

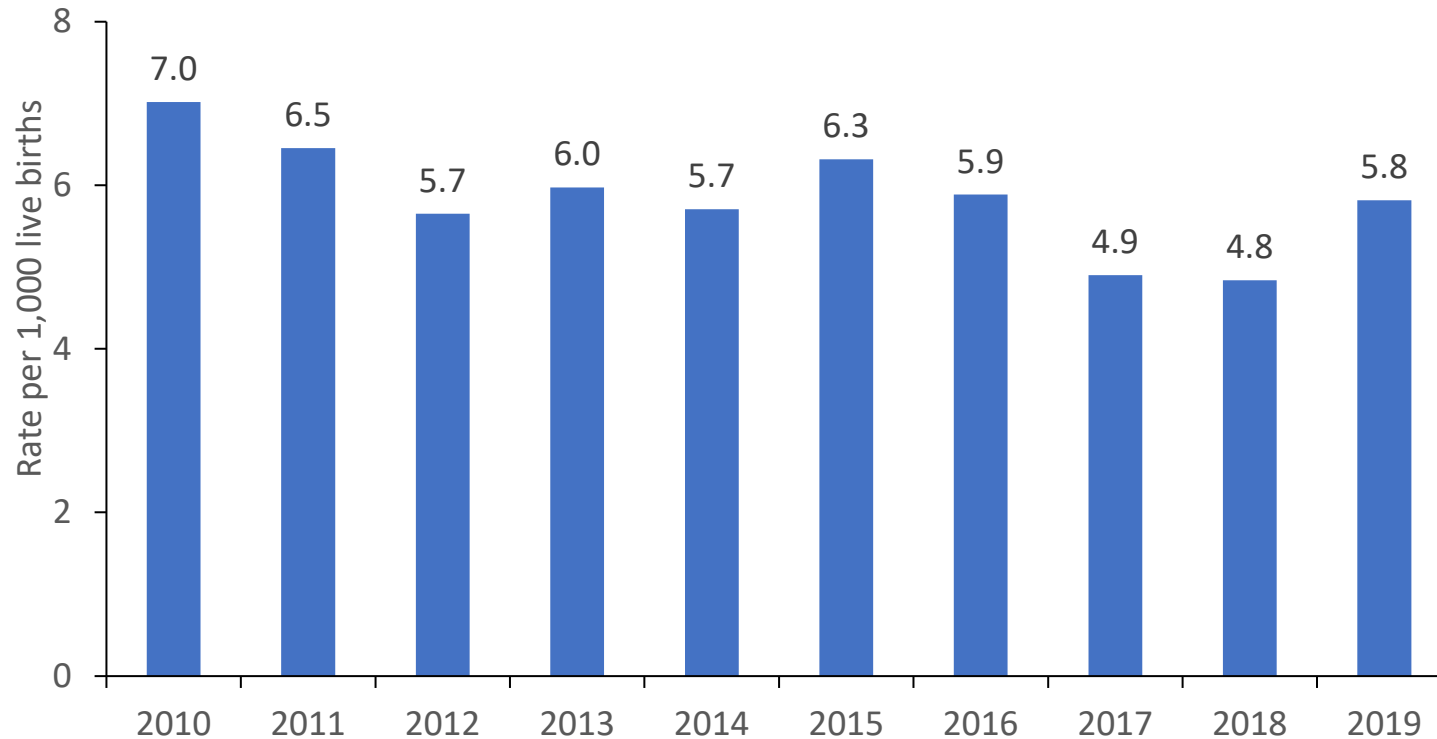
Maternal and Infant Health Statistics, Prosperity Region 4, Michigan

Prepared by Maternal and Child Health (MCH) Epidemiology Section,
Michigan Department of Health and Human Services (MDHHS)
Data source: Michigan resident live birth files (09/18/2020) and infant mortality files (02/18/2021),
Division for Vital Records and Health Statistics, MDHHS
June 2021

Infant Mortality Rate (IMR), Prosperity Region 4, 2010-2019

Infant Mortality Rate, Prosperity Region 4, 2010-2019

(rate per 1,000 live births)

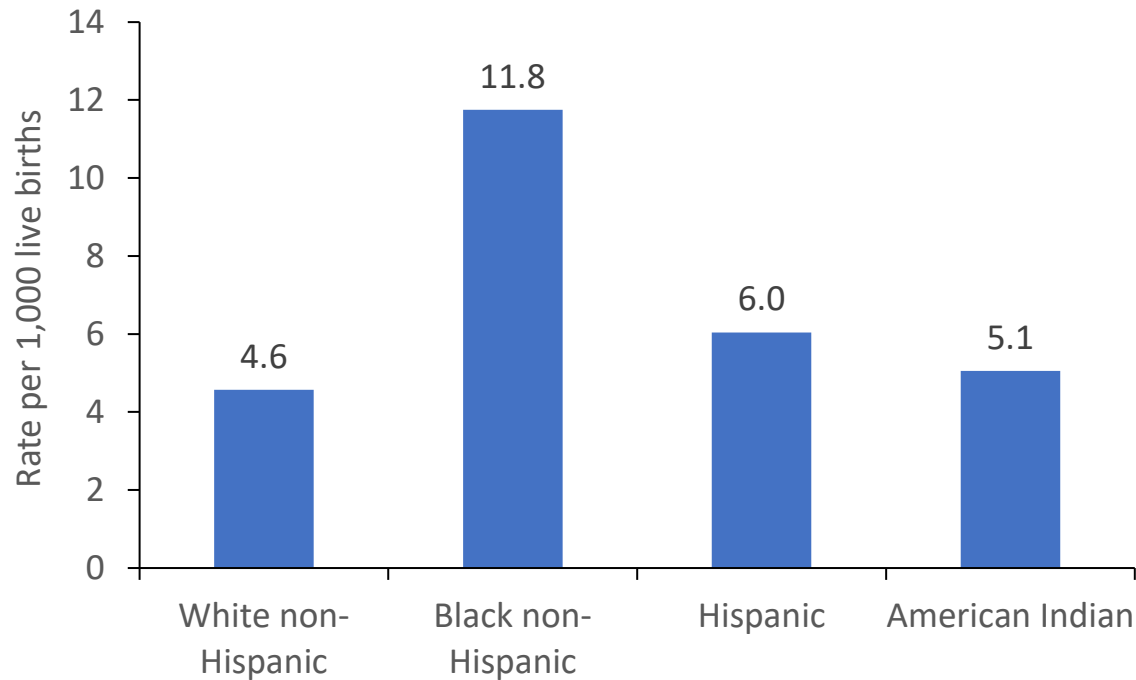


2019 Michigan Rate = 6.4

Year	# Live Births	# Infant Death	IMR
2010	19,665	138	7.0
2011	19,681	127	6.5
2012	19,811	112	5.7
2013	19,591	117	6.0
2014	19,802	113	5.7
2015	19,625	124	6.3
2016	19,709	116	5.9
2017	19,387	95	4.9
2018	19,218	93	4.8
2019	18,404	107	5.8

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.

Infant Mortality Rates by Maternal Race/Ethnicity, Prosperity Region 4, 2015-2019 (rate per 1,000 live births)



Maternal Race/Ethnicity	# Live Births	# Infant Death	IMR
White non-Hispanic	71,164	325	4.6
Black non-Hispanic	8,509	100	11.8
Hispanic	11,259	68	6.0
American Indian	198	DNS	DNS
Asian/Pacific Islander	2,218	15	6.8

DNS: data not sufficient (0<N<6).

2015-2019 Michigan Rates

White, nH = 4.9

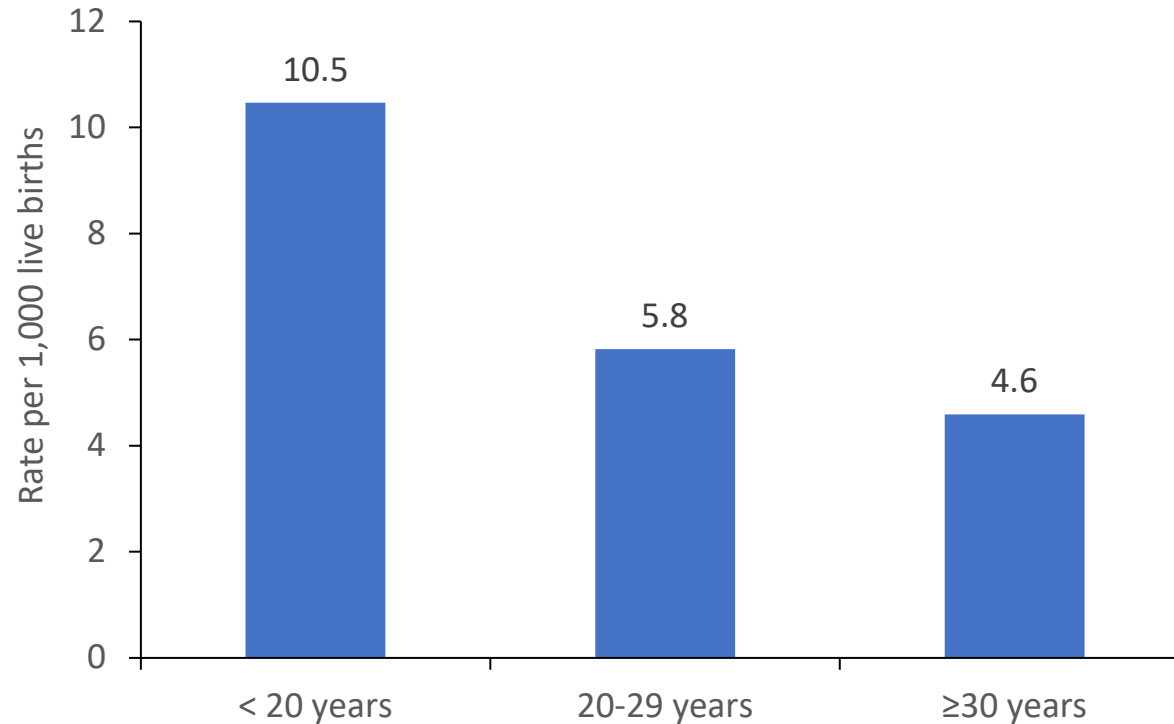
Black, nH = 13.4

Hispanic = 6.3

Asian/Pacific Islander = 4.2

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.

Infant Mortality Rates by Maternal Age, Prosperity Region 4, 2015-2019 (rate per 1,000 live births)

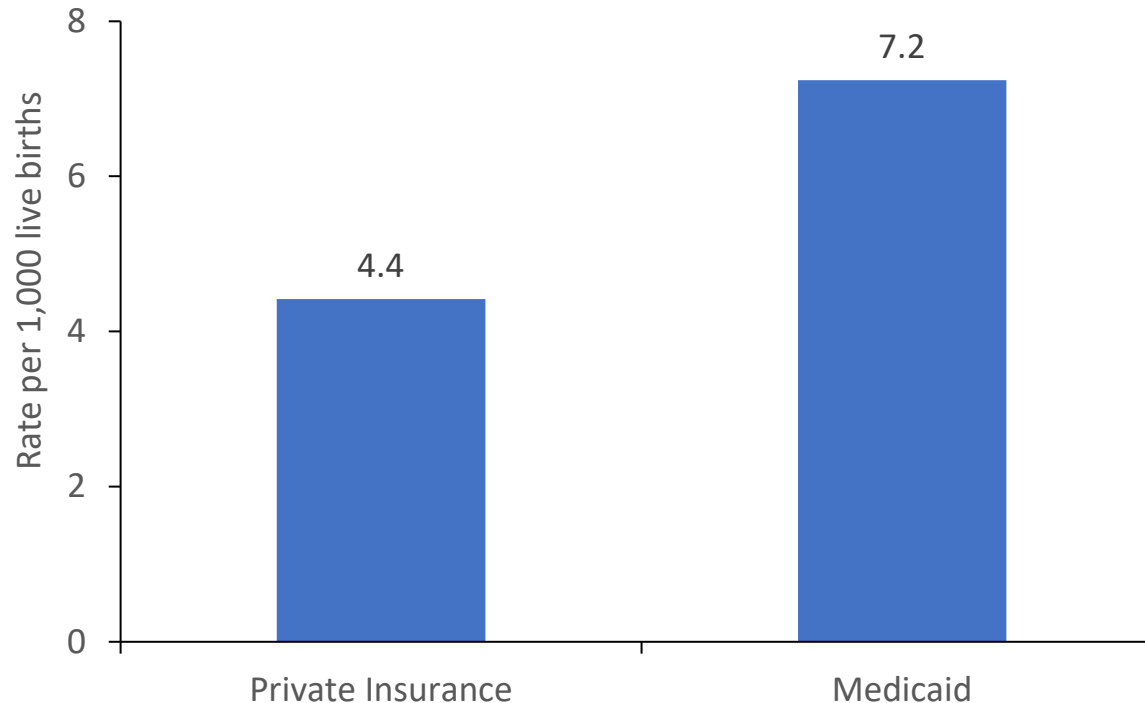


Maternal Age	# Live Births	# Infant Death	IMR
< 20 years	4,969	52	10.5
20-29 years	51,722	301	5.8
≥30 years	39,640	182	4.6

2015-2019 Michigan Rates
 < 20 years = 10.0
 20-29 years = 7.1
 ≥30 years = 5.6

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.

