

# Maternal and Infant Health Statistics Prosperity Region 2 & 3 2013-2022

Prepared by Maternal and Child Health Epidemiology Section  
Michigan Department of Health and Human Services  
November 2024





# Infant Mortality

## Region 2 & 3

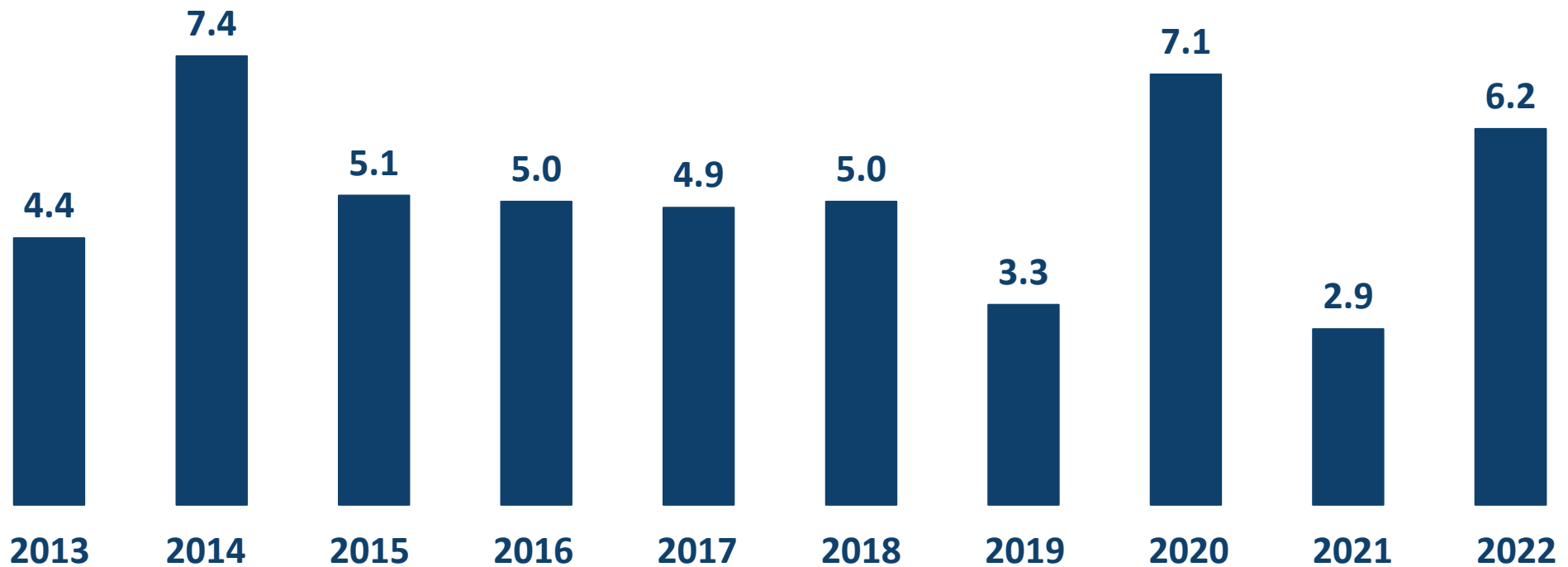
### 2013-2022

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 Region 2, 2013-2022

2022 Michigan Rate = 6.4

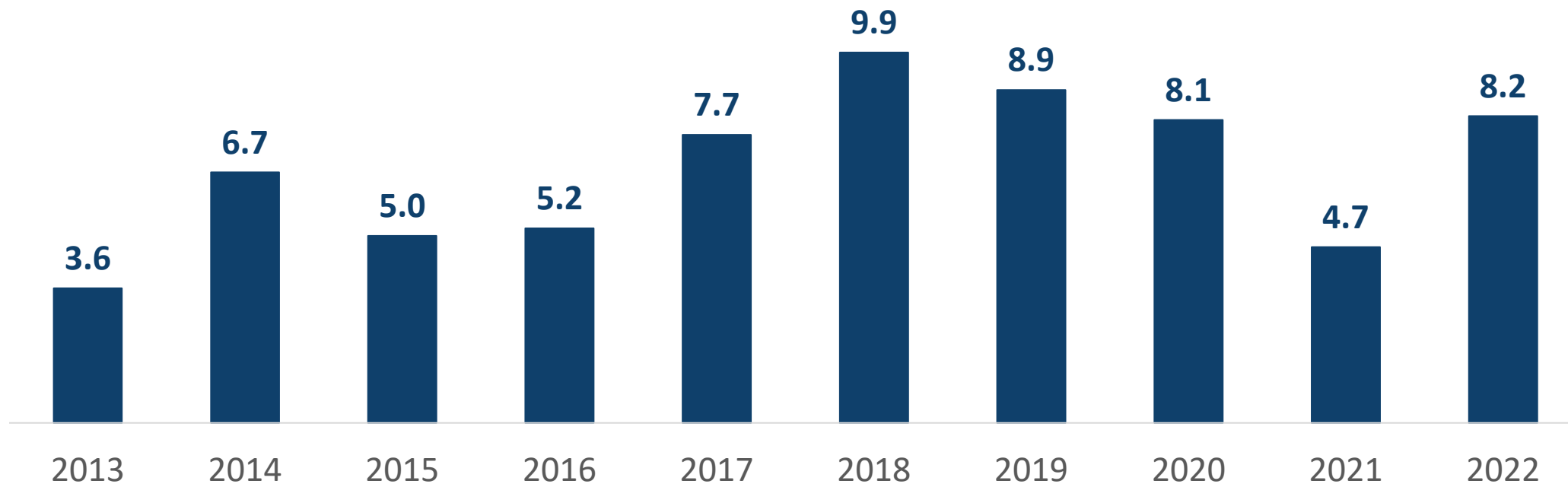
Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.



# Infant Mortality Rate Region 3, 2013-2022

2022 Michigan Rate = 6.4

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 by Maternal Race/Ethnicity Region 2, 2018-2022



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.

Maternal Race	# Infant Deaths	# Live Births	Infant Mortality Rate (Deaths per 1,000 Live Births)
White non-Hispanic	63	12,391	5.1
Hispanic	0<N<6	500	Data Not Sufficient
American Indian non-Hispanic	0	189	0.0
Asian/Pacific Islander non-Hispanic	0	107	0.0
Black non-Hispanic	0	85	0.0

# Infant Mortality by Maternal Race/Ethnicity Region 3, 2018-2022



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.

Maternal Race	# Infant Deaths	# Live Births	Infant Mortality Rate (Deaths per 1,000 Live Births)
White non-Hispanic	62	7,804	7.9
Hispanic	0<N<6	208	Data Not Sufficient
American Indian non-Hispanic	0	59	0.0
Black non-Hispanic	0	52	0.0
Asian/Pacific Islander non-Hispanic	0	37	0.0

# Infant Mortality by Expanded Native American Race/Ethnicity Region 2, 2018-2022



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. More than 1 race: American Indian or Alaskan Native *and* another race; included only if AI/AN were reported first.

	# Infant Deaths	# Live Births	Deaths per 1,000 Live Births
<b>#1:</b> Maternal Race: American Indian & Non-Hispanic	0	189	0.0
<b>#2:</b> Maternal Race: American Indian or more than one race*	0	297	0.0
<b>#3:</b> Maternal Race: American Indian or more than once race* <i>OR</i> Paternal Race: American Indian or more than one race*	0<N<6	507	Data Not Sufficient

# Infant Mortality by Expanded Native American Race/Ethnicity Region 3, 2018-2022



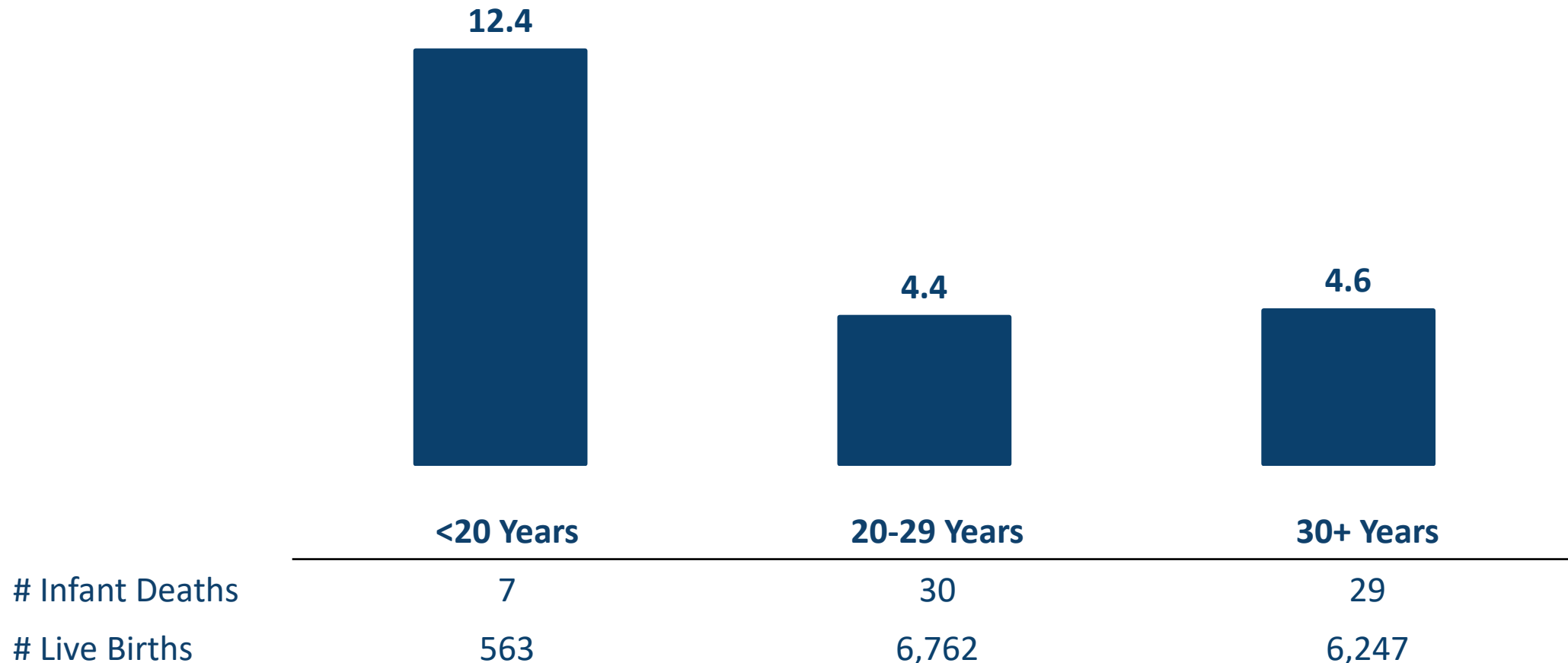
Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. More than 1 race: American Indian or Alaskan Native *and* another race; included only if AI/AN were reported first.

	# Infant Deaths	# Live Births	Deaths per 1,000 Live Births
<b>#1:</b> Maternal Race: American Indian & Non-Hispanic	0	59	0.0
<b>#2:</b> Maternal Race: American Indian or more than one race*	0<N<6	103	Data Not Sufficient
<b>#3:</b> Maternal Race: American Indian or more than once race* <i>OR</i> Paternal Race: American Indian or more than one race*	0<N<6	191	Data Not Sufficient



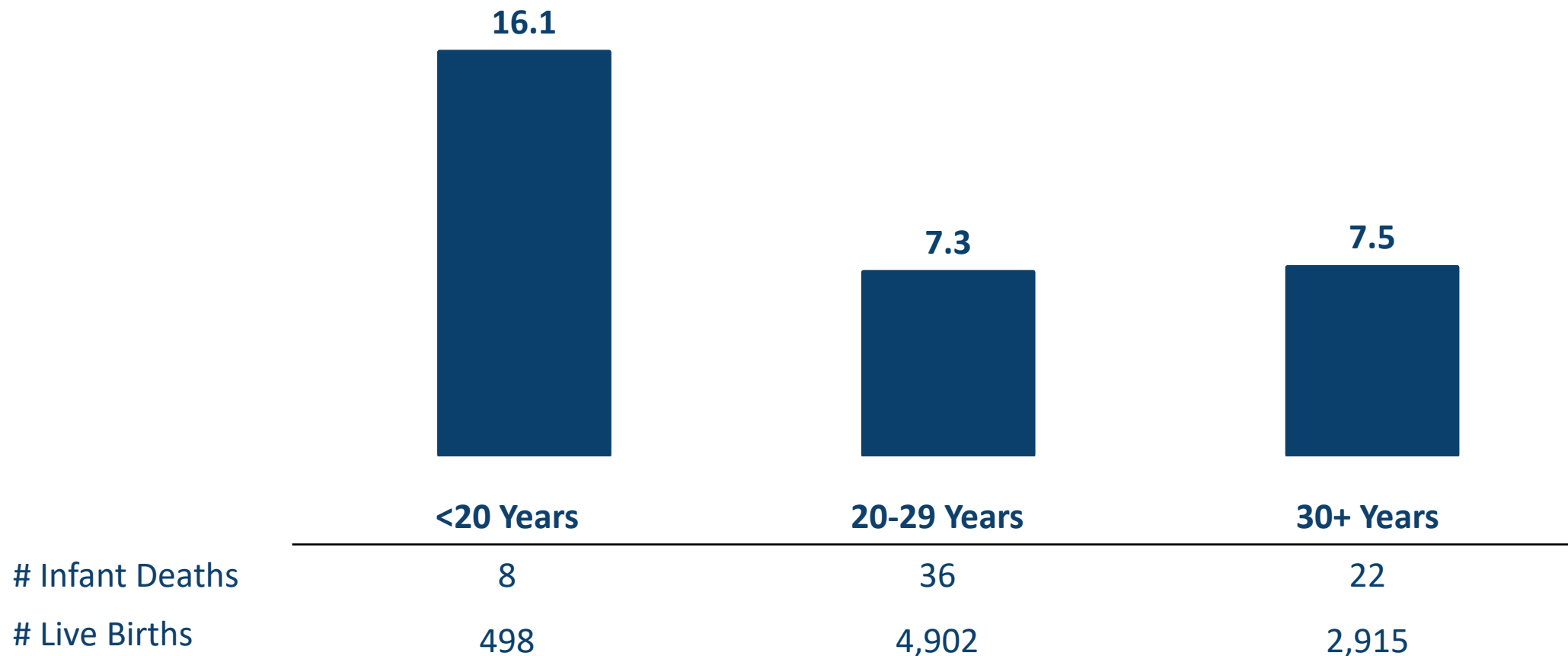
# Infant Mortality Rate by Maternal Age Region 2, 2018-2022

