

Stillbirth Rate and Perinatal Mortality Rate, Michigan, 2010-2017

Prepared by Maternal Child Health (MCH) Epidemiology Section,
Michigan Department of Health and Human Services (MDHHS)
Data source: Michigan Resident Live Birth Files (12/12/2018), Infant Mortality Files (1/23/2019),
and Fetal Death Files (07/29/2019), Division for Vital Records and Health Statistics, MDHHS
October 2019



11/22/2019

1

This presentation provides updated stillbirth and perinatal mortality statistics for 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), Infant Mortality Files (1/23/2019), and Fetal Death Files (07/29/2019), Division for Vital Records and Health Statistics, MDHHS

Revised: October 2019

Stillbirth Rate, Michigan, 2010-2017

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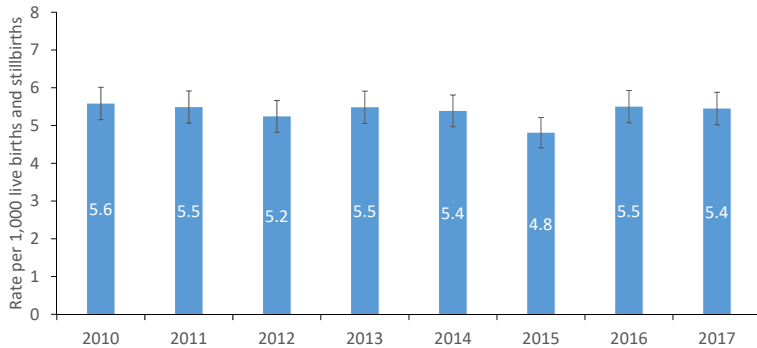
2

The next several slides contain updated stillbirth statistics for the State of Michigan.

Stillbirth Rate: Michigan 2010-2017

(rate per 1,000 live births + stillbirths)

Stillbirth Rate, Michigan, 2010-2017



Year	# Live Births	# Stillbirth	# Live Births + Stillbirths	SBR
2010	114,717	644	115,361	5.6
2011	114,159	630	114,789	5.5
2012	112,708	594	113,302	5.2
2013	113,732	627	114,359	5.5
2014	114,460	620	115,080	5.4
2015	113,211	547	113,758	4.8
2016	113,374	627	114,001	5.5
2017	111,507	611	112,118	5.4

SBR= Stillbirth rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

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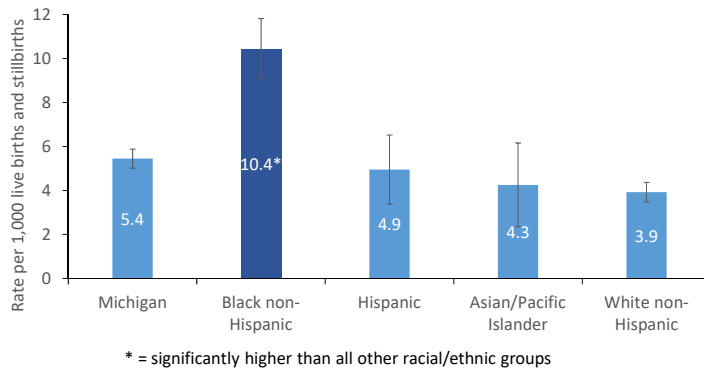
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

3

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the stillbirth rates within Michigan from 2010 to 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. The stillbirth rate has fluctuated a bit over the last eight years, but there were no statistically significant changes. In 2017, the stillbirth rate was 5.4 per 1,000 live births and stillbirths.