Infant Mortality Rates by Intended Payment Source, Prosperity Region 4, 2015-2019 (rate per 1,000 live births)

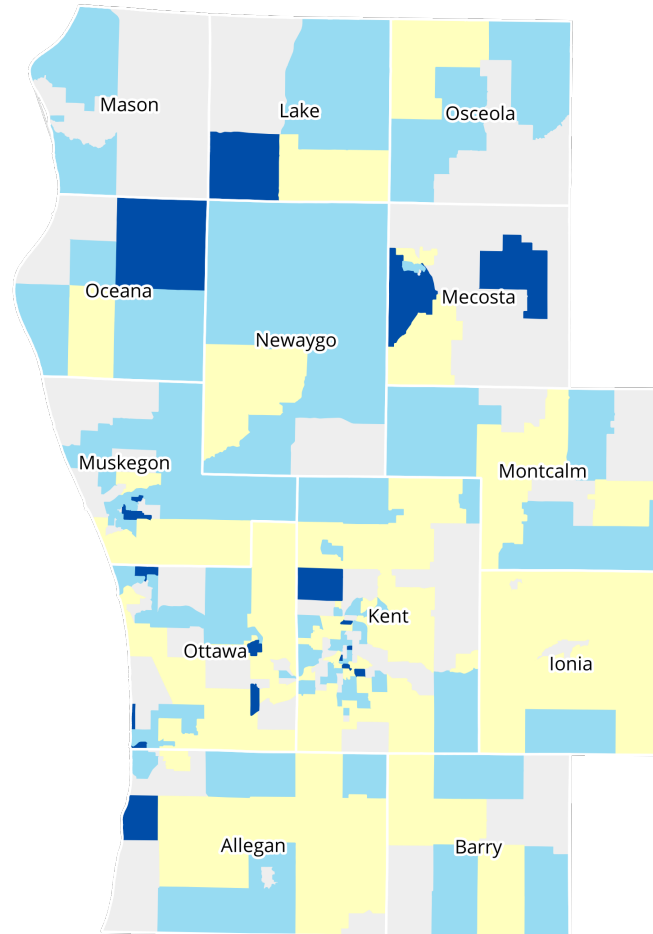


Payment Source	# Live Births	# Infant Death	IMR
Private Insurance	57,949	256	4.4
Medicaid	35,365	256	7.2

2015-2019 Michigan Rates
Private Insurance = 4.8
Medicaid = 8.8

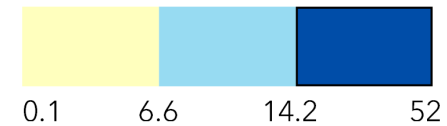
Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Infant Mortality Rate by Census Tract Prosperity Region 4, 2014-2018



Infant Deaths per 1,000 Live Births

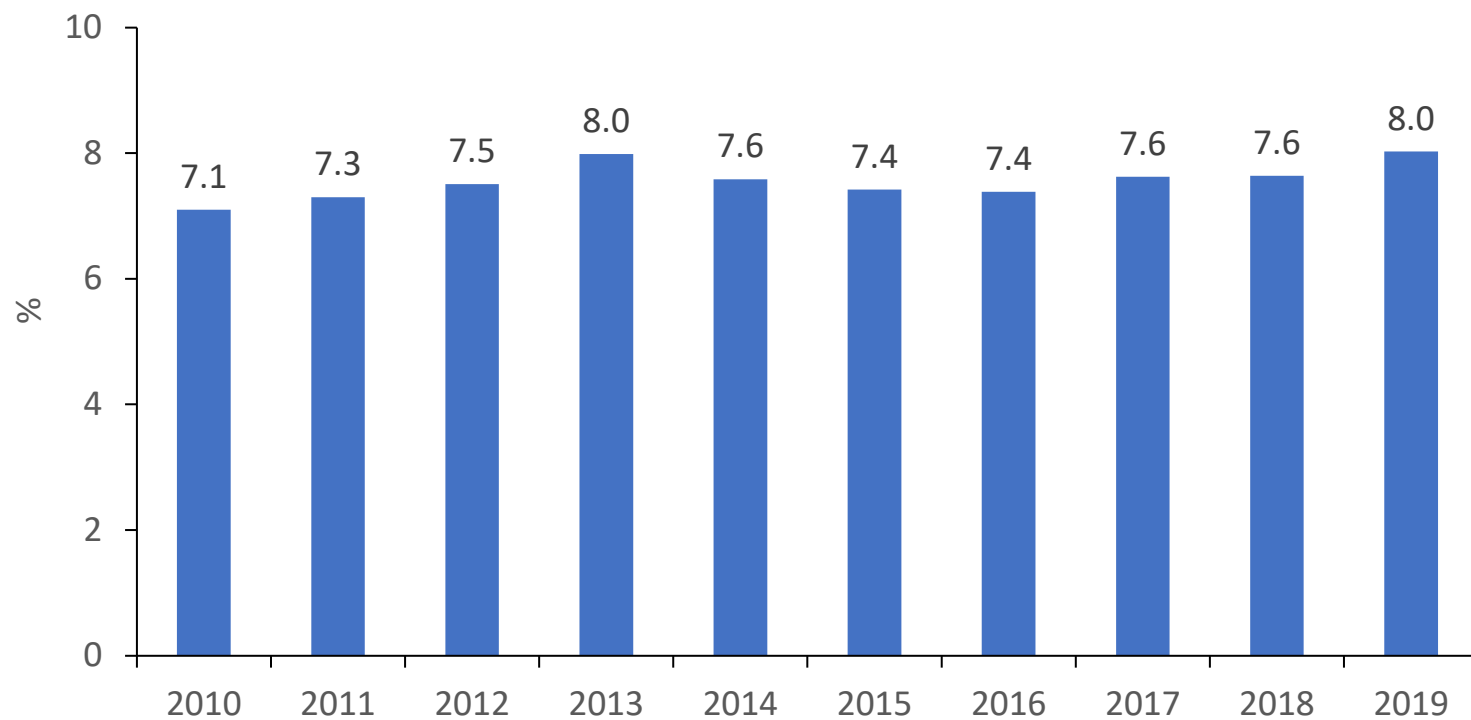
Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.



No Live Births/Infant Deaths

Low Birthweight (LBW), Prosperity Region 4, 2010-2019

Low Birthweight (Birthweight <2,500 Grams), Prosperity Region 4, 2010-2019

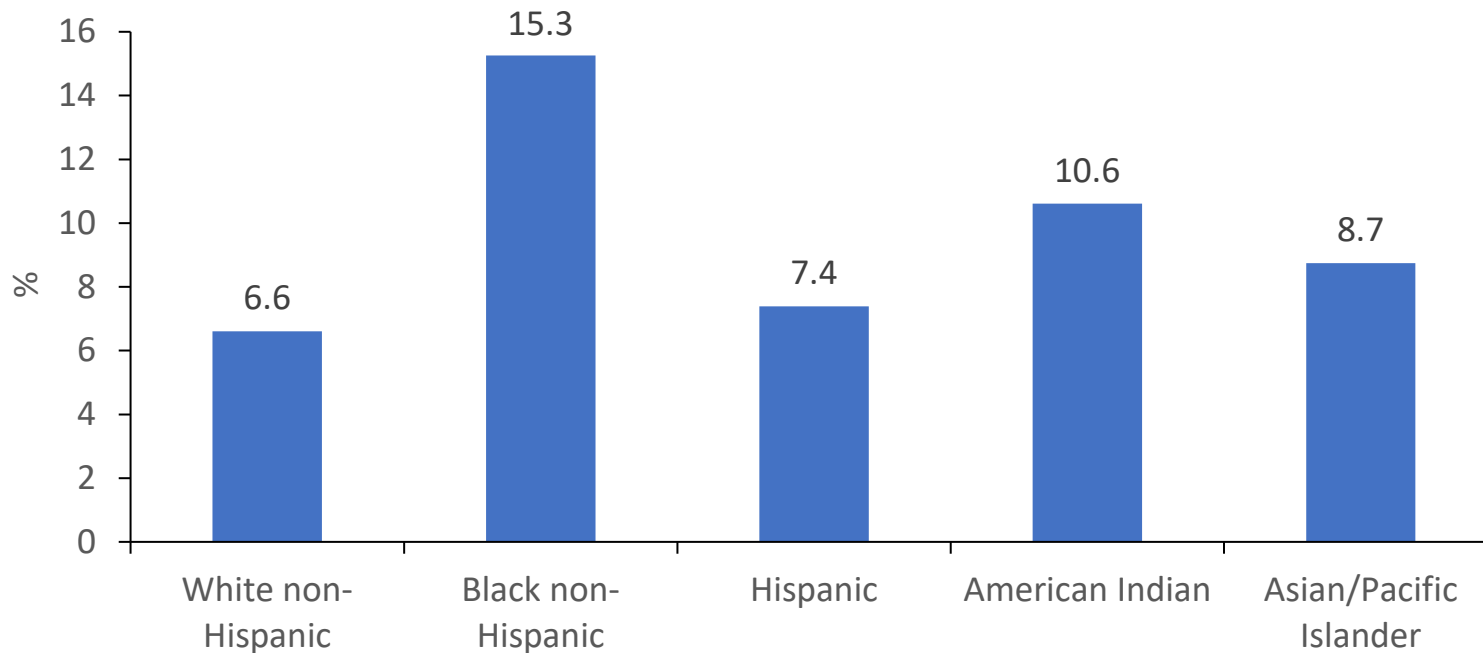


2019 Michigan Percent = 8.8

Year	# Live Births	# LBW	LBW %
2010	19,665	1,396	7.1
2011	19,681	1,436	7.3
2012	19,811	1,487	7.5
2013	19,591	1,564	8.0
2014	19,802	1,502	7.6
2015	19,625	1,456	7.4
2016	19,709	1,455	7.4
2017	19,387	1,478	7.6
2018	19,218	1,468	7.6
2019	18,404	1,477	8.0

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

Low Birthweight (Birthweight <2,500 Grams) by Maternal Race/Ethnicity, Prosperity Region 4, 2015-2019



Maternal Race/Ethnicity	# Live Births	# LBW	LBW %
White non-Hispanic	71,164	4,702	6.6
Black non-Hispanic	8,509	1,298	15.3
Hispanic	11,259	832	7.4
American Indian	198	21	10.6
Asian/Pacific Islander	2,218	194	8.7

2015-2019 Michigan Percentages

White, nH = 7.0

Black, nH = 14.8

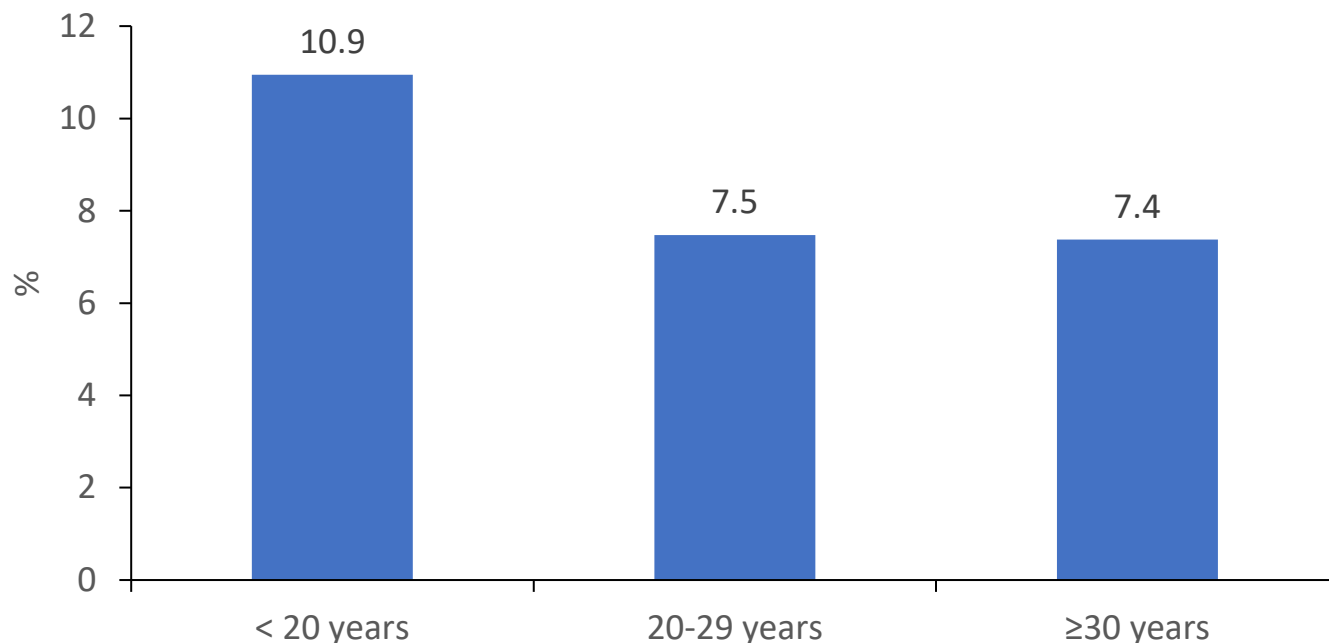
Hispanic = 7.5

American Indian = 8.8

Asian/Pacific Islander = 8.1

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

Low Birthweight (Birthweight <2,500 Grams) by Maternal Age, Prosperity Region 4, 2015-2019

