

Maps of Average Infant Mortality Rates, Michigan, 2012-2016

Prepared by the Maternal and Child Health (MCH) Epidemiology Section,
Michigan Department of Health and Human Services (MDHHS)
Data sources: Michigan resident live birth files linked with infant mortality files (08/06/2018),
Division for Vital Records and Health Statistics, MDHHS
October 2018

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This presentation contains maps of average infant mortality rates, 2012-2016, for the State of Michigan.

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

Data source: Michigan resident live birth files linked with infant mortality files (08/06/2018), Division for Vital Records and Health Statistics, MDHHS

Revised: October 2018

Overview

- Currently, trends in infant mortality are not widely examined in Michigan and there may be spatial patterns that are not being detected.
- The objective of this study is to examine spatial trends in infant mortality in Michigan over a five year period from 2012-2016 in order to better inform public health resource allocation.

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The objective of this study is to examine spatial trends in infant mortality in Michigan over a five year period from 2012-2016 in order to better inform public health resource allocation.

Data

- 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.
- 2012-2016 Michigan live birth files linked with infant mortality files
 - Geocoded maternal residential addresses
- Michigan county/census tract/zip code shapefile for ArcGIS
- Infant mortality rates per 1,000 live births over the five-year period were calculated and aggregated to the county/census tract/zip code level. If the number of infant deaths per county/zip code was less than **six**, the rate was not calculated.
- The average infant mortality rate over the five-year period (2012-2016) is **6.9** per 1,000 live births (3,895 infant deaths and 567,485 live births).

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

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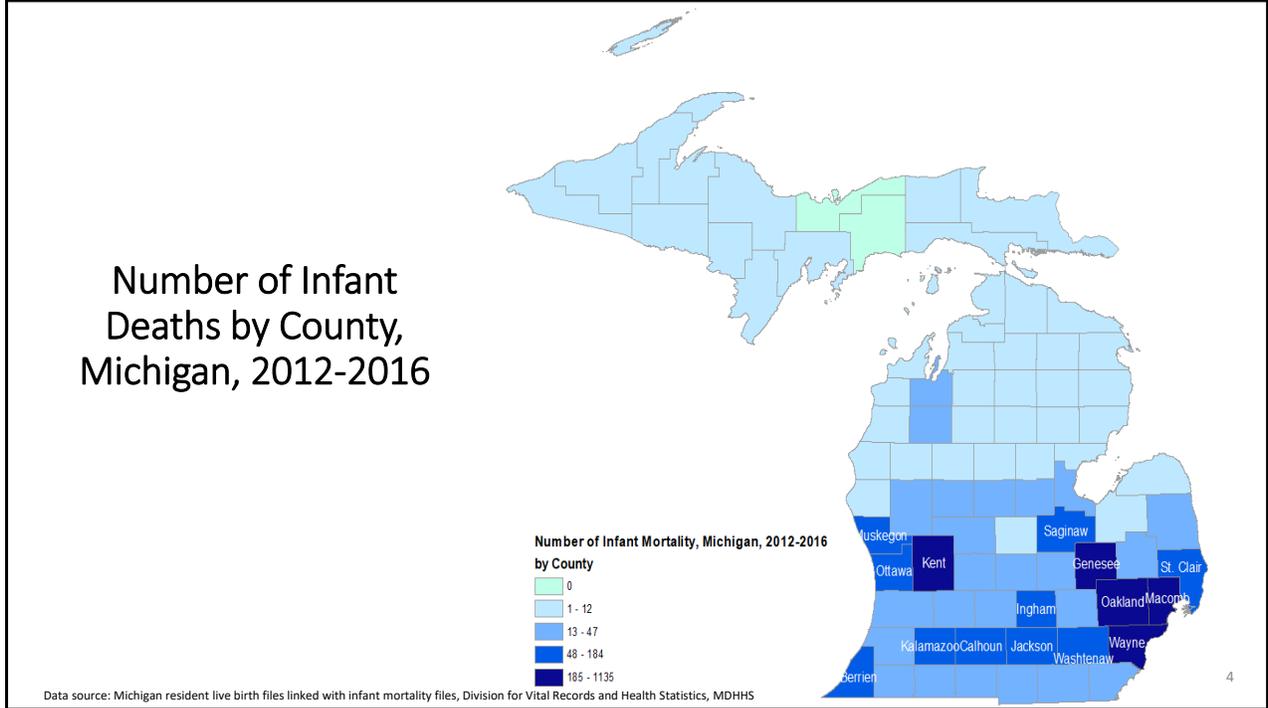
This study used 2012-2016 Michigan live birth files linked with infant mortality files, with geocoded maternal residential addresses (i.e. residence of mothers at child's birth).