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 Maternal Age Region 3, 2018-2022



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 Intended Payment Source Region 2, 2018-2022



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	# Infant Deaths	# Live Births		Infant Deaths per 1,000 Live Births
Private Insurance	33	7,509	4.4	 4.4
Medicaid	30	5,243	5.7	 5.7

# Infant Mortality Rate by Intended Payment Source Region 3, 2018-2022

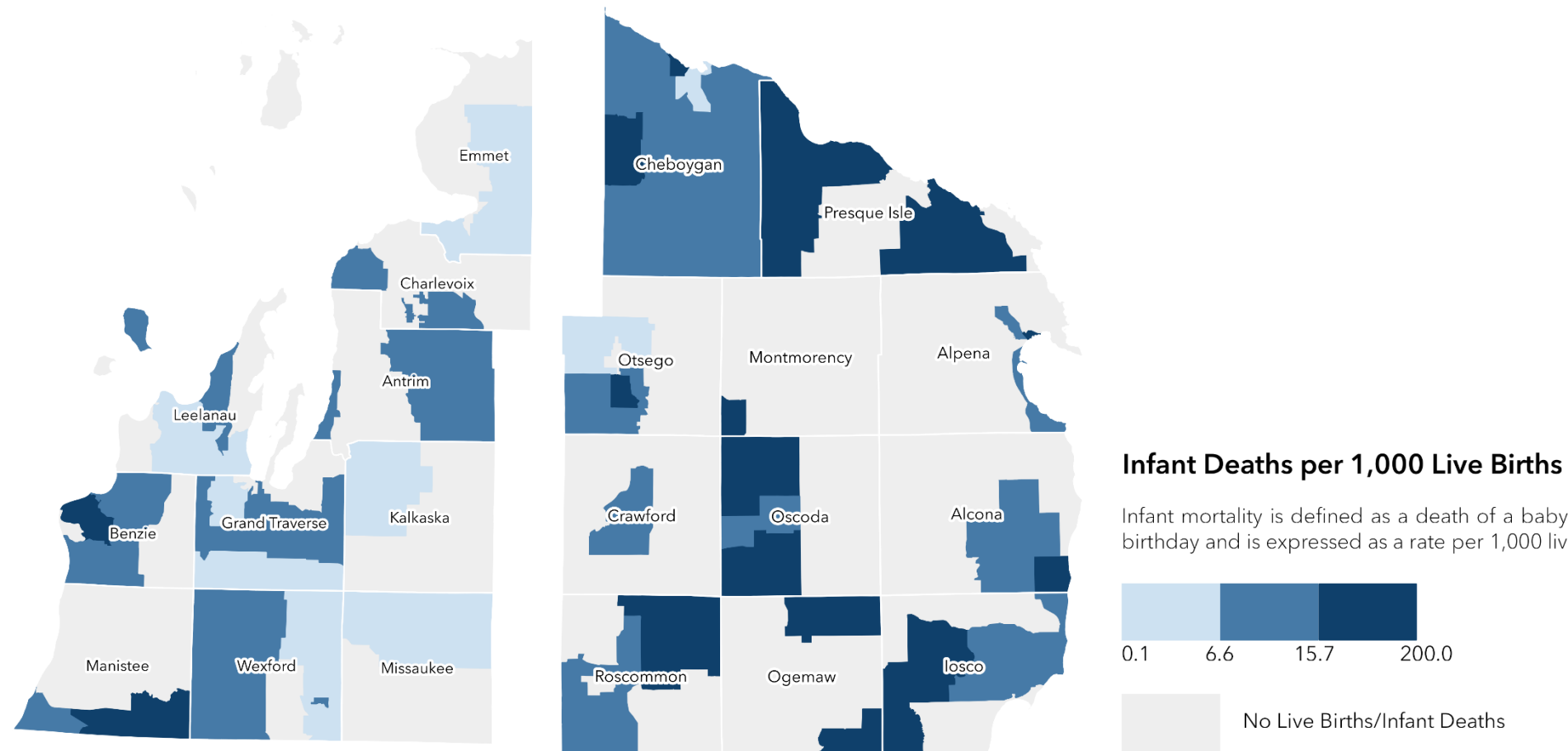


Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births.

Payment	# Infant Deaths	# Live Births	Infant Deaths per 1,000 Live Births
Private Insurance	16	3,536	4.5
Medicaid	47	4,405	10.7

# Infant Mortality Rates by Census Tract Region 2 & 3, 2017-2021

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.





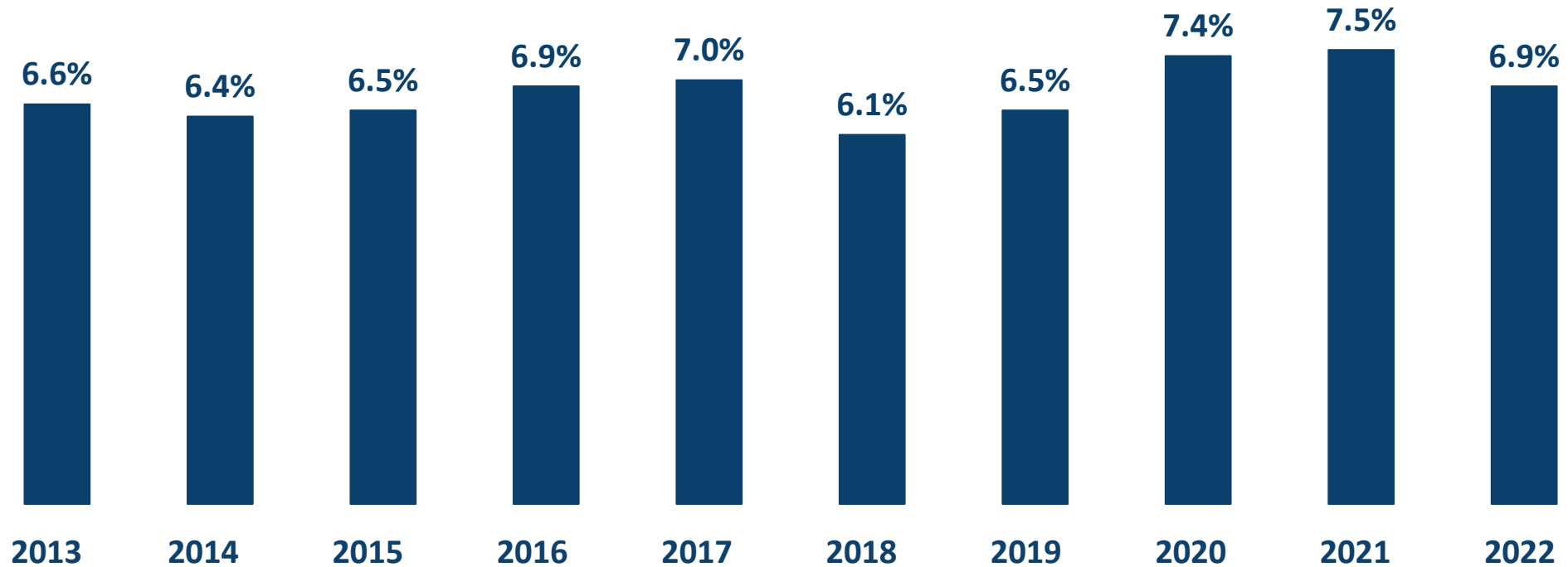
# Low Birthweight Region 2 & 3 2013-2022

Low birthweight is defined as number of live births with birthweight <2,500 grams

# Low Birthweight Region 2, 2013-2022

2022 Michigan = 9.2%

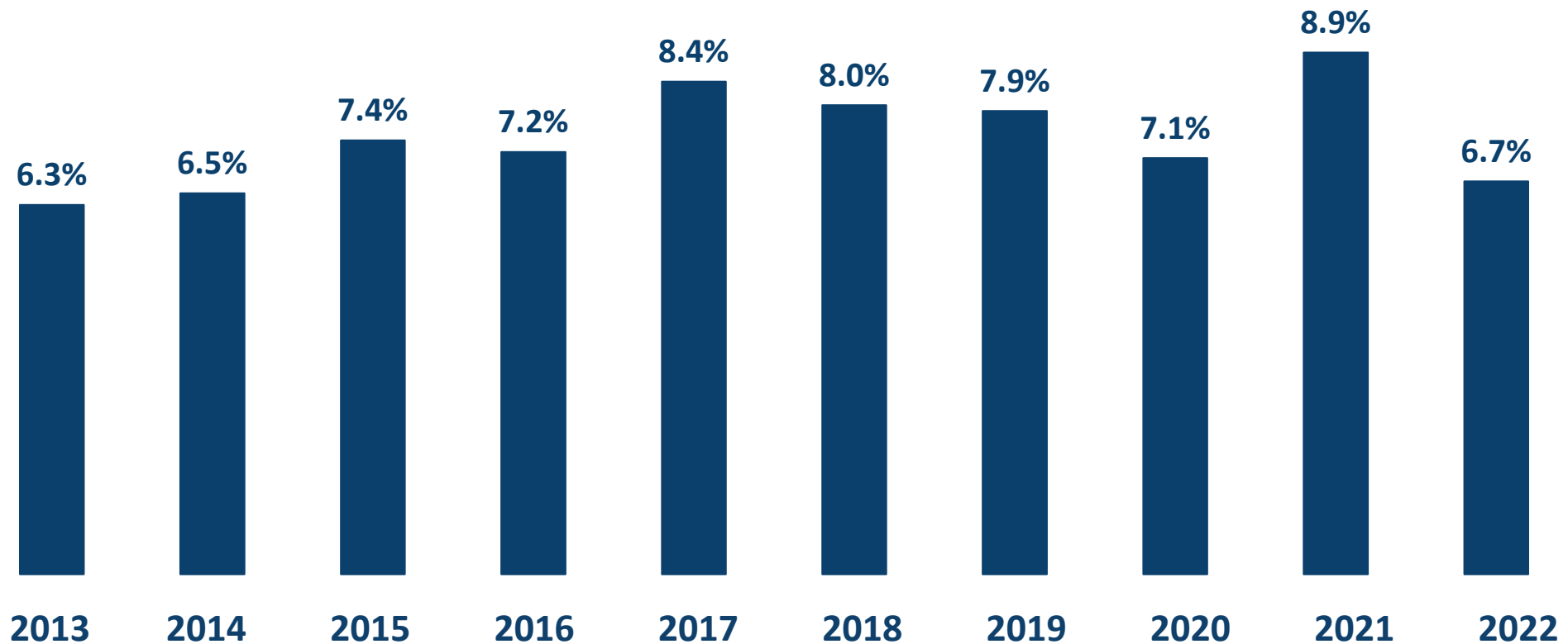
Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births.



# Low Birthweight Region 3, 2013-2022

2022 Michigan = 9.2%

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










# Low Birthweight by Maternal Race/Ethnicity Region 2, 2018-2022






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

Maternal Race	# LBW	# Live Births	Percent (%) Low Birthweight	
White non-Hispanic	838	12,391	6.8%	 6.8
Hispanic	44	500	8.8%	 8.8
American Indian non-Hispanic	10	189	5.3%	 5.3
Asian/Pacific Islander non-Hispanic	6	107	5.6%	 5.6
Black non-Hispanic	10	85	11.8%	 11.8

# Low Birthweight by Maternal Race/Ethnicity, Region 3, 2018-2022



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

Maternal Race	# LBW	# Live Births		Percent (%) Low Birthweight
White non-Hispanic	599	7,804	7.7%	 7.7
Hispanic	19	208	9.1%	 9.1
American Indian non-Hispanic	6	59	10.2%	 10.2
Black non-Hispanic	0<N<6	52	Data Not Sufficient	
Asian/Pacific Islander non-Hispanic	0<N<6	37	Data Not Sufficient	

# Low Birthweight by Expanded Native American Race/Ethnicity Region 2, 2018-2022



Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births. More than 1 race: American Indian or Alaskan Native *and* another race; included only if AI/AN were reported first.

	# Low Birthweight	# Live Births	% Low Birthweight
<b>#1:</b> Maternal Race: American Indian & Non-Hispanic	10	189	5.3
<b>#2:</b> Maternal Race: American Indian or more than one race*	14	297	4.7
<b>#3:</b> Maternal Race: American Indian or more than once race* <i>OR</i> Paternal Race: American Indian or more than one race*	24	507	4.7

# Low Birthweight by Expanded Native American Race/Ethnicity Region 3, 2018-2022

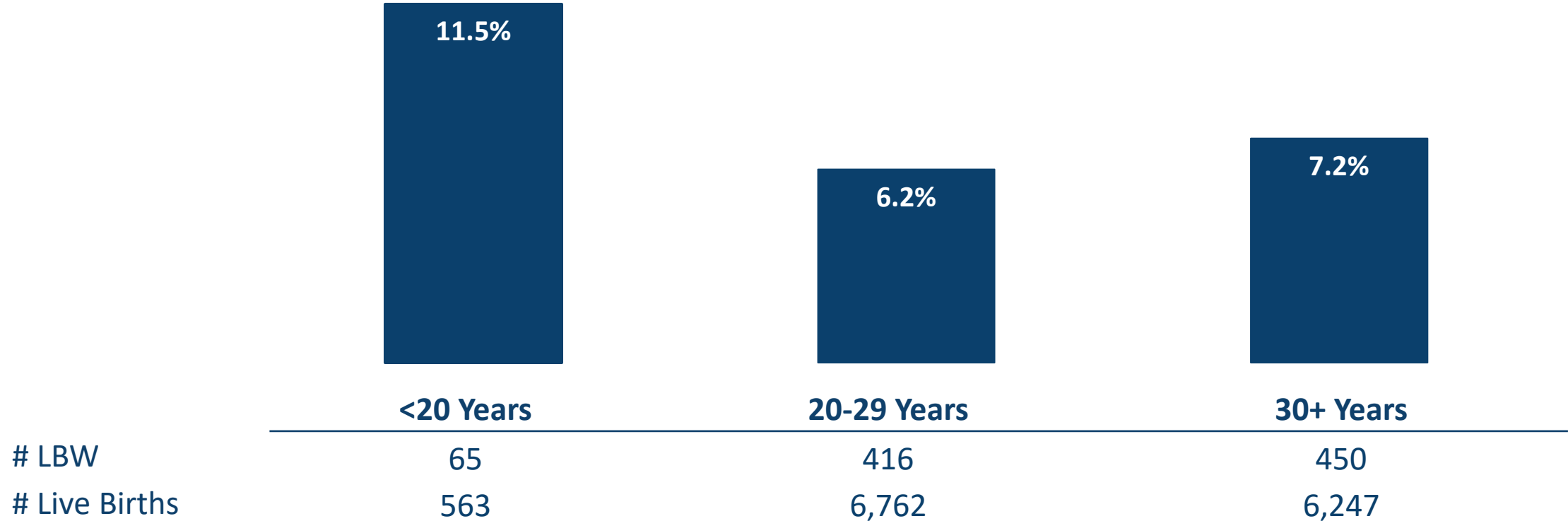


Low birthweight rate is defined as number of births with baby birthweight <2,500 grams per 100 live births. More than 1 race: American Indian or Alaskan Native *and* another race; included only if AI/AN were reported first.