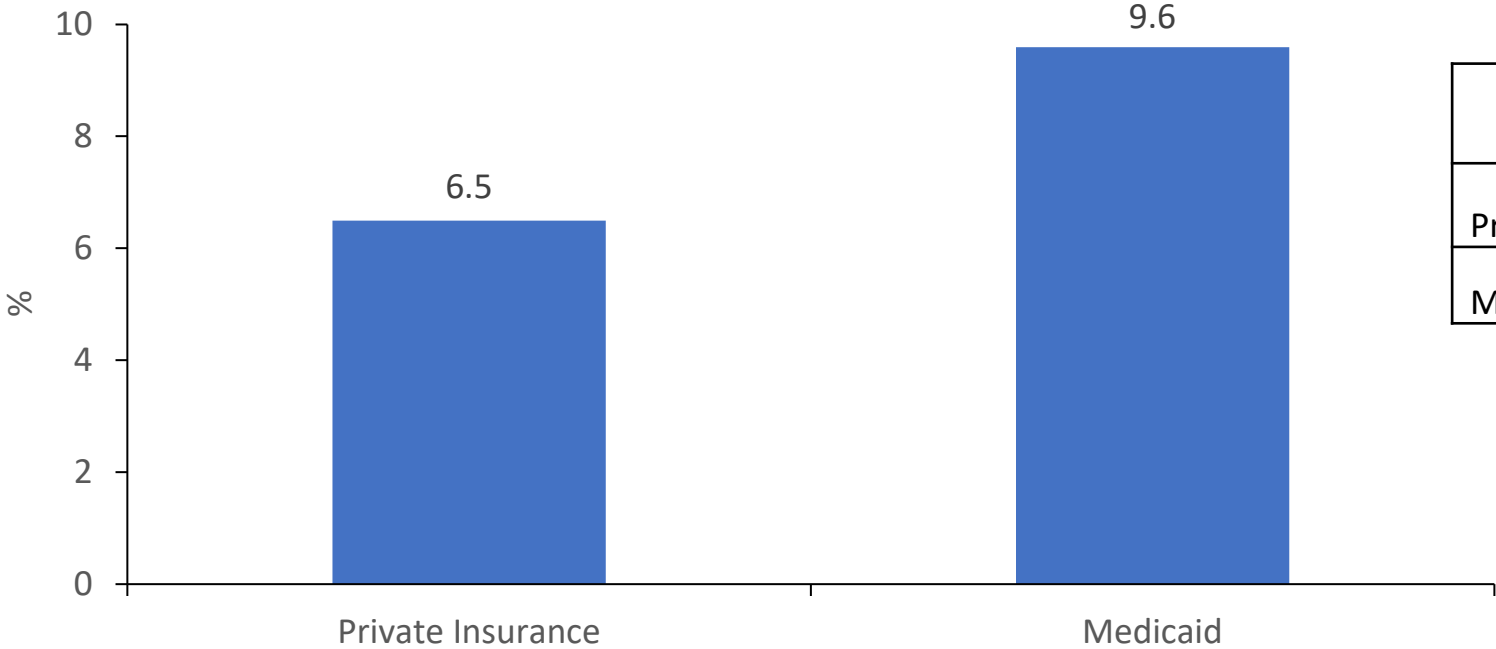


Maternal Age	# Live Births	# LBW	LBW %
< 20 years	4,969	544	10.9
20-29 years	51,722	3,865	7.5
≥30 years	39,640	2,923	7.4

2015-2019 Michigan Percentages
 < 20 years = 10.7
 20-29 years = 8.5
 ≥30 years = 8.5

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

Low Birthweight (Birthweight <2,500 Grams) by Intended Payment Source, Prosperity Region 4, 2015-2019

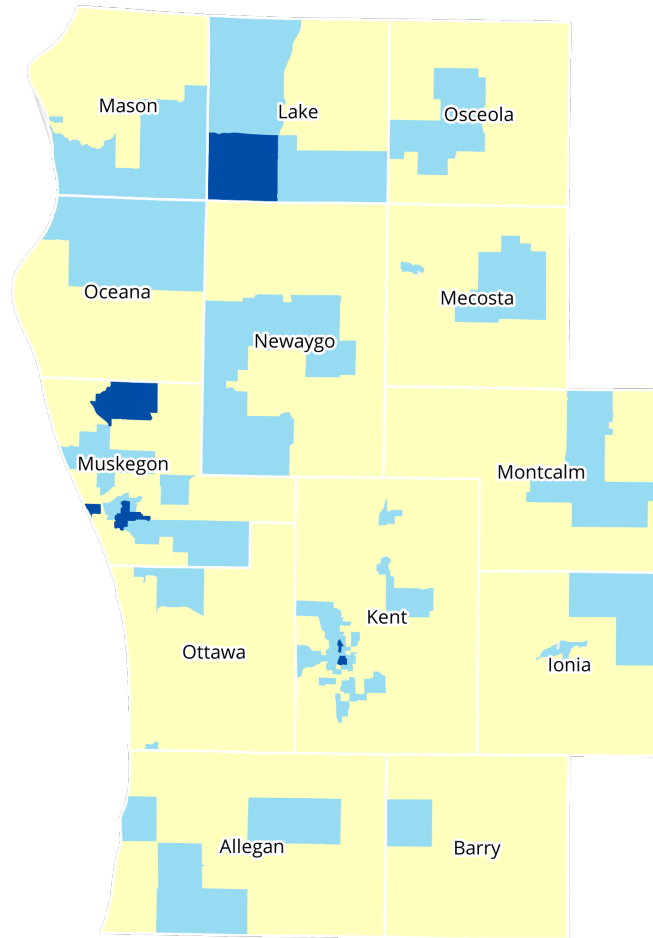


Payment Source	# Live Births	# LBW	LBW %
Private Insurance	57,949	3,764	6.5
Medicaid	35,365	3,392	9.6

2015-2019 Michigan Percentages
 Private Insurance = 7.2
 Medicaid = 10.5

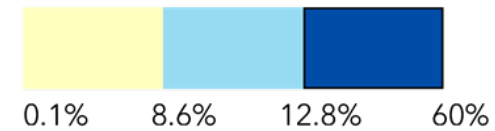
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.

Low Birthweight by Census Tract Prosperity Region 4, 2014-2018



Percent Low Birthweight

Low birthweight rate is defined as number of births with baby birthweight less than 5.5lbs (<2,500 grams) per 100 live births.

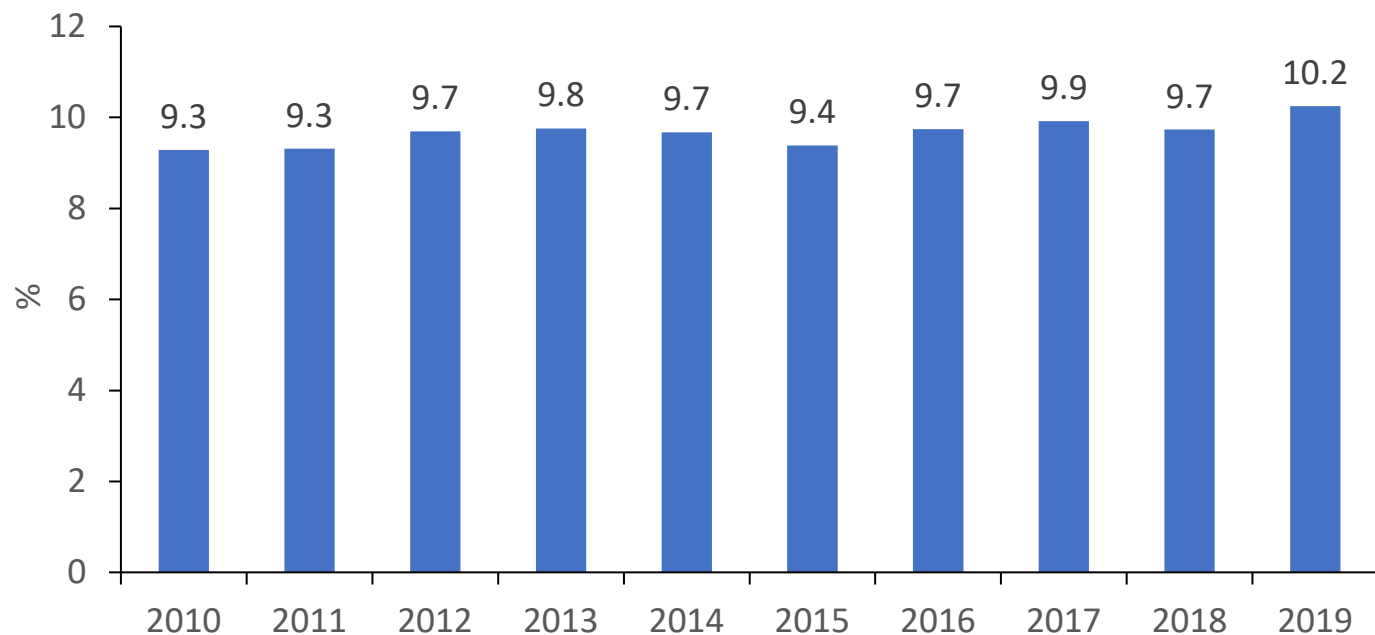


No Live Births/Low Birthweight Births

Preterm Birth (PTB), Prosperity Region 4, 2010-2019

Preterm Birth (Estimated Gestational Age <37 Weeks), Prosperity Region 4, 2010-2019

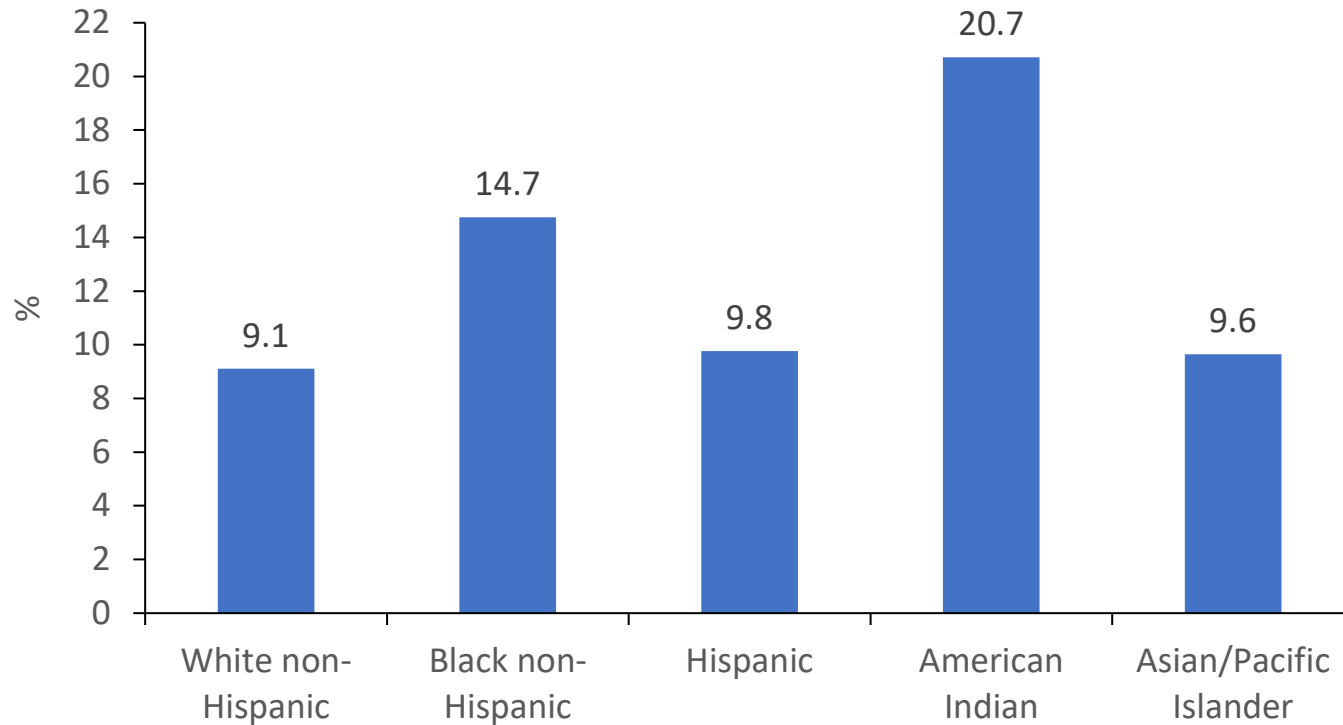
2019 Michigan Percent = 10.3



Year	# Live Births	# PTB	PTB %
2010	19,665	1,825	9.3
2011	19,681	1,832	9.3
2012	19,811	1,920	9.7
2013	19,591	1,911	9.8
2014	19,802	1,915	9.7
2015	19,625	1,841	9.4
2016	19,709	1,920	9.7
2017	19,387	1,923	9.9
2018	19,218	1,870	9.7
2019	18,404	1,886	10.2

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.

