Michigan Infant Health, 2015

Prepared by Yan Tian (TianY@michigan.gov), Maternal Child Health (MCH) Epidemiology Section,
Michigan Department of Health and Human Services (MDHHS)
Data source: Michigan Resident Live Birth Files, Infant Mortality Files and Fetal Death Files,
Division for Vital Records and Health Statistics, MDHHS
03/2017

This presentation provides updated 2015 infant health statistics for the State of Michigan.

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

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

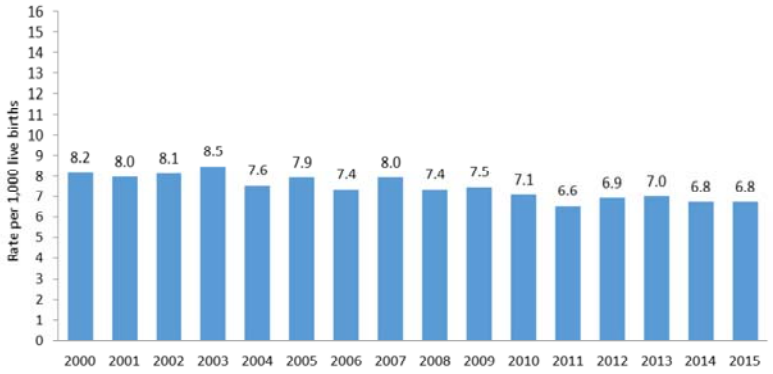
Revised: March 2017

Michigan Infant Mortality, 2015

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

Infant Mortality Rate: Michigan, 2000-2015

(rate per 1,000 live births)



Year	# Live Births	# Infant Death	IMR
2000	136,048	1,112	8.2
2001	133,247	1,066	8.0
2002	129,518	1,054	8.1
2003	130,850	1,112	8.5
2004	129,710	984	7.6
2005	127,518	1,013	7.9
2006	127,537	940	7.4
2007	125,172	997	8.0
2008	121,231	894	7.4
2009	117,309	881	7.5
2010	114,717	817	7.1
2011	114,159	749	6.6
2012	112,708	783	6.9
2013	113,732	799	7.0
2014	114,460	773	6.8
2015	113,211	765	6.8

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

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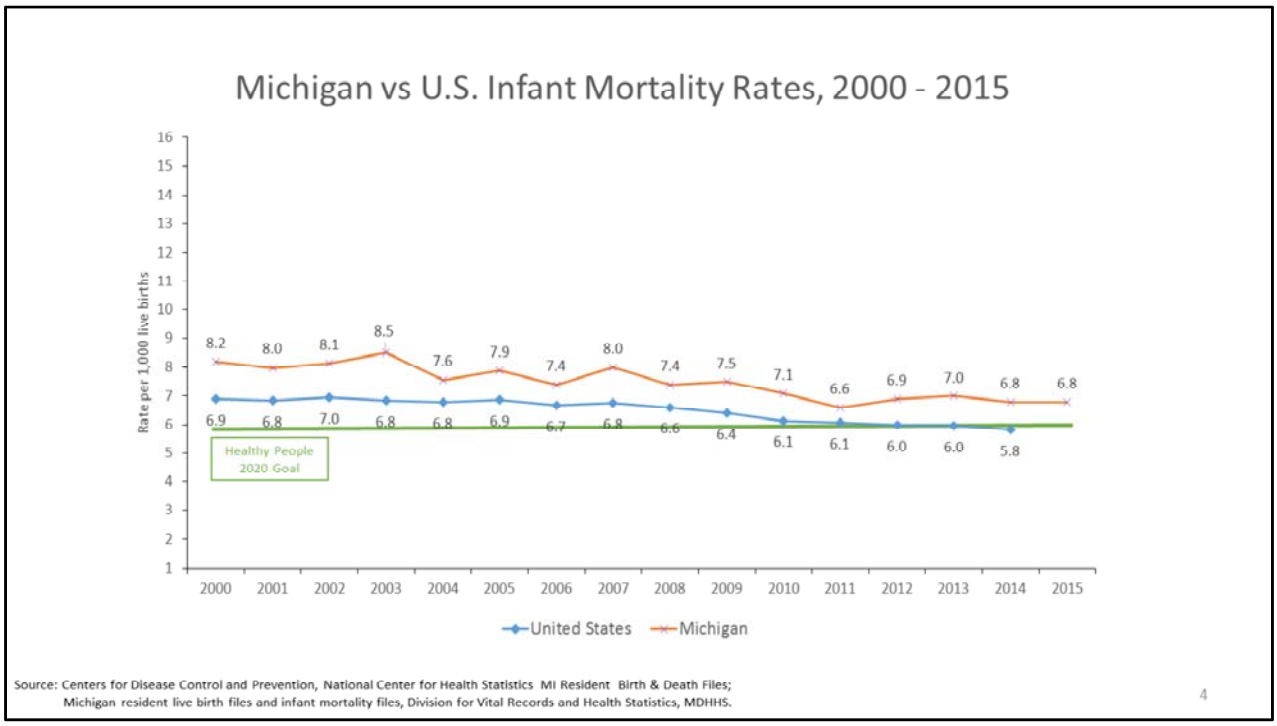
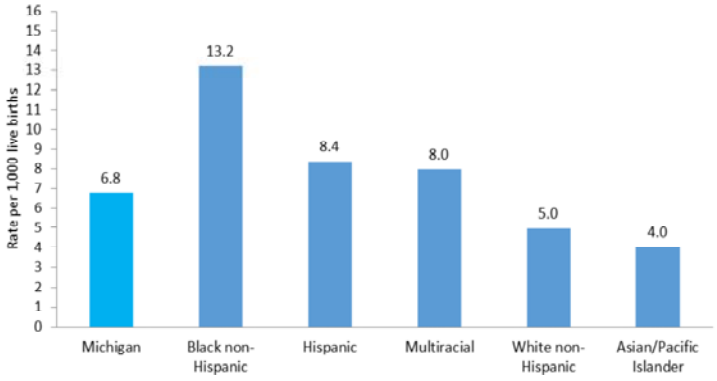
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates within Michigan from 2000 through 2015. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. In 2015, the infant mortality rate in Michigan was 6.8 infant deaths per 1,000 live births. Infant mortality within Michigan has been on a slow decline over the past decade.



Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates within the United States and Michigan from 2000 through 2015. 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. In 2014, the infant mortality rate in the United States was 5.8 infant deaths per 1,000 live births and the rate in Michigan was 6.8 per 1,000 live births. Infant mortality rates within the United States and Michigan have been on a slow decline over the past decade and the United States rate is currently below the Healthy People 2020 goal.

Infant Mortality Rates by Maternal Race/Ethnicity, Michigan, 2015 (rate per 1,000 live births)



Race/Ethnicity	# Live Births	# Infant Death	IMR
Michigan	113,211	765	6.8
Black non-Hispanic	20,776	274	13.2
Hispanic	7,768	65	8.4
Multiracial	1,383	11	8.0
White non-Hispanic	77,464	384	5.0
Asian/Pacific Islander	3,748	15	4.0

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

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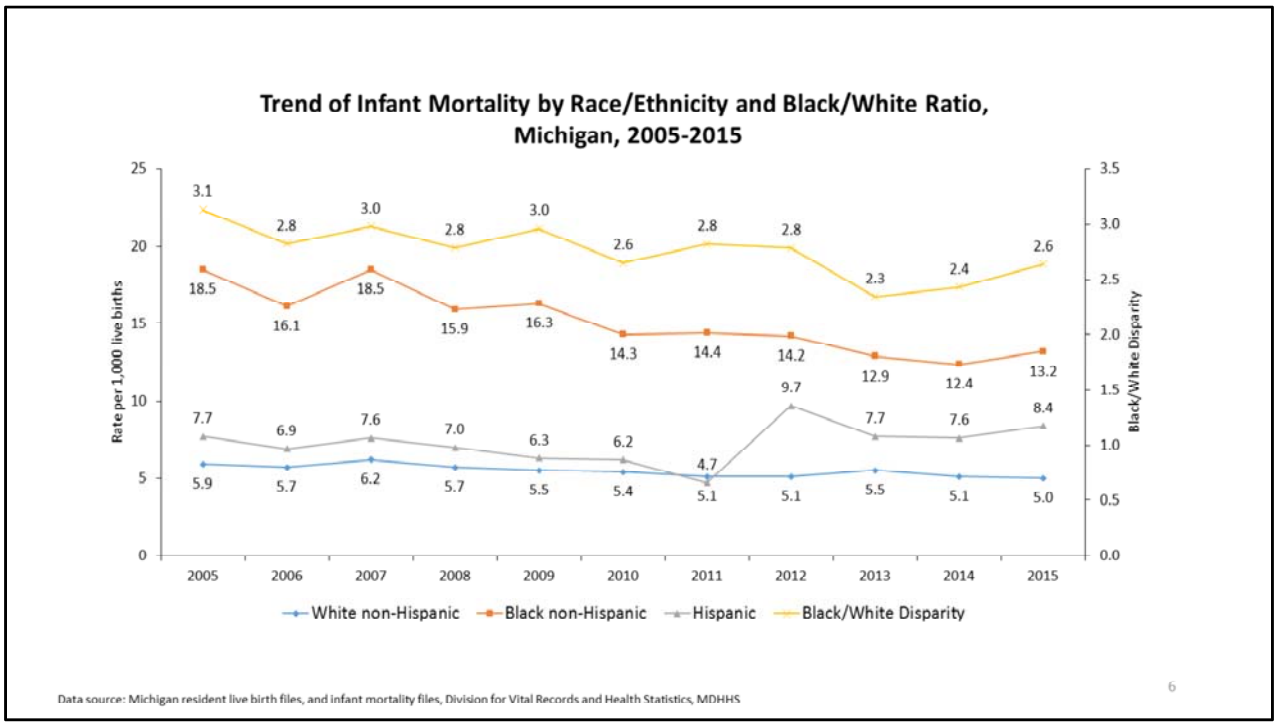
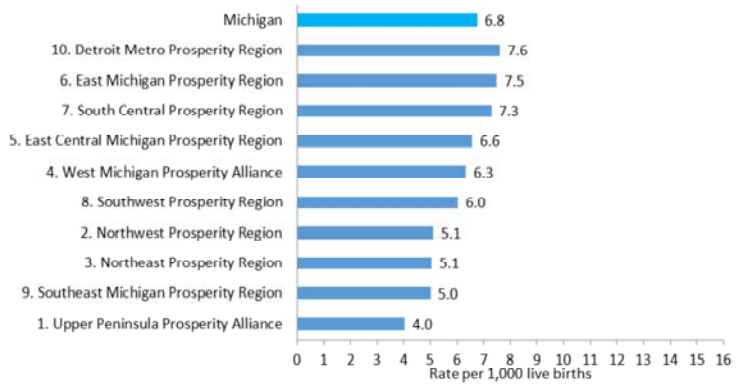
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by maternal race/ethnicity within Michigan for 2015. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. In 2015, there was a threefold difference in infant mortality rates by maternal race and ethnicity, from a high of 13.2 for Black non-Hispanic women to a low of 4.0 for Asian/Pacific Islander women.



Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by maternal race/ethnicity within Michigan from 2005 to 2015. 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 within Michigan among White non-Hispanic and Black non-Hispanic women have been on a slow decline over the past decade. The non-Hispanic Black/White ratio went down from 2005 to 2015, with the lowest (2.3) in 2013.

