This presentation provides updated infant health statistics for prosperity region 5 in the State of Michigan.

This presentation was prepared by the Maternal and Child Health Epidemiology Section, Michigan Department of Health and Human Services (MDHHS).

Data source: Michigan resident live birth files (12/12/2018) and infant mortality files (01/23/2019), Division for Vital Records and Health Statistics, MDHHS

Revised: June 2019
Infant Mortality Rate (IMR), Prosperity Region 5, 2010-2017

The next several slides contain updated infant mortality rate statistics for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the infant mortality rates within prosperity region 5 from 2010 through 2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. The infant mortality rate in prosperity region 5 has fluctuated quite a bit over the last eight years, but appears to be on a downward trend since 2014. In 2017, the infant mortality rate was 6.8 infant deaths per 1,000 live births for the State of Michigan and 5.4 infant deaths per 1,000 live births within prosperity region 5.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the infant mortality rates by city of residence at birth within Michigan in 2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. This slide contains infant mortality rates for selected cities that had more than 5 infant deaths in 2017. In 2017, the infant mortality rate was 16.4 per 1,000 live births in Portage, 14.2 per 1,000 live births in Detroit, 12.2 per 1,000 live births in Flint, and 6.7 per 1,000 live births in Grand Rapids.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by census tract within prosperity region 5 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Light green: no live births;
Grey: no infant deaths;
Yellow: below the mean of rates in Michigan (0.1 - 6.8 deaths per 1,000 live births);
Light blue: between the mean and mean + one standard deviation of rates in Michigan (6.9 – 15.0 deaths per 1,000 live births);
Dark blue: above the mean + one standard deviation of rates in Michigan (15.1 – 142.9 deaths per 1,000 live births).
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by maternal race/ethnicity within prosperity region 5 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. For 2013-2017, there were some differences in infant mortality rates by maternal race and ethnicity within prosperity region 5, from a high of 13.5 deaths per 1,000 live births for Black non-Hispanic women to a low of 5.2 deaths per 1,000 live births for White non-Hispanic women. These statistics are comparable to the overall state rates by race and ethnicity with the exception of Hispanic mothers (10.2 deaths per 1,000 live births in prosperity region 5 compared to 7.2 deaths per 1,000 live births for the State of Michigan overall).
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by maternal age within prosperity region 5 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. For 2013-2017, the infant mortality rate for prosperity region 5 was 11.6 deaths per 1,000 live births among women aged less than 20 years, 6.3 deaths per 1,000 live births among women aged between 20 and 29 years, and 5.8 deaths per 1,000 live births among women aged over 30 years. These statistics are comparable to the overall state rates by maternal age.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by maternal education within prosperity region 5 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. For 2013-2017, the infant mortality rate for prosperity region 5 was 10.9 deaths per 1,000 live births among women who did not finish high school, 8.9 deaths per 1,000 live births among women who just finished high school, and 4.6 deaths per 1,000 live births among women who had more than a high school education. These statistics are comparable to the overall state rates by maternal education.
Infant Mortality Rates by Payment Source, Prosperity Region 5, 2013-2017 (rate per 1,000 live births)

<table>
<thead>
<tr>
<th>Payment Source</th>
<th># Live Births</th>
<th># Infant Death</th>
<th>IMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Insurance</td>
<td>14,510</td>
<td>55</td>
<td>3.8</td>
</tr>
<tr>
<td>Medicaid</td>
<td>14,522</td>
<td>133</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Average Infant Mortality Rate by Payment Source, Prosperity Region 5, 2013-2017

Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average infant mortality rates by payment source within prosperity region 5 for 2013-2017. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the infant mortality rate for prosperity region 5 was higher among women using Medicaid as the payment source (9.2 deaths per 1,000 live births) than women using private insurance (3.8 deaths per 1,000 live births). This comparison looks very similar when looking at the overall state rates by payment source.
Low Birthweight (LBW),
Prosperity Region 5, 2010-2017

The next several slides contain updated low birthweight statistics for prosperity region 5 in the State of Michigan.
Low Birthweight, Prosperity Region 5, 2000-2017

![Percent Low Birthweight (Birthweight <2,500 Grams), Prosperity Region 5, 2010-2017]

