

# ANNUAL REVIEW OF HIV TRENDS IN SE MICHIGAN (2007 - 2011)

Bureau of Disease Control, Prevention and Epidemiology  
HIV/STD/VH/TB Epidemiology Section, April 2013

## Overall trends in new HIV diagnoses in SE Michigan

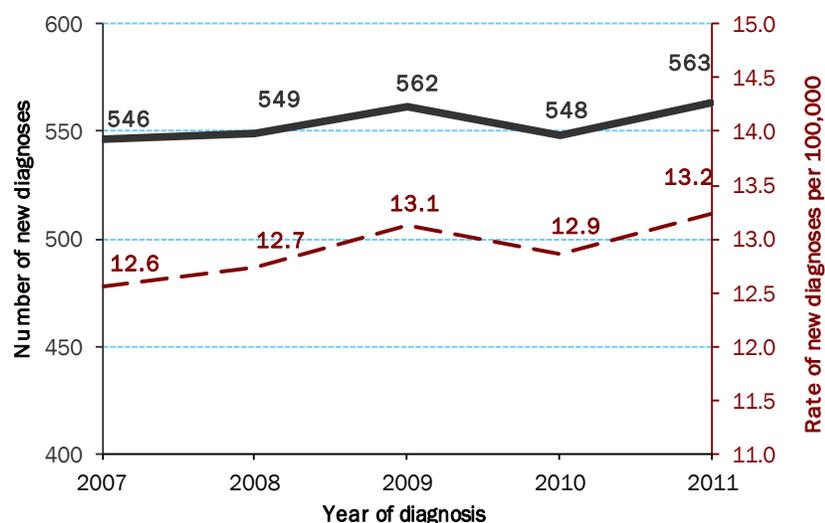
**METHODS.** To evaluate trends in new HIV diagnoses in Southeast Michigan (Lapeer, Macomb, Monroe, St. Clair, Oakland, and Wayne counties) over time, we estimated the number of persons newly diagnosed with HIV infection between 2007 and 2011 by adjusting the number of reported cases to account for those who may not have been reported to the health department by January 1, 2013. 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 2011 and based on the 2010 Census, the most recent year for which 2007-2011 data were available. Rates for age at diagnosis were calculated using the 2011 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 2006-2009. Updated data for 2006-2010 are being released concurrently with this report. All STARHS Incidence reports are available on our website.

**Figure 1. Number and rate of new HIV diagnoses in SE Michigan, 2007–2011**



**OVERVIEW OF TRENDS.** Figure 1 shows the number and rate of new HIV diagnoses in Southeast Michigan from 2007 to 2011. The rate of new HIV diagnoses increased by an average 1% per year after remaining stable for the past two reports. There were an average of 554 new cases per year.

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 12,610 people were living with HIV infection in SE Michigan as of January 2012. 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 third consecutive trend report, the rate of new HIV diagnoses increased among 20-24 and 25-29 year olds (10% and 7% per year, respectively) (table 1). The rate decreased significantly among persons 40-44 years of age for the second consecutive report (average 9% per year). The largest number and highest rates of new diagnoses are now among 20-29 year olds, and rates continue to increase among young adults at the same time as rates in older age groups decrease or remain stable. The average rate among 20-24 year olds is now 40.6 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, 2007-2011

Age at diagnosis	Year of diagnosis														
	2007			2008			2009			2010			2011		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
0 - 12 yrs	2	<1%	0.3	3	1%	0.4	2	<1%	0.3	2	<1%	0.3	1	<1%	0.1
13 -19 yrs	54	10%	11.9	58	11%	12.9	59	11%	13.4	45	8%	10.3	52	9%	12.3
<b>20 -24 yrs</b>	75	14%	30.2	95	17%	38.5	111	20%	44.4	104	19%	41.0	130	23%	48.8 <b>↑10%</b>
<b>25 -29 yrs</b>	66	12%	24.6	73	13%	27.9	84	15%	33.1	83	15%	33.0	85	15%	34.0 <b>↑7%</b>
30 -34 yrs	54	10%	20.1	58	11%	22.4	47	8%	18.5	75	14%	29.3	54	10%	20.9
35 -39 yrs	71	13%	22.5	69	13%	22.6	62	11%	21.2	63	11%	22.4	49	9%	18.6
<b>40 -44 yrs</b>	78	14%	23.7	59	11%	18.6	63	11%	20.5	48	9%	15.7	48	9%	15.9 <b>↓9%</b>
45 -49 yrs	60	11%	17.3	52	10%	15.3	41	7%	12.3	47	9%	14.5	56	10%	17.6
50 -54 yrs	42	8%	12.9	38	7%	11.5	53	9%	15.8	49	9%	14.4	40	7%	11.9
55 -59 yrs	18	3%	6.5	19	3%	6.7	26	5%	9.1	16	3%	5.5	21	4%	6.8
60 and over	26	5%	3.4	23	4%	3.0	12	2%	1.5	17	3%	2.1	27	5%	3.2
<b>Total</b>	<b>546</b>	<b>100%</b>	<b>12.6</b>	<b>549</b>	<b>100%</b>	<b>12.7</b>	<b>562</b>	<b>100%</b>	<b>13.1</b>	<b>548</b>	<b>100%</b>	<b>12.9</b>	<b>563</b>	<b>100%</b>	<b>13.2</b>