Stillbirth Rate by Maternal Race/Ethnicity, Michigan, 2017 (rate per 1,000 live births + stillbirths)

Stillbirth Rate by Maternal Race/Ethnicity, Michigan, 2017



Race/Ethnicity	# Live Births	# Stillbirth	# Live Births + Stillbirths	SBR
Michigan	111,507	611	112,118	5.4
Black non-Hispanic	20,657	218	20,875	10.4
Hispanic	7,639	38	7,677	4.9
Asian/Pacific Islander	4,448	19	4,467	4.3
White non-Hispanic	75,137	296	75,433	3.9

SBR= Stillbirth rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

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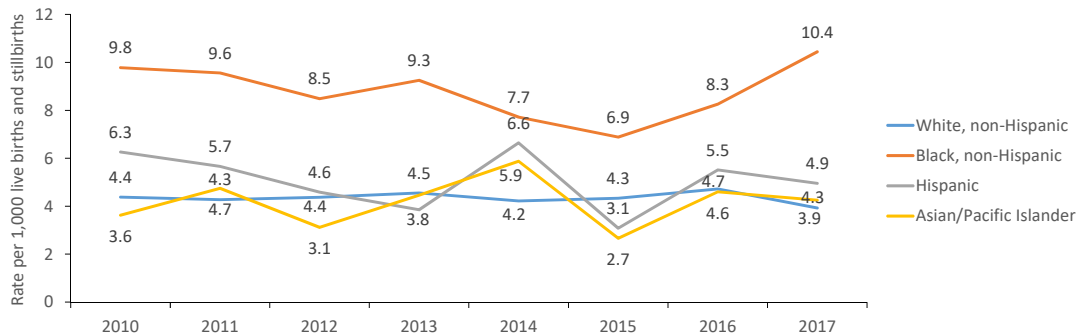
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

4

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the stillbirth rates by maternal race/ethnicity within Michigan in 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. In 2017, there was over a two-fold difference in stillbirth rates by maternal race and ethnicity, from a high of 10.4 per 1,000 live births and stillbirths for Black non-Hispanic women to a low of 3.9 per 1,000 live births and stillbirths for White non-Hispanic women. The stillbirth rate among Black non-Hispanic women was significantly higher than the rate among other racial/ethnic groups.

Stillbirth Rate by Maternal Race/Ethnicity, Michigan, 2010-2017 (rate per 1,000 live births + stillbirths)

Trend of Stillbirth Rate by Maternal Race/Ethnicity, Michigan, 2010-2017



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

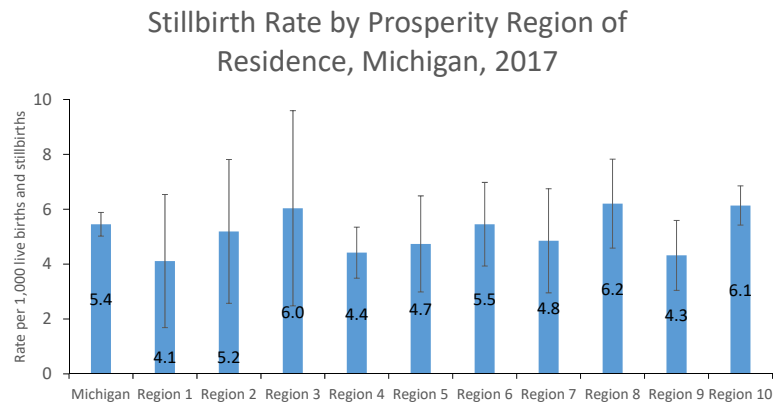
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Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

5

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of stillbirth rates by maternal race/ethnicity within Michigan from 2010 through 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. The stillbirth rate has fluctuated quite a bit over the last eight years by maternal race/ethnicity with Black non-Hispanic women experiencing a steady increase in their stillbirth rate since 2015.