Infant Mortality Rate by Prosperity Regions, Michigan, 2015 (rate per 1,000 live births)

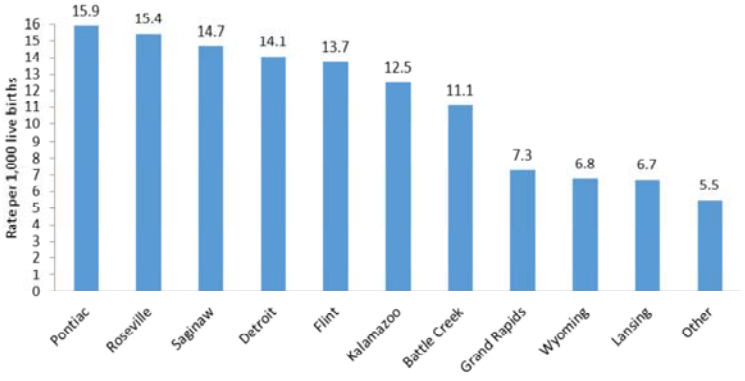


Prosperity Region	# Live Births	# Infant Death	IMR
Michigan	113,211	765	6.8
10. Detroit Metro Prosperity Region	46,457	353	7.6
6. East Michigan Prosperity Region	9,072	68	7.5
7. South Central Prosperity Region	5,209	38	7.3
5. East Central Michigan Prosperity Region	5,943	39	6.6
4. West Michigan Prosperity Alliance	19,614	124	6.3
8. Southwest Prosperity Region	9,279	56	6.0
2. Northwest Prosperity Region	2,932	15	5.1
3. Northeast Prosperity Region	1,780	9	5.1
9. Southeast Michigan Prosperity Region	10,199	51	5.0
1. Upper Peninsula Prosperity Alliance	2,722	11	4.0

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by prosperity regions within Michigan in 2015. 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. In 2015, the infant mortality rate was the highest (7.6 per 1,000 live births) in the Detroit Metro prosperity region and was the lowest in the Upper Peninsula prosperity alliance (4.0 per 1,000 live births).

Infant Mortality Rate by City of Residence at Birth, Michigan, 2015 (rate per 1,000 live births)



City	# Live Births	# Infant Death	IMR
Pontiac	1,131	18	15.9
Roseville	583	9	15.4
Saginaw	818	12	14.7
Detroit	9,891	139	14.1
Flint	1,458	20	13.7
Kalamazoo	1,039	13	12.5
Battle Creek	810	9	11.1
Grand Rapids	3,150	23	7.3
Wyoming	1,177	8	6.8
Lansing	1,784	12	6.7
Other	88,938	487	5.5

Selected city has more than five infant deaths.

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

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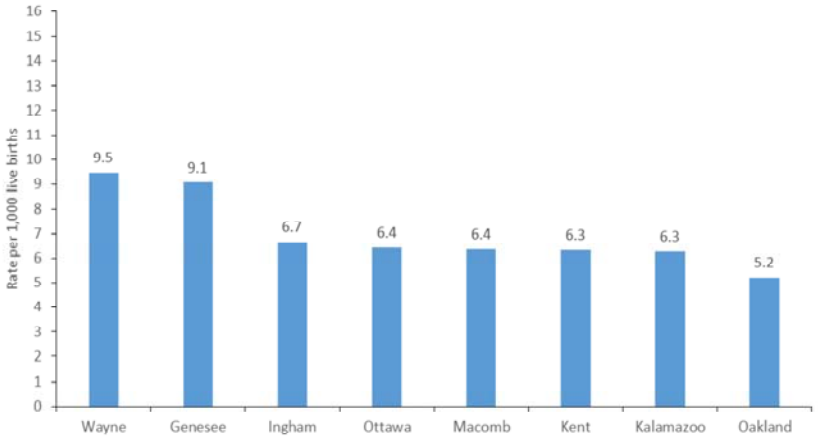
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by city of residence at birth within Michigan in 2015. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. In 2015, the infant mortality rate was 14.1 per 1,000 live births in Detroit, 13.7 per 1,000 live births in Flint, 7.3 per 1,000 live births in Grand Rapids, and 6.7 per 1,000 live births in Lansing.

Infant Mortality Rate by County of Residence at Birth, Michigan, 2015 (rate per 1,000 live births)



County	# Live Births	# Infant Death	IMR
Wayne	23,472	222	9.5
Genesee	4,747	43	9.1
Ingham	3,157	21	6.7
Ottawa	3,265	21	6.4
Macomb	9,397	60	6.4
Kent	8,831	56	6.3
Kalamazoo	3,179	20	6.3
Oakland	13,588	71	5.2

Selected county has more than 20 infant deaths.

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

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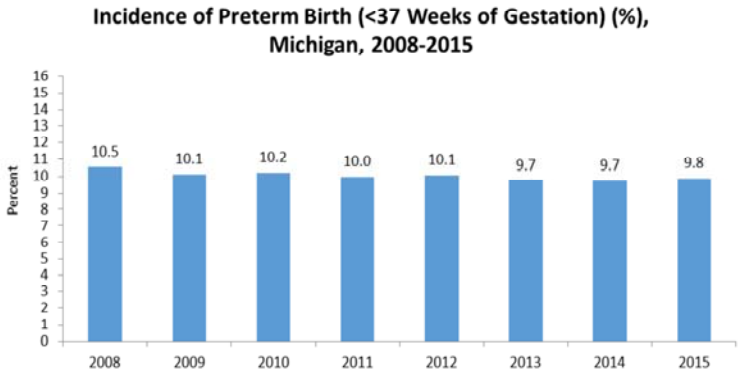
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by county of residence at birth within Michigan in 2015. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. In 2015, the infant mortality rate was 9.5 per 1,000 live births in Wayne county, 9.1 per 1,000 live births in Genesee county, 6.7 per 1,000 live births in Ingham county, and 6.4 per 1,000 live births in Macomb county.

Michigan Preterm Birth, 2015

The next several slides contain updated preterm birth statistics for the State of Michigan

Preterm Birth: Michigan 2008-2015



Year	Eligible births	# PTB	PTB %
2008	121,093	12,743	10.5
2009	117,184	11,832	10.1
2010	114,591	11,696	10.2
2011	114,051	11,378	10.0
2012	112,617	11,338	10.1
2013	113,634	11,069	9.7
2014	114,390	11,136	9.7
2015	113,139	11,136	9.8

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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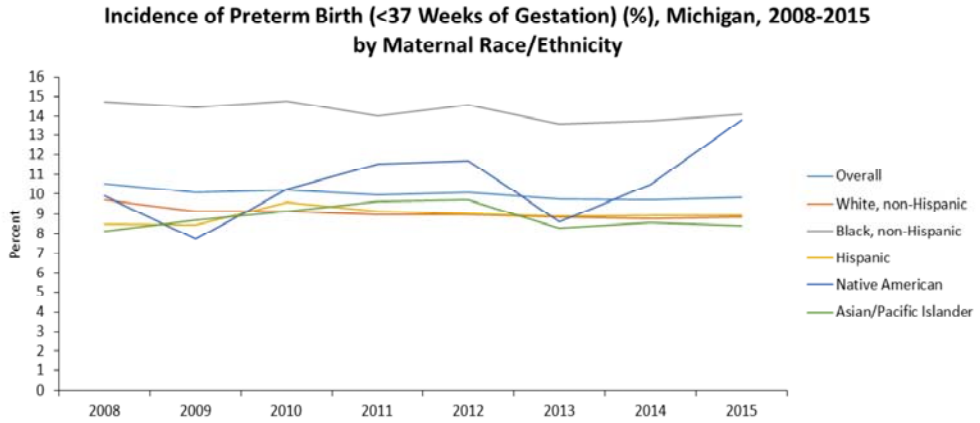
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. In 2015, the incidence of preterm birth in Michigan was 9.8%. The incidence of preterm birth within Michigan has been on a slow decline from 2008 to 2015.

Preterm Birth: Michigan 2008-2015



Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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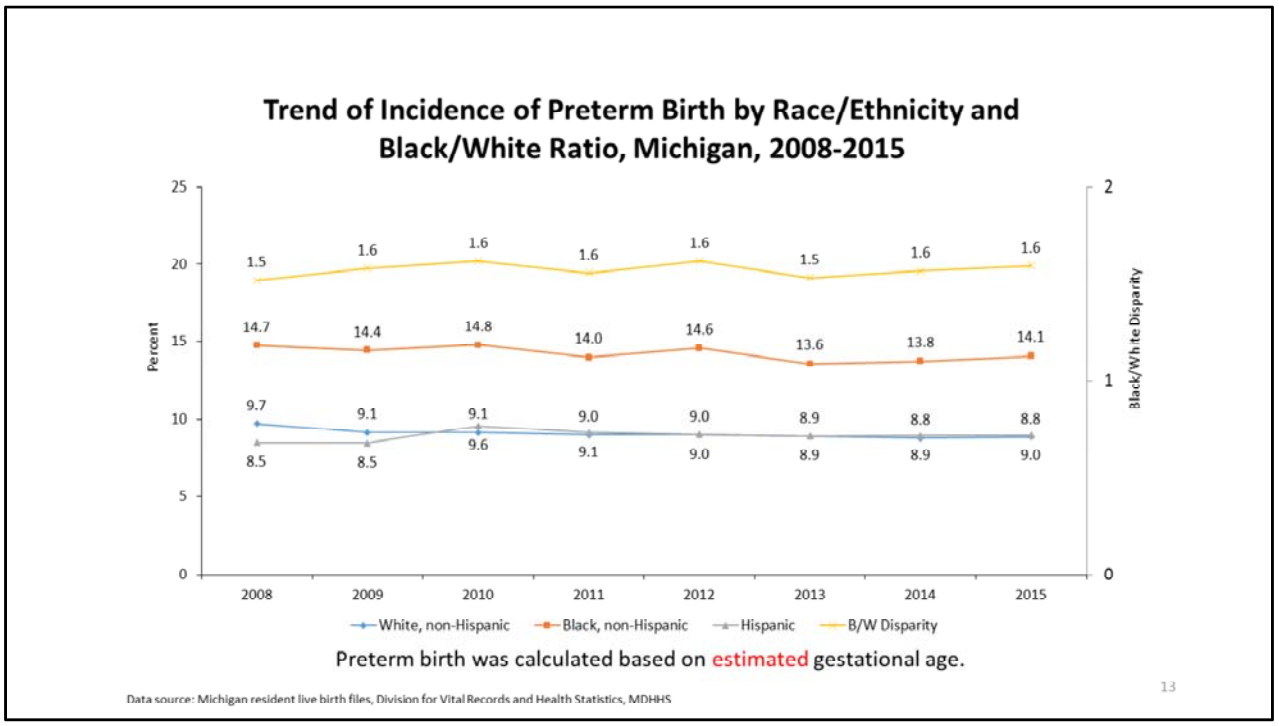
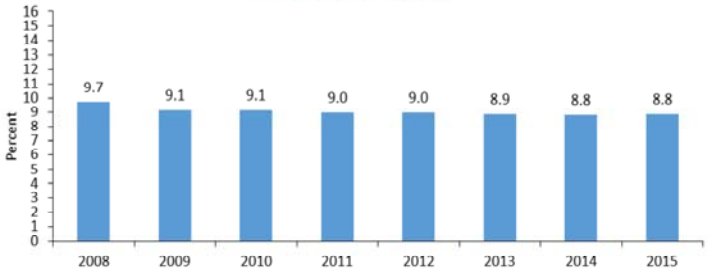
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth by maternal race/ethnicity within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. The incidence of preterm birth for White non-Hispanic, Black non-Hispanic, Hispanic, and Asian/Pacific Islander, respectively, has been on a slow decline from 2008 to 2015. Due to a small sample size, the incidence of preterm birth is not stable for Native American women from 2008 to 2015. Black non-Hispanic women have highest risk of delivering preterm when compared to other racial/ethnic groups.



Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth by maternal race/ethnicity within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. The ratio of Black non-Hispanic/White non-Hispanic disparity (currently at 1.6) has been very stable from 2008 to 2015.

Preterm Birth: Michigan, 2008-2015

Incidence of Preterm Birth (<37 Weeks of Gestation) (%), Michigan, 2008-2015
White, non-Hispanic



Year	Eligible births	# PTB	PTB %
2008	83,650	8,131	9.7
2009	80,213	7,326	9.1
2010	78,139	7,137	9.1
2011	77,998	7,018	9.0
2012	76,947	6,925	9.0
2013	77,620	6,888	8.9
2014	79,099	6,957	8.8
2015	77,427	6,851	8.8

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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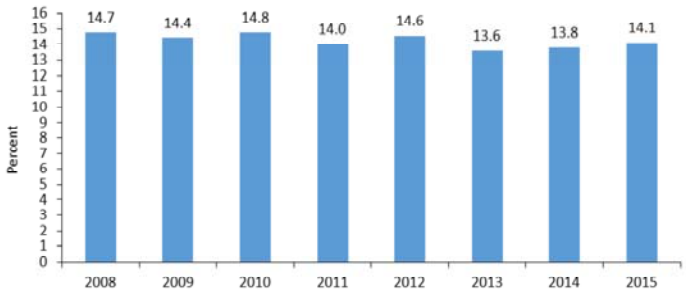
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among White non-Hispanic women within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among White non-Hispanic women, the incidence of preterm birth has been on a slow decline from 2008 to 2015.

