2012 Profile of HIV in Michigan (Statewide)

HIV Incidence Estimates

Data from enhanced HIV/AIDS Reporting System (eHARS) & Incidence Data

Overview:

HIV incidence data provide estimates of new infections in a particular year compared to prevalence data, which measure everyone living with HIV (whether they were infected recently or years earlier). Michigan's HIV incidence rate was stable overall between 2006 and 2009. The state had an average of 754 new infections per year (range 674 - 924) for an overall HIV incidence rate of 9.0 cases per 100,000 population among those ages 13 and older (range 8.1 – 11.1). This rate is half the national rate for the same time period, which range from 19.0 to 22.5 infections per 100,000 population. Consistent with national rates, Michigan data show that males, blacks, 30 to 39 year olds, and MSM have higher incidence rates and counts than other groups.

Rates were calculated for all cases greater than 12 years of age at infection. Data are reported for subgroups (risk, sex, race, and age) where there are a minimum of 200 reported HIV cases, 40 incidence tests (or 20 percent completeness), and 10 recent incidence results. Some demographic groups must be combined to satisfy the minimum number of reported cases required to release estimates. Risk groups include men who have sex with men (MSM), injection drug users (IDU, including MSM/IDU), and heterosexuals. Since reliable denominator data are not available for risk groups, rates cannot be calculated.

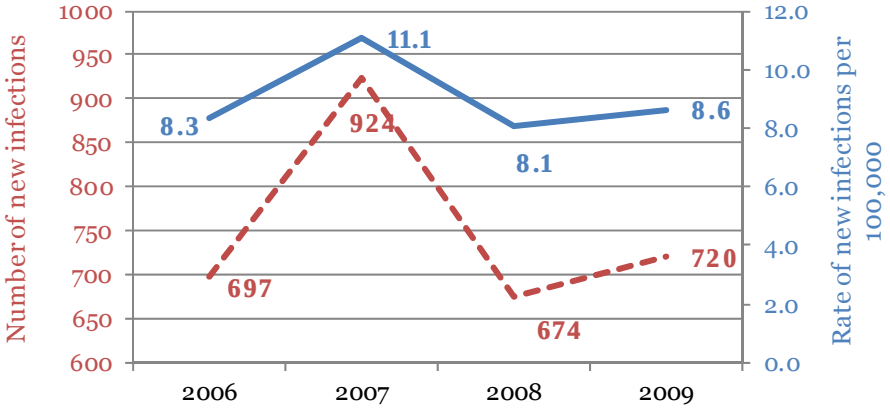
Note: In 2008, Michigan estimated HIV incidence rates for the year 2006, corresponding to a national report for the same time period. Since that time, more data have been collected and the estimation procedure used nationwide has undergone significant refinements. The revised estimate for 2006 should not be compared to the initial estimate for 2006, which was included in the 2010 Epi Profile.

Incidence estimates overall:

Figure 15 shows the number and rates of new infections between 2006 and 2009. Both nationally and in Michigan, a spike in HIV numbers and rates was seen in 2007, returning to more typical levels in 2008. An explanation has not been found for this spike, but it should be emphasized that rates remained stable overall between 2006 and 2009.

Figure 16 shows that numbers of new infections in Michigan did not change significantly over time by showing that the 95 percent confidence intervals (95 percent certainty that the true number falls between the upper and lower values) overlap from year to year. Confidence intervals provide the ranges seen in the graph. They are large due to the estimation process.

Figure 15: Estimated number and rate of new HIV infections in Michigan, 2006-2009



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Risk:

As in the national data, MSM represent the largest number of new infections (figure 17). There were insufficient data on IDU in 2006 to produce reliable estimates for that year. There were no statistically significant changes in the estimated number of new infections per year for any risk group between 2006 and 2009. Although not shown, the 95 percent confidence intervals overlap, indicating that no significant changes occurred from year to year. The gradual increase in the number of IDU cases seen between 2007 and 2009, though not statistically significant, warrants close scrutiny in the future.