<table>
<thead>
<tr>
<th>Year</th>
<th># Live Births</th>
<th># LBW</th>
<th>LBW %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>6,117</td>
<td>483</td>
<td>7.9</td>
</tr>
<tr>
<td>2011</td>
<td>6,139</td>
<td>512</td>
<td>8.3</td>
</tr>
<tr>
<td>2012</td>
<td>5,915</td>
<td>457</td>
<td>7.7</td>
</tr>
<tr>
<td>2013</td>
<td>5,883</td>
<td>451</td>
<td>7.7</td>
</tr>
<tr>
<td>2014</td>
<td>6,050</td>
<td>526</td>
<td>8.7</td>
</tr>
<tr>
<td>2015</td>
<td>5,952</td>
<td>489</td>
<td>8.2</td>
</tr>
<tr>
<td>2016</td>
<td>5,829</td>
<td>472</td>
<td>8.1</td>
</tr>
<tr>
<td>2017</td>
<td>5,885</td>
<td>488</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of low birthweight within prosperity region 5 from 2010 through 2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. The incidence of low birthweight in prosperity region 5 has remained relatively stable over the last eight years. In 2017, the incidence of low birthweight was 8.8% for the State of Michigan and 8.3% for prosperity region 5.
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by census tract within prosperity region 5 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100.

Light green: no live births;
Grey: no low birthweight births;
Yellow: below the mean of rates in Michigan (0.1% - 8.5%);
Light blue: between the mean and mean + one standard deviation of rates in Michigan (8.6% - 12.5%);
Dark blue: above the mean + one standard deviation of rates in Michigan (12.5% - 50.0%).
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by maternal race/ethnicity within prosperity region 5 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. For 2013-2017, there were some differences in the incidence of low birthweight by maternal race and ethnicity within prosperity region 5, from a high of 15.3% for American Indian women to a low of 7.1% for White non-Hispanic women. When looking at the State of Michigan as a whole, Asian/Pacific Islander women report the lowest incidence of low birthweight at 4.2% and Black non-Hispanic women report the highest incidence at 13.0%.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by maternal age within prosperity region 5 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of low birthweight for prosperity region 5 was 9.8% among women aged less than 20 years, 8.0% among women aged between 20 and 29 years, and 8.3% among women aged over 30 years. These statistics are comparable to the overall state rates by maternal age.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by maternal education within prosperity region 5 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of low birthweight for prosperity region 5 was 11.4% among women who did not finish high school, 8.9% among women who just finished high school, and 7.1% among women who had more than a high school education. These statistics are comparable to the overall state rates by maternal education.
Low Birthweight by Payment Source, Prosperity Region 5, 2013-2017

Average Percent Low Birthweight (Birthweight <2,500 Grams) by Payment Source, Prosperity Region 5, 2013-2017

<table>
<thead>
<tr>
<th>Payment Source</th>
<th># Live Births</th>
<th># LBW</th>
<th>LBW %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Insurance</td>
<td>14,510</td>
<td>914</td>
<td>6.3</td>
</tr>
<tr>
<td>Medicaid</td>
<td>14,522</td>
<td>1,471</td>
<td>10.1</td>
</tr>
</tbody>
</table>

2013-2017 Michigan Percentages
Private Insurance = 7.2
Medicaid = 10.1

Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of low birthweight by payment source within prosperity region 5 for 2013-2017. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of low birthweight for prosperity region 5 was higher among women using Medicaid as the payment source (10.1%) than women using private insurance (6.3%). This comparison looks very similar when looking at the overall state rates by payment source.
The next several slides contain updated very low birthweight statistics for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of very low birthweight within prosperity region 5 from 2010 through 2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. The incidence of very low birthweight in prosperity region 5 has remained relatively stable over the last eight years. In 2017, the incidence of very low birthweight was 1.5% for the State of Michigan and 1.2% for prosperity region 5.
Very Low Birthweight by Maternal Race/Ethnicity, Prosperity Region 5, 2013-2017

Average Percent Very Low Birthweight (Birthweight <1,500 Grams) by Maternal Race/Ethnicity, Prosperity Region 5, 2013-2017

<table>
<thead>
<tr>
<th>Maternal Race/Ethnicity</th>
<th># Live Births</th>
<th># VLBW</th>
<th>VLBW %</th>
</tr>
</thead>
<tbody>
<tr>
<td>White non-Hispanic</td>
<td>22,529</td>
<td>247</td>
<td>1.1</td>
</tr>
<tr>
<td>Black non-Hispanic</td>
<td>3,254</td>
<td>83</td>
<td>2.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2,159</td>
<td>24</td>
<td>1.1</td>
</tr>
<tr>
<td>American Indian</td>
<td>202</td>
<td>6</td>
<td>3.0</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>461</td>
<td>7</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by maternal race/ethnicity within prosperity region 5 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. For 2013-2017, there were some differences in the incidence of very low birthweight by maternal race and ethnicity within prosperity region 5, from a high of 3.0% for American Indian women to a low of 1.1% for White non-Hispanic women. When looking at the State of Michigan as a whole, American Indian women report the lowest incidence of very low birthweight at 1.0% and Black non-Hispanic women report the highest incidence at 3.2%.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by maternal age within prosperity region 5 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of very low birthweight for prosperity region 5 was 1.6% among women aged less than 20 years, 1.1% among women aged between 20 and 29 years, and 1.5% among women aged over 30 years. These statistics are comparable to the overall state rates by maternal age.
Average Percent Very Low Birthweight (Birthweight <1,500 Grams) by Maternal Education, Prosperity Region 5, 2013-2017