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.

Michigan county/census tract/zip code ArcGIS shapefiles were used for mapping.

Infant mortality rates per 1,000 live births over the five-year period were calculated and aggregated to the county/census tract/zip code level. If the number of infant deaths per county/zip code was less than **six**, the rate was not calculated (suppressed).

The average infant mortality rate for babies born over the five-year period (2012-2016) is **6.9** per 1,000 live births (3,895 infant deaths and 567,485 live births).



This map shows the number of infant deaths by county for the State of Michigan, 2012-2016.

From 2012 to 2016, five counties had over 184 (mean: 47 + standard deviation: 137 = 148) infant deaths (Genesee, Kent, Macomb, Oakland, and Wayne Counties).

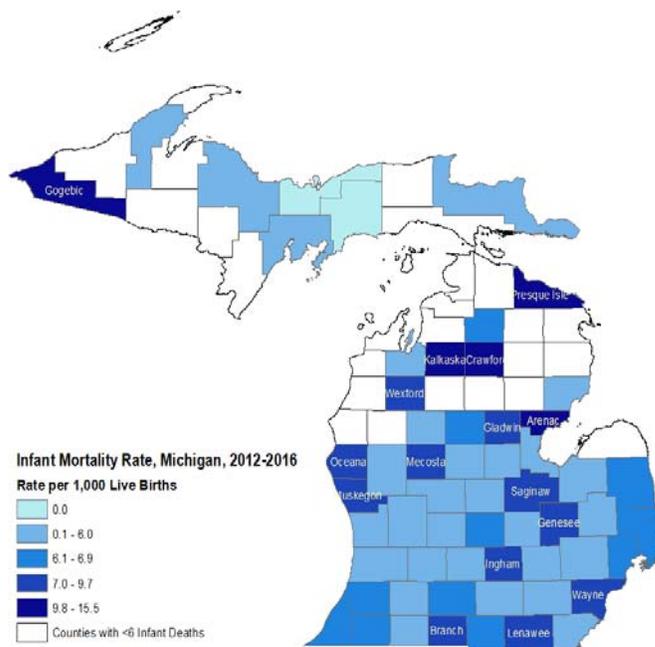
Ten counties had over 47 (mean) and at most 184 infant deaths (Berrien, Calhoun, Ingham, Jackson, Kalamazoo, Muskegon, Ottawa, Saginaw, St. Clair, and Washtenaw Counties).

Twenty-four counties had over 12 (median) and at most 47 infant deaths.

Forty-two counties had over one and at most 12 infant deaths.

Two counties had no infant death (Alger and Schoolcraft Counties).

Average Infant Mortality Rate by County, Michigan, 2012-2016



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

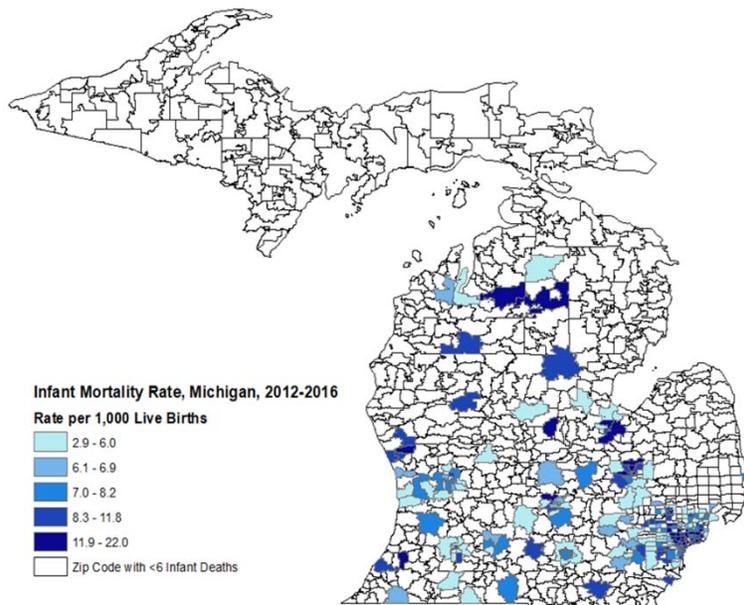
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This map shows average infant mortality rates by county for the State of Michigan, 2012-2016.