	# Low Birthweight	# Live Births	% Low Birthweight
<b>#1:</b> Maternal Race: American Indian & Non-Hispanic	6	59	10.2
<b>#2:</b> Maternal Race: American Indian or more than one race*	10	103	9.7
<b>#3:</b> Maternal Race: American Indian or more than once race* <i>OR</i> Paternal Race: American Indian or more than one race*	18	191	9.4

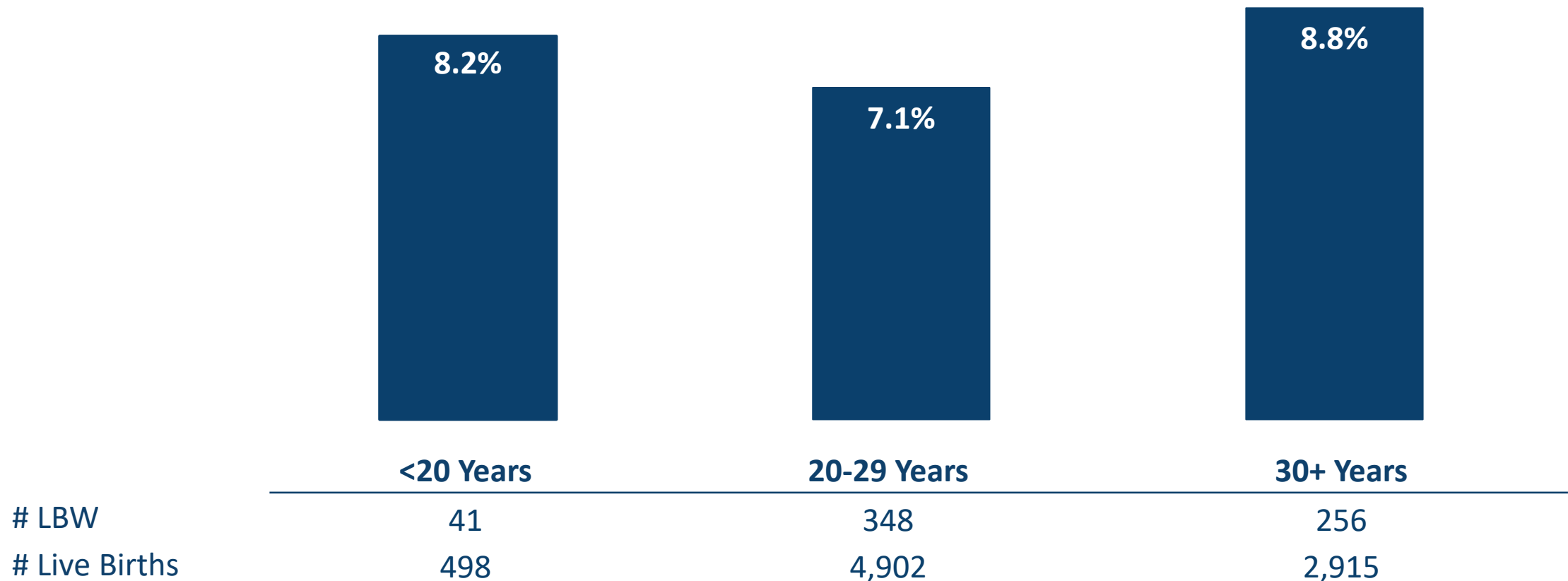
# Low Birthweight by Maternal Age Region 2, 2018-2022

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



# Low Birthweight by Maternal Age Region 3, 2018-2022



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



# Low Birthweight by Intended Payment Source Region 2, 2018-2022



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

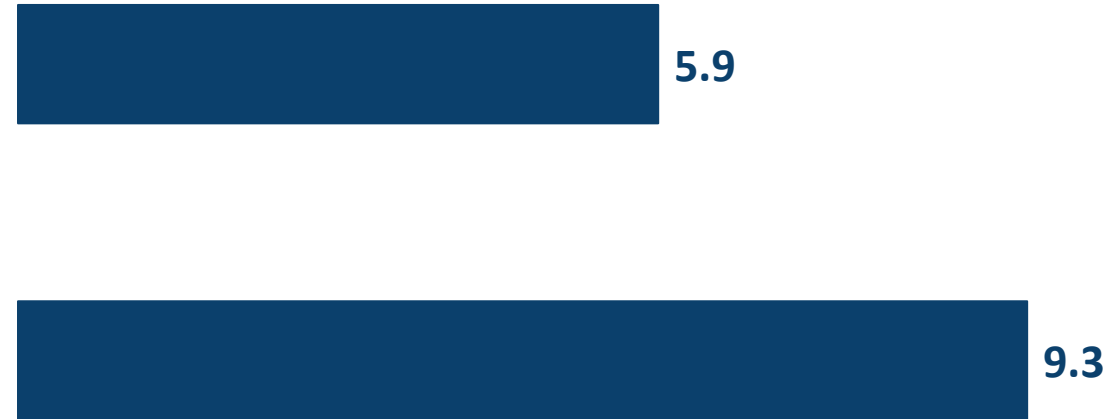
Payment	# LBW	# Live Births		Percent (%) Low Birthweight
Private Insurance	470	7,509	6.3%	 <b>6.3</b>
Medicaid	431	5,243	8.2%	 <b>8.2</b>

# Low Birthweight by Intended Payment Source Region 3, 2018-2022



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

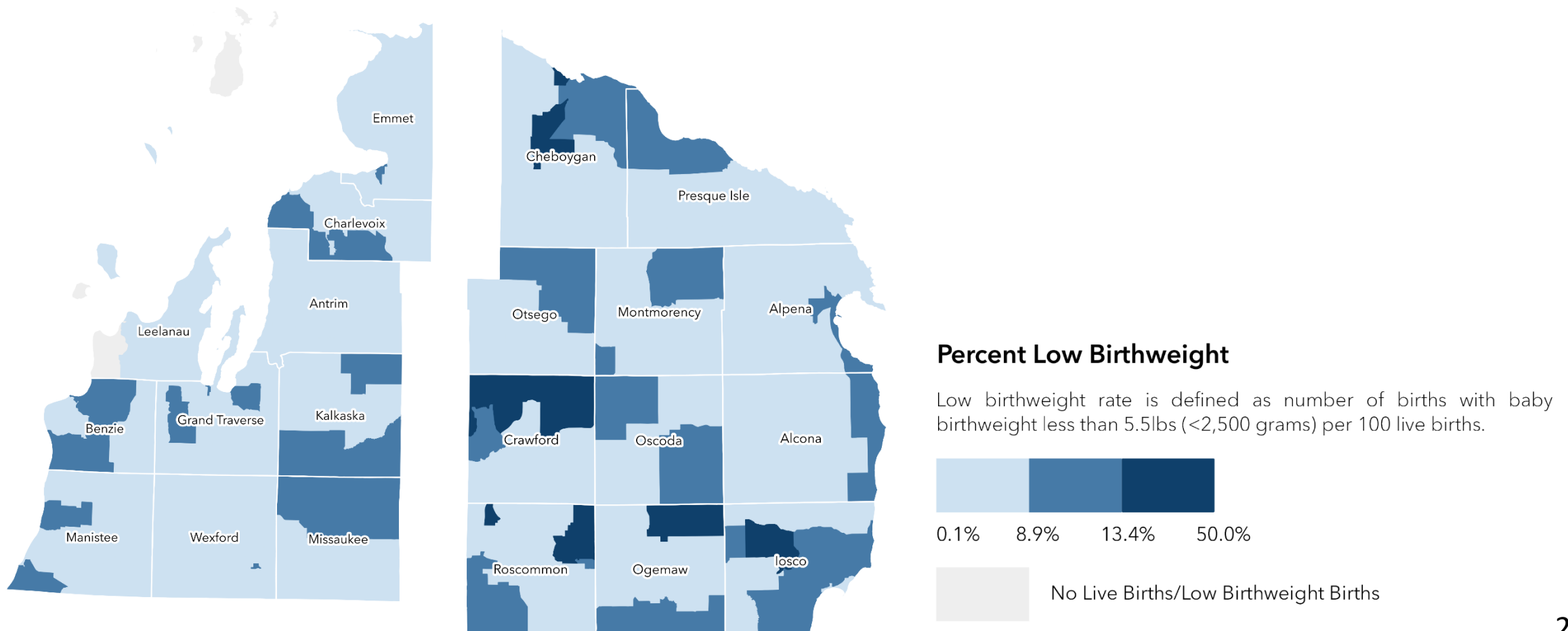
Payment	# LBW	# Live Births	Percent (%) Low Birthweight
Private Insurance	210	3,536	5.9%
Medicaid	411	4,405	9.3%





# Low Birthweight by Census Tract Region 2 & 3, 2017-2021

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





# Preterm Births

## Region 2 & 3

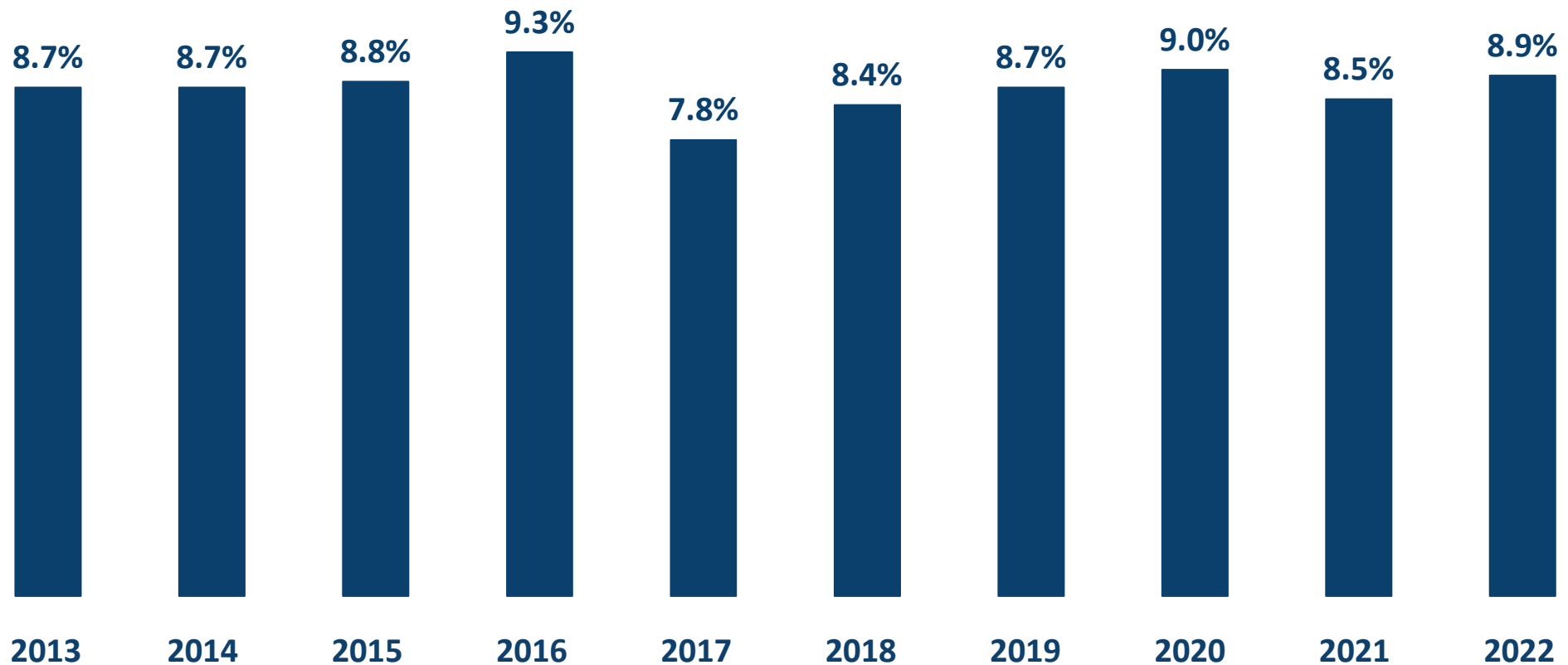
### 2013-2022

Preterm birth is defined as number of live births delivered before 37 completed weeks of gestation.

