www.aidsinfo.nih.gov/>
HIV/AIDS Treatment and Clinical Trial Resources

CDC National Statistics & Surveillance

<http://www.cdc.gov/hiv/topics/surveillance/index.htm>
CDC HIV/AIDS Statistics and Reports

World Health Organization

http://www.who.int/topics/hiv_infections/en/
HIV/AIDS Global Resources

FOCUS ON DETROIT:

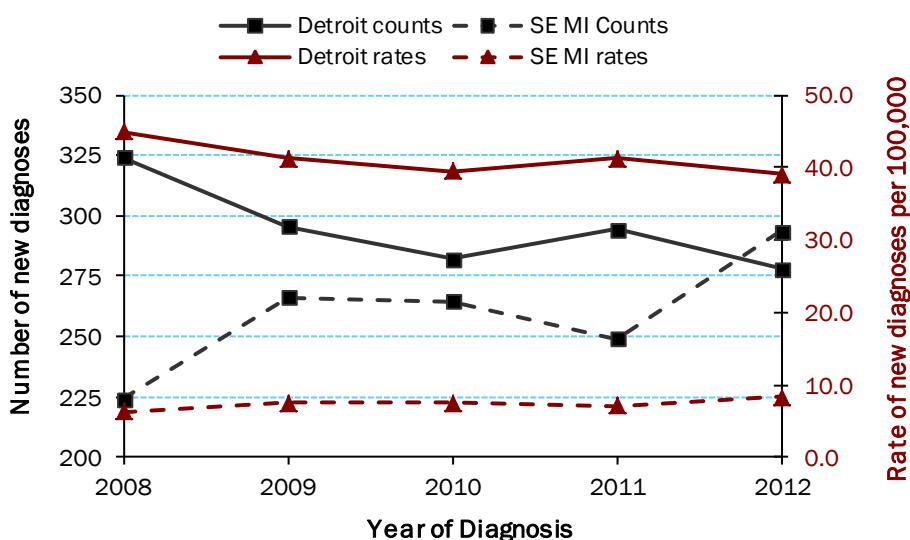
SUPPLEMENTAL FACT SHEET TO THE ANNUAL REVIEW OF HIV TRENDS IN SE MICHIGAN (2008 - 2012)

Bureau of Disease Control, Prevention and Epidemiology
HIV/STD/VH/TB Epidemiology Section, April 2014

Overview of new HIV diagnoses in DETROIT

- **1,474** new HIV diagnoses between 2008 and 2012
- Average of **295** new diagnoses (**41.2 per 100,000 people**) per year
- Rate of new diagnoses in Detroit is more than **4.5 times** higher than the rate in the rest of SE MI
- Detroit makes up **20%** of the SE MI population but has **53%** of new cases diagnosed in 2008-2012

Figure 1.* A comparison of the number and rate of new HIV diagnoses in Detroit vs. the rest of SE Michigan (SE MI)*, 2008-2012

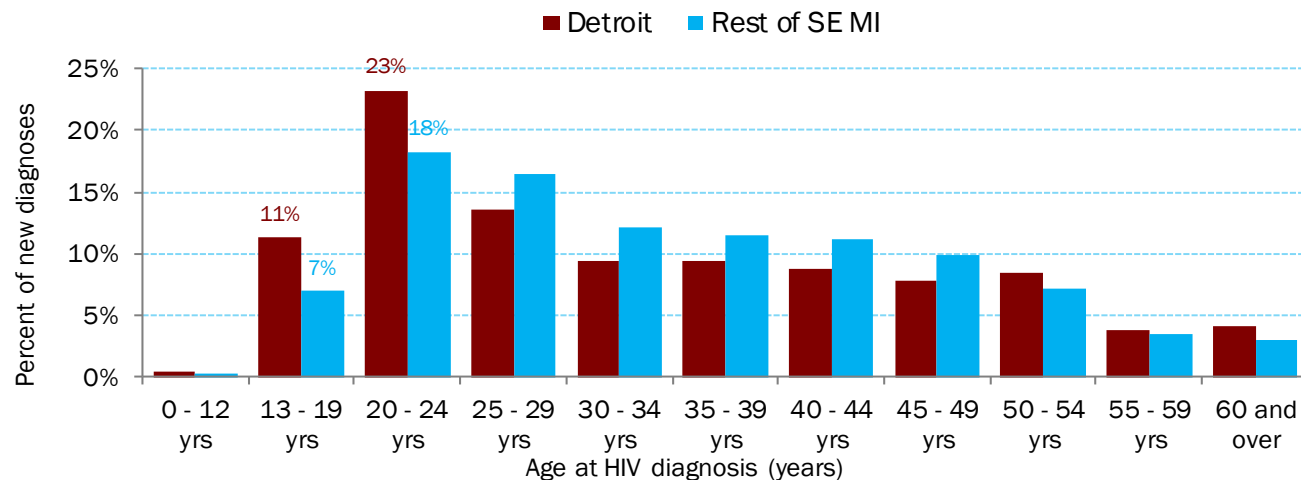


*In this graph, the city of Detroit is excluded from SE MI and shown separately. SE MI includes Lapeer, Macomb, Monroe, Oakland, St. Clair, and Wayne counties.

New HIV diagnoses by age at diagnosis

- **11%** of new diagnoses in **Detroit** were among **13-19 year olds**, compared to **7%** in the rest of SE MI.
- **65%** of newly diagnosed **teens (13-19 year olds)** in SE MI lived in **Detroit** at the time of diagnosis.
- Newly diagnosed persons who were **13-24 years old** were more likely to live in **Detroit** than in the rest of SE MI.
- The age group with the highest number of new cases is **20-24 year olds** in **Detroit** and in the rest of **SE MI**.