From 2012 to 2016, two counties had no infant deaths (Alger and Schoolcraft Counties). Twenty-five counties had less than six infant deaths and the infant mortality rate for these counties was not calculated (suppressed).

Among the 56 counties with six or more infant deaths, the average infant mortality rate was between 0.1 and 6.0 per 1,000 live births in 29 counties; between 6.1 and 6.9 (mean) per 1,000 live births in 11 counties; between 7.0 and 9.7 (mean: 6.9 + standard deviation: 2.8 = 9.7) per 1,000 live births in 11 counties (Branch, Genesee, Gladwin, Ingham, Lenawee, Mecosta, Muskegon, Oceana, Saginaw, Wayne, and Wexford Counties); and over 9.7 per 1,000 live births in 5 counties (Arenac, Crawford, Gogebic, Kalkaska, and Presque Isle Counties).

Average Infant Mortality Rate by Zip Code, Michigan, 2012-2016



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

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This map shows average infant mortality rates by zip code for the State of Michigan, 2012-2016.

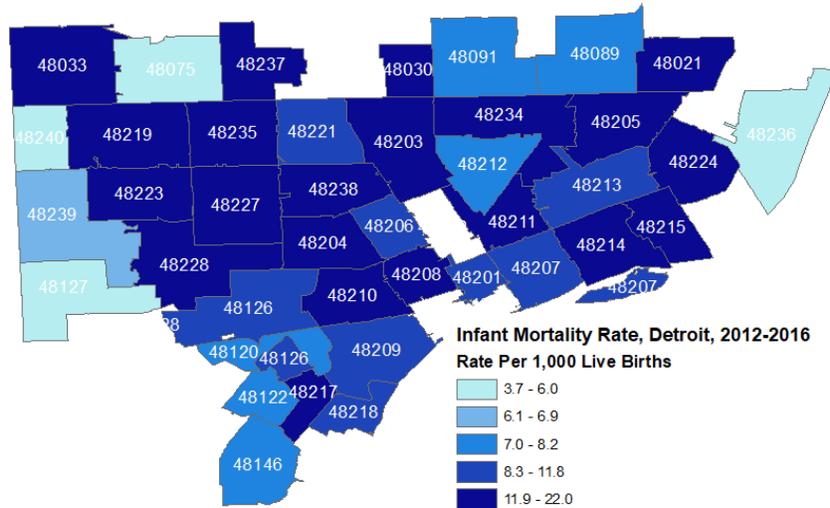
The average state infant mortality rate for babies born over the five-year period (2012-2016) for all zip codes is **6.9** per 1,000 live births.

From 2012 to 2016, **781** zip codes had less than six infant deaths and the infant mortality rates for these zip codes were not calculated (suppressed).

Among the **208** zip codes with six or more infant deaths, the average infant mortality rate was between 2.9 and 6.0 per 1,000 live births in **71** zip codes; between 6.1 and 6.9 (mean) per 1,000 live births in **22** zip codes; between 7.0 and 8.2 (mean: 6.9 + standard deviation: 1.3 = 8.2) per 1,000 live births in **36** zip codes; between 8.3 and 11.8 (6.9 + 3 * standard deviation: 1.3 = 11.8) per 1,000 live births in **43** zip codes; and over 11.9 per 1,000 live births in **36** zip codes.

From 2012 to 2016, among those **208** zip codes with six or more infant deaths in Michigan, **55.3** percent of zip codes (115 out of 208) had infant mortality rate greater than the mean for the state of Michigan; **17.3** percent of zip codes (36 out of 208) had infant mortality rates greater than three standard deviations above the state average.