# Preterm Births Region 2, 2013-2022

2022 Michigan = 10.3%

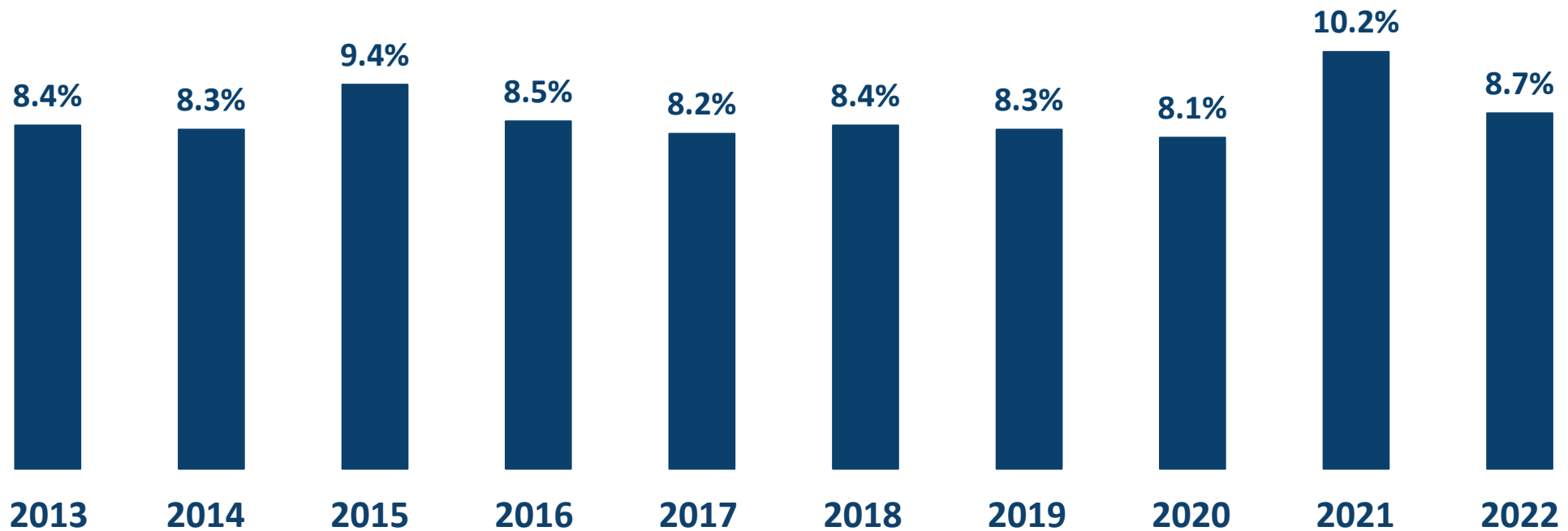
Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.



# Preterm Births Region 3, 2013-2022

2022 Michigan = 10.3%

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.



# Preterm Birth by Maternal Race/Ethnicity Region 2, 2018-2022






Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.

Maternal Race	# Preterm	# Live Births	Percent (%) Preterm	Percent (%) Preterm
White non-Hispanic	1,065	12,391	8.6%	8.6
Hispanic	50	500	10.0%	10.0
American Indian non-Hispanic	19	189	10.1%	10.1
Asian/Pacific Islander non-Hispanic	10	107	9.3%	9.3
Black non-Hispanic	11	85	12.9%	12.9

# Preterm Birth by Maternal Race/Ethnicity Region 3, 2018-2022



Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.

Maternal Race	# Preterm	# Live Births		Percent (%) Preterm
White non-Hispanic	674	7,804	8.6%	 8.6
Hispanic	23	208	11.1%	 11.1
American Indian non-Hispanic	7	59	11.9%	 11.9
Black non-Hispanic	0<N<6	52	Data Not Sufficient	
Asian/Pacific Islander non-Hispanic	0<N<6	37	Data Not Sufficient	

# Preterm Birth by Expanded Native American Race/Ethnicity, Region 2, 2018-2022



Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births. More than 1 race: American Indian or Alaskan Native *and* another race; included only if AI/AN were reported first.

	# Preterm	# Live Births	% Preterm
<b>#1:</b> Maternal Race: American Indian & Non-Hispanic	19	189	10.1%
<b>#2:</b> Maternal Race: American Indian or more than one race*	23	297	7.7%
<b>#3:</b> Maternal Race: American Indian or more than one race* <i>OR</i> Paternal Race: American Indian or more than one race*	45	507	8.9%

# Preterm Birth by Expanded Native American Race/Ethnicity, Region 3, 2018-2022



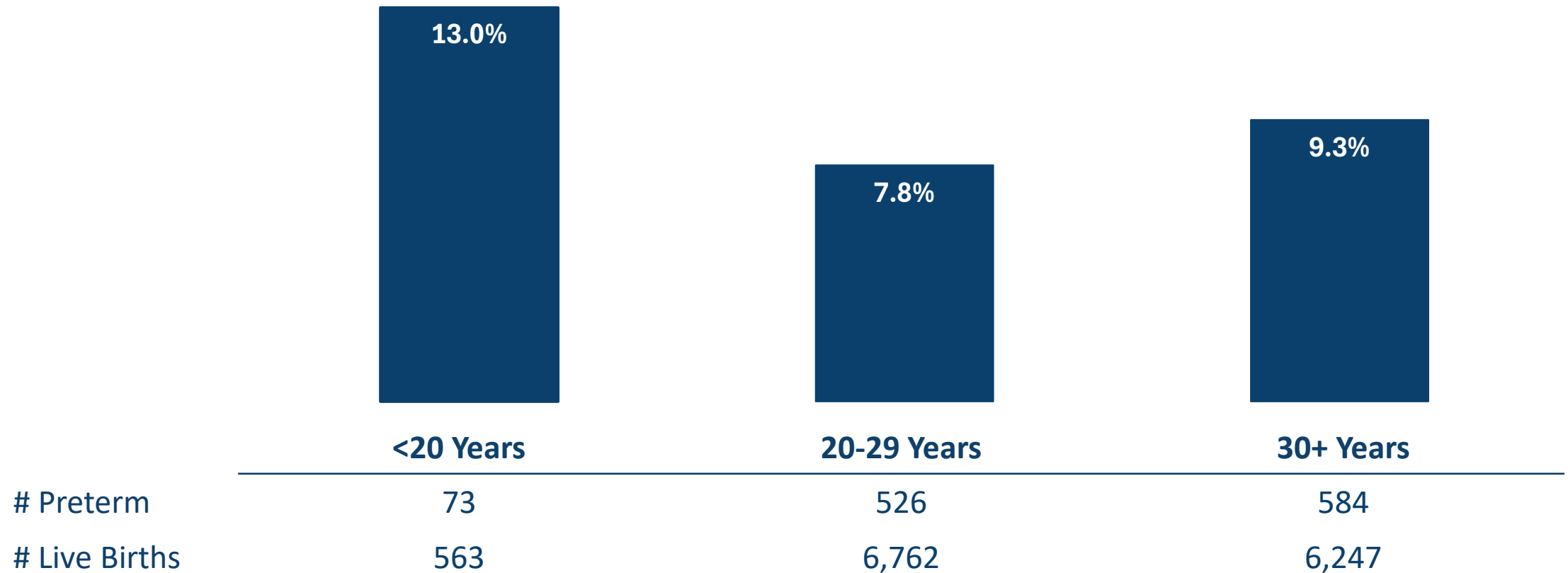
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	# Preterm	# Live Births	% Preterm
<b>#1:</b> Maternal Race: American Indian & Non-Hispanic	7	59	11.9%
<b>#2:</b> Maternal Race: American Indian or more than one race*	10	103	9.7%
<b>#3:</b> Maternal Race: American Indian or more than one race* <i>OR</i> Paternal Race: American Indian or more than one race*	19	191	9.9%



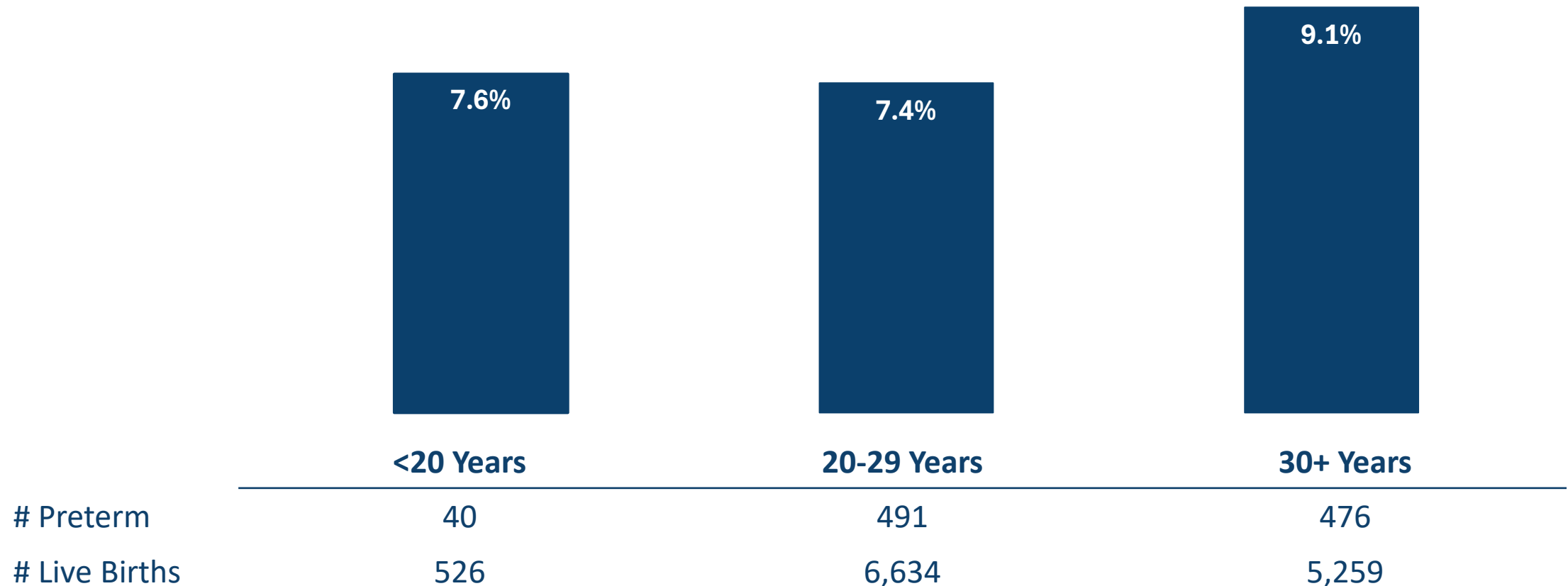
# Preterm Birth by Maternal Age Region 2, 2018-2022

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.



# Preterm Birth by Maternal Age Region 3, 2018-2022

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.



# Preterm Births by Intended Payment Source Region 2, 2018-2022





Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.

Payment	# Preterm	# Live Births	Percent (%) Preterm
Private Insurance	646	7,509	8.6%
Medicaid	503	5,243	9.6%

# Preterm Births by Intended Payment Source Region 3, 2018-2022

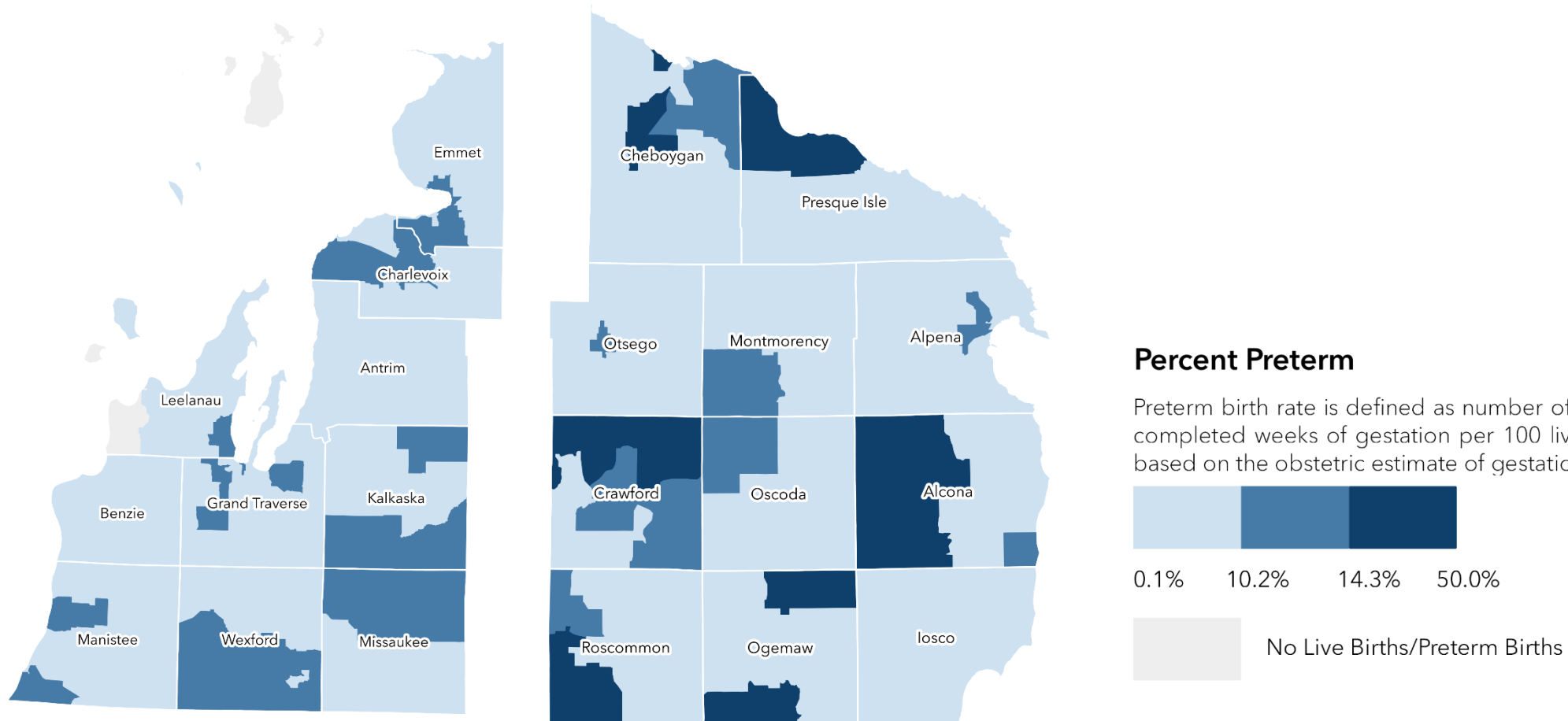


Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.

Payment	# Preterm	# Live Births		Percent (%) Preterm
Private Insurance	253	3,536	7.2%	 <b>7.2</b>
Medicaid	449	4,405	10.2%	 <b>10.2</b>

# Preterm Birth by Census Tract Region 2 & 3, 2017-2021

Preterm birth rate is defined as number of births delivered before 37 completed weeks of gestation per 100 live births.