Preterm Birth (Estimated Gestational Age <37 Weeks) by Maternal Race/Ethnicity, Prosperity Region 4, 2015-2019

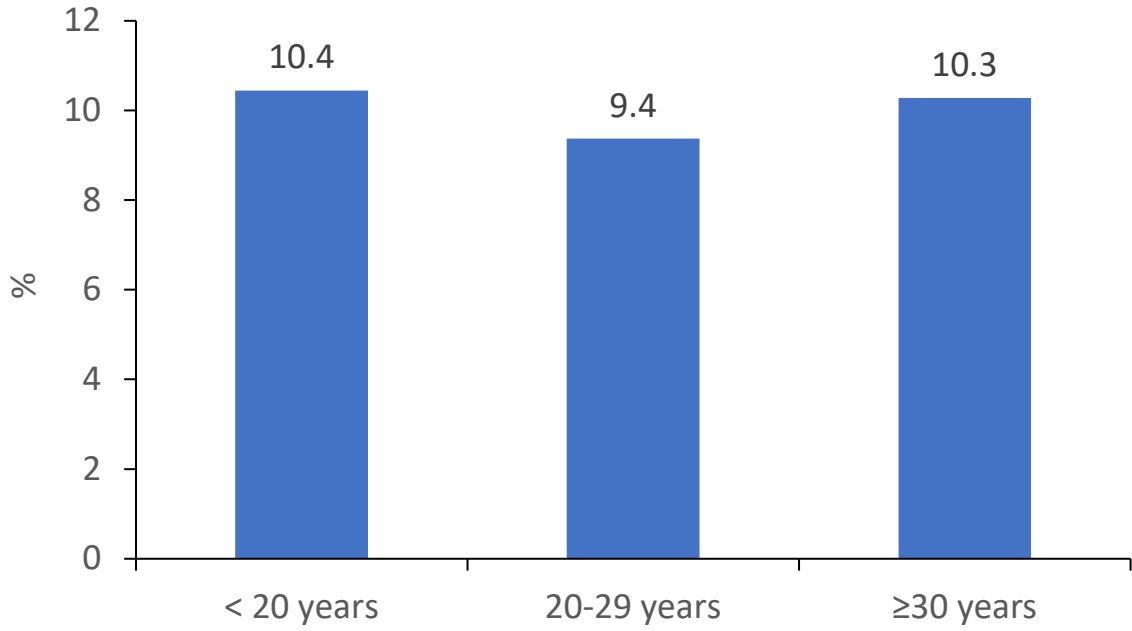


Maternal Race/Ethnicity	# Live Births	# PTB	PTB %
White non-Hispanic	71,164	6,478	9.1
Black non-Hispanic	8,509	1,255	14.7
Hispanic	11,259	1,100	9.8
American Indian	198	41	20.7
Asian/Pacific Islander	2,218	214	9.6

2015-2019 Michigan Percentages
 White, nH = 9.0
 Black, nH = 14.6
 Hispanic = 9.4
 American Indian = 8.2
 Asian/Pacific Islander = 10.2

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.

Preterm Birth (Estimated Gestational Age <37 Weeks) by Maternal Age, Prosperity Region 4, 2015-2019

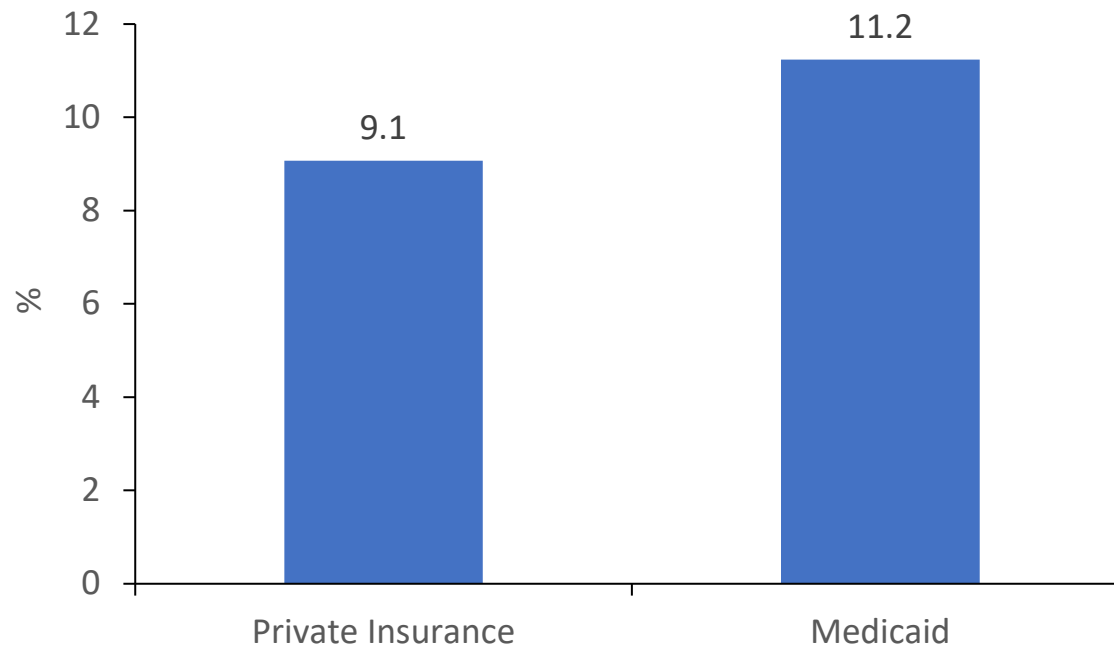


Maternal Age	# Live Births	# PTB	PTB %
< 20 years	4,969	519	10.4
20-29 years	51,722	4,846	9.4
≥30 years	39,640	4,073	10.3

2015-2019 Michigan Percentages
 < 20 years = 10.6
 20-29 years = 9.6
 ≥30 years = 10.6

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.

Preterm Birth (Estimated Gestational Age <37 Weeks) by Intended Payment Source, Prosperity Region 4, 2015-2019

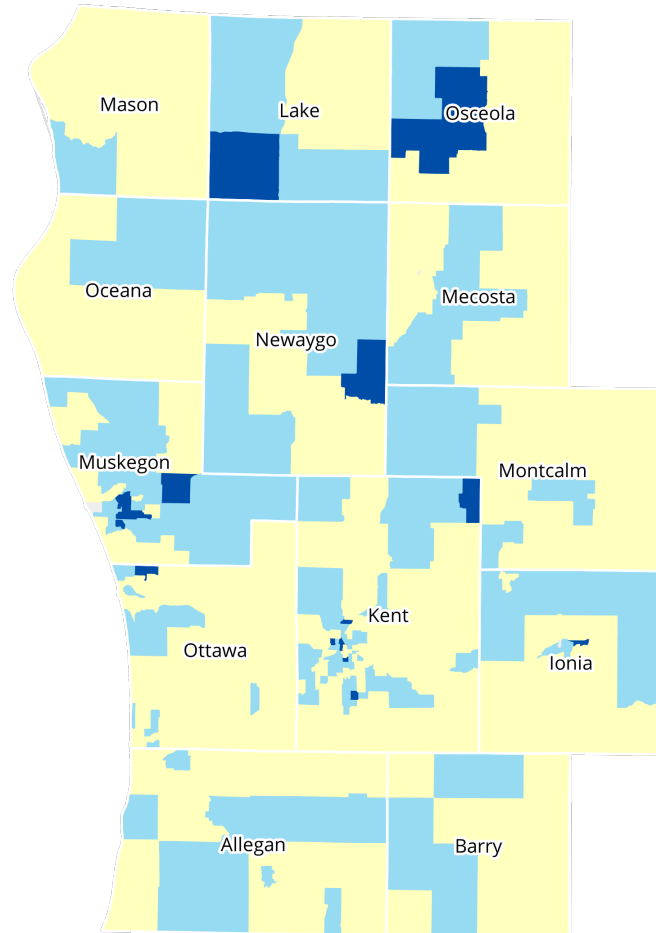


Payment Source	# Live Births	# PTB	PTB %
Private Insurance	57,949	5,253	9.1
Medicaid	35,365	3,973	11.2

2015-2019 Michigan Percentages
 Private Insurance = 9.2
 Medicaid = 11.3

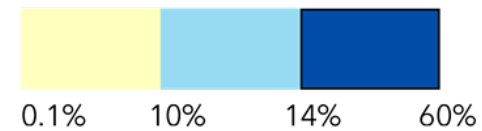
Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.

Preterm Birth by Census Tract Prosperity Region 4, 2014-2018



Percent Preterm

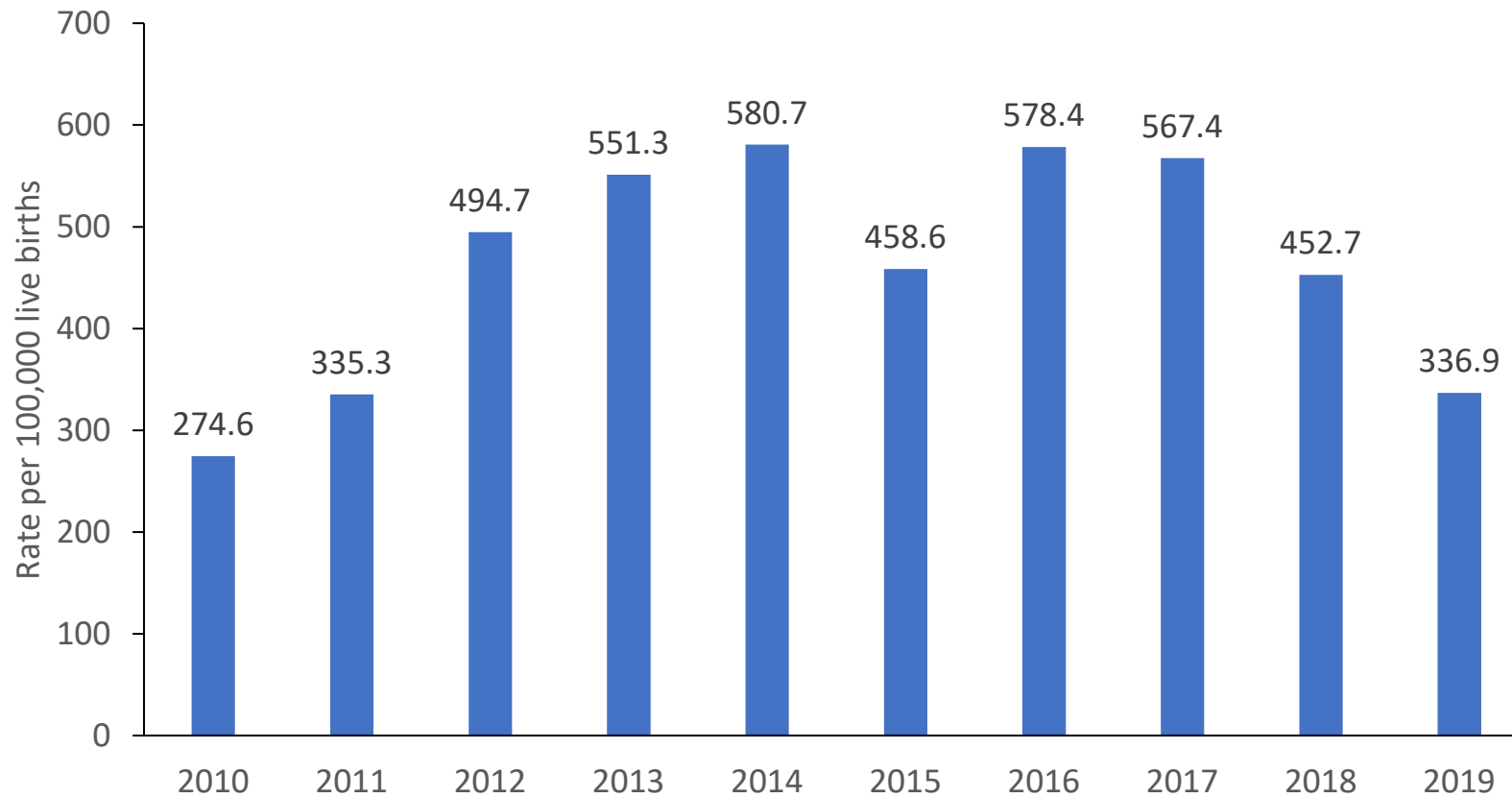
Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. Gestational age is based on the obstetric estimate of gestation.