<table>
<thead>
<tr>
<th>Maternal Education</th>
<th># Live Births</th>
<th># VLBW</th>
<th>VLBW %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School</td>
<td>3,867</td>
<td>69</td>
<td>1.8</td>
</tr>
<tr>
<td>High School</td>
<td>7,643</td>
<td>113</td>
<td>1.5</td>
</tr>
<tr>
<td>&gt; High School</td>
<td>18,029</td>
<td>201</td>
<td>1.1</td>
</tr>
</tbody>
</table>

2013-2017 Michigan Percentages
- < HS = 1.9
- HS = 1.8
- > HS = 1.3

Very low birthweight rate is defined as number of births with baby birthweight <1,500 grams per 100 live births.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by maternal education within prosperity region 5 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. For 2013-2017, the incidence of very low birthweight for prosperity region 5 was 1.8% among women who did not finish high school, 1.5% among women who just finished high school, and 1.1% among women who had more than a high school education. These statistics are comparable to the overall state rates by maternal education.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of very low birthweight by payment source within prosperity region 5 for 2013-2017. Very low birthweight is defined as a birthweight of a baby less than 1,500 grams. The incidence of very low birthweight is calculated as the number of very low birthweight divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of very low birthweight for prosperity region 5 was higher among women using Medicaid as the payment source (1.7%) than women using private insurance (1.0%). This comparison looks very similar when looking at the overall state rates by payment source.
Preterm Birth (PTB),
Prosperity Region 5, 2010-2017

The next several slides contain updated preterm birth statistics for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of preterm birth within prosperity region 5 from 2010 through 2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. The incidence of preterm birth in prosperity region 5 has remained relatively stable over the last eight years. In 2017, the incidence of preterm birth was 10.2% for the State of Michigan and 8.4% for prosperity region 5.
Preterm Birth by Census Tract, Prosperity Region 5, 2013-2017

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by census tract within prosperity region 5 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100.

Light green: no live births;
Grey: no preterm births;
Yellow: below the mean of rates in Michigan (0.1% - 9.9%);
Light blue: between the mean and mean + one standard deviation of rates in Michigan (10.0% - 13.7%);
Dark blue: above the mean + one standard deviation of rates in Michigan (13.8% - 42.9%).
Preterm Birth by Maternal Race/Ethnicity, Prosperity Region 5, 2013-2017

<table>
<thead>
<tr>
<th>Maternal Race/Ethnicity</th>
<th># Live Births</th>
<th># PTB</th>
<th>PTB %</th>
</tr>
</thead>
<tbody>
<tr>
<td>White non-Hispanic</td>
<td>22,529</td>
<td>1,790</td>
<td>7.9</td>
</tr>
<tr>
<td>Black non-Hispanic</td>
<td>3,254</td>
<td>352</td>
<td>10.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2,159</td>
<td>178</td>
<td>8.2</td>
</tr>
<tr>
<td>American Indian</td>
<td>202</td>
<td>26</td>
<td>12.9</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>461</td>
<td>36</td>
<td>7.8</td>
</tr>
</tbody>
</table>

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by maternal race/ethnicity within prosperity region 5 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. For 2013-2017, there were some differences in the incidence of preterm birth by maternal race and ethnicity within prosperity region 5, from a high of 12.9% for American Indian women to a low of 7.8% for Asian/Pacific Islander women. When looking at the State of Michigan as a whole, Asian/Pacific Islander women report the lowest incidence of preterm birth at 8.6% and Black non-Hispanic women report the highest incidence at 14.2%.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by maternal age within prosperity region 5 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. For 2013-2017, the incidence of preterm birth for prosperity region 5 was 8.8% among women aged less than 20 years, 7.9% among women aged between 20 and 29 years, and 9.2% among women aged over 30 years. These statistics were slightly lower than the comparable overall state rates by maternal age.