Preterm Birth: Michigan, 2008-2015

Incidence of Preterm Birth (<37 Weeks of Gestation) (%), Michigan, 2008-2015
Black, non-Hispanic



Year	Eligible births	# PTB	PTB %
2008	21,858	3,222	14.7
2009	21,521	3,106	14.4
2010	21,342	3,150	14.8
2011	21,010	2,940	14.0
2012	20,658	3,007	14.6
2013	21,180	2,877	13.6
2014	20,682	2,848	13.8
2015	20,752	2,923	14.1

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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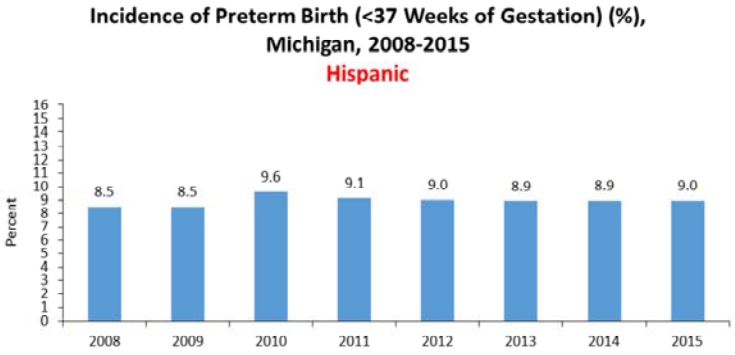
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among Black non-Hispanic women within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among Black non-Hispanic women, the incidence of preterm birth was 14.7% in 2008, 14.8% in 2010, 14.6% in 2012, and 14.1% in 2015. In 2013, the incidence of preterm delivery among Black non-Hispanic women reached it's lowest level (13.6%).

Preterm Birth: Michigan, 2008-2015



Year	Eligible births	# PTB	PTB %
2008	8,678	738	8.5
2009	8,248	699	8.5
2010	8,089	775	9.6
2011	7,900	722	9.1
2012	7,591	684	9.0
2013	7,756	692	8.9
2014	7,622	682	8.9
2015	7,763	695	9.0

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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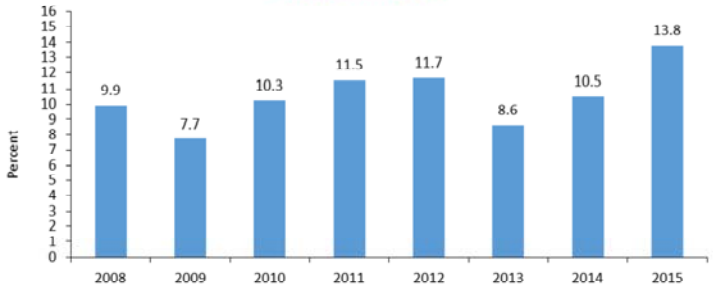
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among Hispanic women within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among Hispanic women, the incidence of preterm birth has been on a slow decline from 2010 to 2015. The incidence of preterm birth among Hispanic women was 9.0% in 2015.

Preterm Birth: Michigan, 2008-2015

Incidence of Preterm Birth (<37 Weeks of Gestation) (%), Michigan, 2008-2015
Native American



Year	Eligible births	# PTB	PTB %
2008	716	71	9.9
2009	724	56	7.7
2010	712	73	10.3
2011	703	81	11.5
2012	667	78	11.7
2013	591	51	8.6
2014	458	48	10.5
2015	456	63	13.8

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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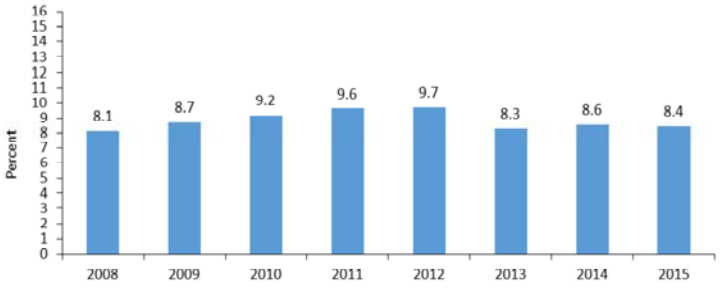
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among Native American women within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Due to small sample size, the incidence of preterm birth is not stable for Native American women from 2008 to 2015. The incidence of preterm birth among Native American women was 13.8% in 2015.

Preterm Birth: Michigan, 2008-2015

Incidence of Preterm Birth (<37 Weeks of Gestation) (%), Michigan, 2008-2015
Asian/Pacific Islander



Year	Eligible births	# PTB	PTB %
2008	3,954	322	8.1
2009	3,851	335	8.7
2010	3,567	327	9.2
2011	3,773	363	9.6
2012	3,837	373	9.7
2013	3,796	315	8.3
2014	3,724	319	8.6
2015	3,748	316	8.4

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

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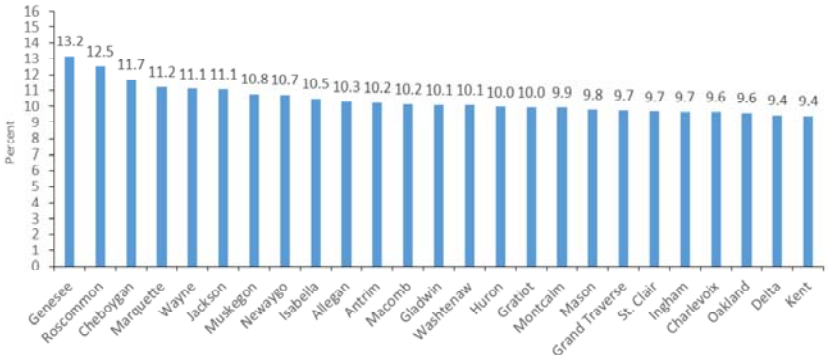
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among Asian/Pacific Islander women within Michigan from 2008 through 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among Asian/Pacific Islander women, the incidence of preterm birth increased from 2008 to 2012, however, it has been on a slow decline from 2014 to 2015.

Preterm Birth: Michigan, 2015

Incidence of Preterm Birth (<37 Weeks of Gestation) (%)
by County of Residence at Birth, Michigan, 2015



County	Eligible births	# PTB	PTB %
Genesee	4,747	626	13.2
Roscommon	168	21	12.5
Cheboygan	223	26	11.7
Marquette	614	69	11.2
Wayne	23,472	2,608	11.1
Jackson	1,729	192	11.1
Muskegon	2,079	224	10.8
Newaygo	522	56	10.7
Isabella	678	71	10.5
Allegan	1,397	144	10.3
Antrim	205	21	10.2
Macomb	9,397	954	10.2
Gladwin	277	28	10.1
Washtenaw	3,704	374	10.1
Huron	311	31	10.0
Gratiot	402	40	10.0
Montcalm	704	70	9.9
Mason	316	31	9.8
Grand Traverse	913	89	9.7
St. Clair	1,520	147	9.7
Ingham	3,157	305	9.7
Charlevoix	218	21	9.6
Oakland	13,588	1,305	9.6
Delta	360	34	9.4
Kent	8,831	829	9.4

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with known estimated gestational age multiplied by 100. Selected county has more than 20 preterm births.

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

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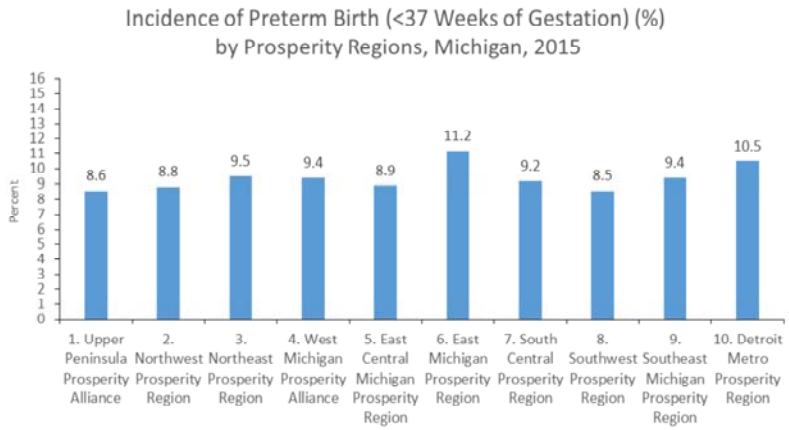
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth by county of residence at birth within Michigan in 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. In 2015, the incidence of preterm birth is 13.2% in Genesee County, 11.1% in Wayne County, 10.1% in Washtenaw County, and 9.6% in Oakland County.

Preterm Birth: Michigan, 2015



Prosperity Regions	Eligible births	# PTB	PTB %
1. Upper Peninsula Prosperity Alliance	2,722	233	8.6
2. Northwest Prosperity Region	2,932	258	8.8
3. Northeast Prosperity Region	1,780	169	9.5
4. West Michigan Prosperity Alliance	19,614	1,839	9.4
5. East Central Michigan Prosperity Region	5,943	528	8.9
6. East Michigan Prosperity Region	9,072	1,014	11.2
7. South Central Prosperity Region	5,209	479	9.2
8. Southwest Prosperity Region	9,279	791	8.5
9. Southeast Michigan Prosperity Region	10,199	957	9.4
10. Detroit Metro Prosperity Region	46,457	4,867	10.5

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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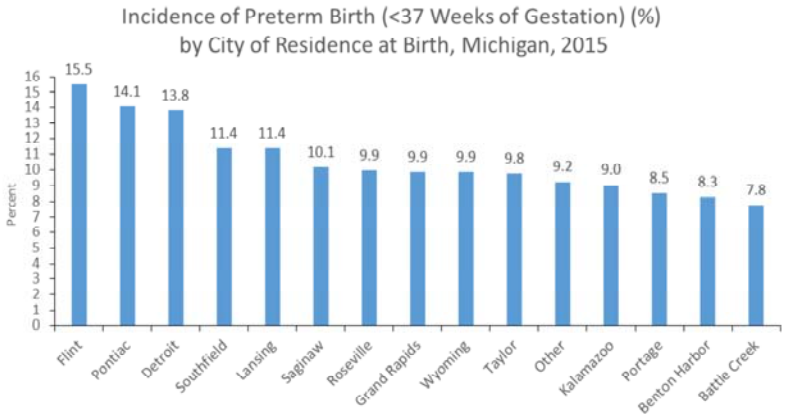
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth by prosperity region of residence at birth within Michigan in 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. In 2015, the incidence of preterm birth was the highest in the East Michigan prosperity region (11.2%) and the lowest in the Southwest prosperity region (8.5%).

Preterm Birth: Michigan, 2015



County	Eligible births	# PTB	PTB %
Flint	1,458	226	15.5
Pontiac	1,131	159	14.1
Detroit	9,891	1,368	13.8
Southfield	781	89	11.4
Lansing	1,784	203	11.4
Saginaw	818	83	10.1
Roseville	583	58	9.9
Grand Rapids	3,150	311	9.9
Wyoming	1,177	116	9.9
Taylor	860	84	9.8
Other	88,938	8,215	9.2
Kalamazoo	1,039	94	9.0
Portage	586	50	8.5
Benton Harbor	205	17	8.3
Battle Creek	810	63	7.8

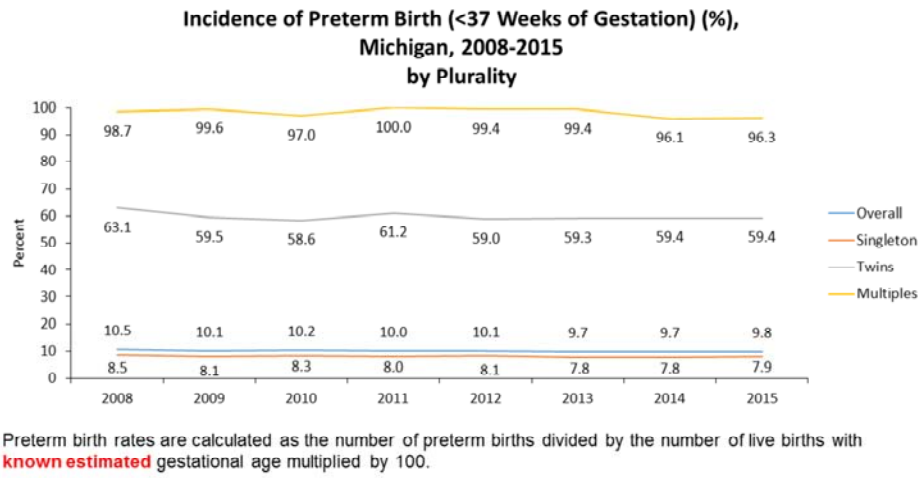
Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

21

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth by city of residence at birth within Michigan in 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. In 2015, the incidence of preterm birth was 15.5% in the City of Flint, 13.8% in Detroit, 11.4% in Lansing, and 9.9% in Grand Rapids.