No Live Births/Preterm Births

Neonatal Abstinence Syndrome (NAS) Prosperity Region 4, 2010-2019

Neonatal Abstinence Syndrome*, Prosperity Region 4, 2010-2019 (Rate per 100,000 Live Births)



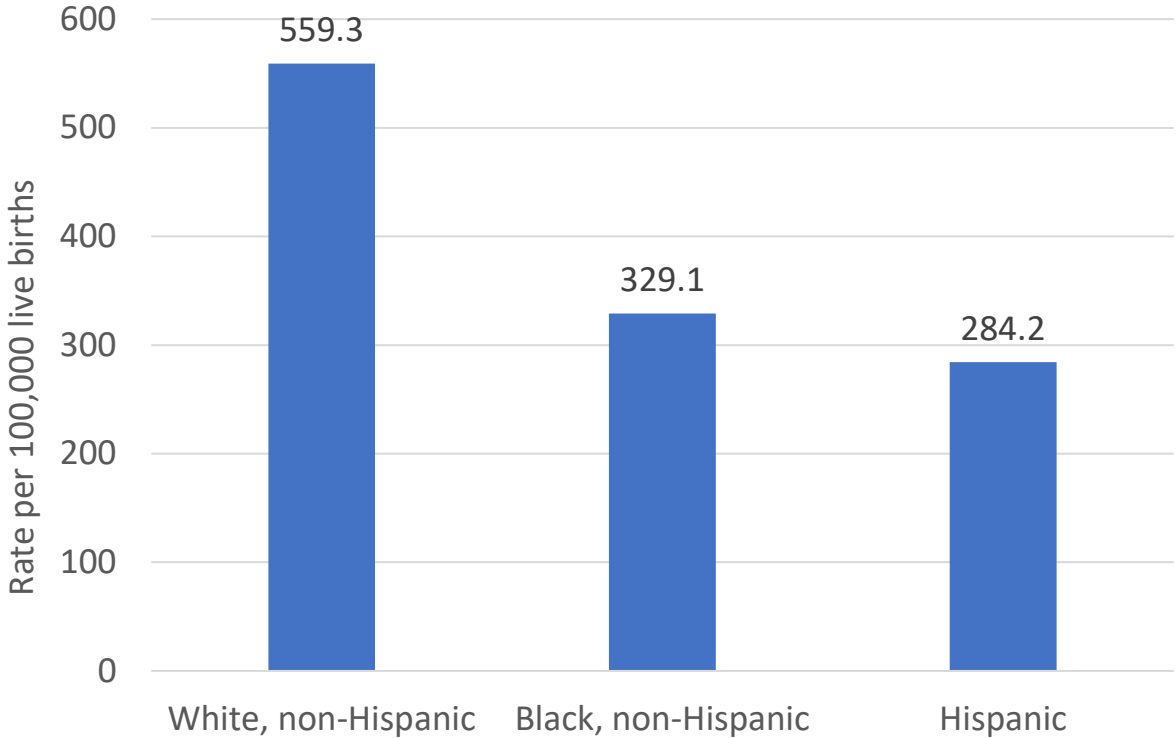
Year	# Live Births	# NAS	NAS Rate
2010	19,665	54	274.6
2011	19,681	66	335.3
2012	19,811	98	494.7
2013	19,591	108	551.3
2014	19,802	115	580.7
2015	19,625	90	458.6
2016	19,709	114	578.4
2017	19,387	110	567.4
2018	19,218	87	452.7
2019	18,404	62	336.9

2019 Michigan Rate = 623.7

* 2010-2015: 779.5 (drug withdrawal syndrome in newborn) and 2016-current: P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction)

Data source: MDHHS Division for Vital Records and Health Statistics. Michigan resident live birth file linked to the Michigan Inpatient Hospital Database.

Neonatal Abstinence Syndrome* by Maternal Race/Ethnicity, Prosperity Region 4, 2015-2019



Maternal Race/Ethnicity	# Live Births	# NAS	NAS Rate
White non-Hispanic	71,164	398	559.3
Black non-Hispanic	8,509	28	329.1
Hispanic	11,259	32	284.2
American Indian	198	DNS	DNS

DNS: data not sufficient (0<N<6).

2015-2019 Michigan Rates
 White, nH = 943.1
 Black, nH = 394.2
 Hispanic = 573.8

* 2015: 779.5 (drug withdrawal syndrome in newborn) and 2016-current: P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction)

Birth Defects Prevalence, by Race/Ethnicity and Prosperity Region, 2017

Birth Defect Prevalence Rates by Race/ethnicity: MBDR, 2017

- Throughout birth years 2010-2017, the birth defect prevalence rate for Michigan remained fairly steady at an average rate of 1,374.2 cases per 10,000 live births.
- In 2017, the race-specific birth defect prevalence rate for cases born to black mothers (1,725.4 cases per 10,000 live births) exceeded that of cases born to white mothers (1,079.3 cases per 10,000 live births) and cases born to mothers of “other” races (1,654.5 cases per 10,000 live births).
- In 2017, the ethnicity-specific birth defect prevalence rate for cases born to a mother reporting Arabic ethnicity (1,742.2 cases per 10,000 live births) was greater than that of cases born to a mother reporting Hispanic ethnicity (1,087.8 cases per 10,000 live births).

* Total reported birth defect cases for all diagnostic groupings per 10,000 live births

**Maternal Race/ethnicity as reported on birth record

Figure 1. Statewide Maternal Race-Specific Birth Defect Prevalence Rates: MBDR, 2017

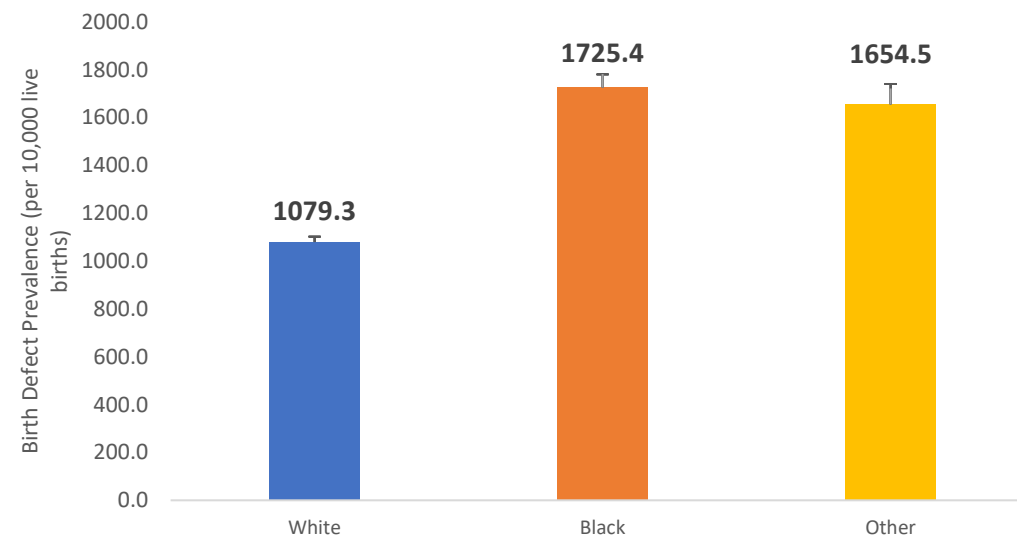
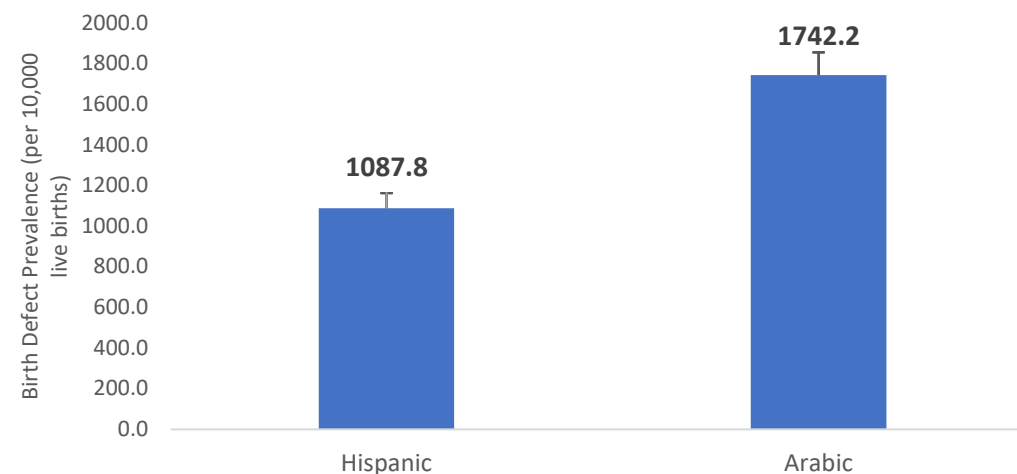
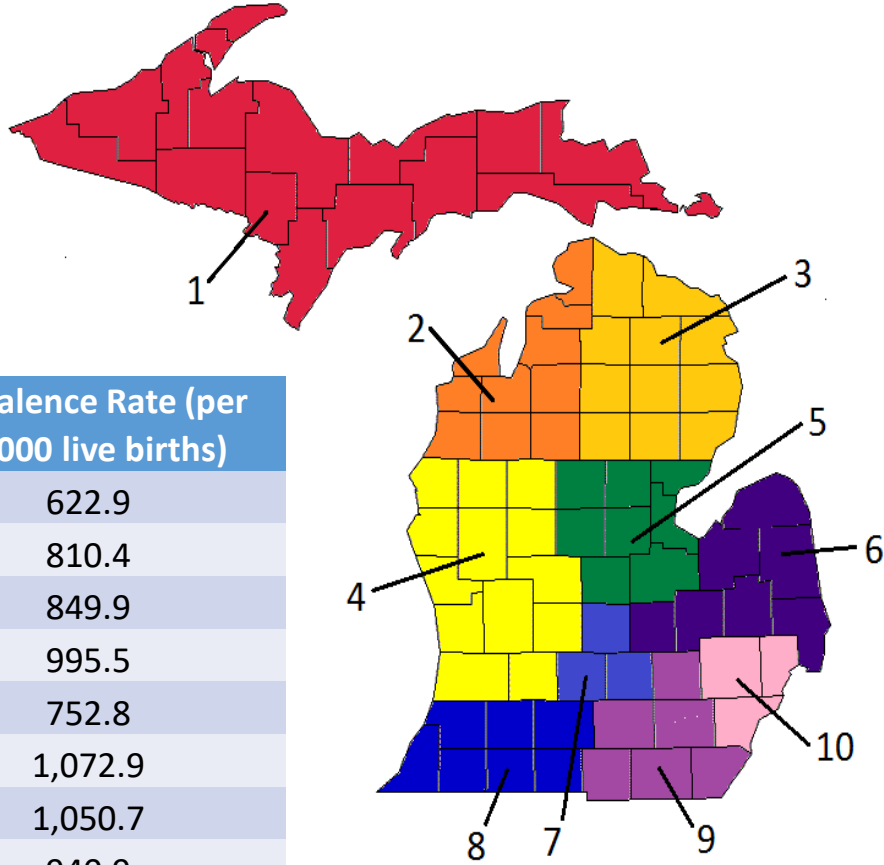


Figure 2. Statewide Maternal Ethnicity-Specific Birth Defect Prevalence Rates: MBDR, 2017



Birth Defect Prevalence Rates by Prosperity Region: MBDR, 2017

- The State of Michigan is broken up into 10 prosperity regions based on shared geographic, demographic, and economic interests.
- In 2017, Michigan prosperity regions 9 and 10 reported the highest birth defect prevalence rates of 1,619.9 and 1,872.5 cases per 10,000 live births.
- The prosperity region that reported the lowest birth defect prevalence was region 1 with a prevalence rate of 622.9 cases per 10,000 live births.



Region	Number of Cases	Prevalence Rate (per 10,000 live births)
1	166	622.9
2	233	810.4
3	154	849.9
4	1,930	995.5
5	443	752.8
6	959	1,072.9
7	539	1,050.7
8	844	940.9
9	1,644	1,619.9
10	8,556	1,872.5
Total	15,468	1,387.2

*All statewide data reported from the Michigan Birth Defects Registry (MBDR) for birth year 2017
 ** 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

Statewide Birth Defect Prevalence Rates by Prosperity Region with Prosperity Region Map: MBDR, 2017

Sleep-Related Infant Death Rate Prosperity Region 4, 2010-2018

Overview of Sleep-Related Infant Deaths in Michigan 2010-2018

- Between 2010 and 2018 there were **1,287** sleep-related infant deaths in Michigan.
- The rate of sleep-related infant deaths has fluctuated slightly but has not statistically significantly differed between years (Figure 1).
- Between 2010 and 2018 Black Infants were 3.5 times more likely to die of sleep-related causes as compared to white Infants. Infants of races Other than white and Black were 2.4 times more likely to die of sleep-related causes as compared to white infants (Figure 2).