Stillbirth Rate by Prosperity Region of Residence, Michigan, 2017 (rate per 1,000 live births + stillbirths)



Prosperity Region	# Live Births	# Stillbirth	# Live Births + Stillbirths	SBR
Michigan	111,507	611	112,118	5.4
1. Upper Peninsula Prosperity Alliance	2,665	11	2,676	4.1
2. Northwest Prosperity Region	2,875	15	2,890	5.2
3. Northeast Prosperity Region	1,812	11	1,823	6.0
4. West Michigan Prosperity Alliance	19,387	86	19,473	4.4
5. East Central Michigan Prosperity Region	5,885	28	5,913	4.7
6. East Michigan Prosperity Region	8,938	49	8,987	5.5
7. South Central Prosperity Region	5,130	25	5,155	4.8
8. Southwest Prosperity Region	8,970	56	9,026	6.2
9. Southeast Michigan Prosperity Region	10,149	44	10,193	4.3
10. Detroit Metro Prosperity Region	45,693	282	45,975	6.1

SBR= Stillbirth rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

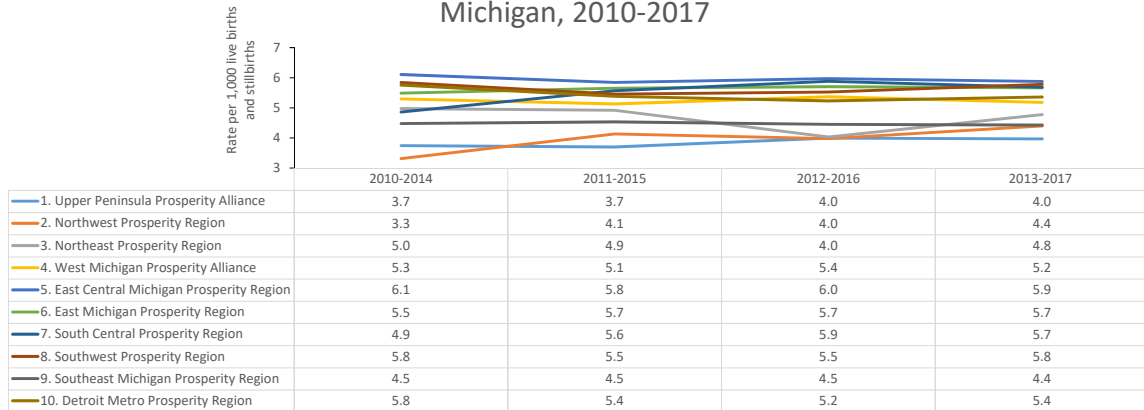
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Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

6

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the stillbirth rates by prosperity region of residence at birth within Michigan in 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. In 2017, the stillbirth rate was the highest (6.2 per 1,000 live births and stillbirths) in the Southwest Prosperity Region and was the lowest in the Upper Peninsula Prosperity Alliance (4.1 per 1,000 live births and stillbirths), but there were no statistically significant differences among prosperity regions.

Stillbirth Rate by Prosperity Region of Residence, Michigan, 2010-2017 (rate per 1,000 live births + stillbirths)

Trend of 5-Year Average Stillbirth Rate by Prosperity Region, Michigan, 2010-2017



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

11/22/2019
Data source: Michigan resident live birth files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

7

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of 5-year average stillbirth rates by prosperity region of residence at birth within Michigan from 2010 through 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, but the rate is now expressed per 1,000 live births and stillbirths. The stillbirth rate has fluctuated a little bit over the years by prosperity region. In 2013-2017, the average stillbirth rate was the highest in the East Central Prosperity Region (5.9 per 1,000 live births and stillbirths) and was the lowest in the Upper Peninsula Prosperity Alliance (4.0 per 1,000 live births and stillbirths).

Perinatal Mortality Rate, Michigan, 2010-2017

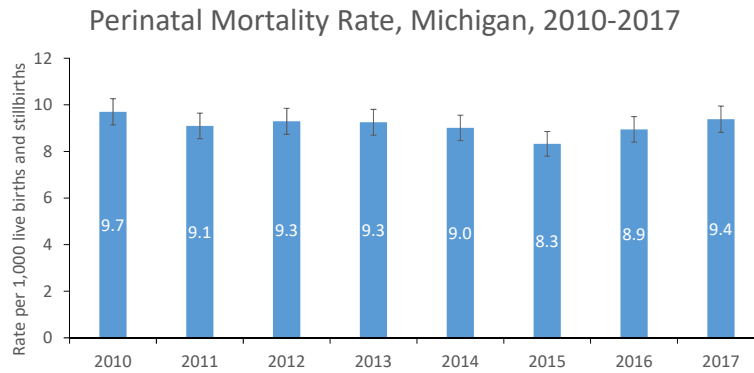
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8

The next several slides contain updated perinatal mortality statistics for the State of Michigan.