Average Percent Preterm Birth (Estimated Gestational Age <37 Weeks) by Maternal Education, Prosperity Region 5, 2013-2017

<table>
<thead>
<tr>
<th>Maternal Education</th>
<th># Live Births</th>
<th># PTB</th>
<th>PTB %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; High School</td>
<td>3,867</td>
<td>359</td>
<td>9.3</td>
</tr>
<tr>
<td>High School</td>
<td>7,643</td>
<td>691</td>
<td>9.0</td>
</tr>
<tr>
<td>&gt; High School</td>
<td>18,029</td>
<td>1,422</td>
<td>7.9</td>
</tr>
</tbody>
</table>

2013-2017 Michigan Percentages
- < HS = 11.3
- HS = 10.9
- > HS = 9.2

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by maternal education within prosperity region 5 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. For 2013-2017, the incidence of preterm birth for prosperity region 5 was 9.3% among women who did not finish high school, 9.0% among women who just finished high school, and 7.9% among women who had more than a high school education. These statistics were slightly lower than the comparable overall state rates by maternal education.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of preterm birth by payment source within prosperity region 5 for 2013-2017. Preterm birth is defined as a birth of a baby less than 37 completed weeks of gestation. Gestational age is based on the obstetric estimate of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births multiplied by 100. Payment source refers to source of expected payment that pregnant women use at delivery. For 2013-2017, the incidence of preterm birth for prosperity region 5 was higher among women using Medicaid as the payment source (9.4%) than women using private insurance (7.4%). The difference between the Medicaid and private insurance preterm birth percentages is a bit larger in prosperity region 5 when compared to the State of Michigan as a whole.
The next two slides contain updated birth defects prevalence statistics for the State of Michigan as a whole and by Michigan prosperity region.

- Throughout birth years 2006-2016, the birth defect prevalence rate for Michigan remained fairly steady at an average rate of 1,189.3 cases per 10,000 live births.
- In 2016, the race-specific birth defect prevalence rate for cases born to black mothers (1,485.9 cases per 10,000 live births) exceeded that of cases born to white mothers (925.6 cases per 10,000 live births) and cases born to mothers of "other" races (1,372.5 cases per 10,000 live births).
- In 2016, the ethnicity-specific birth defect prevalence rate for cases born to a mother reporting Arabic ethnicity (1,330.1 cases per 10,000 live births) was greater than that of cases born to a mother reporting Hispanic ethnicity (1,016.9 cases per 10,000 live births).

This slide uses data from the Michigan Birth Defects Registry and details the Michigan birth defects prevalence by maternal race and ethnicity for 2016.

The average overall birth defects prevalence for the State of Michigan during 2006-2016 was 1,189.3 cases per 10,000 live births.

In 2016, the birth defects prevalence among black mothers (at 1,485.9 cases per 10,000 live births) and mothers of other races (at 1,372.5 cases per 10,000 live births) was higher than that of white mothers (at 925.6 cases per 10,000 live births).

Furthermore, the birth defects prevalence among Hispanic (at 1,016.9 cases per 10,000 live births) and Arabic mothers (at 1,330.1 cases per 10,000 live births) was greater than that of white mothers (at 925.6 cases per 10,000 live births) in 2016.

Disclaimer: Data are based on passive reporting which means it is the responsibility of facilities to identify and report cases of birth defects. Not all facilities report cases as completely and timely as would be the ideal. Children diagnosed and treated in facilities in other states may be missed which will significantly affect the completeness of data for Michigan’s borderer counties.
Birth Defect Prevalence Rates by Prosperity Region: MBDR, 2016

- The State of Michigan is broken up into 10 prosperity regions based on shared geographic, demographic, and economic interests.
- In 2016, Michigan prosperity regions 6 and 10 reported the highest birth defect prevalence rates of 1,248.1 and 1,411.7 cases per 10,000 live births.
- The prosperity region that reported the lowest birth defect prevalence was region 1 with a prevalence rate of 405.6 cases per 10,000 live births.

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Cases</th>
<th>Prevalence Rate (per 10,000 live births)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>113</td>
<td>405.6</td>
</tr>
<tr>
<td>2</td>
<td>224</td>
<td>753.4</td>
</tr>
<tr>
<td>3</td>
<td>103</td>
<td>600.6</td>
</tr>
<tr>
<td>4</td>
<td>1,339</td>
<td>679.4</td>
</tr>
<tr>
<td>5</td>
<td>321</td>
<td>550.7</td>
</tr>
<tr>
<td>6</td>
<td>1,150</td>
<td>1,248.1</td>
</tr>
<tr>
<td>7</td>
<td>414</td>
<td>772.8</td>
</tr>
<tr>
<td>8</td>
<td>620</td>
<td>679.0</td>
</tr>
<tr>
<td>9</td>
<td>1,258</td>
<td>1,201.4</td>
</tr>
<tr>
<td>10</td>
<td>6,520</td>
<td>1,411.7</td>
</tr>
<tr>
<td>Total</td>
<td>12,062</td>
<td>1,063.9</td>
</tr>
</tbody>
</table>