Preterm Birth: Michigan, 2008-2015



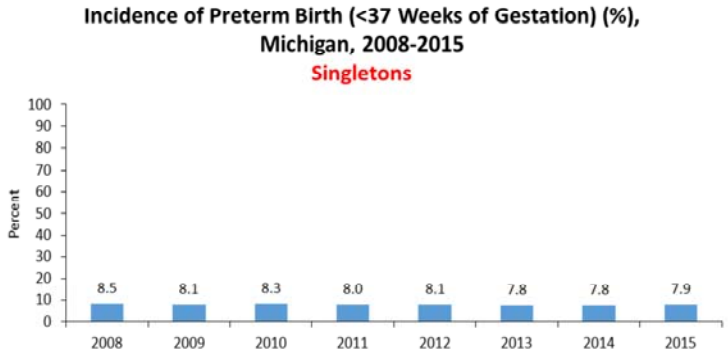
Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

22

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth by plurality within Michigan from 2008 to 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. From 2008 to 2015, the incidence of preterm birth was on a slow decline for singletons, twins, and multiples.

Preterm Birth: Michigan, 2008-2015



Year	Eligible births	# PTB	PTB %
2008	116,749	9,921	8.5
2009	112,868	9,172	8.1
2010	110,324	9,119	8.3
2011	109,929	8,786	8.0
2012	108,504	8,842	8.1
2013	109,399	8,490	7.8
2014	110,166	8,579	7.8
2015	108,935	8,579	7.9

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with known estimated gestational age multiplied by 100.

23

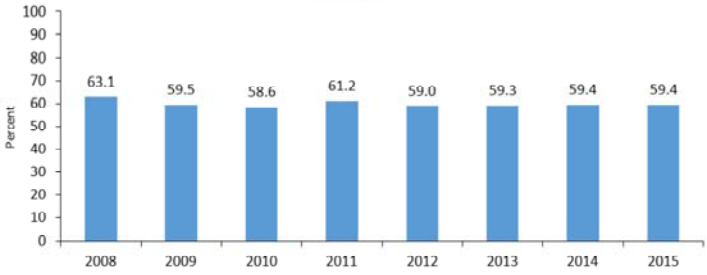
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among singleton births within Michigan from 2008 to 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among singleton births, the incidence of preterm birth has been on a slow decline from 2008 to 2015. The 2015 incidence of preterm birth among singleton births was 7.9%.

Preterm Birth: Michigan, 2008-2015

Incidence of Preterm Birth (<37 Weeks of Gestation) (%), Michigan, 2008-2015

Twins



Year	Eligible births	# PTB	PTB %
2008	4,119	2,600	63.1
2009	4,085	2,430	59.5
2010	4,065	2,381	58.6
2011	3,945	2,415	61.2
2012	3,942	2,327	59.0
2013	4,063	2,408	59.3
2014	4,097	2,435	59.4
2015	4,044	2,403	59.4

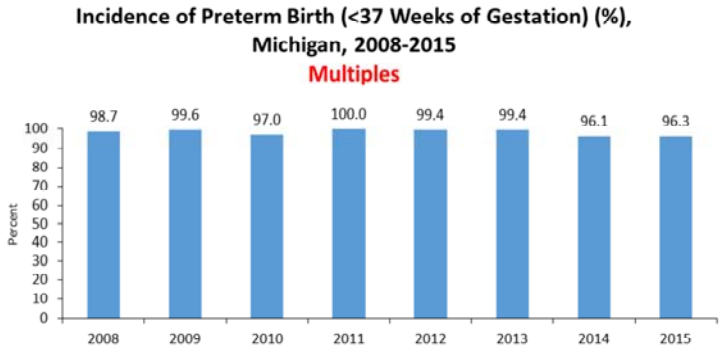
Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

24

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among twin births within Michigan from 2008 to 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among twin births, the incidence of preterm birth has been on a slow decline from 2008 to 2015. The 2015 incidence of preterm birth among twin births was 59.4%.

Preterm Birth: Michigan, 2008-2015



Year	Eligible births	# PTB	PTB %
2008	225	222	98.7
2009	231	230	99.6
2010	202	196	97.0
2011	177	177	100.0
2012	170	169	99.4
2013	172	171	99.4
2014	127	122	96.1
2015	160	154	96.3

Preterm birth rates are calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100.

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

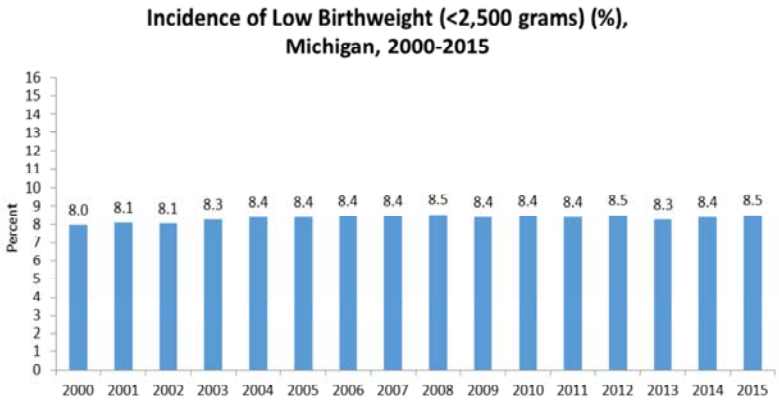
25

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of preterm birth among multiple births within Michigan from 2008 to 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. Among multiple births, the incidence of preterm birth has been not stable from 2008 to 2015. The 2015 incidence of preterm births among multiple births was 96.3%.

Michigan Low Birthweight, 2015

The next several slides contain updated low birthweight statistics for the State of Michigan

Low Birthweight: Michigan, 2000-2015



Year	Eligible Births	# LBW	LBW %
2000	136,048	10,840	8.0
2001	133,247	10,756	8.1
2002	129,518	10,443	8.1
2003	130,850	10,800	8.3
2004	129,707	10,906	8.4
2005	127,518	10,700	8.4
2006	127,537	10,746	8.4
2007	125,148	10,566	8.4
2008	121,155	10,339	8.5
2009	117,255	9,849	8.4
2010	114,647	9,685	8.4
2011	114,123	9,576	8.4
2012	112,676	9,535	8.5
2013	113,681	9,397	8.3
2014	114,414	9,592	8.4
2015	113,163	9,611	8.5

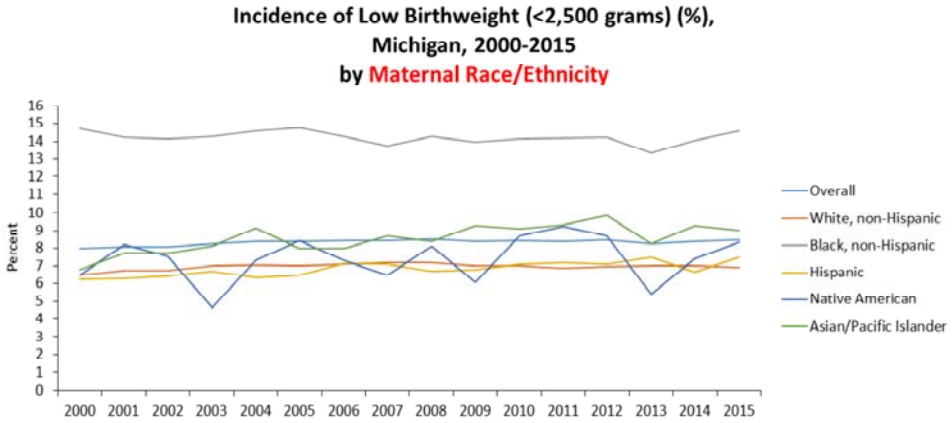
Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

27

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight in Michigan was 8.5%. The incidence of low birthweight within Michigan has been very stable from 2000 to 2015. The 2015 incidence of low birthweight in Michigan was 8.5%.

Low Birthweight: Michigan, 2000-2015



Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

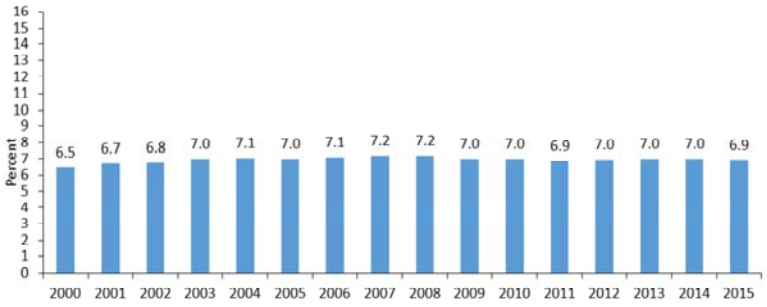
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

28

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight by maternal race/ethnicity within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. The incidence of low birthweight for non-Hispanic White and Hispanic, respectively, has been very stable from 2000 to 2015. Due to a small sample size, the incidence of preterm birth was not stable for Native American women from 2000 to 2015. Non-Hispanic Black women have the highest risk of delivering low birthweight babies when compared to other racial/ethnic groups.

Low Birthweight: Michigan, 2000-2015

Incidence of Low Birthweight (<2,500 grams) (%), Michigan, 2000-2015
White, non-Hispanic



Year	Eligible Births	# LBW	LBW %
2000	99,667	6,440	6.5
2001	97,415	6,547	6.7
2002	94,721	6,404	6.8
2003	94,942	6,635	7.0
2004	93,419	6,604	7.1
2005	91,172	6,395	7.0
2006	89,285	6,348	7.1
2007	86,326	6,211	7.2
2008	83,679	6,028	7.2
2009	80,253	5,620	7.0
2010	78,175	5,463	7.0
2011	78,035	5,366	6.9
2012	76,973	5,361	7.0
2013	77,643	5,430	7.0
2014	79,106	5,530	7.0
2015	77,429	5,364	6.9

Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

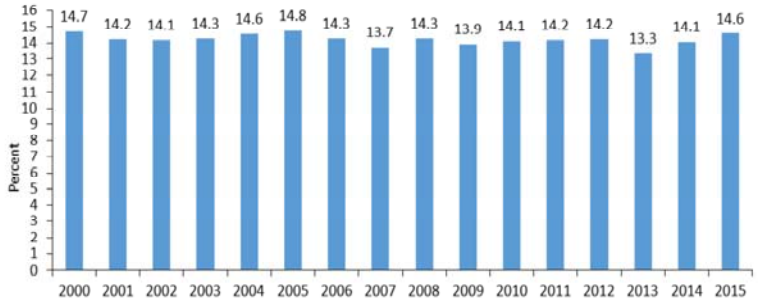
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

29

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among White non-Hispanic women within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. Among babies born to White non-Hispanic women, the incidence of low birthweight increased from 2000 to 2008, and then has been on a slow decline from 2008 to 2015. The 2015 incidence of low birthweight among White non-Hispanic women in Michigan was 6.9%.