Average Infant Mortality Rate by Zip Code, City of Detroit, 2012-2016



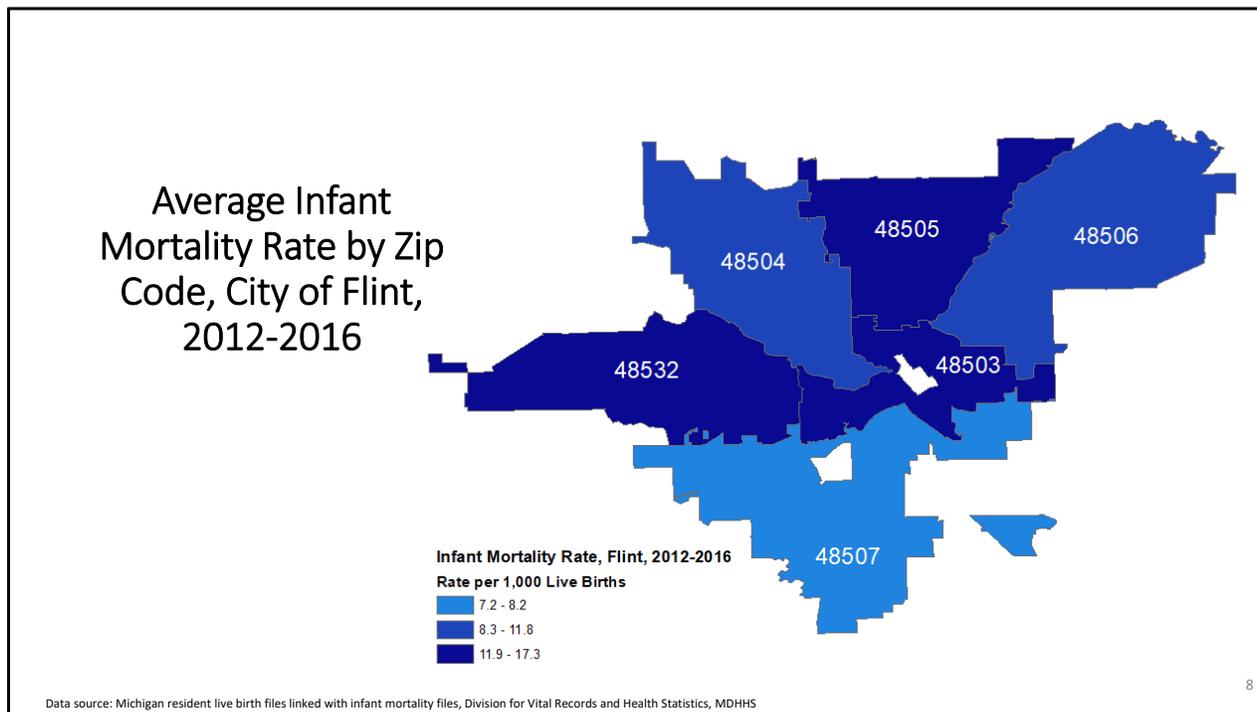
Data source: Michigan resident live birth files linked with infant mortality files, Division for Vital Records and Health Statistics, MDHHS

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This map shows the average infant mortality rate by zip code in the City of Detroit, 2012-2016. The average state infant mortality rate for babies born over the five-year period (2012-2016) for all zip codes is **6.9** per 1,000 live births.

From 2012 to 2016, among those **40** zip codes with 6 or more infant deaths, the average infant mortality rate was between 2.9 and 6.0 per 1,000 live births in **four** zip codes (48075, 48127, 48236, and 48240); between 6.1 and 6.9 (mean for state zip codes) per 1,000 live births in **one** zip codes (48239); between 7.0 and 8.2 (mean: 6.9 + standard deviation: 1.3 = 8.2) per 1,000 live births in **six** zip codes (48089, 48091, 48120, 48122, 48146, 48212); between 8.3 and 11.8 ($6.9 + 3 * \text{standard deviation: } 1.3 = 11.8$) per 1,000 live births in **eight** zip codes (48126, 48201, 48206, 48207, 48209, 48213, 48218, 48221); and over 11.9 per 1,000 live births in **21** zip codes (48021, 48030, 48033, 48203, 48204, 48205, 48208, 48210, 48211, 48214, 48215, 48217, 48219, 48223, 48224, 48227, 48228, 48234, 48235, 48237, 48238).