*All statewide data reported from the Michigan Birth Defects Registry (MBDR) for birth year 2016
**Total reported birth defect cases for all diagnostic groupings per 10,000 live births
***Prevalence rates are based on births to mothers living in Michigan at the time of delivery.
****Regions approximate prosperity region boundaries

This slide uses data from the Michigan Birth Defects Registry and details birth defects prevalence by prosperity region for 2016.

In 2016, regions 10, 6, and 9 reported the highest birth defects prevalence (at 1,411.7, 1,248.1, and 1,201.4 cases per 10,000 live births, respectively), while regions 1, 5, and 3 reported the lowest birth defects prevalence (at 405.6, 550.7, and 600.6 cases per 10,000 live births, respectively).

Disclaimer: Data are based on passive reporting which means it is the responsibility of facilities to identify and report cases of birth defects. Not all facilities report cases as completely and timely as would be the ideal. Children diagnosed and treated in facilities in other states may be missed which will significantly affect the completeness of data for Michigan’s boarder counties.
The next couple slides contain updated treated neonatal abstinence syndrome statistics for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics and Michigan Inpatient Database, this slide shows the incidence of treated neonatal abstinence syndrome (NAS) within prosperity region 5 from 2010 through 2016. Infants with treated NAS were identified by any diagnosis of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code of 779.5 (drug withdrawal syndrome in newborn) through September 2015 or Tenth Revision (ICD-10-CM) diagnosis code of P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction) starting in October 2015. The incidence of treated neonatal abstinence syndrome has showed an increasing trend over the last eight years. In 2016, the incidence of neonatal abstinence syndrome in prosperity region 5 was 1,149.4 per 100,000 live births.

Data source: Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Bureau of Epidemiology and Population Health, Michigan Department of Health and Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health and Hospital Association Service Corporation (MHASC).
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of treated neonatal abstinence syndrome (NAS) by maternal race/ethnicity within prosperity region 5 for 2012-2016. Infants with treated NAS were identified by any diagnosis of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code of 779.5 (drug withdrawal syndrome in newborn) through September 2015 or Tenth Revision (ICD-10-CM) diagnosis code of P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction) starting in October 2015. In 2012-2016, there were some differences in the incidence of treated neonatal abstinence syndrome by maternal race and ethnicity, from a high of 2,830.2 per 100,000 live births for American Indian women to a low of 670.9 for Black non-Hispanic women.

Data source: Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Bureau of Epidemiology and Population Health, Michigan Department of Health and Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health and Hospital Association Service Corporation (MHASC).
Sleep-Related Infant Death Rate
Michigan, 2010-2016
Prosperity Region 5, 2010-2015

The next couple slides contain sleep-related infant death statistics for prosperity region 5 in the State of Michigan.
Overview of Sleep-Related Infant Deaths in Michigan

- Between 2010 and 2016 there were 1,013 sleep-related infant deaths in Michigan.
- The three year moving average for sleep-related infant death rates has been increasing since 2010-2012 (Figure 1).
- White infants experience lower sleep-related infant death rates as compared to Black infants and American Indian/Alaska native infants (Figure 2).
- Hispanic and non-Hispanic infants experience similar rates of sleep-related infant deaths (Figure 2).

Using data from the Michigan Public Health Institute (MPHI), Sudden Unexpected Infant Death (SUID) case registry this slide shows the three-year moving average and sleep-related infant death rate by race/ethnic demographic breakdown. A death is included in the MPHI SUID registry if it occurs in Michigan resident infants less than 1 year of age suddenly and unexpectedly. Sleep-related infant deaths include sudden infant death syndrome (SIDS), undetermined/sudden unexplained infant death (SUID), suffocation/positional asphyxia and other causes where the sleep-environment likely contributed to the death.

The three-year moving average increased from 12.2 per 10,000 live births in 2010 to 2012 to 13.3 per 10,000 live births in 2014 to 2016.

Data from 2010 to 2016 show Black infants experience the highest rate of Sudden Unexpected Infant Death (27.6 per 10,000 live births) followed by American Indian and Alaska Native Infants (18.8 per 10,000 live births). White infants experience the lowest rate of Sudden Unexpected Infant Deaths at 9.5 per 10,000 live births.
• Between 2010 and 2015 there were 60 sleep-related infant deaths in Region Five.
• The resulting sleep-related infant death rate in Region Five was 16.7 per 10,000 live births.
• During this same time period, the Region Five sleep-related infant death rate was higher than the Michigan sleep-related death rate (12.8 per 10,000 live births).