Perinatal Mortality Rate: Michigan 2010-2017

(rate per 1,000 live births + stillbirths)



Year	# Live Births	# Perinatal Mortality	# Live Births + Stillbirths	PMR
2010	114,717	1,119	115,361	9.7
2011	114,159	1,044	114,789	9.1
2012	112,708	1,053	113,302	9.3
2013	113,732	1,058	114,359	9.3
2014	114,460	1,037	115,080	9.0
2015	113,211	947	113,758	8.3
2016	113,374	1,020	114,001	8.9
2017	111,507	1,052	112,118	9.4

PMR= Perinatal mortality rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

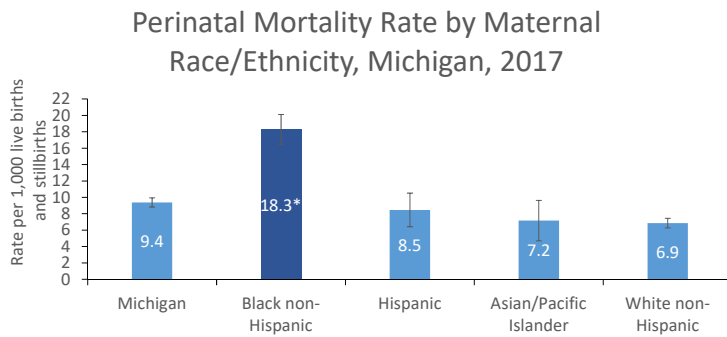
11/22/2019

Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

9

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the perinatal mortality rates within Michigan from 2010 to 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. The perinatal mortality rate has fluctuated a bit over the last eight years, but no statistically significant changes were observed. In 2017, the perinatal mortality rate was 9.4 per 1,000 live births and stillbirths.

Perinatal Mortality Rate by Maternal Race/Ethnicity, Michigan, 2017 (rate per 1,000 live births + stillbirths)



* = significantly higher than all other racial/ethnic groups

11/22/2019

Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

Race/Ethnicity	# Live Births	# Perinatal Mortality	# Live Births + Stillbirths	PMR
Michigan	111,507	1,052	112,118	9.4
Black non-Hispanic	20,657	382	20,875	18.3
Hispanic	7,639	65	7,677	8.5
Asian/Pacific Islander	4,448	32	4,467	7.2
White non-Hispanic	75,137	517	75,433	6.9

PMR= Perinatal mortality rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

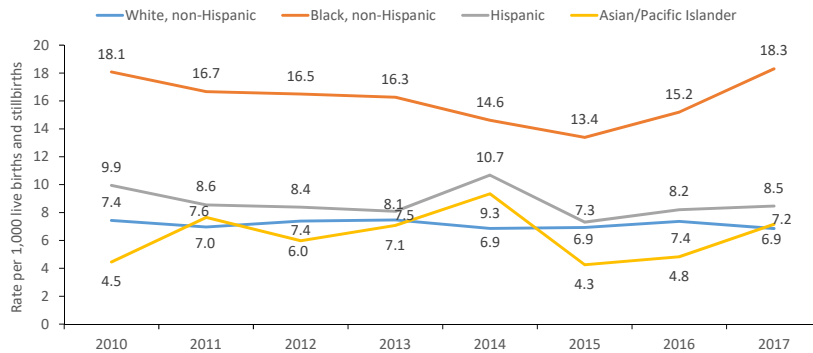
Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

10

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the perinatal mortality rates by maternal race/ethnicity within Michigan in 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2017, there was over a two-fold difference in perinatal mortality rates by maternal race and ethnicity, from a high of 18.3 per 1,000 live births and stillbirths for Black non-Hispanic women to a low of 6.9 per 1,000 live births and stillbirths for White non-Hispanic women. The perinatal mortality rate among Black non-Hispanic women was significantly higher than the rate among other racial/ethnic groups.