Figure 2.* Age at HIV diagnosis among newly diagnosed cases in SE Michigan, 2008-2012



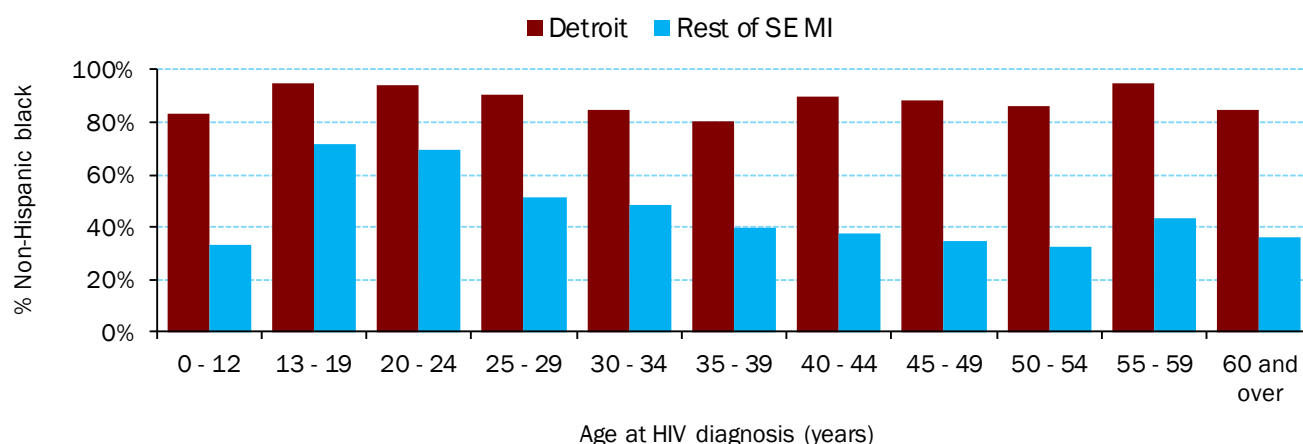
*FOOTNOTES:

- The number of new diagnoses are estimates based on the number of reported cases adjusted to account for reporting delay.
- We cannot assess the significance of trends by demographic subgroups in the City of Detroit, because the methodology used in trend analysis cannot be used for geographic regions smaller than SE Michigan.

New HIV diagnoses by **race and sex**

- Newly diagnosed persons in **Detroit** are significantly more likely to be black than persons newly diagnosed in the rest of SE MI.
- 94%** of newly diagnosed **13-24 year olds** in **Detroit** are black compared to **70%** in the **rest of SE MI**, despite the fact that just 79% of Detroit's population is black.
- 13-24 year olds** newly diagnosed in **Detroit** are significantly more likely to be male than adults 25 years and older (85% vs. 71%, respectively).

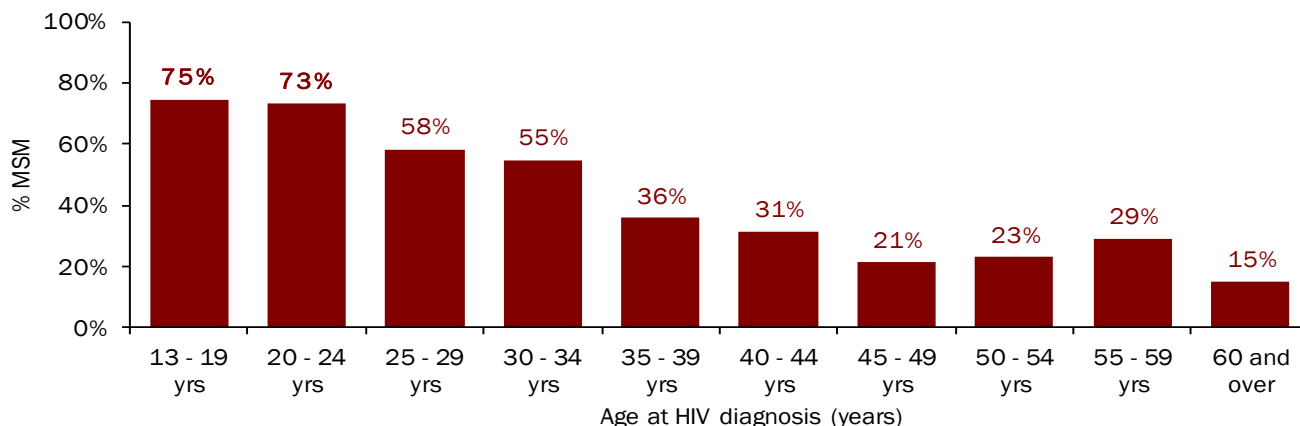
Figure 3.* Percent black race by age at HIV diagnosis among persons newly diagnosed in SE MI, 2008-2012



Race and risk among **Detroit teens and young adults**

- 75%** of newly diagnosed **teens (13-19 year olds)** in **Detroit** reported being MSM (males who have sex with males), compared to **47%** of those who were **20 or older** at diagnosis.
- Among **teens** newly diagnosed in **Detroit**, **70%** are black MSM compared to **41%** of persons **20 or older**.
- Both teens and young adults (20-24 year olds)** are more likely to be black MSM than persons diagnosed at **25 years or older**, and they are more likely to live in Detroit than the rest of SE MI.

Figure 4.* Percent MSM by age at HIV diagnosis among persons of all races newly diagnosed in Detroit, 2008-2012



*FOOTNOTES:

- 0-12 year olds are excluded from this graph, because no cases were MSM.
- The number of new diagnoses are estimates based on the number of reported cases adjusted to account for reporting delay.
- We cannot assess the significance of trends by demographic subgroups in the City of Detroit, because the methodology used in trend analysis cannot be used for geographic regions smaller than SE Michigan.