†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, 2007-2011

Race/Sex	Year of diagnosis														
	2007			2008			2009			2010			2011		
	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate	Num	%	Rate
<b>Male</b>	413	76%	19.6	418	76%	20.0	447	80%	21.6	434	79%	21.0	450	80%	21.8 <b>↑3%</b>
<b>Black</b>	283	52%	61.5	299	54%	65.7	307	55%	67.9	289	53%	64.2	313	56%	69.8 <b>↑2%</b>
<b>White</b>	94	17%	6.5	84	15%	5.8	116	21%	8.1	116	21%	8.2	111	20%	7.9 <b>↑7%</b>
Other	36	7%	18.8	35	6%	18.1	25	4%	12.8	28	5%	14.2	26	5%	12.6
<b>Female</b>	133	24%	5.9	130	24%	5.9	115	20%	5.2	114	21%	5.2	113	20%	5.2
Black	112	21%	20.9	101	18%	19.0	98	17%	18.5	94	17%	17.9	86	15%	16.5
White	12	2%	0.8	19	3%	1.3	10	2%	0.7	12	2%	0.8	18	3%	1.2
Other	9	2%	4.7	10	2%	5.1	7	1%	3.5	8	1%	4.0	9	2%	4.5
<b>All</b>	<b>546</b>	<b>100%</b>	<b>12.6</b>	<b>549</b>	<b>100%</b>	<b>12.7</b>	<b>562</b>	<b>100%</b>	<b>13.1</b>	<b>548</b>	<b>100%</b>	<b>12.9</b>	<b>563</b>	<b>100%</b>	<b>13.2</b>
Black	395	72%	39.6	400	73%	40.6	404	72%	41.3	383	70%	39.2	399	71%	41.1
<b>White</b>	106	19%	3.6	103	19%	3.5	126	22%	4.3	128	23%	4.5	129	23%	4.5 <b>↑7%</b>
<b>Other</b>	45	8%	11.8	45	8%	11.6	32	6%	8.1	37	7%	9.1	35	6%	8.5 <b>↓9%</b>

†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 among black males, white males, and males overall (an average 2% per year, 7% per year, and 3% per year, respectively) (table 2). The rate among all white persons increased by 7% per year for the first time since we have started analyzing trends in 2003. The rate decreased among persons of other race (an average 9% per year). Despite the increase in rate among white persons, rates of new HIV diagnoses are consistently highest among black individuals. In 2011, the rate of new diagnoses among black persons was over 9 times higher than the rate among white persons. The rate of new diagnoses among black males was nearly 9 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 14 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*

The number of newly diagnosed persons who were injection drug users (IDU) decreased by an average 13% per year. The number of new diagnoses also decreased among persons who were heterosexual by an average of 11% per year (table 3). The number of new diagnoses increased among persons with no identified risk (an average 7% per year).

Table 3.<sup>s</sup> New HIV diagnoses by risk, SE MI, 2007-2011

Risk	Year of diagnosis									
	2007		2008		2009		2010		2011	
	Num	%	Num	%	Num	%	Num	%	Num	%
MSM	254	47%	268	49%	272	48%	275	50%	289	51%
<b>IDU</b>	39	7%	22	4%	23	4%	29	5%	18	3%
MSM/IDU	6	1%	13	2%	8	1%	4	1%	8	1%
<b>Heterosexual</b>	111	20%	90	16%	91	16%	79	14%	67	12%
Other known	2	<1%	3	1%	1	<1%	2	<1%	1	<1%
<b>No identified risk</b>	134	25%	152	28%	167	30%	159	29%	180	32%
<b>Total</b>	<b>546</b>	<b>100%</b>	<b>549</b>	<b>100%</b>	<b>562</b>	<b>100%</b>	<b>548</b>	<b>100%</b>	<b>563</b>	<b>100%</b>

<sup>s</sup>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.

This is the eight consecutive report showing significant decreases in new diagnoses among injection drug users, which may be partly attributed to the success of harm reduction programs like needle exchange. This is also the fourth consecutive report showing decreases among persons with heterosexual risk. The increase in persons with no identified risk indicates the importance of completing all patient history questions on the adult case report form, as risk information is crucial for the analysis of HIV data.