Low Birthweight: Michigan, 2000-2015

Incidence of Low Birthweight (<2,500 grams) (%), Michigan, 2000-2015
Black, non-Hispanic



Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

Year	Eligible Births	# LBW	LBW %
2000	24,003	3,530	14.7
2001	23,408	3,330	14.2
2002	22,186	3,139	14.1
2003	22,308	3,187	14.3
2004	22,397	3,264	14.6
2005	22,284	3,291	14.8
2006	22,669	3,237	14.3
2007	21,745	2,987	13.7
2008	21,889	3,125	14.3
2009	21,547	3,003	13.9
2010	21,350	3,016	14.1
2011	21,034	2,984	14.2
2012	20,678	2,938	14.2
2013	21,195	2,823	13.3
2014	20,697	2,910	14.1
2015	20,771	3,029	14.6

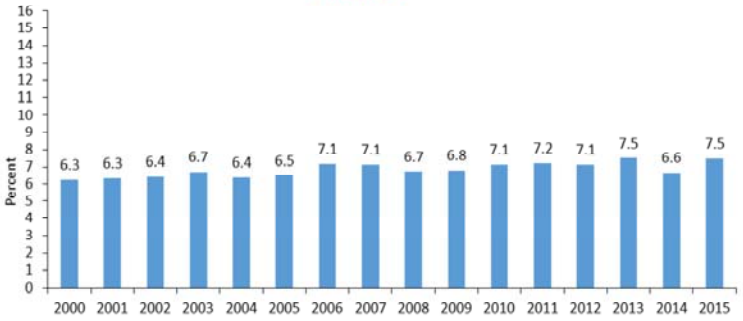
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

30

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among Black non-Hispanic women within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. Among babies born to Black non-Hispanic women, the incidence of low birthweight has been on a slow decline from 2000 to 2014, with the lowest incidence (13.3%) being reported in 2013. The 2015 incidence of low birthweight among Black non-Hispanic women was 14.6%.

Low Birthweight: Michigan, 2000-2015

Incidence of Low Birthweight (<2,500 grams) (%), Michigan, 2000-2015
Hispanic



Year	Eligible Births	# LBW	LBW %
2000	6,923	433	6.3
2001	7,317	462	6.3
2002	7,224	463	6.4
2003	7,643	511	6.7
2004	7,774	494	6.4
2005	8,396	545	6.5
2006	8,525	609	7.1
2007	8,729	620	7.1
2008	8,678	583	6.7
2009	8,252	560	6.8
2010	8,096	576	7.1
2011	7,907	568	7.2
2012	7,597	540	7.1
2013	7,761	582	7.5
2014	7,624	506	6.6
2015	7,768	582	7.5

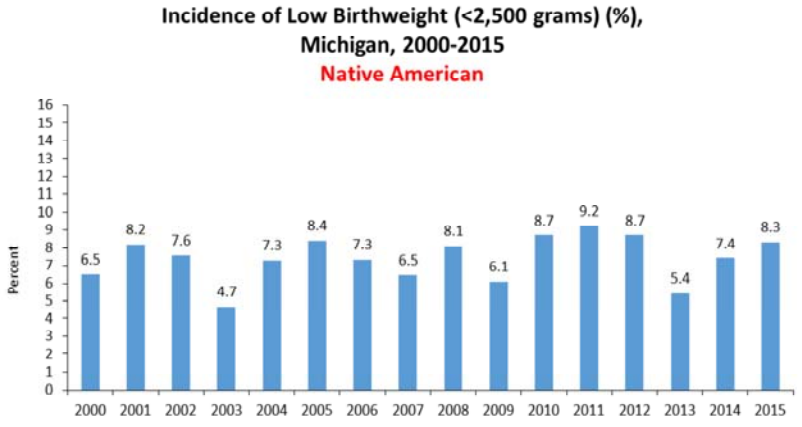
Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

31

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among Hispanic women within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. Among babies born to Hispanic women, the incidence of low birthweight increased from 6.3% in 2000 to 7.5% in 2015.

Low Birthweight: Michigan, 2000-2015



Year	Eligible Births	# LBW	LBW %
2000	632	41	6.5
2001	622	51	8.2
2002	635	48	7.6
2003	600	28	4.7
2004	671	49	7.3
2005	712	60	8.4
2006	683	50	7.3
2007	557	36	6.5
2008	715	58	8.1
2009	724	44	6.1
2010	713	62	8.7
2011	704	65	9.2
2012	667	58	8.7
2013	592	32	5.4
2014	459	34	7.4
2015	456	38	8.3

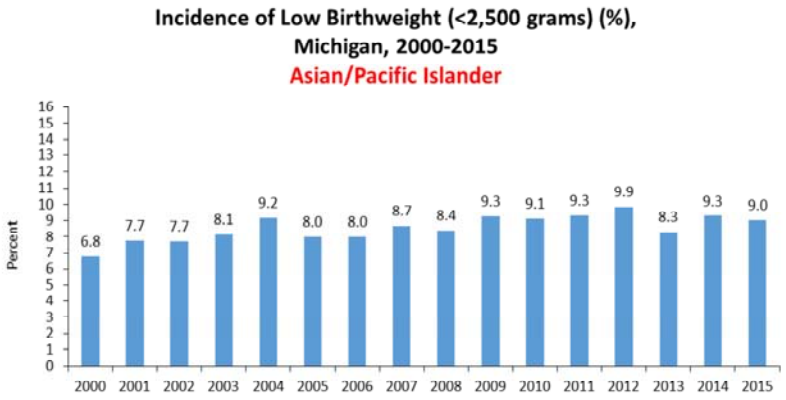
Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

32

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among Native American women within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. Among babies born to Native American women, the incidence of low birthweight increased from 6.5% in 2000 to 8.3% in 2015. Due to small numbers of low birthweight babies, the incidence of low birthweight among Native American mothers has not been stable over the past decade.

Low Birthweight: Michigan, 2000-2015



Year	Eligible Births	# LBW	LBW %
2000	3,631	246	6.8
2001	3,849	298	7.7
2002	4,038	311	7.7
2003	4,387	357	8.1
2004	4,494	412	9.2
2005	4,197	335	8.0
2006	4,415	353	8.0
2007	3,923	341	8.7
2008	3,953	331	8.4
2009	3,853	357	9.3
2010	3,570	325	9.1
2011	3,773	351	9.3
2012	3,840	379	9.9
2013	3,797	314	8.3
2014	3,723	346	9.3
2015	3,747	338	9.0

Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

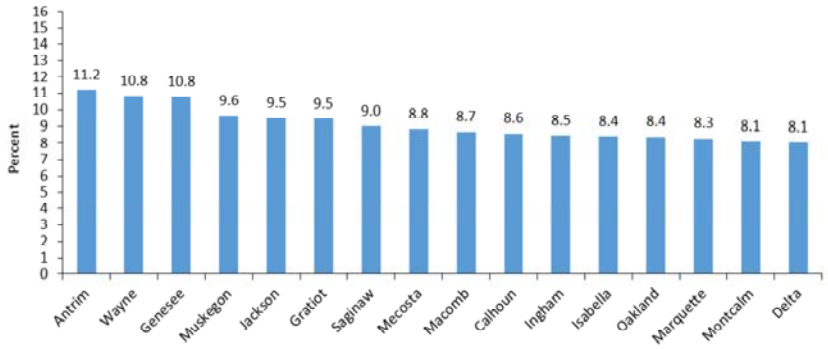
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

33

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among Asian/Pacific Islander women within Michigan from 2000 through 2015. 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 all live births with known birthweight multiplied by 100. Among babies born to Asian/Pacific Islander women, the incidence of low birthweight has been on a slow increase from 2000 to 2015. The 2015 incidence of low birthweight among Asian/Pacific Islander women was 9.0%.

Low Birthweight: Michigan, 2015

Incidence of Low Birthweight (<2,500 grams) (%), by Selected County of Residence at Birth, Michigan, 2015



County	Eligible Births	# LBW	LBW %
Antrim	205	23	11.2
Wayne	23,472	2,540	10.8
Genesee	4,747	513	10.8
Muskegon	2,079	200	9.6
Jackson	1,729	164	9.5
Gratiot	402	38	9.5
Saginaw	2,256	203	9.0
Mecosta	431	38	8.8
Macomb	9,397	814	8.7
Calhoun	1,654	142	8.6
Ingham	3,157	267	8.5
Isabella	678	57	8.4
Oakland	13,588	1,140	8.4
Marquette	614	51	8.3
Montcalm	704	57	8.1
Delta	360	29	8.1

Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100. Selected county has more than 20 low birthweight counts.

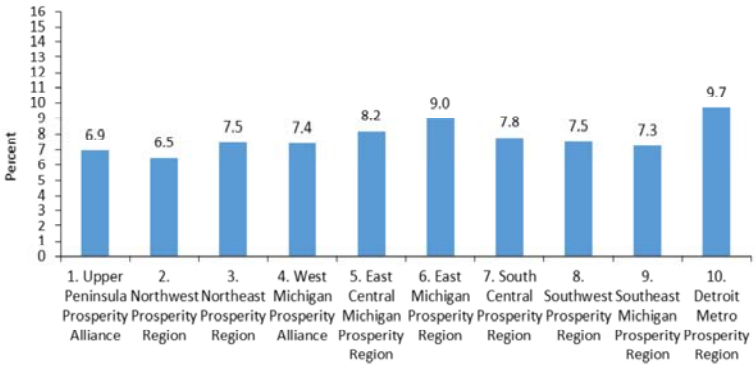
Data source: Michigan resident live birth files, Division for Vital Records and Health Statistics, MDHHS

34

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight by county of residence at birth within Michigan in 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight is 10.8% in Genesee County, 10.8% in Wayne County, and 8.4% in Oakland County.

Low Birthweight: Michigan, 2015

Incidence of Low Birthweight (<2,500 grams) (%), by Prosperity Region of Residence at Birth, Michigan, 2015



Prosperity Region	Eligible Births	# LBW	LBW %
1. Upper Peninsula Prosperity Alliance	2,722	189	6.9
2. Northwest Prosperity Region	2,932	190	6.5
3. Northeast Prosperity Region	1,780	133	7.5
4. West Michigan Prosperity Alliance	19,614	1,455	7.4
5. East Central Michigan Prosperity Region	5,943	488	8.2
6. East Michigan Prosperity Region	9,072	813	9.0
7. South Central Prosperity Region	5,209	405	7.8
8. Southwest Prosperity Region	9,279	700	7.5
9. Southeast Michigan Prosperity Region	10,199	741	7.3
10. Detroit Metro Prosperity Region	46,457	4,494	9.7

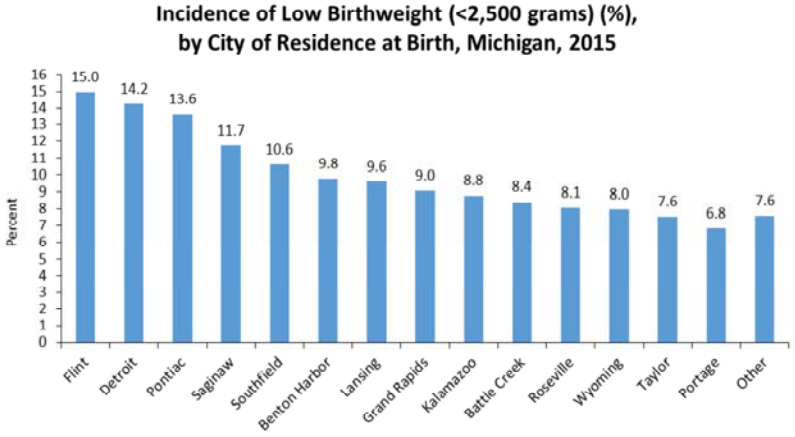
Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

35

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight by prosperity region of residence at birth within Michigan in 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight was the highest in Detroit Metro prosperity region (9.7%) and the lowest in the Northwest prosperity region (6.5%).