Figure 1. Rate of Sleep-Related Infant Deaths
per 1,000 Live Births

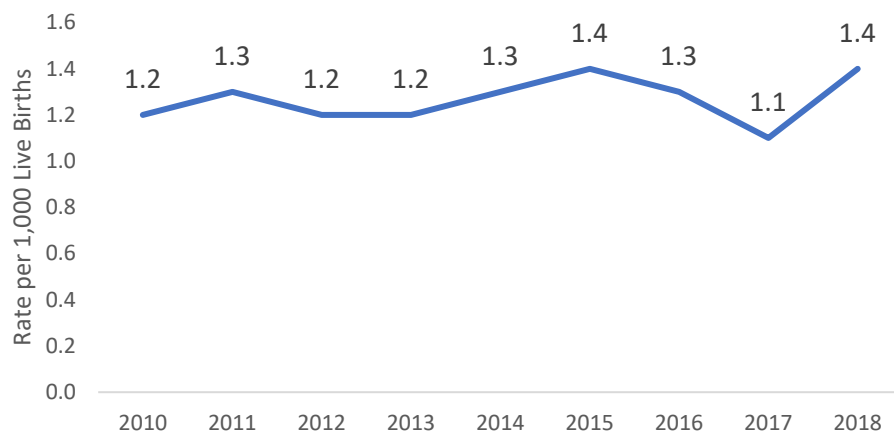
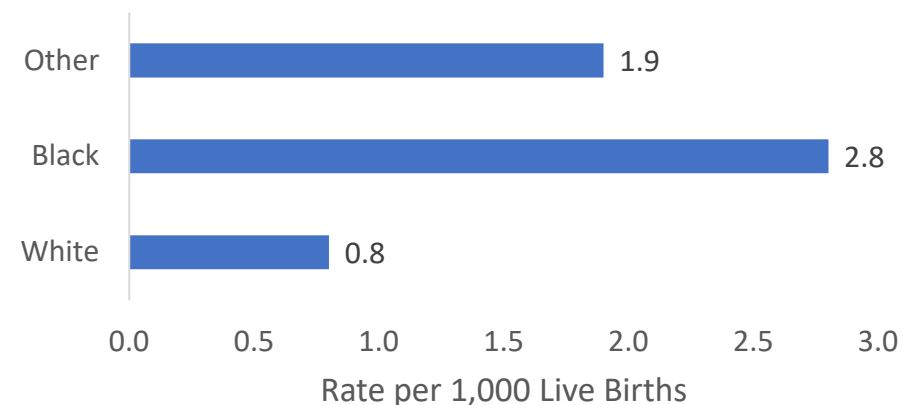
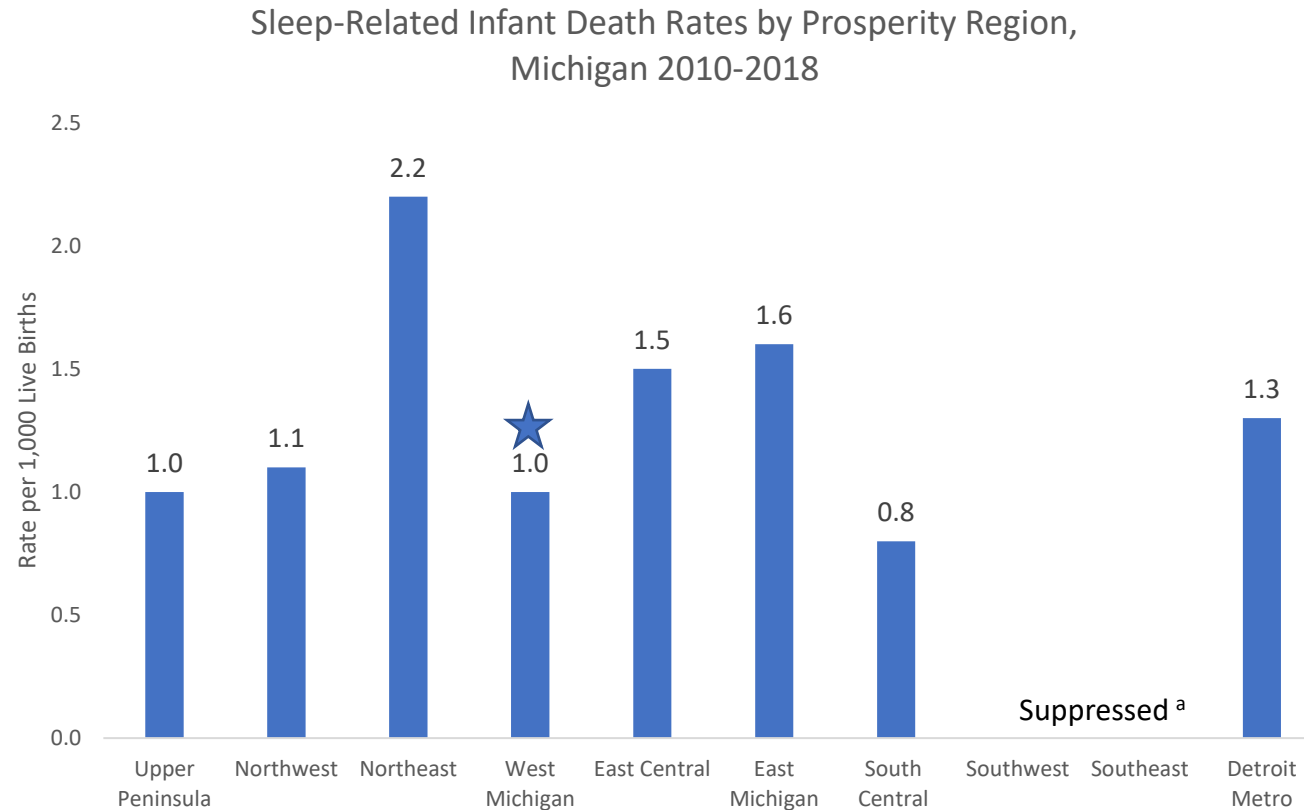


Figure 2. Rate of Sleep-Related Infant Deaths
per 1,000 Live Births, by Race



Sleep-Related Infant Death Rate, Prosperity Region 4, 2010-2018

(rate per 1,000 live births)

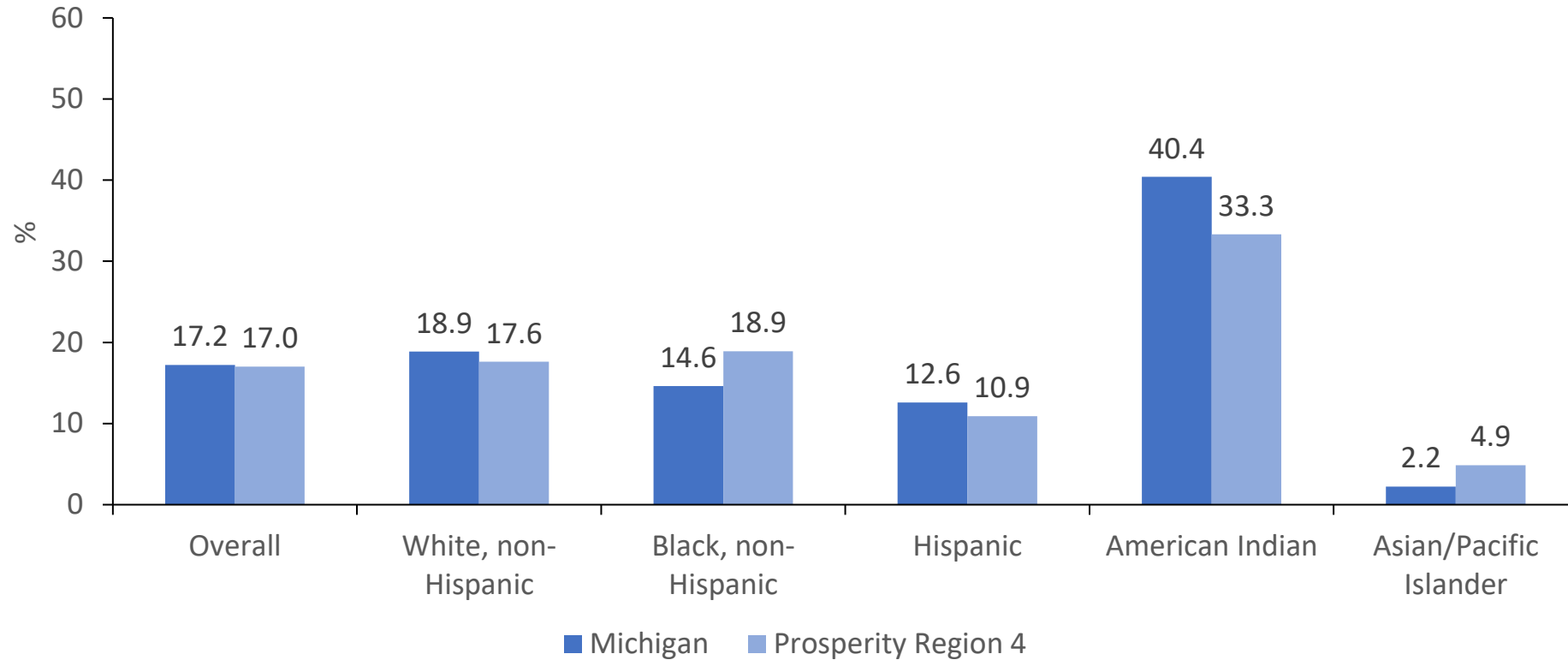


- Between 2010 and 2018 there were **175** sleep-related infant deaths in Region Four.
- The Region Four sleep-related infant death rate of 1.0 per 1,000 live births was **lower** than the Michigan sleep-related death rate (Michigan rate: 1.3 per 1,000 live births), although the difference was not statistically significant.

^a Data for Regions 8 and 9 suppressed as to not inadvertently identify a suppressed county level statistics. County level data can be found at https://www.keepingkidsalive.org/wp-content/uploads/Sleep-Related-Infant-Deaths-in-Michigan_2010-to-2018.pdf

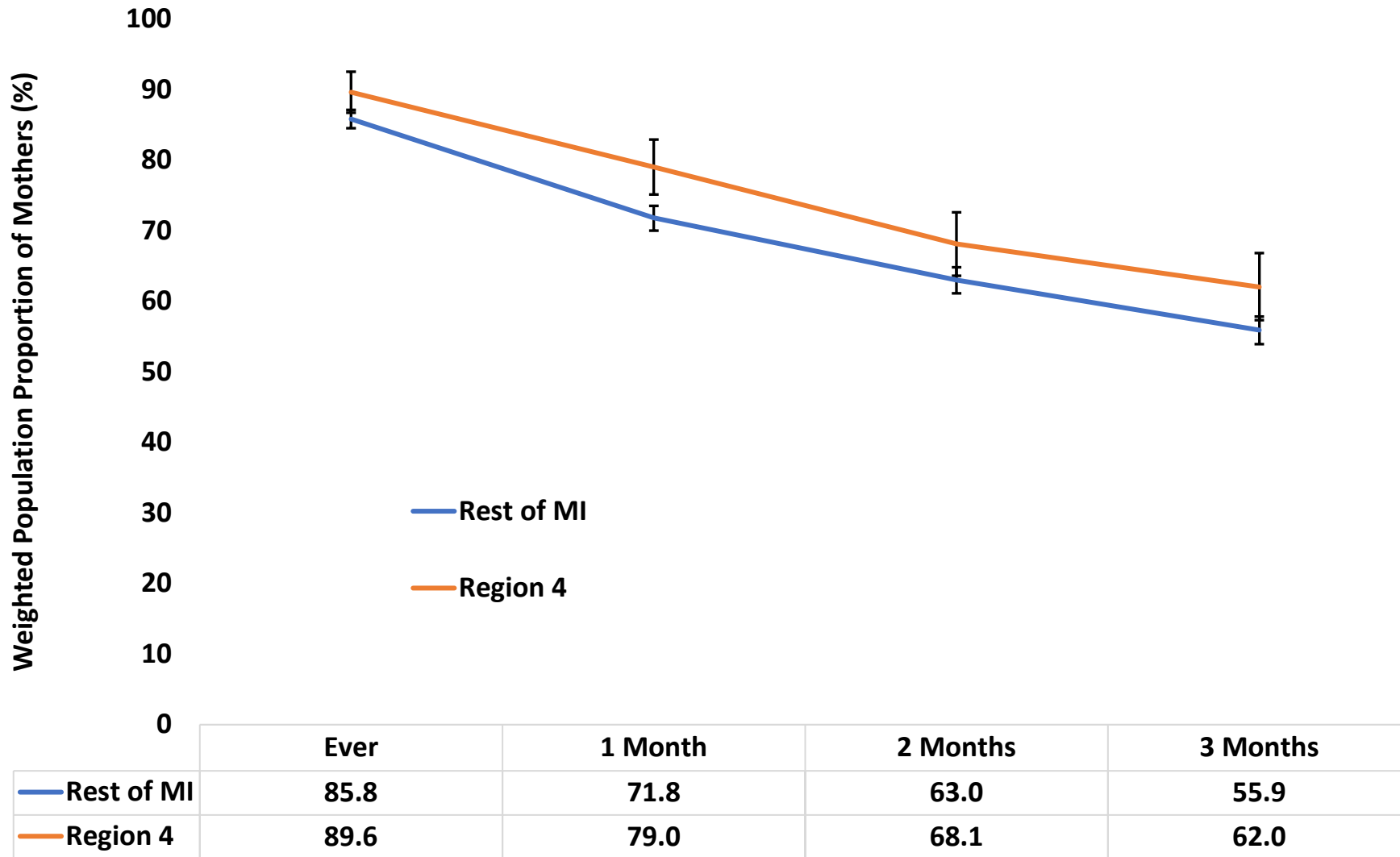
Smoking During Pregnancy, Prosperity Region 4, 2015-2019

Smoking During Pregnancy by Maternal Race/Ethnicity, Michigan and Prosperity Region 4, 2015-2019