## New HIV diagnoses by *residence at diagnosis*

The rate of new diagnoses remained stable in all counties of SE MI except for Oakland County, which increased by an average 7% per year (table 4). This is the first report to show a significant increase in Oakland.

The rate of new diagnoses in Detroit remains the highest of any location, and it is nearly four and a half times as high as the rate in Oakland County, 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 17% of SE MI's and 7% of the state's population. Despite this, residents of Detroit represent 55% of SE Michigan's and 38% of the state's new HIV cases.

Table 4.† New HIV Diagnoses\* by residence at diagnosis, SE MI, 2007-2011

Residence	Year of diagnosis														
	2007		2008		2009		2010		2011						
	Num (%)	Rate	Num (%)	Rate	Num (%)	Rate	Num (%)	Rate	Num (%)	Rate					
Detroit	319	58%	43.9	326	59%	45.2	296	53%	41.3	283	52%	39.7	303	54%	42.5
<b>Oakland Co.</b>	86	16%	7.2	90	16%	7.5	125	22%	10.4	105	19%	8.8	114	20%	9.5 <b>↑7%</b>
Wayne Co. (excl Detroit)	93	17%	7.9	71	13%	6.2	81	14%	7.3	92	17%	8.3	78	14%	7.2
Macomb Co.	38	7%	4.5	48	9%	5.7	53	9%	6.4	50	9%	5.9	57	10%	6.7
St. Clair Co.	5	1%	3.0	7	1%	4.2	3	1%	1.8	9	2%	5.6	5	1%	3.2
Monroe Co.	4	1%	2.6	4	1%	2.6	3	1%	2.0	5	1%	3.3	4	1%	2.7
Lapeer Co.	1	<1%	1.1	2	<1%	2.2	1	<1%	1.1	4	1%	4.6	2	<1%	2.3
<b>Total</b>	<b>546</b>	<b>100%</b>	<b>12.6</b>	<b>549</b>	<b>100%</b>	<b>12.7</b>	<b>562</b>	<b>100%</b>	<b>13.1</b>	<b>548</b>	<b>100%</b>	<b>12.9</b>	<b>563</b>	<b>100%</b>	<b>13.2</b>

†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.
- Rates are per 100,000 population.

## Concurrent HIV and AIDS diagnoses

For the first report in five reports, the proportion of persons diagnosed with stage 3 HIV infection within 30 days of diagnosis (“concurrent”) did not significantly decrease (table 5). Males of other race were the only race/sex subgroup to experience a decrease in the proportion of diagnoses that were concurrent (16% decrease).

Table 5.† Concurrent HIV diagnoses by race/sex group, SE MI, 2007-2011

Race/Sex	Year of diagnosis										Total	
	2007		2008		2009		2010		2011			
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
<b>Male</b>	105	25%	92	22%	91	20%	90	21%	81	18%	459	21%
Black	64	23%	56	19%	58	19%	62	21%	50	16%	290	19%
White	34	36%	26	31%	27	23%	26	22%	30	27%	143	27%
<b>Other</b>	7	19%	10	28%	6	24%	2	7%	1	4%	26	17%
<b>Female</b>	26	20%	26	20%	21	18%	21	18%	25	22%	119	20%
Black	23	21%	23	23%	19	19%	16	17%	16	19%	97	20%
White	2	17%	1	5%	2	20%	3	25%	4	23%	12	17%
Other	1	11%	2	20%	0	0%	2	25%	5	54%	10	23%
<b>All</b>	131	24%	118	22%	112	20%	111	20%	106	19%	578	21%
Black	87	22%	79	20%	77	19%	78	20%	66	17%	388	20%
White	36	34%	27	26%	29	23%	29	23%	34	26%	155	26%
Other	8	18%	12	27%	6	19%	4	11%	6	17%	36	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 2007 and 2011, the rate of new diagnoses in Southeast Michigan increased by 1%, with an average of 554 cases per year and an average rate of 12.9.
- 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 and 25 - 29 year olds for the 3rd consecutive trend report
  - Black males, white males, and males overall
  - White persons
  - Persons with no identified risk (NIR)\*
  - Oakland County residents
- DECREASES in rates occurred among:
  - 40-44 year olds (2nd consecutive report)
  - Males of other race/ethnicity
  - Injection drug users (8th consecutive report) and heterosexuals (4th consecutive report)\*
- Race and sex disparities in rates of new HIV diagnoses remain. Comparing the diagnosis rates of black persons and white persons in 2011:
  - **Overall:** The rate for black persons was over 9 times higher
  - **Males:** The rate for black males was nearly 9 times higher
  - **Females:** The rate for black females was almost 14 times higher
- For the first report in five reports, decreases did not occur in concurrent diagnoses. Males of other race were the only group to experience a decrease in the proportion of diagnoses that were concurrent.

\*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](http://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](http://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/](http://www.who.int/topics/hiv_infections/en/)  
HIV/AIDS Global Resources