Low Birthweight: Michigan, 2015



City	Eligible Births	# LBW	LBW %
Flint	1,458	218	15.0
Detroit	9,891	1,408	14.2
Pontiac	1,131	154	13.6
Saginaw	818	96	11.7
Southfield	781	83	10.6
Benton Harbor	205	20	9.8
Lansing	1,784	171	9.6
Grand Rapids	3,150	285	9.0
Kalamazoo	1,039	91	8.8
Battle Creek	810	68	8.4
Roseville	583	47	8.1
Wyoming	1,177	94	8.0
Taylor	860	65	7.6
Portage	586	40	6.8
Other	88,938	6,771	7.6

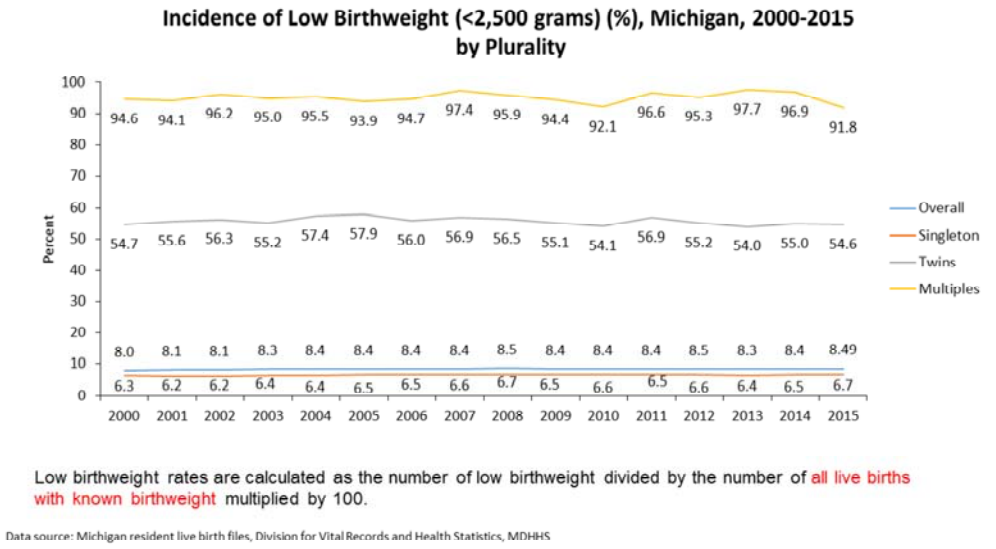
Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

36

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight by city of residence at birth within Michigan in 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight was 15.0% in the City of Flint, 14.2% in Detroit, and 9.6% in Lansing.

Low Birthweight: Michigan, 2000-2015



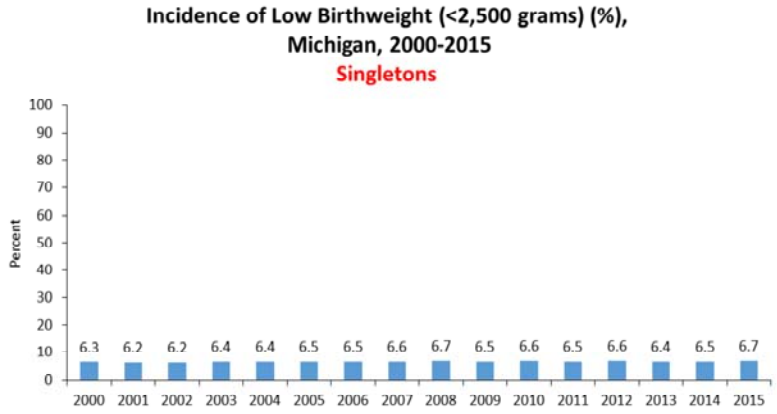
Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

37

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight by plurality within Michigan from 2000 to 2015. 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 all live births with known birthweight multiplied by 100. From 2008 to 2015, the incidence of low birthweight has been on a slow decline for singletons, twins, and multiples.

Low Birthweight: Michigan, 2000-2015



Year	Eligible Births	# LBW	LBW %
2000	131,607	8,297	6.3
2001	128,456	7,956	6.2
2002	124,941	7,761	6.2
2003	126,038	8,033	6.4
2004	124,910	8,019	6.4
2005	122,970	7,972	6.5
2006	122,796	7,987	6.5
2007	120,661	7,921	6.6
2008	116,812	7,799	6.7
2009	112,936	7,378	6.5
2010	110,382	7,301	6.6
2011	110,001	7,162	6.5
2012	108,561	7,197	6.6
2013	109,448	7,036	6.4
2014	110,188	7,215	6.5
2015	108,961	7,256	6.7

Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

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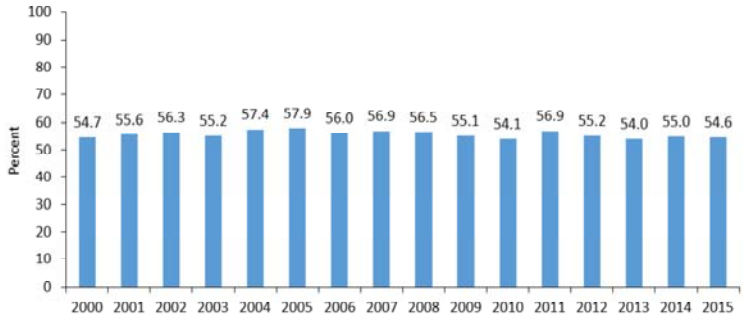
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among singleton babies within Michigan from 2000 to 2015. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100. The incidence of low birthweight has been on a slow increase among singleton babies, from 6.3% in 2000 to 6.7% in 2015.

Low Birthweight: Michigan, 2000-2015

Incidence of Low Birthweight (<2,500 grams) (%), Michigan, 2000-2015
Twins



Year	Eligible Births	# LBW	LBW %
2000	4,143	2,265	54.7
2001	4,437	2,467	55.6
2002	4,316	2,431	56.3
2003	4,532	2,501	55.2
2004	4,443	2,549	57.4
2005	4,287	2,483	57.9
2006	4,473	2,505	56.0
2007	4,259	2,423	56.9
2008	4,121	2,327	56.5
2009	4,088	2,253	55.1
2010	4,063	2,198	54.1
2011	3,945	2,243	56.9
2012	3,944	2,176	55.2
2013	4,061	2,193	54.0
2014	4,099	2,254	55.0
2015	4,044	2,210	54.6

Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

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

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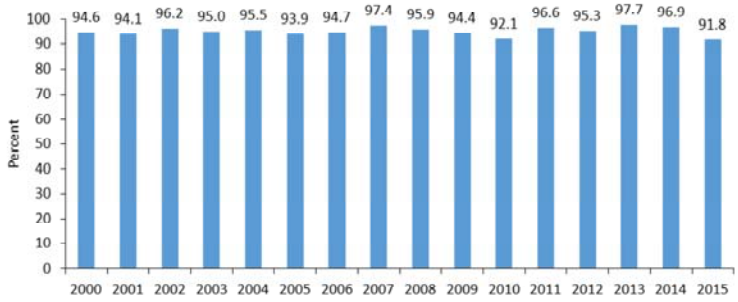
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among twin babies within Michigan from 2000 to 2015. Low birthweight is defined as a birthweight of a baby less than 2,500 grams. The incidence of low birthweight is calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100. Among twin babies, the incidence of low birthweight increased from 54.7% in 2000 to 57.9% in 2005 and it has been on a slow decline from 2005 to 2015. The 2015 incidence of low birthweight among twin babies was 54.6%.

Low Birthweight: Michigan, 2000-2015

Incidence of Low Birthweight (<2,500 grams) (%), Michigan, 2000-2015
Multiples



Year	Eligible Births	# LBW	LBW %
2000	294	278	94.6
2001	354	333	94.1
2002	261	251	96.2
2003	280	266	95.0
2004	354	338	95.5
2005	261	245	93.9
2006	262	248	94.7
2007	228	222	97.4
2008	222	213	95.9
2009	231	218	94.4
2010	202	186	92.1
2011	177	171	96.6
2012	170	162	95.3
2013	172	168	97.7
2014	127	123	96.9
2015	158	145	91.8

Low birthweight rates are calculated as the number of low birthweight divided by the number of all live births with known birthweight multiplied by 100.

Data source: Michigan resident live birth 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 of Vital Records and Health Statistics, this slide shows the incidence of low birthweight among multiple babies within Michigan from 2000 to 2015. 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 all live births with known birthweight multiplied by 100. Among multiple babies, the incidence of low birthweight has been 94.6% in 2000, 97.4% in 2007, and 97.7% in 2013. However, it was the lowest in 2015 (91.8%).

Michigan Infant Mortality, Preterm Birth and Low Birthweight by Maternal Characteristics, 2015

The next several slides provide updated infant mortality, preterm birth, and low birthweight statistics by maternal characteristics for the State of Michigan.

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015

	Infant Death (N=765)		Live Birth (N=113,211)		IMR
	N	%	N	%	Per 1,000
Maternal Age					
< 20 years	65	8.6	6,412	5.7	10.1
20-24 years	226	29.8	25,727	22.7	8.8
25-29 years	212	28.0	35,104	31.0	6.0
30-34 years	139	18.3	30,403	26.9	4.6
35-39 years	94	12.4	12,889	11.4	7.3
≥ 40 years	22	2.9	2,673	2.4	8.2
	758		113,208		
Maternal Race/Ethnicity					
White, non-Hispanic	384	51.1	77,464	69.4	5.0
Black, non-Hispanic	274	36.5	20,776	18.6	13.2
Hispanic	65	8.7	7,768	7.0	8.4
American Indian	2	0.3	456	0.4	4.4
Asian/Pacific Islander	15	2.0	3,748	3.4	4.0
Multiracial	11	1.5	1,383	1.2	8.0
	751		111,595		
Maternal Education					
< HS Diploma or GED	145	19.7	13,680	12.2	10.6
HS Diploma or GED	245	33.2	28,224	25.1	8.7
Some College	227	30.8	37,548	33.4	6.0
4 or More Years College	120	16.3	32,853	29.3	3.7
	737		112,305		

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by maternal characteristics within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women aged less than 20 years (10.1 per 1,000 live births), Black non-Hispanic women (13.2 per 1,000 live births), and women with less than a high school education (10.6 per 1,000 live births).

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015

	Infant Death (N=765)		Live Birth (N=113,211)		IMR
	N	%	N	%	Per 1,000
Payment Source					
Private Insurance	303	40.1	61,077	54.1	5.0
Medicaid	432	57.2	49,264	43.6	8.8
Self Pay	16	2.1	1,912	1.7	8.4
Other	4	0.5	662	0.6	6.0
	755		112,915		
Smoking during pregnancy					
Yes	191	26.0	19,297	17.3	9.9
No	544	74.0	92,132	82.7	5.9
	735		111,429		
Prenatal BMI					
Underweight	18	2.4	3,607	3.3	5.0
Normal weight	254	33.2	46,948	42.9	5.4
Overweight	163	21.3	28,043	25.6	5.8
Obese	330	43.1	30,855	28.2	10.7
	765		109,453		
Newborn NICU Admission					
Yes	284	37.9	8,859	7.8	32.1
No	465	62.1	104,270	92.2	4.5
	749		113,129		
Other in Household Smoke					
Yes	165	23.4	16,037	14.8	10.3
No	540	76.6	92,321	85.2	5.8
	705		108,358		

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by maternal characteristics within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women using Medicaid as the payment source (8.8 per 1,000 live births), smoking women (9.9 per 1,000 live births), obese women (10.7 per 1,000 live births) and women living in households where others smoked (10.3 per 1,000 live births). Babies with a newborn NICU admission had a higher risk of infant mortality (32.1 per 1,000 live births).

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015

	Infant Death (N=765)		Live Birth (N=113,211)		IMR
	N	%	N	%	Per 1,000
Previous C-Section Delivery					
Yes	85	11.3	16,044	14.2	5.3
No	665	88.7	96,819	85.8	6.9
	750		112,863		
Gravidity					
First time mother	211	28.1	35,225	31.2	6.0
Non first time mother	539	71.9	77,686	68.8	6.9
	750		112,911		
Prenatal Care Began					
None	48	6.9	1,556	1.4	30.8
1st trimester	420	60.2	81,887	75.1	5.1
2nd trimester	179	25.6	21,151	19.4	8.5
3rd trimester	51	7.3	4,444	4.1	11.5
	698		109,038		
Kotelchuck Index					
Adequate Plus	333	43.5	43,436	38.4	7.7
Adequate	110	14.4	39,804	35.2	2.8
Intermediate	42	5.5	9,120	8.1	4.6
Inadequate	180	23.5	15,238	13.5	11.8
Unknown	100	13.1	5,613	5.0	17.8
	765		113,211		

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by maternal characteristics within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among non-first time mother (6.9 per 1,000 live births), women without prenatal care (30.8 per 1,000 live births), and pregnant women with an inadequate Kotelchuck index (11.8 per 1,000 live births).