Breastfeeding Initiation and Duration, Prosperity Region 4

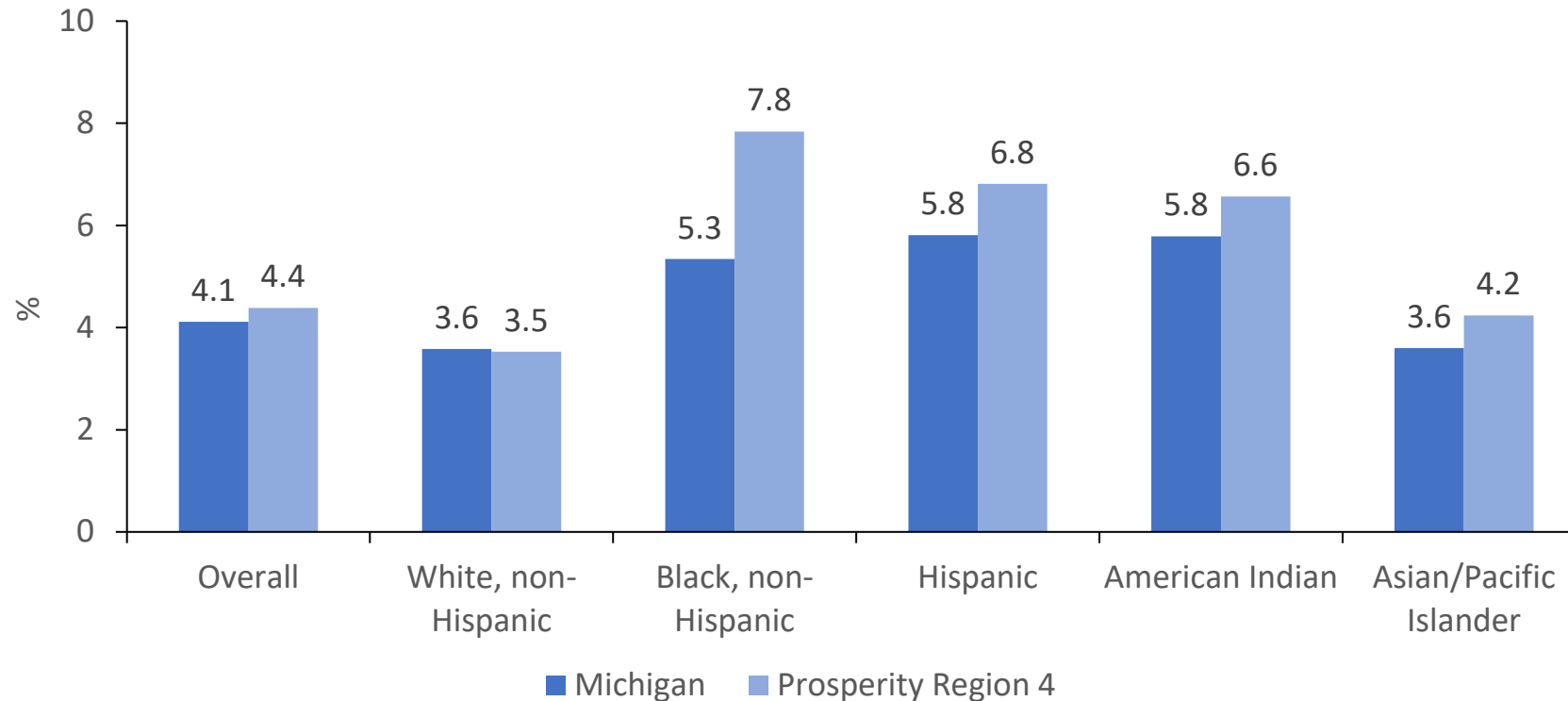
Breastfeeding Initiation and Duration, Region 4 v Rest of Michigan MI PRAMS 2016-2018



- Breastfeeding in Region 4 is more prevalent than in the remainder of the state at all four time points
 - All $p < 0.05$

Late Entry into Prenatal Care, Prosperity Region 4, 2015-2019

Late Entry Into Prenatal Care by Maternal Race/Ethnicity, Michigan and Prosperity Region 4, 2015-2019

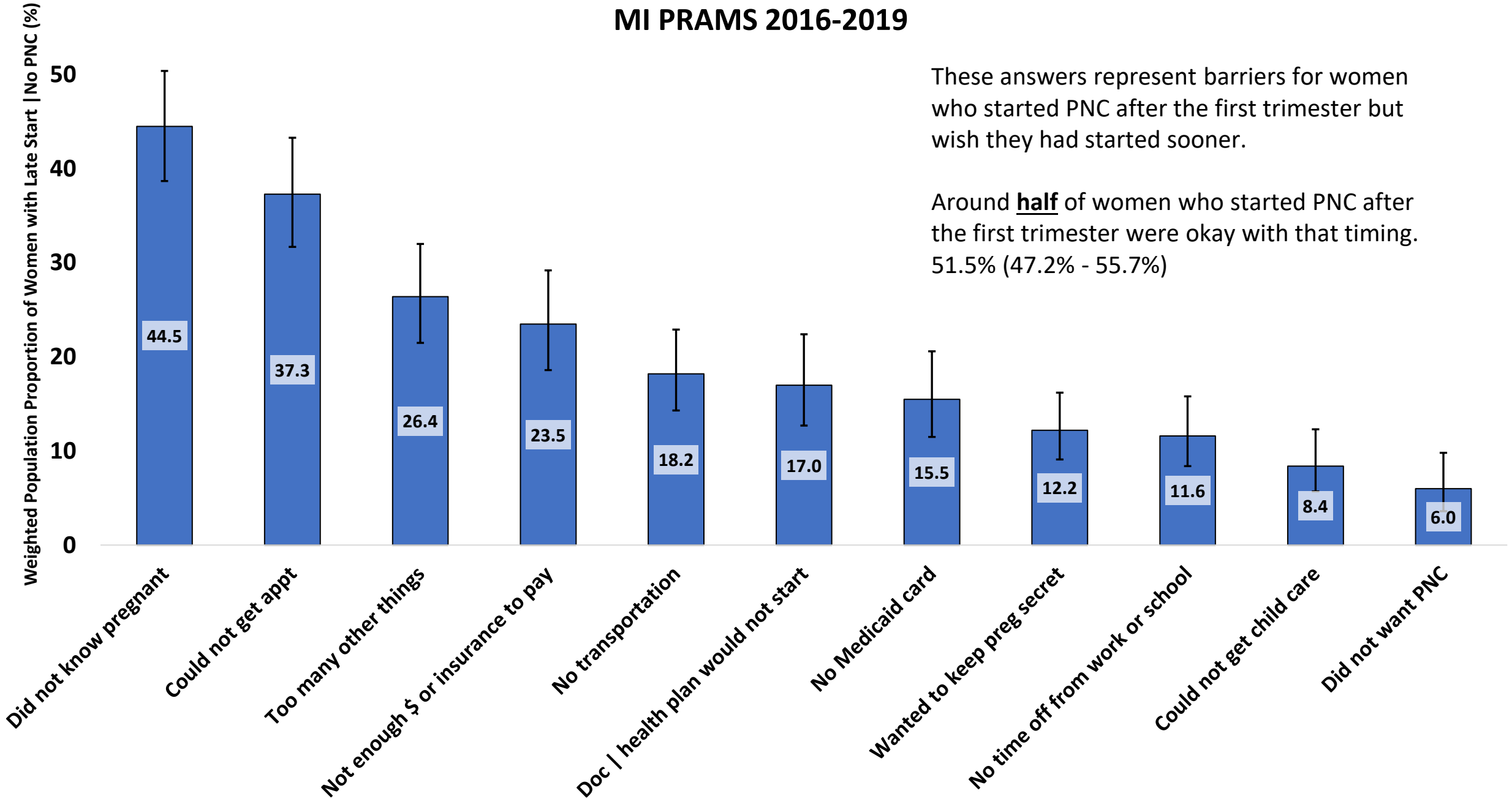


- Late entry into prenatal care refers to begin prenatal care in the 7th – 9th month of gestation

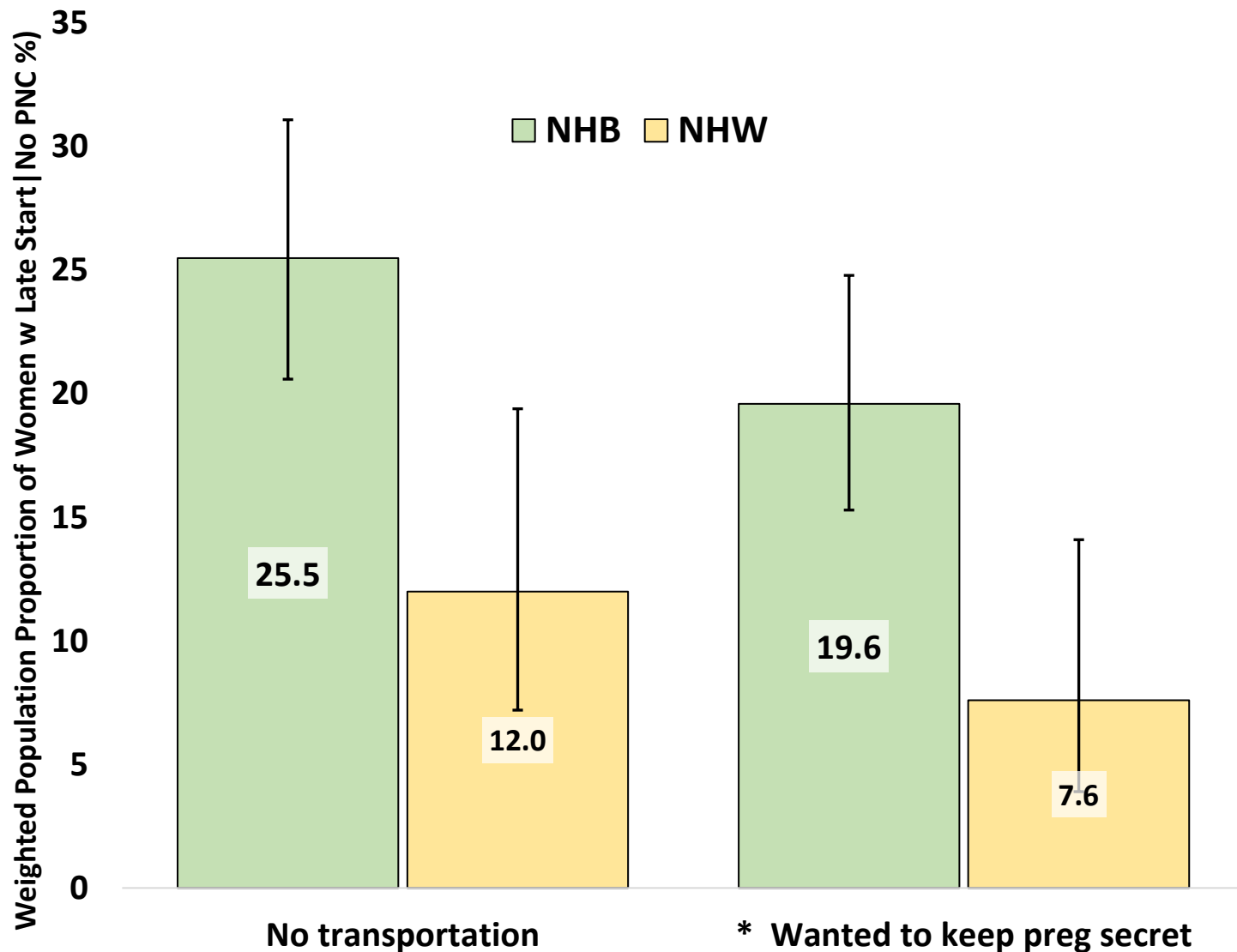
Barriers to Prenatal Care, Michigan, 2016-2019