Race:

Estimated rates of new infections for black persons in Michigan ranged from 7.9 to 15.0 times higher than the rates among white persons. The disproportionate impact on black persons is seen between 2006 and 2009 and is more variable in Michigan than in national data. Nationally, rates among black persons were 7.1 to 8.4 times the rates among white persons. There were not enough data to report rates for Hispanics or other racial/ethnic groups. There were no statistically significant changes in estimated rates of new infections for any race group between 2006 and 2009 (figure 18).

Figure 16: Estimated number of new HIV infections and 95% confidence intervals in Michigan, 2006-2009

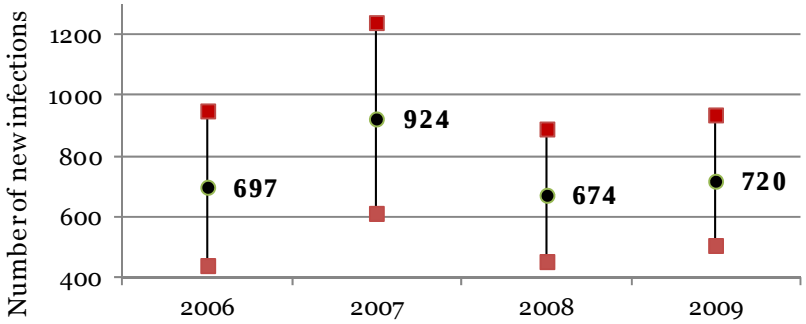


Figure 17: Estimated number of new HIV infections in Michigan, by risk, 2006-2009

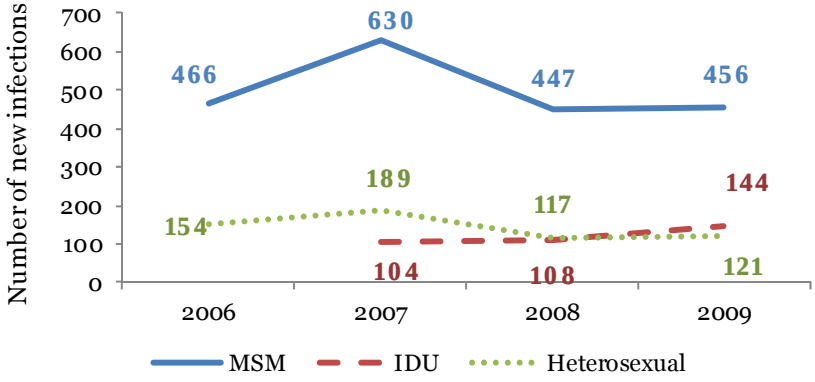
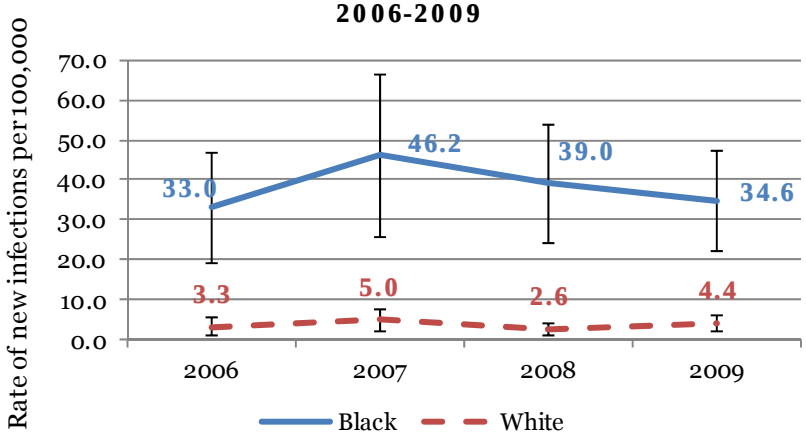


Figure 18: Estimated HIV incidence rate and 95% confidence intervals in Michigan, by race, 2006-2009