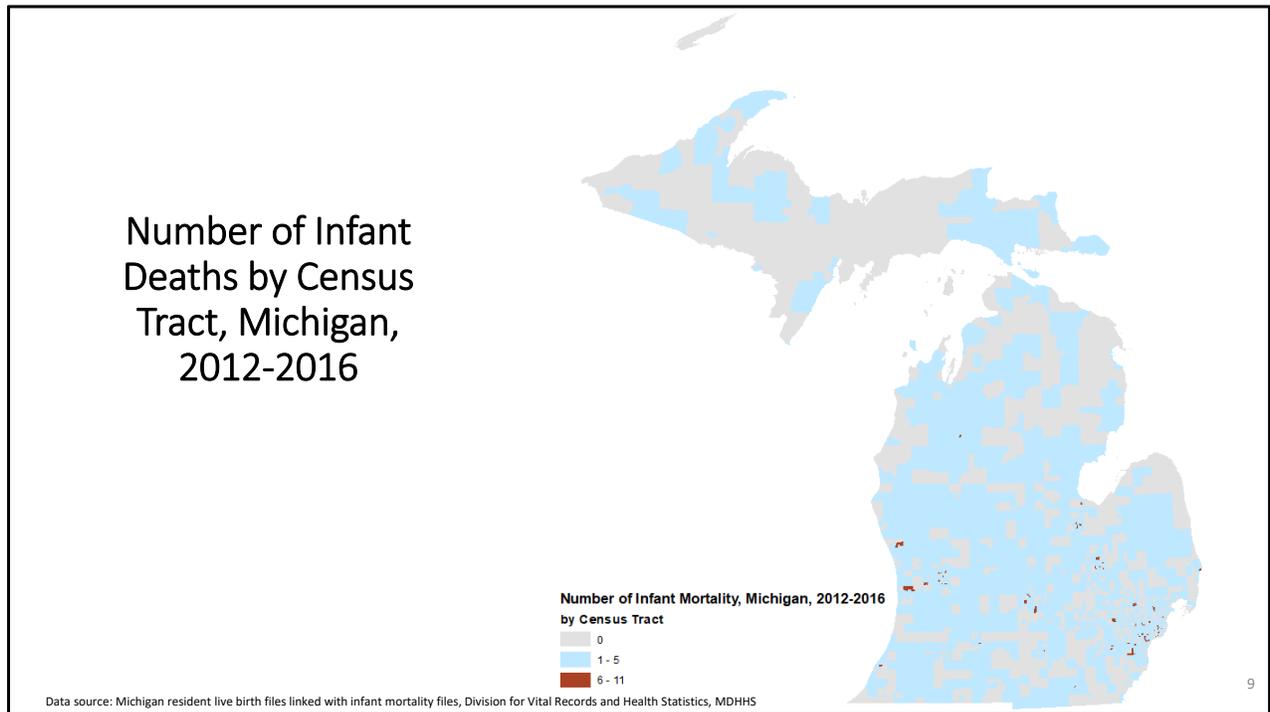
From 2012 to 2016, among those **40** zip codes with six or more infant deaths in the city of Detroit, **87.5** percent of zip codes (35 out of 40) had infant mortality rate greater than the mean for the state of Michigan; **52.5** percent of zip codes (21 out of 40) had infant mortality rates greater than three standard deviations above the state average.



This map shows the average infant mortality rate by zip code in the City of Flint, 2012-2016.

From 2012 to 2016, among those **six** zip codes with six or more infant deaths, the average infant mortality rate was between 7.2 and 8.2 (mean: 6.9 + standard deviation 1.3 = 8.2) per 1,000 live births in **one** zip code (48507); between 8.3 and 11.8 (6.9 + 3 * standard deviation: 1.3 = 11.8) per 1,000 live births in **two** zip codes (48504, 48506); and over 11.9 per 1,000 live births in **three** zip codes (48503, 48505, 48532) .

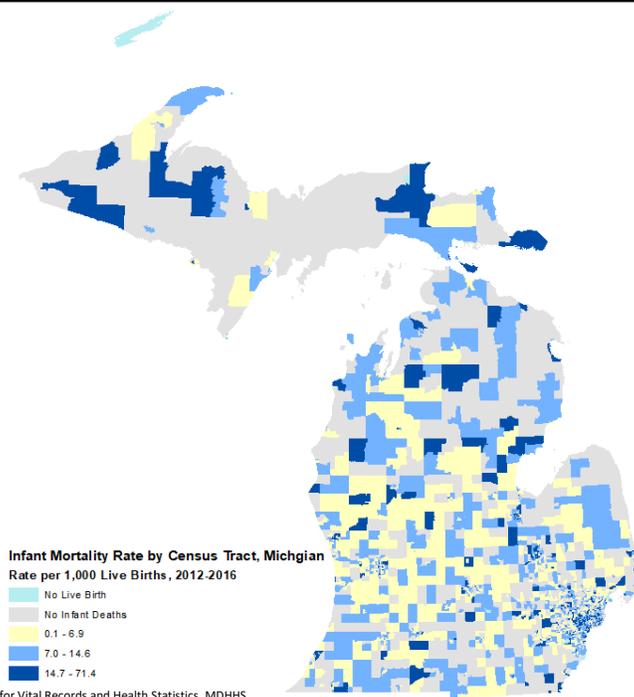
From 2012 to 2016, among those **six** zip codes with six or more infant deaths in the city of Flint, **all** of zip codes (6 out of 6) had infant mortality rate greater than the mean for the state of Michigan (6.9 per 1,000 live births); **50** percent of zip codes (3 out of 6) had infant mortality rates greater than three standard deviations above the state average.