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015

	Infant Death (N=765)		Live Birth (N=113,211)		IMR
	N	%	N	%	Per 1,000
Preterm birth					
Term	247	32.4	102,003	90.2	2.4
Preterm (<37 weeks)	516	67.6	11,136	9.8	46.3
	763		113,139		
Birthweight					
Very Low Birthweight	392	51.4	1,735	1.5	225.9
Low Birthweight	133	17.5	7,876	7.0	16.9
Normal Birthweight	221	29.0	93,460	82.6	2.4
High Birthweight	16	2.1	10,092	8.9	1.6
	762		113,163		

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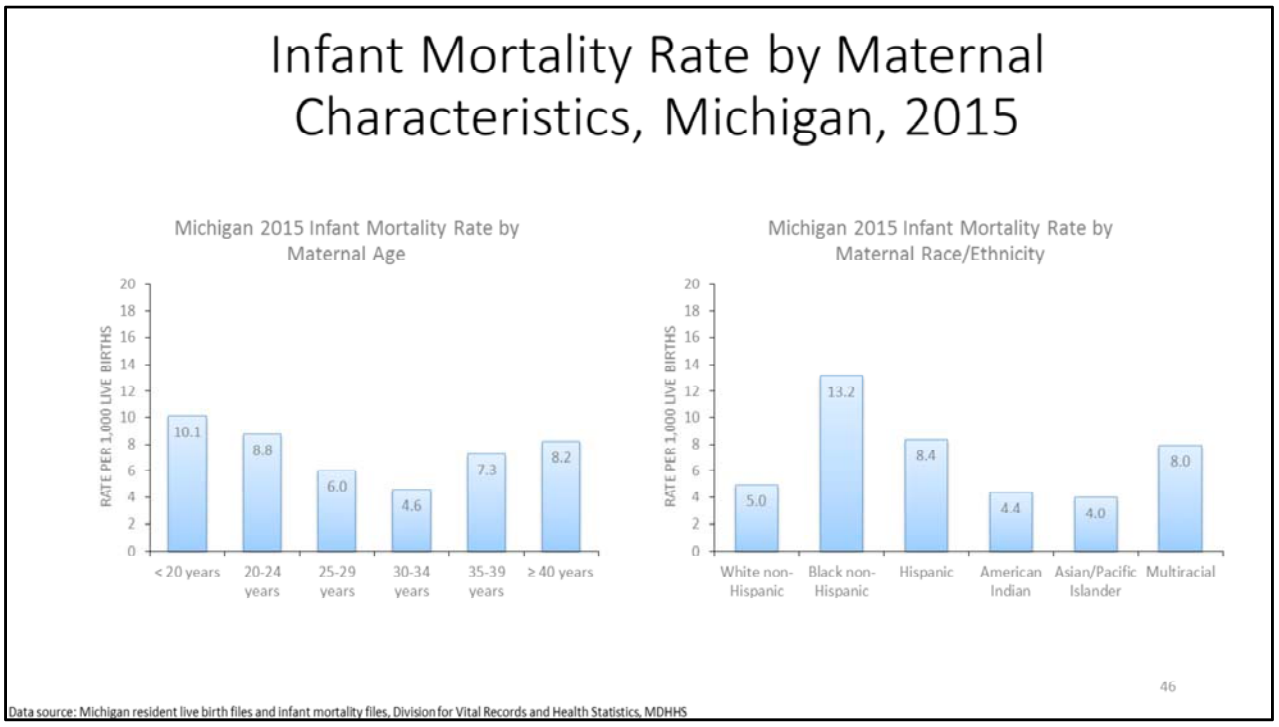
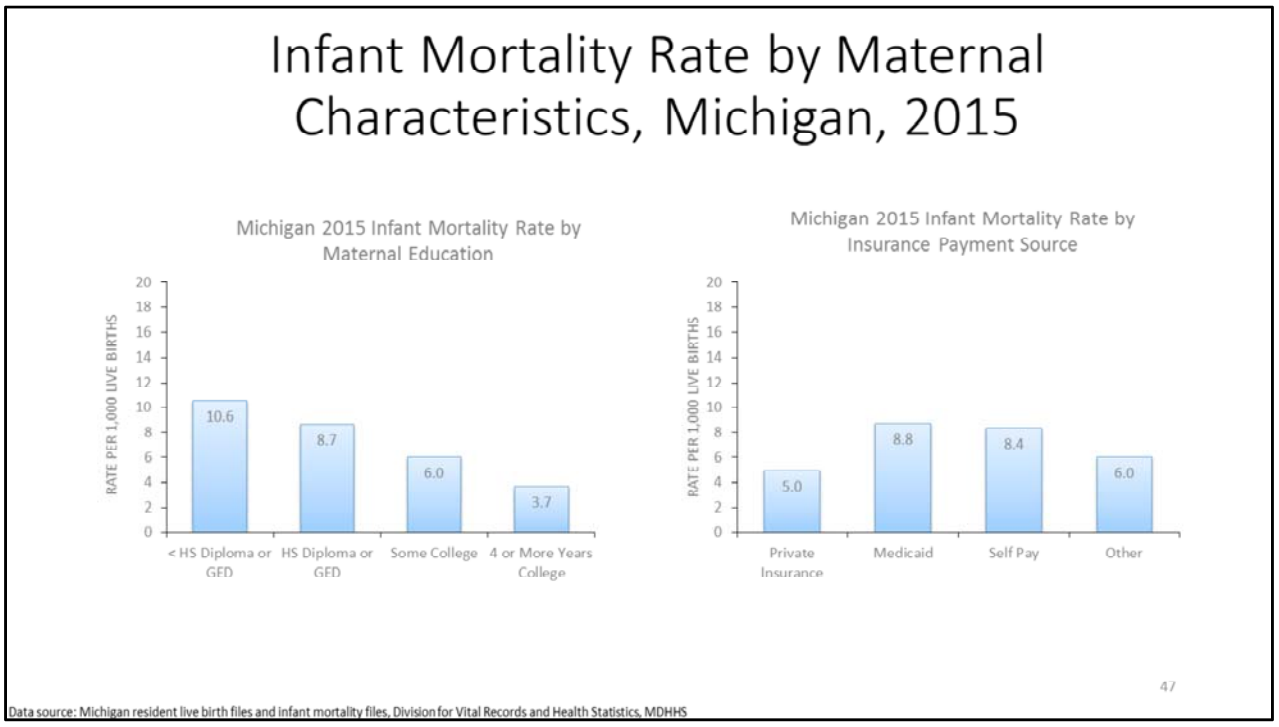
Data source: Michigan resident live birth files and infant mortality files, Division for Vital Records and Health Statistics, MDHHS

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by maternal characteristics within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among preterm birth babies (46.3 per 1,000 live births) and babies with very low birthweight (225.9 per 1,000 live births).

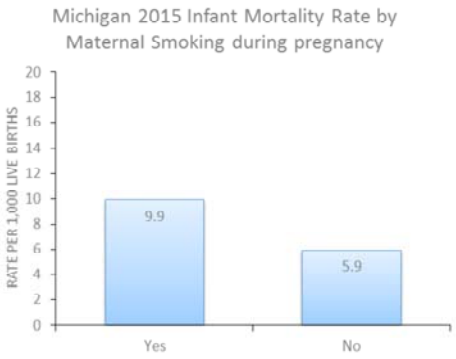


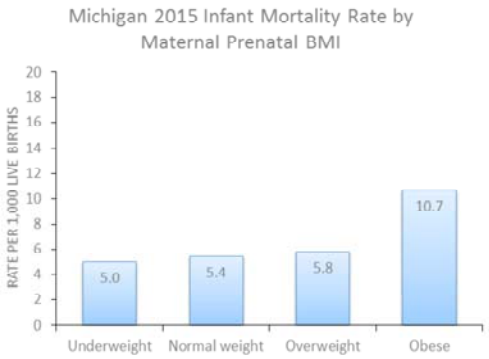
Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the graphs of infant mortality rates by maternal age and maternal race/ethnicity within Michigan in 2015. Infant mortality is defined as a death of a baby before his or her first birthday and is expressed as a rate per 1,000 live births. In 2015, the infant mortality rate in Michigan was higher among women aged less than 20 years (10.1 per 1,000 live births), women aged over 40 years (8.2 per 1,000 live births), Black non-Hispanic women (13.2 per 1,000 live births), and Hispanic women (8.4 per 1,000 live births).



Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the graphs of infant mortality rates by maternal education and maternal insurance payment source within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women with less than a high school education (10.6 per 1,000 live births), and women using Medicaid as their payment source (8.8 per 1,000 live births).

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015



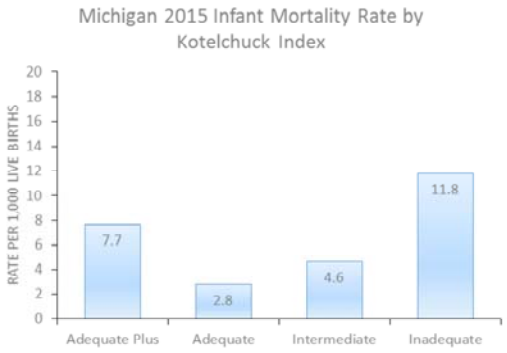


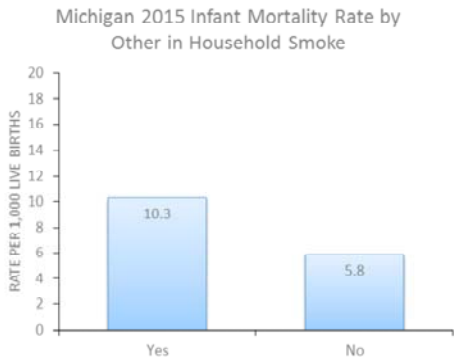
48

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the graphs of infant mortality rates by maternal smoking during pregnancy and prenatal body mass index (BMI) within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women who smoked during pregnancy (9.9 per 1,000 live births) and obese women (10.7 per 1,000 live births).

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015



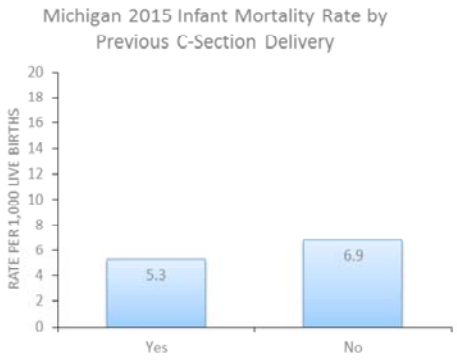


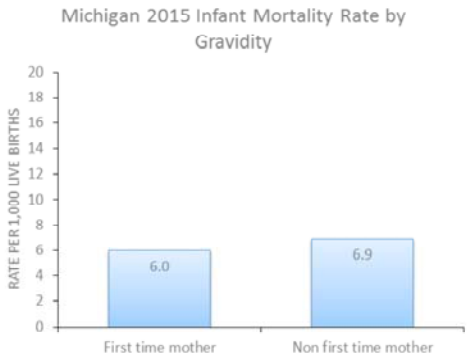
49

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the graphs of infant mortality rates by newborn NICU admission and household smoking status within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women living in households where others smoked (10.3 per 1,000 live births), and pregnant women with adequate plus Kotelchuck index (7.7 per 1,000 live births) and inadequate Kotelchuck index (11.8 per 1,000 live births). Pregnant women with adequate plus Kotelchuck index were more likely to have higher risk pregnancy.

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015



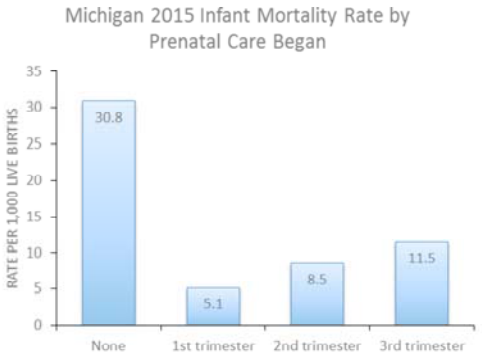


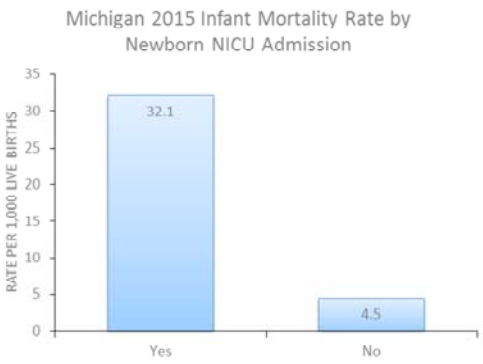
50

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the graphs of infant mortality rates by C-section delivery and gravidity within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women with a previous C-section delivery (6.9 per 1,000 live births) and among non-first time mother (6.9 per 1,000 live births).