Using data from the Michigan Public Health Institute, Sudden Unexpected Infant Death (SUID) case registry, this slide shows the sleep-related infant death rate in prosperity region five as compared to other prosperity regions in the state. Between 2010 and 2015, prosperity region five experienced a higher SUID rate as compared to Michigan overall, with a rate of 16.7 per 10,000 live births as compared to 12.8 per 10,000 live births for Michigan.
The next slide contains maternal morbidity data for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, Michigan Resident Inpatient files, this slide shows severe maternal morbidity in prosperity region five per 10,000 delivery hospitalizations, broken down by race and ethnicity. Severe maternal morbidity includes unexpected outcomes of labor and delivery that result in significant short or long-term health consequences. When looking at prosperity region five severe maternal morbidity by race, Black mothers experience the highest rate at 278.2 per 10,000 delivery hospitalizations, this compares to a rate of 142.2 per 10,000 delivery hospitalizations for region five overall.

Data source: Michigan Resident Inpatient Files created by the Division for Vital Records and Health Statistics, Bureau of Epidemiology and Population Health, Michigan Department of Health and Human Services, using data from the Michigan Inpatient Database obtained with permission from the Michigan Health and Hospital Association Service Corporation (MHASC).
The next slide contains maternal mortality data for prosperity region 5 in the State of Michigan.
Maternal Mortality Rate, Prosperity Region 5, 2011-2015
(rate per 100,000 live births)

- Maternal deaths include deaths that occur during pregnancy, at delivery or within one year of pregnancy.
- Total maternal mortality includes both pregnancy associated mortality (unrelated to the pregnancy) and pregnancy-related mortality (related to or aggravated by the pregnancy).
- In Region Five there were 17 maternal deaths between 2011 and 2015
- The resulting maternal mortality rate equals 56.8 per 100,000 live births

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics and the Michigan Department of Health and Human Services, Michigan Maternal Mortality Surveillance Program, this slide shows the maternal mortality rate in prosperity region five as compared to the rest of the prosperity regions in Michigan. Maternal mortality is classified as a death that occurs during pregnancy or within one year of pregnancy. Prosperity region five experiences a lower maternal mortality rate than Michigan overall at 56.8 per 100,000 live births as compared to 59.7 per 100,000 live births.
Maternal Depression
Michigan & Prosperity Region 5, 2012-2015

The next few slides contain maternal depression data for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS), the following slides show the prevalence of depression before and after pregnancy by maternal race/ethnicity. Numbers are reported as the proportion of mothers of live births reporting a certain condition. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

For the state as a whole: 8.9% of mothers report depression before pregnancy but no postpartum depression; 3.8% reported depression before pregnancy and postpartum depression; and 9.5% reported postpartum depression but no depression before pregnancy. The top two numbers in each bar added together are the proportion of women reporting postpartum depression. For the state as a whole, 9.5% + 3.8%=13.3% of women report depression after pregnancy.

Notably - most women who report postpartum depression did not report depression before pregnancy. Most women who reported depression before pregnancy did not go on to report postpartum depression.

A small proportion of mothers reported depression both before and after pregnancy. There is variation by maternal race/ethnicity. Depression before pregnancy is relatively more common among NHW mothers than NHB mothers. Depression after pregnancy is relatively more common among mothers of NHB and Other race/ethnicity compared to NHW mothers.
Depression by time [before pregnancy only, after pregnancy only, both] is available for sub-state prosperity regions.

Postpartum depression (top two numbers per column) is relatively less common among mothers in prosperity region 9 and is more common among mothers in prosperity region 10. This difference in prosperity region 10 is being driven by significantly more postpartum depression in Wayne County (data not shown).

Due to small numbers in each region, few differences are statistically significant. The most important thing to take from this slide is that no region of the state is without maternal depression before and after pregnancy.
Looking at women reporting depression either before pregnancy and/or after pregnancy:

Between one quarter and one fifth of all Michigan mothers are affected by depression (22.2%).

By maternal race/ethnicity:
About one fifth of NHW mothers (20.8%) are affected by depression around the time of pregnancy.
About one quarter of NHB (25.6%) or other race/ethnicity (25.6%) mothers are affected by depression.