Perinatal Mortality Rate by Maternal Race/Ethnicity, Michigan, 2010-2017 (rate per 1,000 live births + stillbirths)

Trend of Perinatal Mortality Rate by Maternal Race/Ethnicity, Michigan, 2010-2017



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

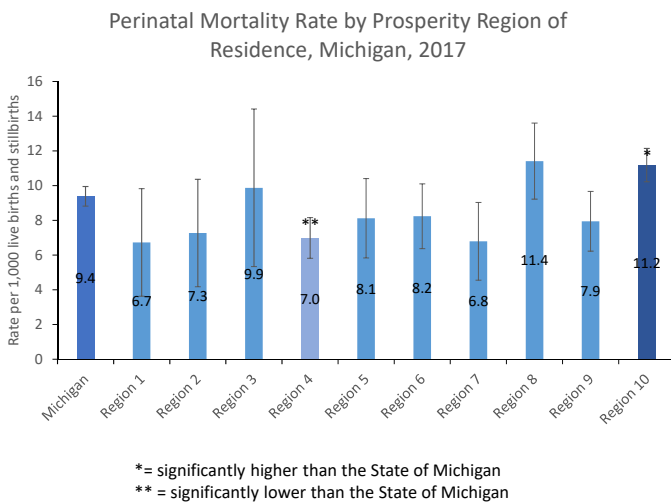
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11

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of perinatal mortality rates by maternal race/ethnicity within Michigan from 2010 through 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. The perinatal mortality rate has fluctuated quite a bit over the last eight years by maternal race/ethnicity. In 2017, there was over a two-fold difference in perinatal mortality rates by maternal race and ethnicity with Black non-Hispanic women experiencing a steady increase in their perinatal mortality rate since 2015.

Perinatal Mortality Rate by Prosperity Region of Residence, Michigan, 2017 (rate per 1,000 live births + stillbirths)



Prosperity Region	# Live Births	# Perinatal Mortality	# Live Births + Stillbirths	PMR
Michigan	111,507	1,052	112,118	9.4
1. Upper Peninsula Prosperity Alliance	2,665	18	2,676	6.7
2. Northwest Prosperity Region	2,875	21	2,890	7.3
3. Northeast Prosperity Region	1,812	18	1,823	9.9
4. West Michigan Prosperity Alliance	19,387	136	19,473	7.0
5. East Central Michigan Prosperity Region	5,885	48	5,913	8.1
6. East Michigan Prosperity Region	8,938	74	8,987	8.2
7. South Central Prosperity Region	5,130	35	5,155	6.8
8. Southwest Prosperity Region	8,970	103	9,026	11.4
9. Southeast Michigan Prosperity Region	10,149	81	10,193	7.9
10. Detroit Metro Prosperity Region	45,693	514	45,975	11.2

PMR= Perinatal mortality rate per 1,000 live births and stillbirths.