PNC Barriers - mother started PNC AFTER 1st trimester and wanted to start sooner

MI PRAMS 2016-2019

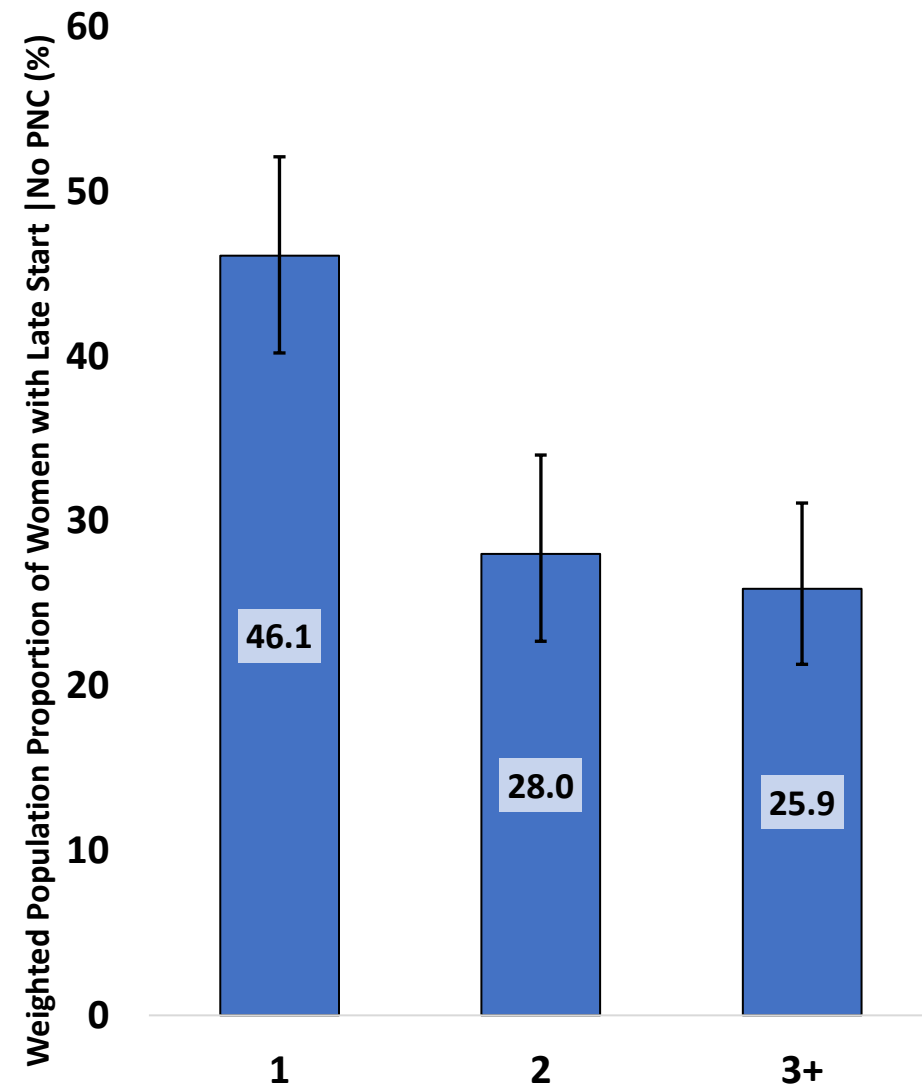


**Selected PNC Barriers with Significant Differences by Maternal Race/Ethnicity
MI PRAMS 2016-2019**



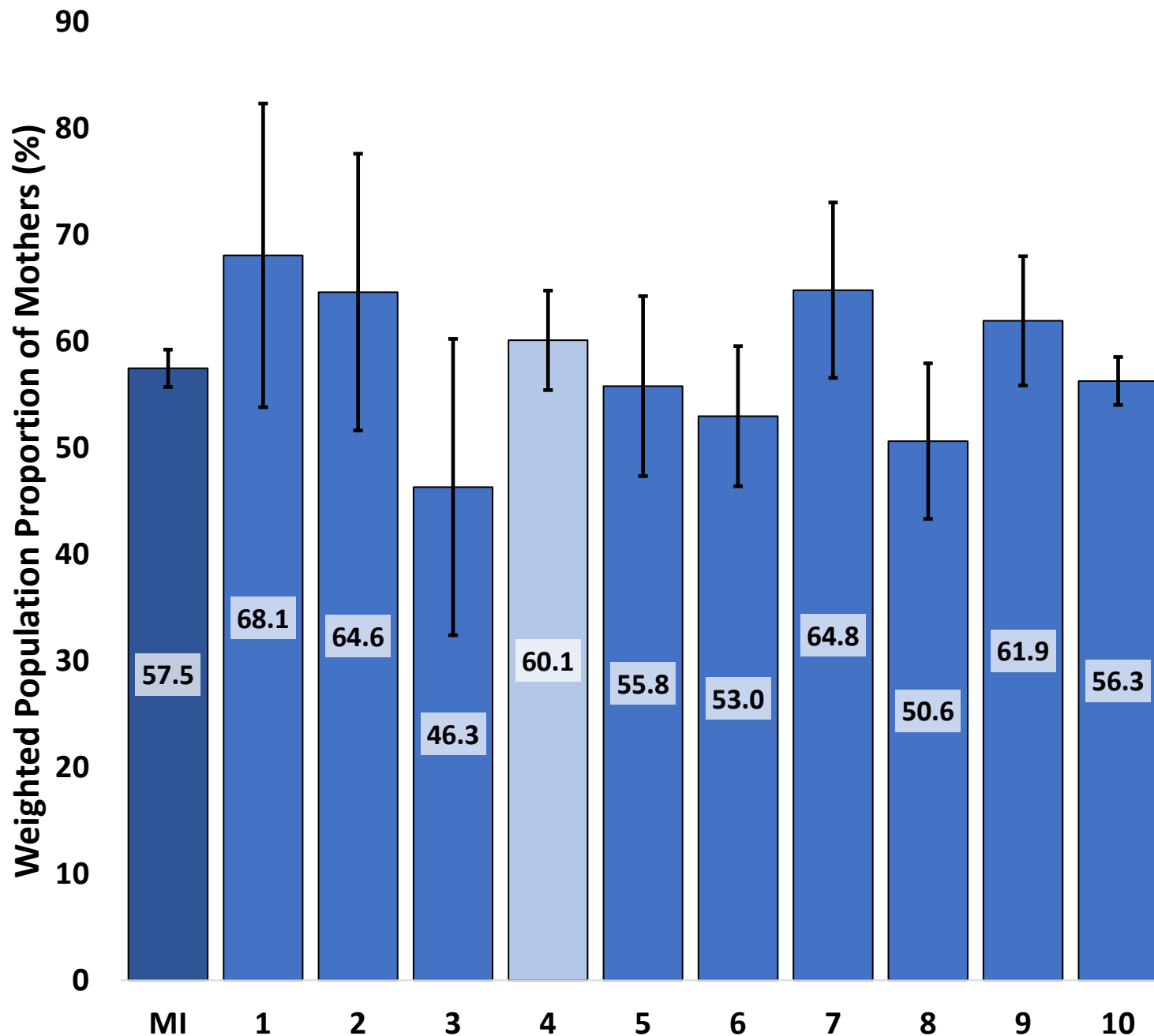
* Relative Standard Error between 30-50%; interpret estimate with caution

**Number of PNC Barriers - women with late | no PNC
MI PRAMS 2016-2019**



Pregnancy Intention, Prosperity Region 4, 2016-2018

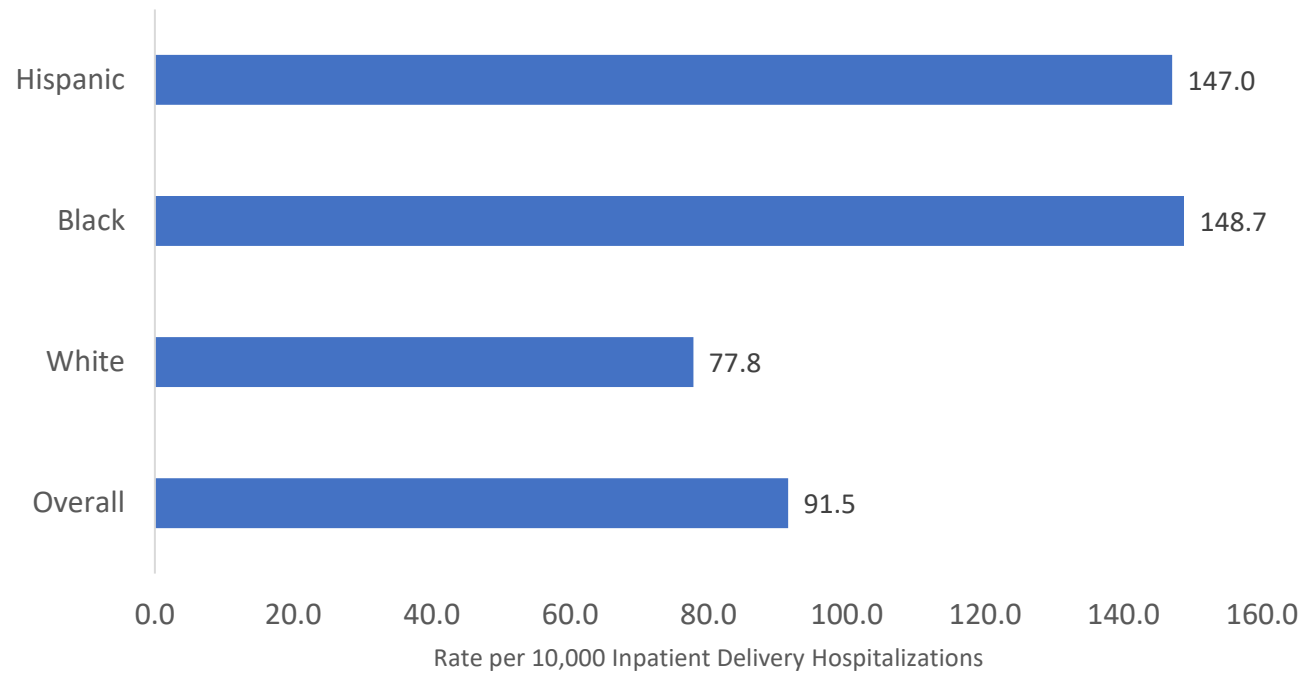
Intended Pregnancy; MI PRAMS 2016-2018



- Intended Pregnancy
- Derived from question about pregnancy timing
- Intended
 - Women who said they had wanted pregnancy for some time, or wanted to be pregnant right when they conceived
- Unintended
 - Women who wanted to be pregnant some time in the future, never again, or were unsure
- Although there is variation across the state, none of the differences are large enough to achieve statistical significance

Severe Maternal Morbidity Rate Prosperity Region 4, 2019

Severe Maternal Morbidity, Prosperity Region 4, 2019 (rate per 10,000 delivery hospitalizations)



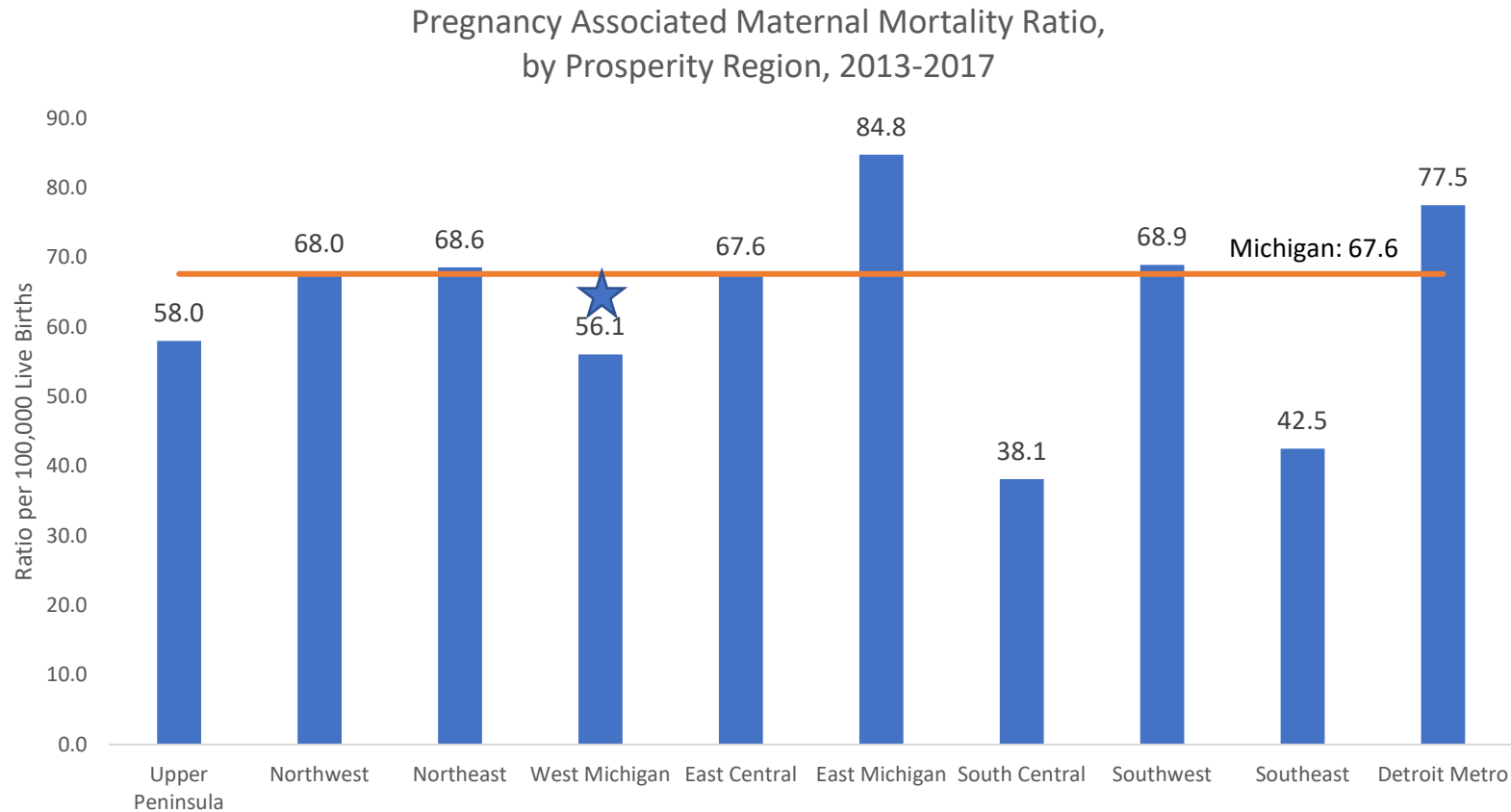
<u>2019 Michigan Rates</u>	
Overall:	194.3
White:	157.6
Black:	321.1
Asian:	192.1
Native American:	155.7
Hispanic:	205.7

* Statistics for other races are suppressed due to insufficient sample sizes.

Maternal Mortality Ratio Prosperity Region 4, 2013-2017

Maternal Mortality Ratio, Prosperity Region 4, 2013-2017

(ratio 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), pregnancy-related mortality (related to or aggravated by the pregnancy), and deaths where pregnancy-relatedness is unable to be determined.
- In Region Four there were **55** maternal deaths between 2013 and 2017