The most important thing to take from this slide is that a considerable proportion of mothers of all race/ethnicities are affected by depression either before pregnancy, after pregnancy, or at both times.
Looking at women reporting depression either before pregnancy and/or after pregnancy:

Between one quarter and one fifth of all Michigan mothers are affected by depression (22.2%).

Depression may be relatively more common among mothers of prosperity region 2, but the difference may be attributable to chance (p=0.0504). Depression was relatively less common among mothers of prosperity region 9 (p=0.0383) and prosperity region 10 (p=0.0051). The difference for prosperity region 10 is being driven by less overall depression among mothers of Oakland County (data not shown).

The most important thing to take from this slide is that a considerable proportion of mothers in all prosperity regions are affected by depression either before pregnancy, after pregnancy, or at both times.
Breastfeeding Initiation and Duration, Prosperity Region 5, 2012-2015

The next couple slides contain breastfeeding initiation and duration data for prosperity region 5 in the State of Michigan.
Breastfeeding data calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting a certain condition. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

Mothers of prosperity region 5 initiate breastfeeding at levels similar to mothers from the remainder of Michigan. However fewer prosperity region 5 mothers reported breastfeeding at 4, 8, and 12 weeks postpartum.

** MI PRAMS has data available on the reasons that women chose not to initiate breastfeeding, and reasons that women stopped breastfeeding **
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average percentage of mothers who didn’t plan to breastfeed by census tract within prosperity region 5 for 2013-2017. This indicator is calculated as the percentage of mothers who did not plan to breastfeed their babies at delivery among all live births.

- Light green: no live births;
- Grey: 0.0% of mothers who didn’t plan to breastfeed;
- Yellow: below the mean of rates in Michigan (0.1% - 18.5%);
- Light blue: between the mean and mean + one standard deviation of rates in Michigan (18.6% - 30.2%);
- Dark blue: above the mean + one standard deviation of rates in Michigan (30.3% - 100.0%).
The next slides contain updated smoking during pregnancy statistics for prosperity region 5 in the State of Michigan.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the incidence of smoking during pregnancy by maternal race/ethnicity within prosperity region 5 in 2017. The incidence of smoking during pregnancy is calculated as the number of women who smoked during pregnancy divided by the number of live births multiplied by 100. In 2017, the incidence of smoking during pregnancy among American Indian women (42.3% for the State of Michigan, and 46.9% within prosperity region 5) was higher than other racial groups.
Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the average incidence of smoking during pregnancy by census tract within prosperity region 5 for 2013-2017. The incidence of smoking during pregnancy is calculated as the number of women who smoked during pregnancy divided by the number of live births multiplied by 100.

Light green: no live births;
Grey: no smoking during pregnancy;
Yellow: below the mean of rates in Michigan (0.1% - 19.7%);
Light blue: between the mean and mean + one standard deviation of rates in Michigan (19.8% - 32.0%);
Dark blue: above the mean + one standard deviation of rates in Michigan (32.1% - 100.0%).
Smoking data calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting any cigarette smoking or whether smoking was allowed in their home during pregnancy. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

Smoking around pregnancy is a concern everywhere in the state, but this may be especially important for the mothers of prosperity region 5. For each smoking measure captured by MI PRAMS, significantly more of the mothers of prosperity region 5 reported smoking compared to the rest of the state.
The next slide contains maternal alcohol consumption statistics for prosperity region 5 in the State of Michigan.
Alcohol use data calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting any alcohol consumption at a given time around pregnancy. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

Compared to mothers in the rest of the state, alcohol consumption before pregnancy and during pregnancy did not differ significantly for the mothers of prosperity region 5. However, it is notable that 4.1% of mothers reported any alcohol consumption during the last 3 months of pregnancy.
Barriers to Prenatal Care, Michigan, 2016-2017

The next couple slides contain barriers to prenatal care statistics for the State of Michigan.
Barriers to PNC are from the 2016 and 2017 MI PRAMS survey. Responses are weighted to represent mothers of live births for those years.

About half (52.9%) of women who start prenatal care after the first trimester tell MI PRAMS that they were okay with the timing of when they started prenatal care. This may be one of the biggest obstacle to encouraging more women to start prenatal care early during pregnancy.

Among women who started PNC after the first trimester and wished that they had started sooner, we see that mom not knowing she was pregnant was the most common barrier to early PNC, followed by others on this graph.
Barriers to PNC are from the 2016 and 2017 MI PRAMS survey. Responses are weighted to represent mothers of live births for those years.

The graph on the left shows a few specific barriers to early PNC that were significantly more prevalent among NHB mothers than NHW mothers. Mother not knowing she was pregnant, having too many things going on, lack of transportation, and wanting to keep her pregnancy secret were more common for NHB mothers.