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015



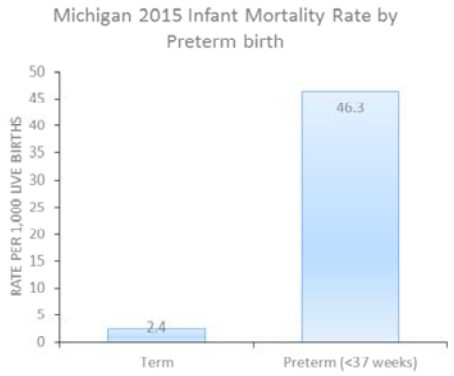


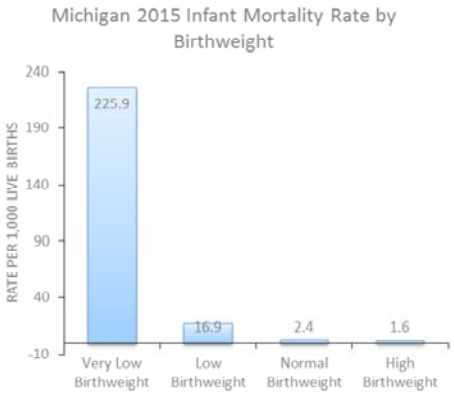
51

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by prenatal care within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among women without prenatal care (30.8 per 1,000 live births). Babies with a newborn NICU admission had a higher risk of infant mortality (32.1 per 1,000 live births). However, higher risk babies were more likely to be admitted to NICU.

Infant Mortality Rate by Maternal Characteristics, Michigan, 2015





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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the infant mortality rates by preterm birth and low birthweight within Michigan in 2015. 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. In 2015, the infant mortality rate in Michigan was higher among preterm birth babies (46.3 per 1,000 live births) and babies with very low birthweight (225.9 per 1,000 live births).

Preterm Birth by Maternal Characteristics, Michigan, 2015

	Term Birth (N=102,003)	Preterm Birth (N=11,136)		
	N	N	%	OR (95% C.I.)
Maternal Age				
< 20 years	5,787	614	9.6%	1.1 (1.0, 1.2)
20-24 years	23,177	2,529	9.8%	1.1 (1.0, 1.2)
25-29 years	31,924	3,160	9.0%	1.0
30-34 years	27,470	2,924	9.6%	1.1 (1.0, 1.1)
35-39 years	11,371	1,508	11.7%	1.3 (1.3, 1.4)
≥ 40 years	2,273	399	14.9%	1.8 (1.6, 2.0)
Maternal Race/Ethnicity				
White non-Hispanic	70,576	6,851	8.8%	1.0
Black non-Hispanic	17,829	2,923	14.1%	1.7 (1.6, 1.8)
Hispanic	7,068	695	9.0%	1.0 (0.9, 1.1)
American Indian	393	63	13.8%	1.7 (1.3, 2.2)
Asian/Pacific Islander	3,432	316	8.4%	0.9 (0.8, 1.1)
Multiracial	1,237	145	10.5%	1.2 (1.0, 1.4)
Maternal Education				
< HS Diploma or GED	12,162	1,502	11.0%	1.4 (1.3, 1.4)
HS Diploma or GED	25,160	3,046	10.8%	1.3 (1.3, 1.4)
Some College	33,853	3,672	9.8%	1.2 (1.1, 1.3)
4 or More Years College	30,098	2,749	8.4%	1.0

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the preterm birth rates by maternal characteristics within Michigan in 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. In 2015, the incidence of preterm birth in Michigan was higher among women aged over 40 years (14.9%), Black non-Hispanic women (14.1%), and women with less than a high school education (11.0%).

Preterm Birth by Maternal Characteristics, Michigan, 2015

	Term Birth (N=102,003)	Preterm Birth (N=11,136)		
	N	N	%	OR (95% C.I.)
Payment Source				
Private Insurance	55,559	5,503	9.0%	1.0
Medicaid	43,871	5,360	10.9%	1.2 (1.2, 1.3)
Self Pay	1,720	181	9.5%	1.1 (0.9, 1.2)
Other	600	62	9.4%	1.0 (0.8, 1.4)
Smoking during pregnancy				
Yes	17,056	2,227	11.5%	1.3 (1.2, 1.3)
No	83,485	8,599	9.3%	1.0
Prenatal BMI				
Underweight	3,176	429	11.9%	1.4 (1.3, 1.6)
Normal weight	42,803	4,112	8.8%	1.0
Overweight	25,433	2,597	9.3%	1.1 (1.0, 1.1)
Obese	27,550	3,293	10.7%	1.2 (1.2, 1.3)
Newborn NICU Admission				
Yes	3,845	5,006	56.6%	20.9 (19.9, 22.0)
No	98,102	6,112	5.9%	1.0
Other in Household Smoke				
Yes	14,294	1,728	10.8%	1.2 (1.1, 1.2)
No	83,662	8,615	9.3%	1.0

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the preterm birth rates by maternal characteristics within Michigan in 2015. Preterm birth is defined as a birth of a baby less than 37 complete weeks of gestation. The incidence of preterm birth is calculated as the number of preterm births divided by the number of live births with **known estimated** gestational age multiplied by 100. In 2015, the incidence of preterm birth in Michigan was higher among women using Medicaid as their payment source (10.9%), smoking women (11.5%), underweight and obese women (11.9% and 10.7%, respectively), and women living in households where others smoke (10.8%). Babies with a newborn NICU admission had a higher risk of preterm birth (56.6%).

Preterm Birth by Maternal Characteristics, Michigan, 2015

	Term Birth (N=102,003)	Preterm Birth (N=11,136)		
	N	N	%	OR (95% C.I.)
Previous C-Section Delivery				
Yes	14,336	1,704	10.6%	1.1 (1.0, 1.2)
No	87,379	9,387	9.7%	1.0
Gravidity				
First time mother	32,163	3,044	8.6%	0.8 (0.8, 0.9)
Non first time mother	69,599	8,047	10.4%	1.0
Prenatal Care Began				
None	1,074	445	29.3%	4.1 (3.6, 4.6)
1st trimester	74,316	7,565	9.2%	1.0
2nd trimester	19,069	2,080	9.8%	1.1 (1.0, 1.1)
3rd trimester	4,043	400	9.0%	1.0 (0.9, 1.1)
Kotelchuck Index				
Adequate Plus	36,771	6,660	15.3%	5.2 (4.9, 5.5)
Adequate	38,451	1,352	3.4%	1.0
Intermediate	8,659	461	5.1%	1.5 (1.4, 1.7)
Inadequate	13,434	1,769	11.6%	3.7 (3.5, 4.0)

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Low Birthweight by Maternal Characteristics, Michigan, 2015

	Normal & High Birthweight (N=103,552)	Very Low & Low Birthweight (N=9,611)		
	N	N	%	OR (95% C.I.)
Maternal Age				
< 20 years	5,769	642	10.0%	1.3 (1.2, 1.5)
20-24 years	23,317	2,404	9.3%	1.2 (1.2, 1.3)
25-29 years	32,390	2,701	7.7%	1.0
30-34 years	28,039	2,349	7.7%	1.0 (0.9, 1.1)
35-39 years	11,682	1,196	9.3%	1.2 (1.1, 1.3)
≥ 40 years	2,354	317	11.9%	1.6 (1.4, 1.8)
Maternal Race/Ethnicity				
White non-Hispanic	72,065	5,364	6.9%	1.0
Black non-Hispanic	17,742	3,029	14.6%	2.3 (2.2, 2.4)
Hispanic	7,186	582	7.5%	1.1 (1.0, 1.2)
American Indian	418	38	8.3%	1.2 (0.9, 1.7)
Asian/Pacific Islander	3,409	338	9.0%	1.3 (1.2, 1.5)
Multiracial	1,252	129	9.3%	1.4 (1.2, 1.7)
Maternal Education				
< HS Diploma or GED	12,180	1,492	10.9%	1.8 (1.6, 1.9)
HS Diploma or GED	25,451	2,761	9.8%	1.6 (1.5, 1.6)
Some College	34,467	3,072	8.2%	1.3 (1.2, 1.4)
4 or More Years College	30,698	2,141	6.5%	1.0

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the low birthweight rates by maternal characteristics within Michigan in 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight in Michigan was higher among women aged less than 20 years (10.0%), aged over 40 years (11.9%), Black non-Hispanic women (14.6%), and women with less than a high school education (10.9%).

Low Birthweight by Maternal Characteristics, Michigan, 2015

	Normal & High Birthweight (N=103,552)	Very Low & Low Birthweight (N=9,611)		
	N	N	%	OR (95% C.I.)
Payment Source				
Private Insurance	56,700	4,360	7.1%	1.0
Medicaid	44,249	5,010	10.2%	1.5 (1.4, 1.5)
Self Pay	1,750	148	7.8%	1.1 (0.9, 1.3)
Other	596	66	10.0%	1.4 (1.1, 1.9)
Smoking during pregnancy				
Yes	16,977	2,315	12.0%	1.6 (1.6, 1.7)
No	85,037	7,057	7.7%	1.0
Prenatal BMI				
Underweight	3,128	479	13.3%	1.7 (1.6, 1.9)
Normal weight	43,098	3,831	8.2%	1.0
Overweight	25,854	2,174	7.8%	0.9 (0.9, 1.0)
Obese	28,307	2,542	8.2%	1.0 (1.0, 1.1)
Newborn NICU Admission				
Yes	4,537	4,318	48.8%	17.8 (17.0, 18.8)
No	98,957	5,276	5.1%	1.0
Other in Household Smoke				
Yes	14,248	1,785	11.1%	1.5 (1.4, 1.6)
No	85,104	7,184	7.8%	1.0

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Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the low birthweight rates by maternal characteristics within Michigan in 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight in Michigan was higher among women using Medicaid as their payment source (10.2%), smoking women (12.0%), underweight women (13.3%), and women living in households where others smoked (11.1%). Babies with a newborn NICU admission had a higher risk of low birthweight (48.8%).

Low Birthweight by Maternal Characteristics, Michigan, 2015

	Normal & High Birthweight (N=103,552)	Very Low & Low Birthweight (N=9,611)		
	N	N	%	OR (95% C.I.)
Previous C-Section Delivery				
Yes	14,816	1,228	7.7%	0.9 (0.8, 0.9)
No	88,430	8,350	8.6%	1.0
Gravidity				
First time mother	32,255	2,962	8.4%	1.0 (0.9, 1.0)
Non first time mother	71,043	6,612	8.5%	1.0
Prenatal Care Began				
None	1,169	380	24.5%	3.8 (3.4, 4.3)
1st trimester	75,441	6,432	7.9%	1.0
2nd trimester	19,246	1,889	8.9%	1.2 (1.1, 1.2)
3rd trimester	4,093	351	7.9%	1.0 (0.9, 1.1)
Kotelchuck Index				
Adequate Plus	38,012	5,420	12.5%	3.8 (3.6, 4.1)
Adequate	38,362	1,431	3.6%	1.0
Intermediate	8,714	401	4.4%	1.2 (1.1, 1.4)
Inadequate	13,643	1,585	10.4%	3.1 (2.9, 3.4)
Preterm birth				
Term (≥ 37 weeks)	99,068	2,908	2.9%	1.0
Preterm (<37 weeks)	4,432	6,698	60.2%	51.5 (48.8, 54.3)

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

Using data from the Michigan Department of Health and Human Services, Division of Vital Records and Health Statistics, this slide shows the low birthweight rates by maternal characteristics within Michigan in 2015. 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 all live births with known birthweight multiplied by 100. In 2015, the incidence of low birthweight in Michigan was higher among non-first time mother (8.5%), women without prenatal care (24.5%), and pregnant women with an adequate plus or inadequate Kotelchuck index (12.5% and 10.4%, respectively). Preterm birth babies had a higher risk of being low birthweight (60.2%).