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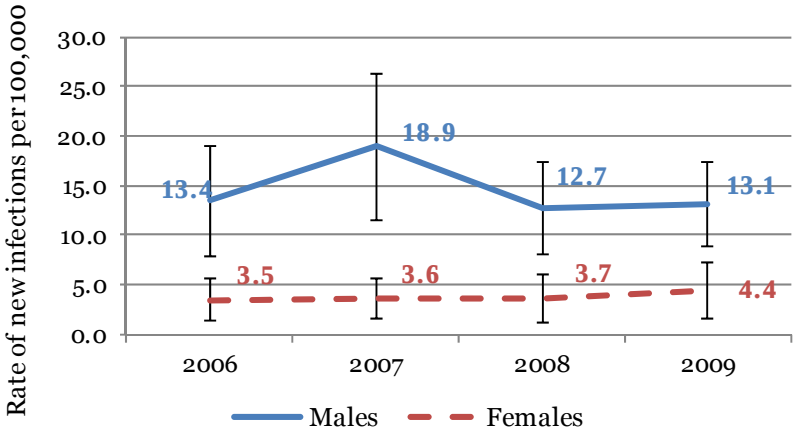
Note how 95 percent confidence intervals shown by brackets for each data point overlap, demonstrating no significant change from year to year.

Sex:

Estimated rates of recent HIV infection for males in Michigan ranged from 3.0 to 5.3 times the rates for females. This is a larger range than differences between the sexes nationally, where rates for males are 3.1 to 3.5 times the rates for females. There were no statistically significant changes in estimated rates of new infections for males or females between 2006 and 2009 (figure 19). Note how 95 percent confidence intervals shown by brackets for each data point overlap, demonstrating no significant change from year to year.

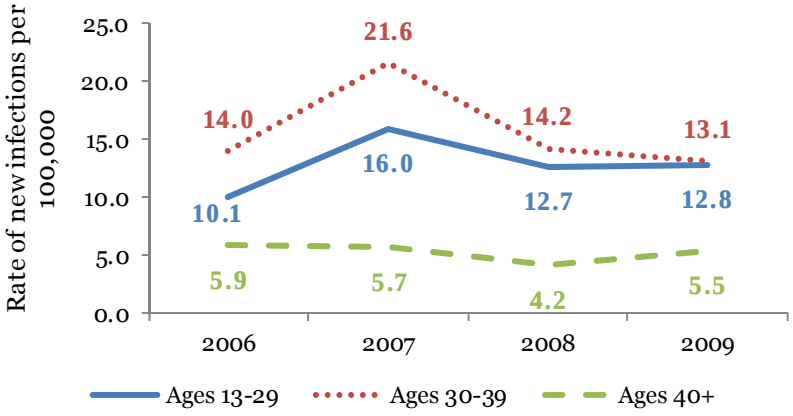
Figure 19: Estimated HIV incidence rate and 95% confidence intervals in Michigan, by sex, 2006-2009



Age at HIV infection:

In Michigan, as at the national level, the highest rates of new infections are among 30-39 year olds. There were no statistically significant changes in estimated rates for any age group between 2006 and 2009 (figure 20). 95 percent confidence intervals are not shown in Figure 20, but as in previous figures they overlap, indicating no significant changes from year to year.

Figure 20: Estimated HIV incidence rate in Michigan, by age at infection, 2006-2009



Summary and conclusions:

HIV incidence estimates are an additional tool to study the trajectory of the epidemic and help inform efforts to interrupt ongoing transmission.

Michigan's HIV incidence rates are lower than those seen nationally and were stable overall for the 2006 to 2009 time period. The most highly impacted groups in Michigan are also the groups most impacted nationally. For more MI incidence data, please see table 14 on page 108. For further analysis on national data or subgroups, please refer to "Estimated HIV Incidence in the United States, 2006-2009" in the online journal PLos One, August 2011, Volume 6, Issue 8, e17502 (www.plosone.org).