# Prenatal Care Utilization

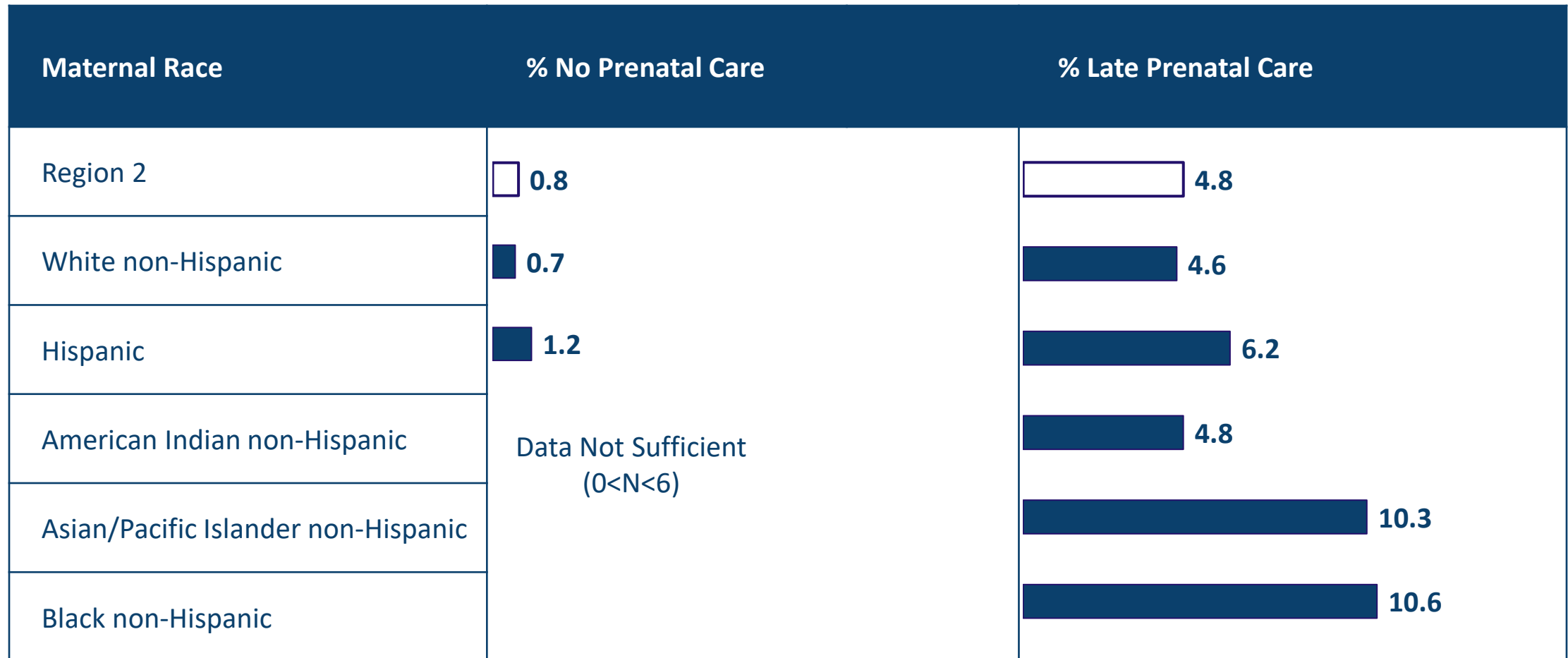
## Region 2 & 3

### 2022

# Prenatal Care Utilization by Maternal Race/Ethnicity Region 2, 2018-2022



‘No prenatal care’ is a proportion of all live births. ‘Late prenatal care’ is calculated among live births where prenatal care was accessed. Late entry into prenatal care refers to prenatal care beginning in the 3<sup>rd</sup> trimester.



# Prenatal Care Utilization by Maternal Race/Ethnicity Region 3, 2018-2022



‘No prenatal care’ is a proportion of all live births. ‘Late prenatal care’ is calculated among live births where prenatal care was accessed. Late entry into prenatal care refers to prenatal care beginning in the 3<sup>rd</sup> trimester.

Maternal Race	% No Prenatal Care	% Late Prenatal Care
Region 3	1.0	4.7
White non-Hispanic	0.9	4.6
Hispanic	Data Not Sufficient (0<N<6)	9.1
American Indian non-Hispanic	0.0	0.0
Black non-Hispanic	Data Not Sufficient (0<N<6)	Data Not Sufficient (0<N<6)
Asian/Pacific Islander non-Hispanic	0.0	0.0

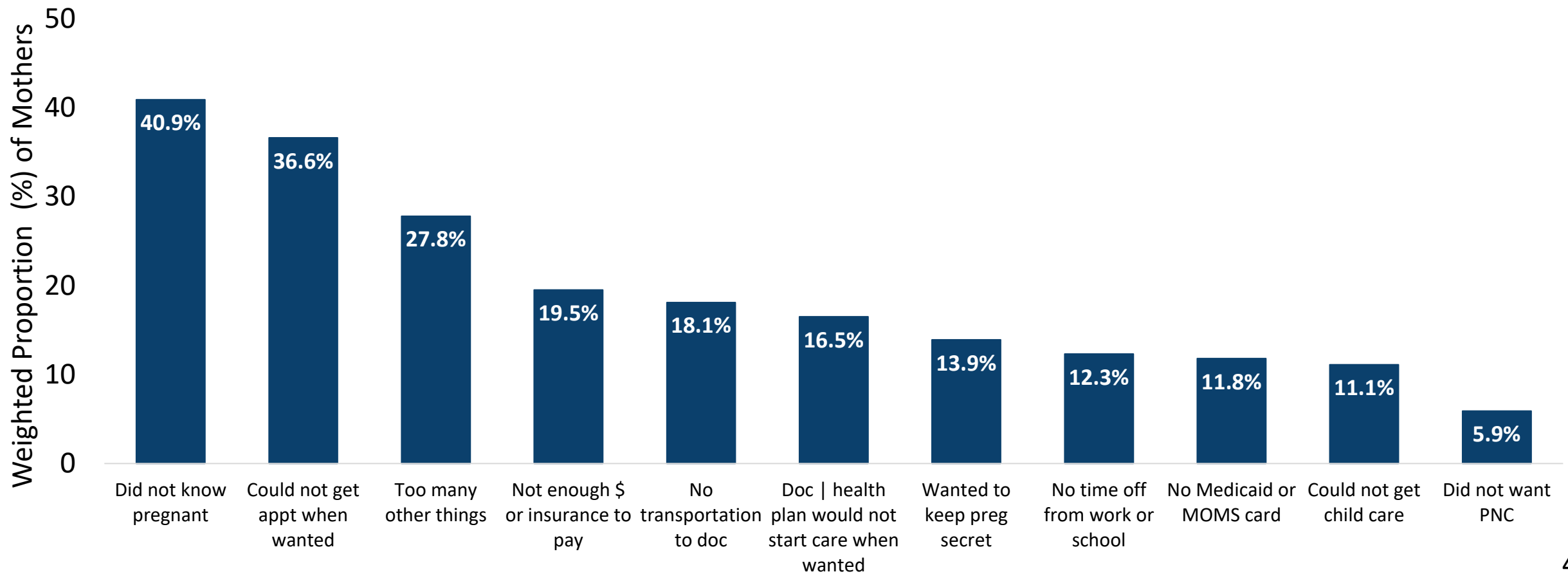




# Barriers to Prenatal Care Michigan 2016-2022

# Barriers to Prenatal Care Michigan, 2016-2022

The chart depicts barriers to prenatal care among mothers who **started PNC *after* 1st trimester and wanted to start sooner**. Around half (51.5%) of mothers who started PNC after the first trimester were okay with that timing.



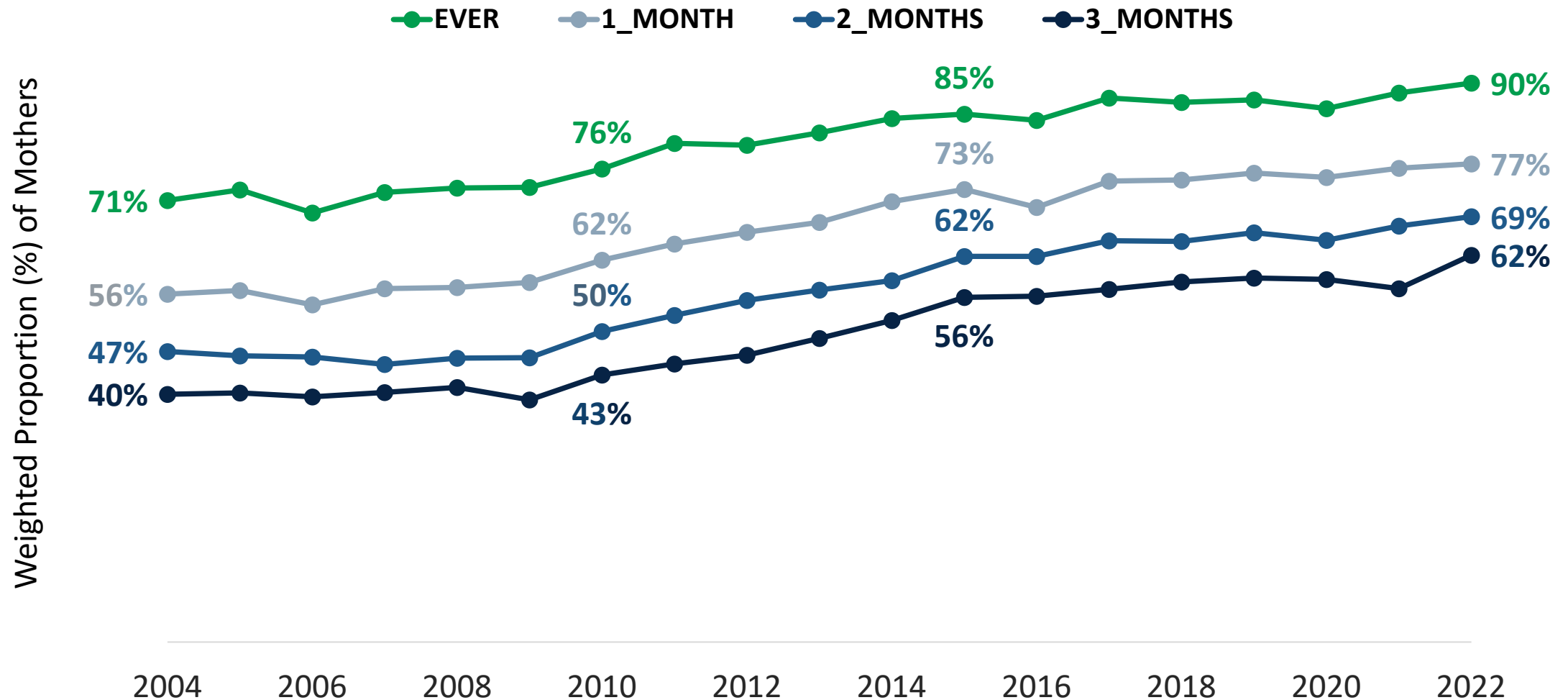


# Breastfeeding Initiation and Duration

## Michigan

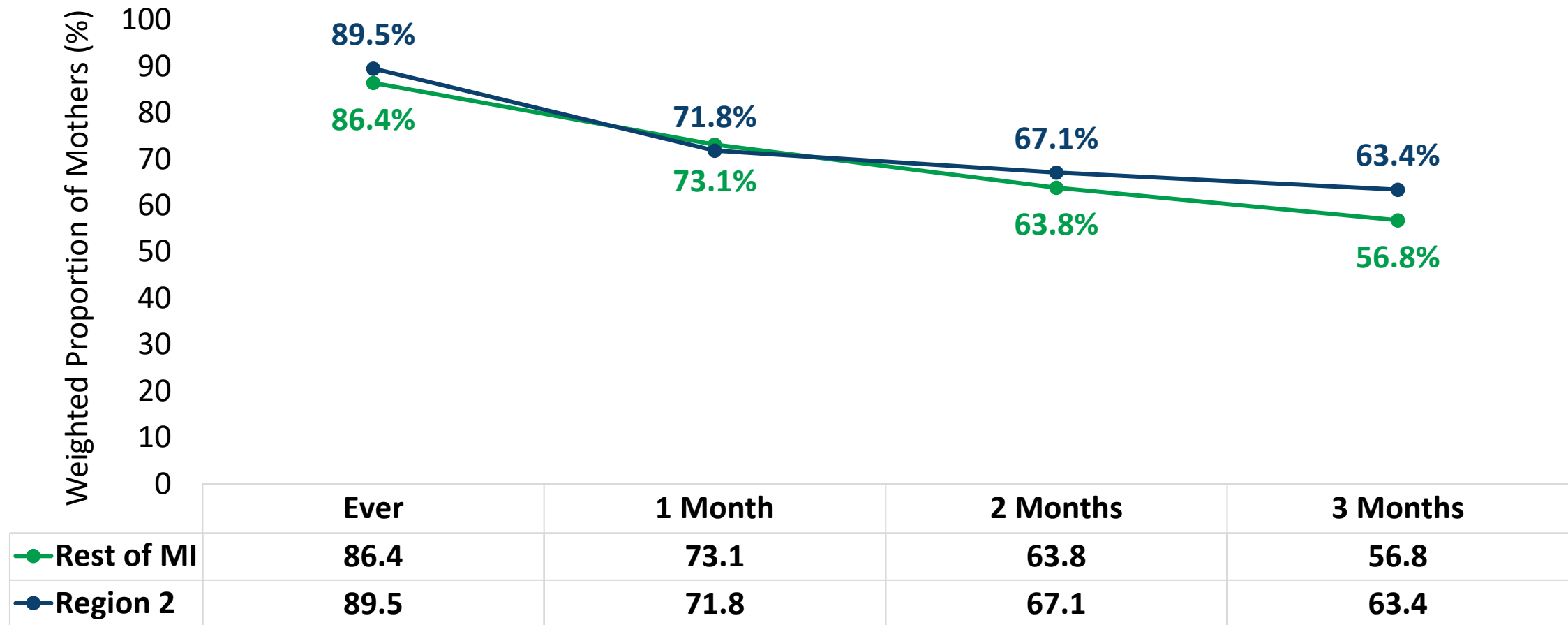
### 2004-2022

# Breastfeeding Initiation + Duration Michigan, 2004-2022



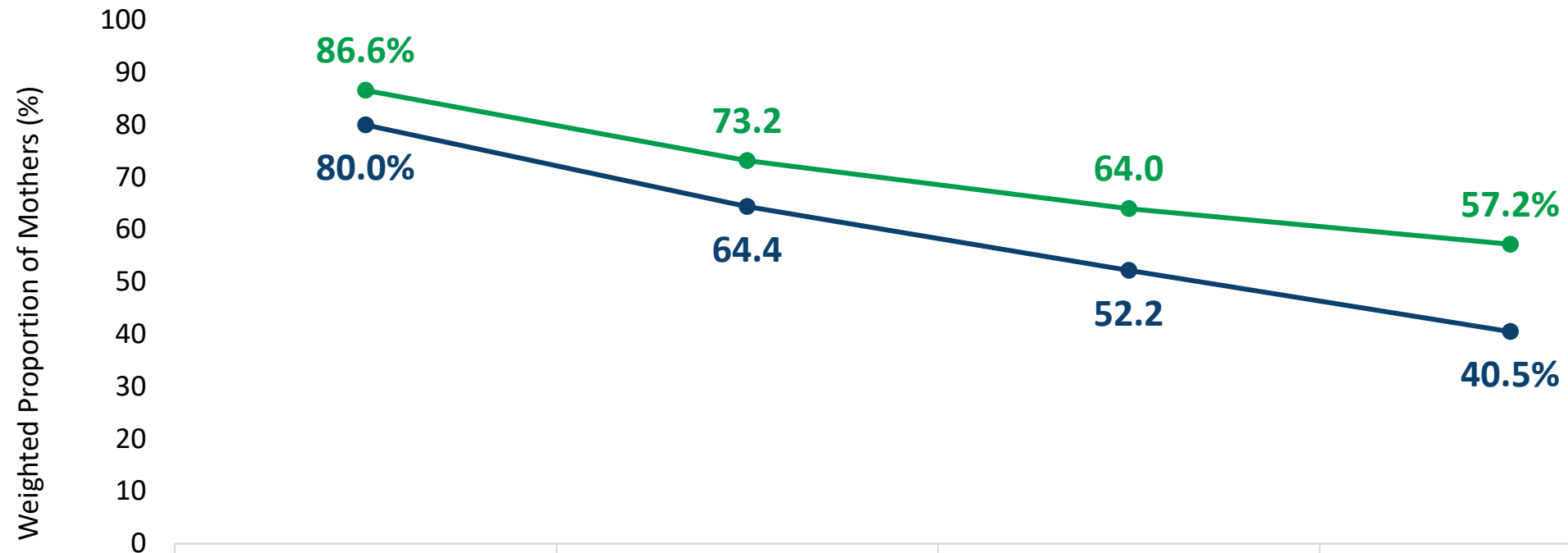
# Breastfeeding Initiation and Duration Region 2 vs Rest of Michigan, 2016-2018