The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

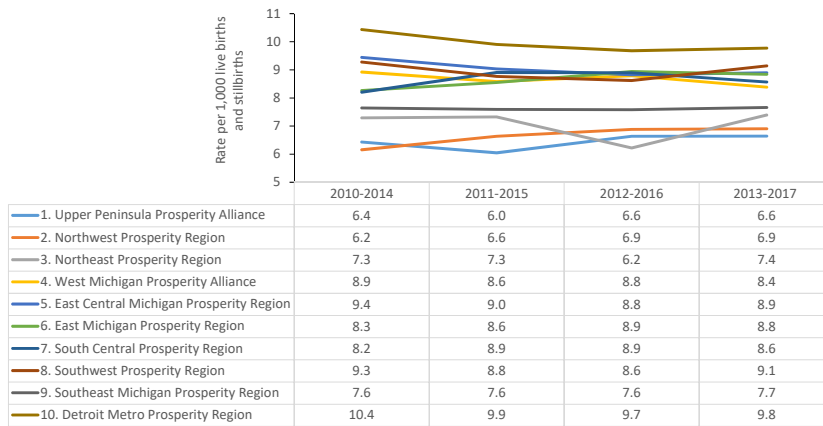
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Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

12

Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the perinatal mortality rates by prosperity region of residence at birth within Michigan in 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2017, the perinatal mortality rate was the highest in the Southwest Prosperity Region (11.4 per 1,000 live births and stillbirths) and was the lowest in the Upper Peninsula Prosperity Alliance (6.7 per 1,000 live births and stillbirths). The perinatal mortality rate was significantly higher in Detroit Metro Prosperity Region, and was significantly lower in West Michigan Prosperity Alliance, when compared to the rate within the State of Michigan.

Perinatal Mortality Rate by Prosperity Region of Residence, Michigan, 2010-2017 (rate per 1,000 live births + stillbirths)

Trend of 5-Year Average Perinatal Mortality Rate by
Prosperity Region, Michigan, 2010-2017



The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams.

Perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths.

11/22/2019

Data source: Michigan resident live birth files, infant death files and fetal death files, Division for Vital Records and Health Statistics, MDHHS

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Using data from the Michigan Department of Health and Human Services, Division for Vital Records and Health Statistics, this slide shows the trend of 5-year average perinatal mortality rates by prosperity region of residence at birth within Michigan from 2010 through 2017. The National Center for Health Statistics and the Michigan Public Health Code both define a stillbirth as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams and is expressed as a rate per 1,000 live births. Within the remaining slides, stillbirths are still defined as a death of a fetus that has completed at least 20 weeks of gestation or weighs at least 400 grams, and perinatal mortality rate is defined as the sum of the number of stillbirths and the number of infants dying under 7 days of age divided by the sum of the number of live births and the number of stillbirths and expressed per 1,000 live births and stillbirths. In 2013-2017, the average perinatal mortality rate was the highest in the Detroit Metro Prosperity Region (9.8 per 1,000 live births and stillbirths) and was the lowest in the Upper Peninsula Prosperity Alliance (6.6 per 1,000 live births and stillbirths).

Limitations of Stillbirth Reporting

- It is suspected that stillbirths are under-reported by some Michigan hospitals. However, the records that are reported by the Division for Vital Records and Health Statistics do undergo a series of data checks.
- The stillbirth rates may fluctuate due to small numbers.
- Another limitation is the lack of information on etiology. The causes of many stillbirths are unknown. Known causes of stillbirth generally fall into one of three broad categories: problems with the baby (birth defects or genetic problems); problems with the placenta or umbilical cord (this is where the mother and baby exchange oxygen and nutrients); and certain conditions in the mother (for example, uncontrolled diabetes, high blood pressure, or obesity). However, we are unable to confirm the causes for all stillbirths.

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This slide shows the limitations of stillbirth reporting.

It is suspected that stillbirths are under-reported by some Michigan hospitals. However, the records that are reported by the Division for Vital Records and Health Statistics do undergo a series of data checks.

Stillbirth rates also tend to fluctuate a bit from year to year due to small numbers.

Another limitation is the lack of information on etiology. The causes of many stillbirths are unknown. Known causes of stillbirth generally fall into one of three broad categories: problems with the baby (birth defects or genetic problems); problems with the placenta or umbilical cord (this is where the mother and baby exchange oxygen and nutrients); and certain conditions in the mother (for example, uncontrolled diabetes, high blood pressure, or obesity). However, we are unable to confirm the causes for all stillbirths.