The graph on the right shows the total number of barriers cited by women who wished they had started PNC sooner. Most women (49.6%) have just one barrier that needed to be addressed to help them start PNC sooner. About a quarter have two barriers (23.1%) that would have helped them start PNC sooner.
The next slide contains pregnancy intention statistics for prosperity region 5 in the State of Michigan.
Pregnancy intention is calculated from the Michigan Department of Health and Human Services Pregnancy Risk Assessment Monitoring System (MI PRAMS). Numbers are reported as the proportion of mothers of live births reporting that they wanted to get pregnant at the time they conceived, or they had been wanting to get pregnant for some time before they conceived. Birth years 2012-2015 are combined to provide more precision for subgroup estimates.

At the regional level, there is no significant difference between prosperity region 5 and the rest of the state in the proportion of intended pregnancies. Within prosperity region 5 as in the rest of the state, intended pregnancy was more common for NHW mothers than NHB mothers. Intended pregnancy may be more common among NHB mothers of PR5 compared to NHB mothers in the rest of the state, but the difference may be attributable to chance (p=0.0849).
Newborn Screening Timeliness, Prosperity Region 5, 2018

The next two slides contain newborn screening timeliness data for prosperity region 5 in the State of Michigan.
The Michigan Newborn Screening (NBS) program screens approximately 99.4% of births in Michigan each year for over 55 conditions.

The blood spot is collected around 24 hours after birth.

All screens are sent via a courier service or UPS (for UP hospitals) to the state lab in Lansing.

Timely receipt of the specimens is imperative so that infants identified with conditions on the NBS panel receive immediate follow up.

Data presented includes infants born at a Michigan hospital whose NBS record was linked to a Michigan live birth file.

<table>
<thead>
<tr>
<th>Race</th>
<th>N</th>
<th>Received within 72 hours of collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>4694</td>
<td>4597</td>
</tr>
<tr>
<td>Black</td>
<td>666</td>
<td>649</td>
</tr>
<tr>
<td>American Indian</td>
<td>41</td>
<td>40</td>
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<tr>
<td>Asian/Pacific Island</td>
<td>44</td>
<td>44</td>
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<tr>
<td>Arab descent</td>
<td>55</td>
<td>54</td>
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<tr>
<td>Multi-racial</td>
<td>291</td>
<td>289</td>
</tr>
<tr>
<td>Missing</td>
<td>252</td>
<td>241</td>
</tr>
</tbody>
</table>

Using data from the NBS database, this slide shows the percent of specimens received by the State lab less than 72 hours after collection in prosperity region 5, by race. Timely receipt of the blood spots ensures that infants who screen positive receive early diagnosis and treatment. The percent of specimens received less than 72 hours after collection ranged from 97.6% to 100.0%.
NBS Timelessness by Race, Prosperity Region 5, 2018

- The appropriate day metric is used to hold birth hospitals accountable for getting their NBS specimens to the State lab as quickly as possible.
- Since specimens need time to dry before transport, specimens collected at least 5 hours before their hospital specific courier pick up time should arrive at the lab the following day. Specimens collected less than 5 hours before their hospital specific courier pick up time should arrive at the lab two days after collection.

Percent of specimens received on the appropriate day

<table>
<thead>
<tr>
<th>Race</th>
<th>N</th>
<th>Received on the appropriate day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>White</td>
<td>4694</td>
<td>4131 88.0</td>
</tr>
<tr>
<td>Black</td>
<td>666</td>
<td>532 79.9</td>
</tr>
<tr>
<td>American Indian</td>
<td>44</td>
<td>38 92.7</td>
</tr>
<tr>
<td>Asian/Pacific Island</td>
<td>44</td>
<td>38 86.4</td>
</tr>
<tr>
<td>Arab descent</td>
<td>55</td>
<td>47 85.5</td>
</tr>
<tr>
<td>Multi-racial</td>
<td>291</td>
<td>272 93.5</td>
</tr>
<tr>
<td>Missing</td>
<td>252</td>
<td>200 79.4</td>
</tr>
</tbody>
</table>

Using data from the NBS database, this slide shows the percent of specimens received on the appropriate day in prosperity region 5, by race. The appropriate day is calculated by using the hospital specific courier pick up time. The appropriate day metric is used to hold birth hospitals accountable for getting their NBS specimens to the State lab as quickly as possible. Timely receipt of the blood spots ensures that infants who screen positive receive early diagnosis and treatment. The percent of specimens received on the appropriate day ranged from 79.9%-93.5%.