Breastfeeding in Region 2 does not differ significantly from the remainder of the State for any of these time points



# Breastfeeding Initiation and Duration Region 3 vs Rest of Michigan, 2016-2018

Breastfeeding in Region 3 does not differ significantly from the remainder of the State for the first three time points. Three-month duration is lower for Region 3 vs. the remainder of the State.



	Ever	1 Month	2 Months	3 Months
Rest of MI	86.6	73.2	64.0	57.2
Region 3	80.0	64.4	52.2	40.5

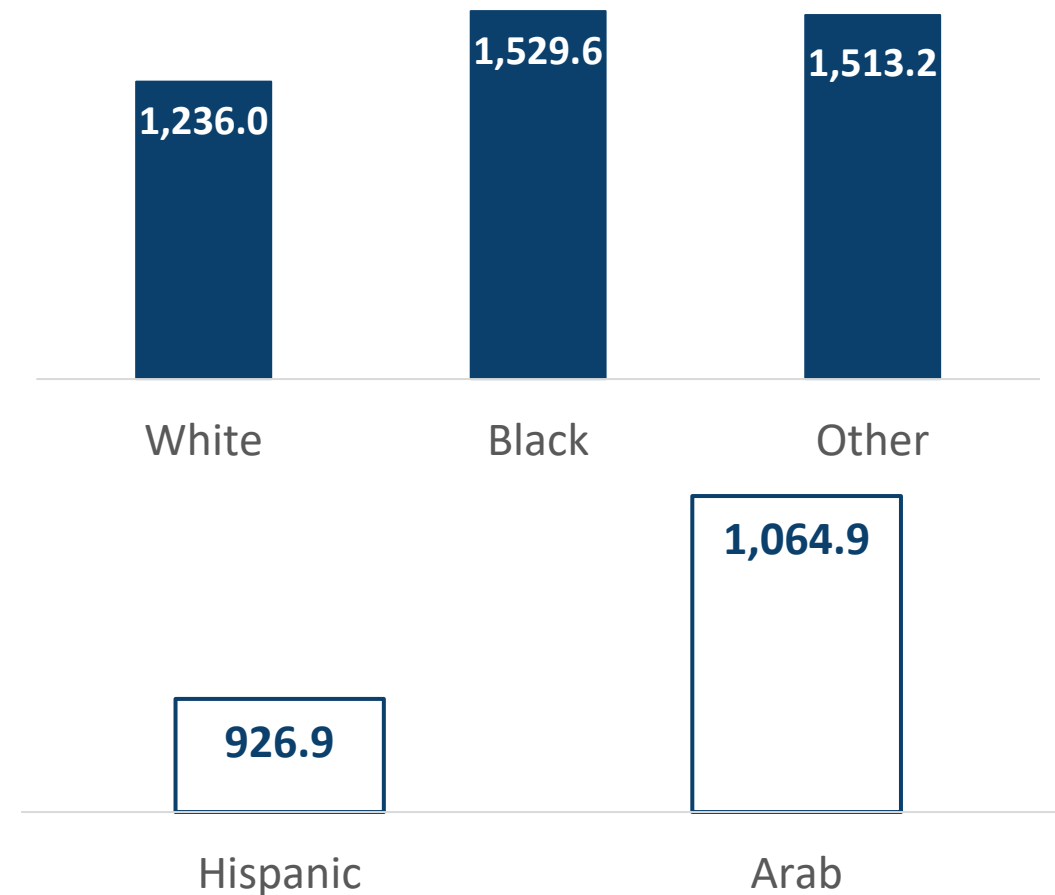


# Birth Defects 2021

# Birth Defect Prevalence by Maternal Race/ethnicity, 2021

- Throughout birth years 2015-2021, the birth defect prevalence rate for Michigan remained steady at an average rate of 2,008.8 cases per 10,000 live births. The increase in birth defect prevalence can be partially attributed to the improvement of data collection methods utilized by the MBDR.
- In 2021, the race-specific birth defect prevalence rate for cases born to mothers of “other” races (1,513.2 per 10,000 live births) exceeded that of cases born to black mothers (1529.6 cases per 10,000 live births) and cases born to white mothers (1,236.0 cases per 10,000 live births).
- In 2021, the ethnicity-specific birth defect prevalence rate for cases born to a mother reporting Arab ethnicity (1,064.9 cases per 10,000 live births) was greater than that of cases born to a mother reporting Hispanic ethnicity (926.9 cases per 10,000 live births).

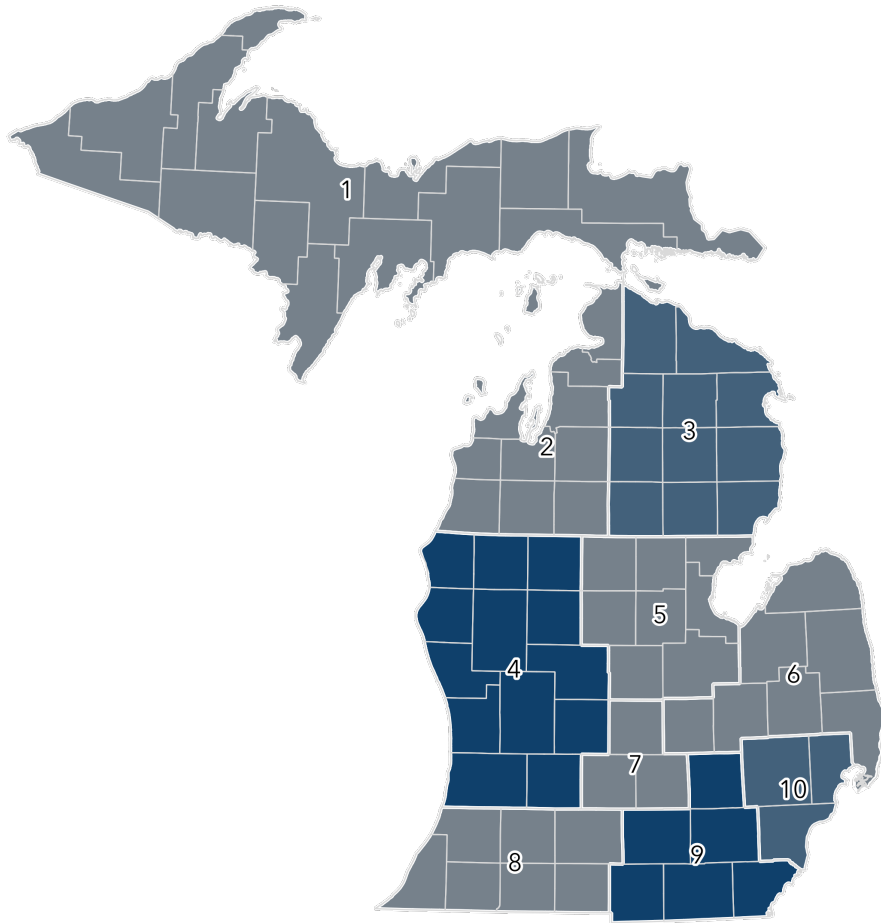
**Birth Defects Prevalence Rate  
per 10,000 Live Births, 2021**





# Birth Defect Prevalence Rates by Prosperity Region, 2021

Prevalence rates are based on births to mothers living in Michigan at the time of delivery.  
Regions approximate prosperity region boundaries



Region	# Cases	Prevalence Rate (per 10,000 live births)
Michigan	13,794	1,313.5
Region 1	95	367.5
Region 2	267	961.8
Region 3	184	1073.5
Region 4	3,806	2,085.1
Region 5	360	659.5
Region 6	838	982.8
Region 7	364	782.6
Region 8	708	846.5
Region 9	2,255	2,333.6
Region 10	4,917	1,142.8



# Neonatal Abstinence Syndrome

## Region 2 & 3

### 2013-2022

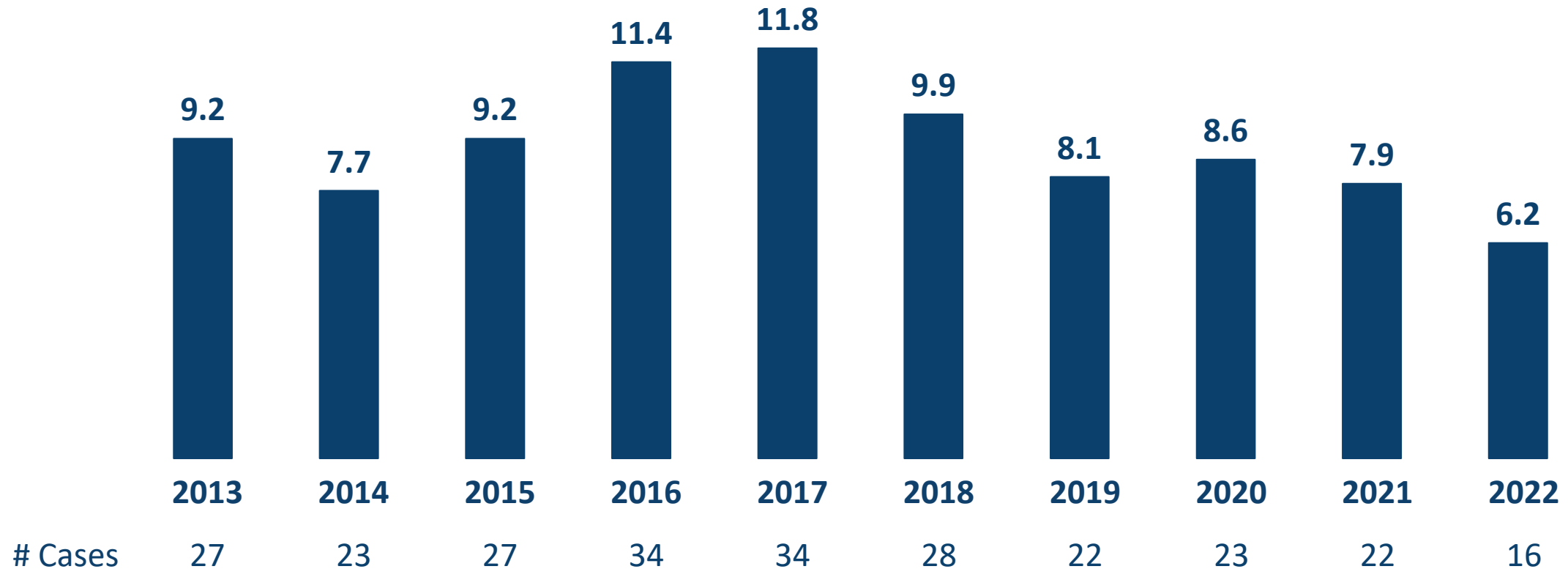
# About the Data

1. Neonatal Abstinence Syndrome (NAS) cases are identified by diagnosis code (ICD-9 779.5 or ICD-10 P96.1) from the Michigan Inpatient Database. The transition from ICD-9 to ICD-10 started in Fall 2015. This may contribute to some fluctuation in the data.
2. NAS cases may be underreported with the increasing popularity of non-pharmacological interventions, which may not be consistently captured in the data.
3. The goal of NAS surveillance is *not* to reduce the number of cases to zero. This is due to limitations with current surveillance practices. They do not allow us to distinguish between a) women with untreated opioid use or other substance use disorder or b) women with opioid use disorder on medicated assisted therapy, or c) women on long term opioid, benzodiazepine or barbiturate therapy for a chronic disease condition.
4. NAS rates are calculated per 1,000 live births in order to be consistent with the CSTE case definition. Previous reports published by MDHHS include NAS rates per 100,000 live births.

# Neonatal Abstinence Syndrome Region 2, 2013-2022

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

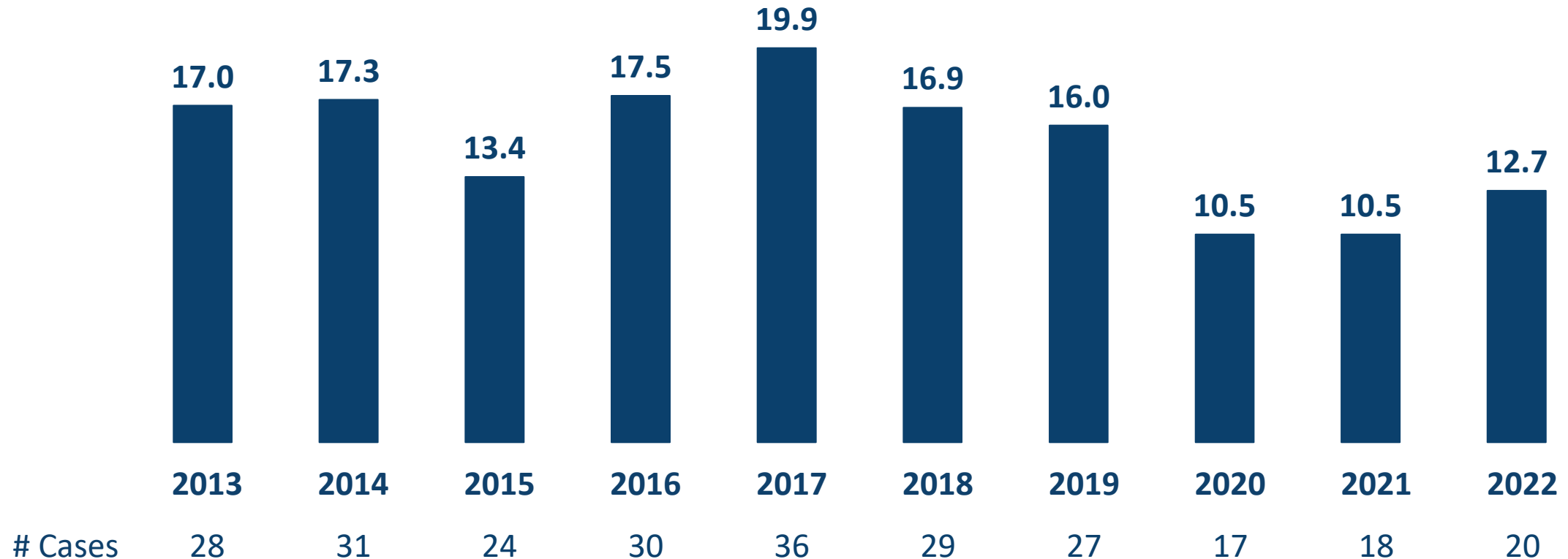
NAS Cases per 1,000 Live Births



# Neonatal Abstinence Syndrome Region 3, 2013-2022

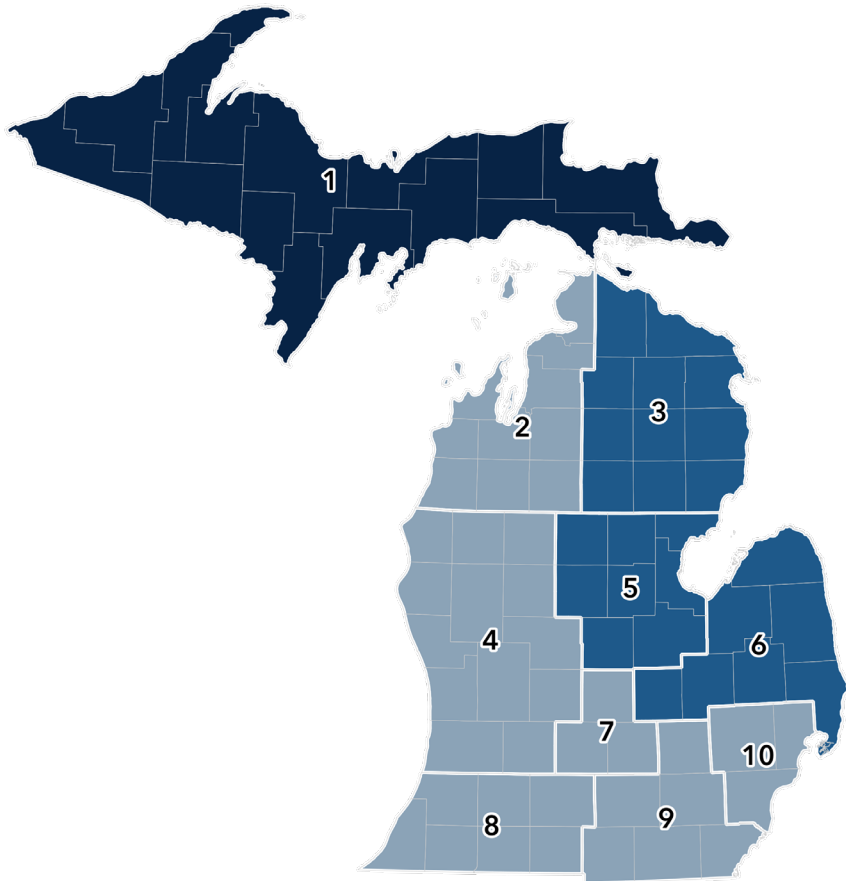
2010-2015: 779.5 (drug withdrawal syndrome in newborn) and 2016-current: P96.1 (neonatal withdrawal symptoms from maternal use of drugs of addiction)

NAS Cases per 1,000 Live Births



# Neonatal Abstinence Syndrome by Prosperity Region, 2022

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



	# NAS Cases	# Live Births	Cases per 1,000 Live Births
Michigan	605	100,880	6.0
Region 1	44	2,181	20.2
Region 2	16	2,597	6.2
Region 3	20	1,577	12.7
Region 4	46	17,799	2.6
Region 5	64	5,304	12.1
Region 6	102	8,260	12.3
Region 7	23	4,542	5.1
Region 8	50	7,696	6.5
Region 9	43	9,031	4.8
Region 10	196	41,893	4.7



# Sleep-Related Infant Death Rate 2010-2021

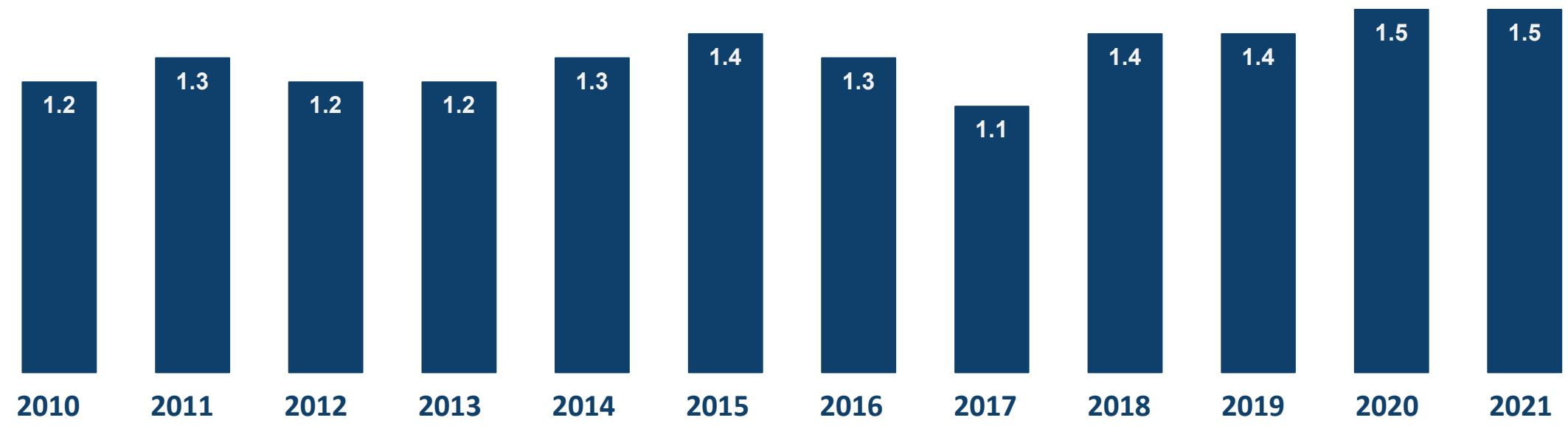
Deaths to infants less than 1 year of age that occur suddenly and unexpectedly due to suffocation/positional asphyxia, sudden infant death syndrome, undetermined/unexpected infant death, and other causes where the sleep environment was likely to have contributed to the death.

# Sleep-Related Infant Deaths

## Michigan, 2010-2021

Between 2010 and 2021 there were **1,755** sleep-related infant deaths in Michigan. The rate of sleep-related infant deaths has fluctuated slightly but has not statistically significantly differed between years.

Sleep Related Infant Deaths  
per 1,000 Live Births

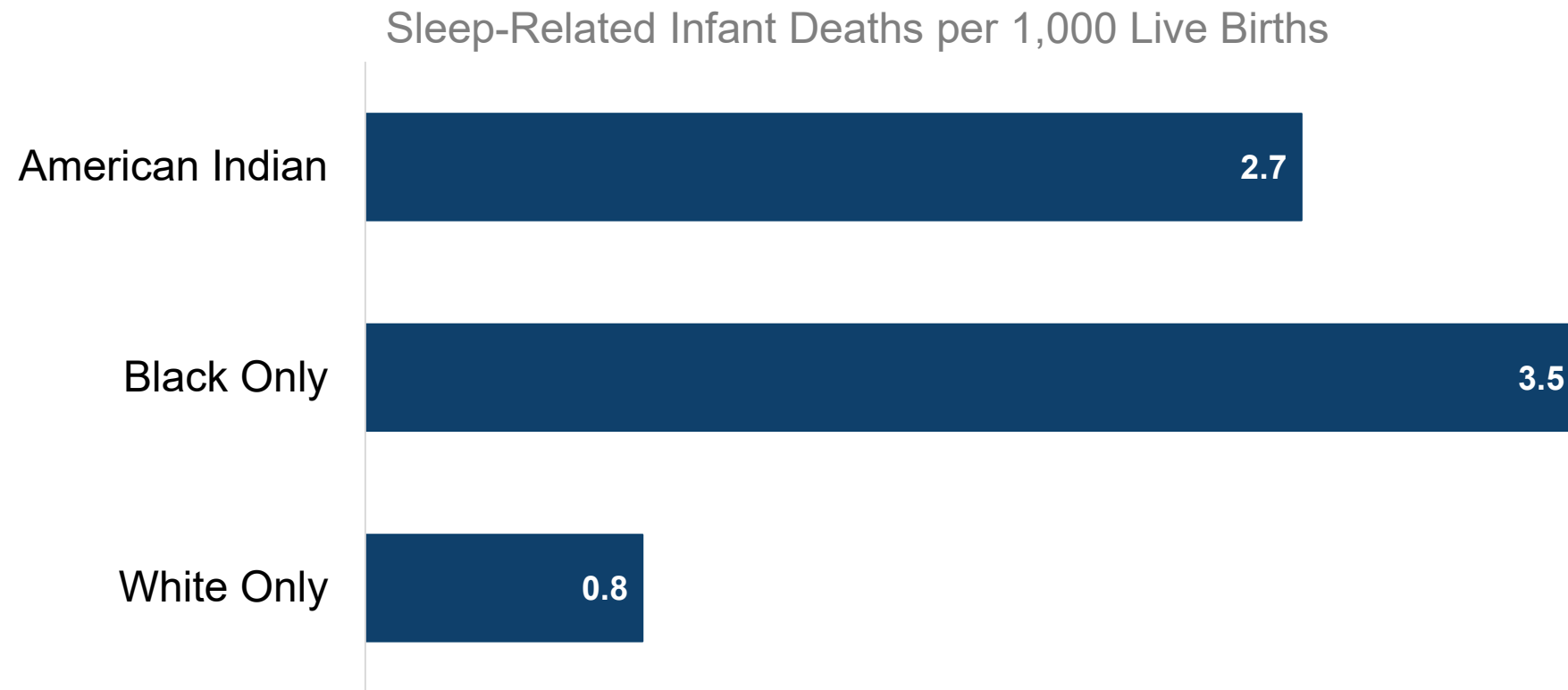


# deaths	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
	140	147	131	142	152	159	142	123	151	149	161	158



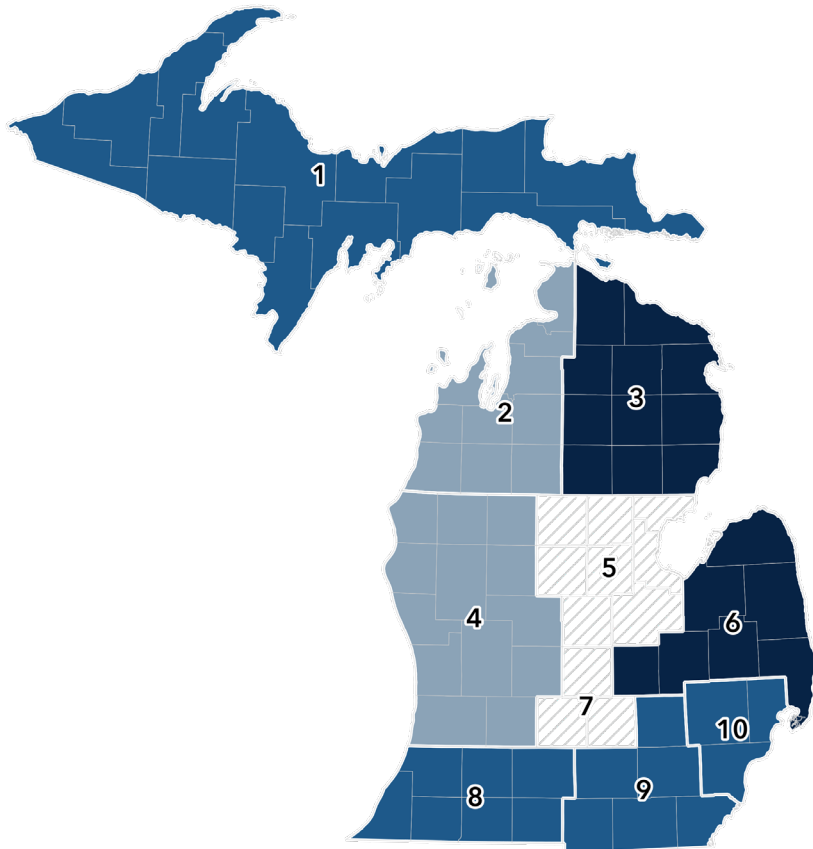
# Sleep-Related Infant Deaths by Race Michigan, 2016-2021

Between 2016 and 2021 Black Infants were **4.6** times more likely to die of sleep-related causes as compared to white Infants. American Indian infants were **3.5** times more likely to die of sleep-related causes as compared to white infants.



# Sleep-Related Infant Deaths by Prosperity Region, 2010-2021

Between 2010 and 2021 there were **32** sleep-related infant deaths in Region 2 and **39** sleep-related infant deaths in Region 3. Compared to the Michigan, the Region 2 sleep-related infant death rate was lower while the Region 3 sleep-related infant death rate was higher. Neither difference was statistically significant. Data for regions 5 and 7 suppressed as to not inadvertently identify suppressed county level statistics.



		# Infant Deaths	Sleep Related Deaths per 1,000 live births
	Michigan	1,755	1.3
<b>Region 1</b>	<b>Upper Peninsula</b>	<b>39</b>	<b>1.2</b>
Region 2	Northwest	32	0.9
Region 3	Northeast	39	1.9
Region 4	West Michigan	231	1.0
Region 5	East Central	Data Suppressed	
Region 6	East Michigan	185	1.7
Region 7	South Central	Data Suppressed	
Region 8	Southwest	152	1.5
Region 9	Southeast	134	1.1
Region 10	Detroit Metro	758	1.4



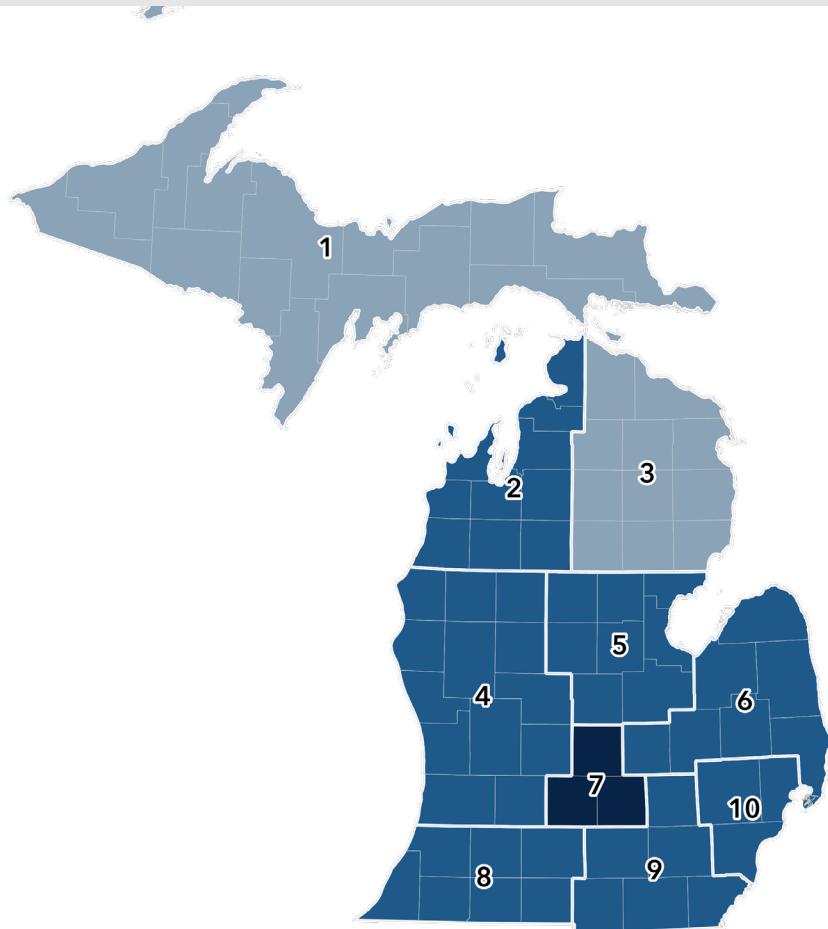
# Low Risk Cesarean 2022

$$\frac{\# \text{ cesarean among 1st births low risk females}}{\# \text{ 1st births to low risk females}}$$

Low risk: full term, singleton births, and vertex presentation

# Low Risk Cesarean by Prosperity Region, 2022

Low-risk cesarean is a ratio of the number of first births delivered by cesarean section to low-risk females (full-term, singleton births, vertex presentation) to the number of first births to low-risk females (full-term, singleton births, vertex presentation).



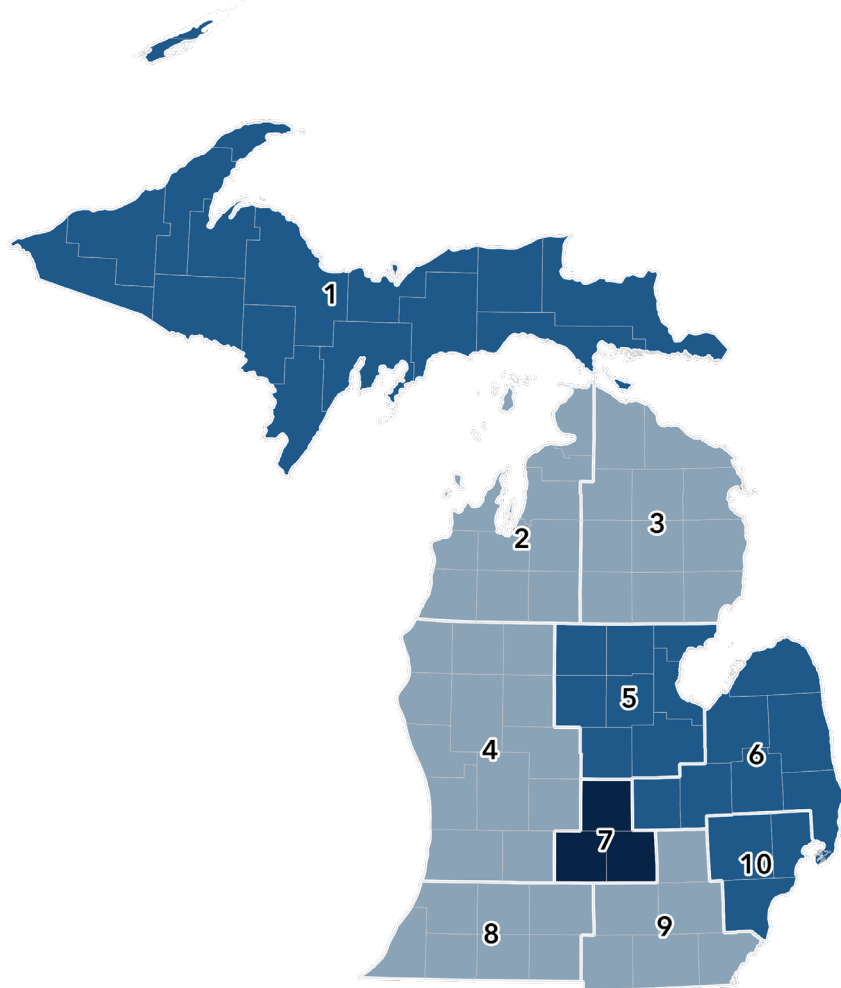
	# Low Risk Cesarean	# Low Risk Births	% Low Risk Cesarean
Michigan	7,544	26,742	28.2%
Region 1	132	557	23.7%
Region 2	195	727	26.8%
Region 3	112	467	24.0%
Region 4	1,279	4,932	25.9%
Region 5	374	1,299	28.8%
Region 6	581	2,012	28.9%
<b>Region 7</b>	<b>377</b>	<b>1,178</b>	<b>32.0%</b>
Region 8	499	1,937	25.8%
Region 9	593	2,305	25.7%
Region 10	3,402	11,328	30.0%



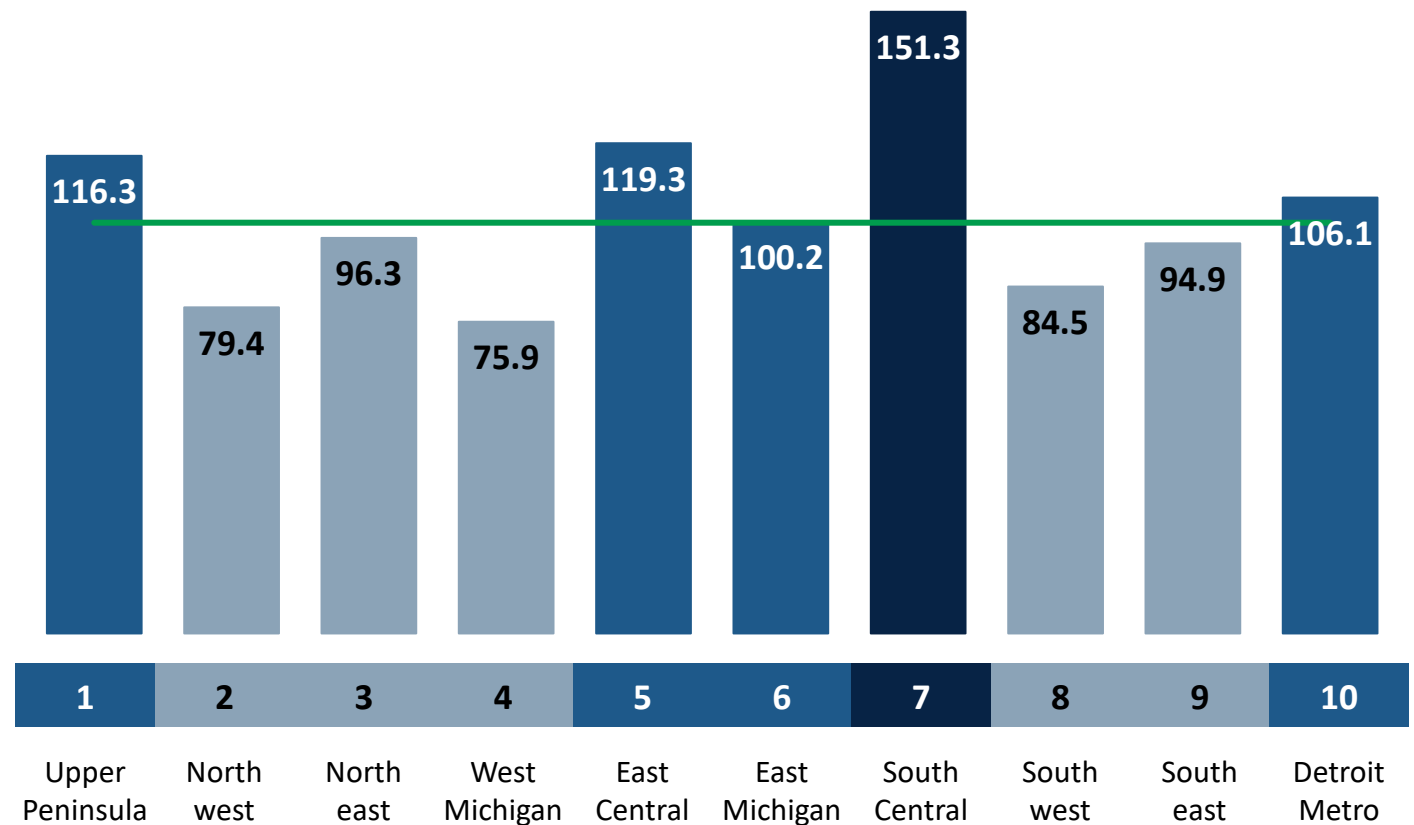
# Severe Maternal Morbidity Rate 2021

The unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health.

# Severe Maternal Morbidity *Excluding Transfusions* by Prosperity Region, 2021



Hospitalizations per 10,000 Inpatient Delivery Hospitalizations  
**Michigan: 100.0**



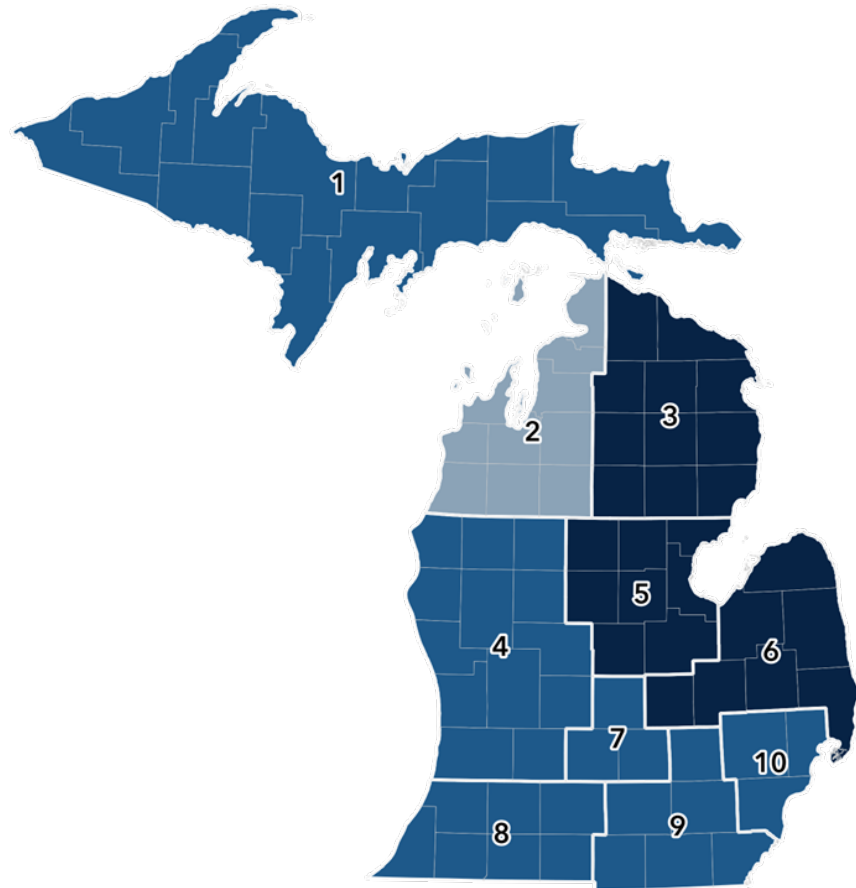


# Maternal Mortality Ratio 2016-2020

Maternal deaths include deaths that occur during pregnancy, at delivery or within one year of pregnancy. It includes 1) deaths that are related to the pregnancy 2) unrelated to the pregnancy 3) as well as where the relation is unknown.

# Total Maternal Mortality by Prosperity Region, 2016-2020

Maternal deaths include deaths that occur during pregnancy, at delivery or within one year of pregnancy. During 2016 and 2020, there were **7 maternal deaths** in Region 2, and **10 maternal deaths** in Region 3.



## Deaths per 100,000 Live Births

Michigan	79.3
1 Upper Peninsula	91.6
2 North West	49.8
3 North East	116.9
4 West Michigan	55.9
5 East Central	102
6 East Michigan	104.1
7 South Central	63.9
8 South West	79.5
9 South East	61.7
10 Detroit Metro	86.4