This map shows the number of infant deaths by census tract for the State of Michigan, 2012-2016.

From 2012 to 2016, **26** census tracts had no live births; **964** census tracts had no infant deaths; **1711** census tracts had 1-5 infant deaths; and **72** census tracts had six or more infant deaths.

Average Infant Mortality Rate by Census Tract, Michigan, 2012-2016



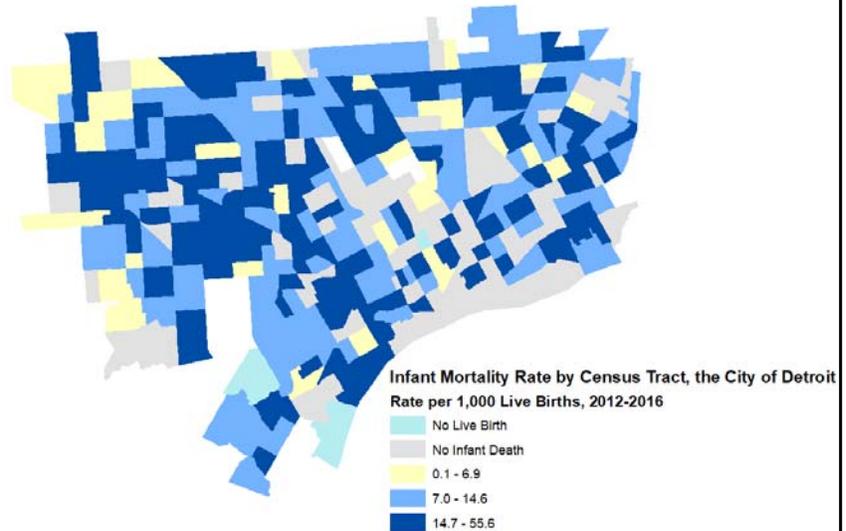
This map shows the average infant mortality rate by census tract for the State of Michigan, 2012-2016.

From 2012 to 2016, **26** census tracts had no live births and **964** census tracts had no infant deaths.

From 2012 to 2016, the average infant mortality average rate was between 0.1 and 6.9 (mean) per 1,000 live births in **676** census tracts; between 7.0 and 14.6 (mean: 6.9 + standard deviation : 7.7 = 14.6) per 1,000 live births in **752** census tracts; and over 14.7 per 1,000 live births in **355** census tracts.

From 2012 to 2016, among those **1783** census tracts with live births and infant deaths in Michigan, **62.1** percent of census tracts (1107 out of 1783) had infant mortality rate greater than the mean for the state of Michigan; **19.9** percent of census tracts (355 out of 1783) had infant mortality rates greater than one standard deviation above the state average.

Average Infant Mortality Rate by Census Tract, City of Detroit, 2012-2016



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

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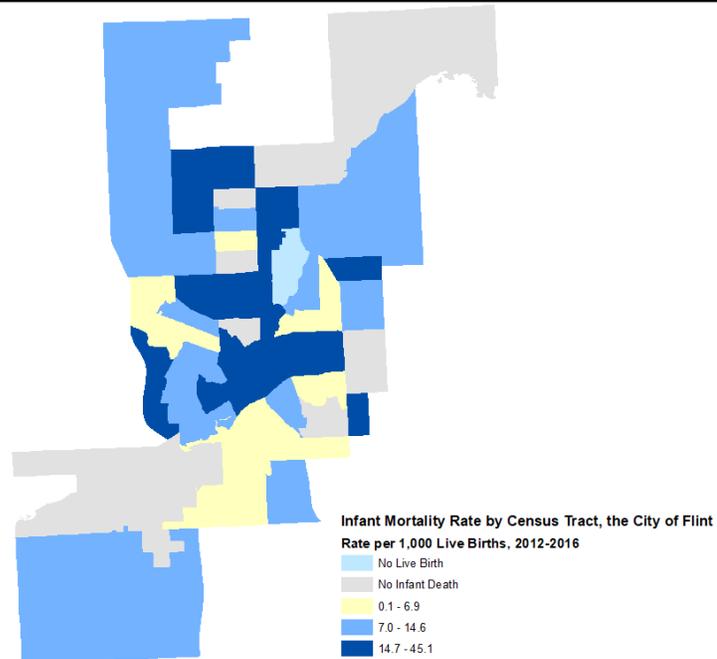
This map shows the average infant mortality rate by census tract for the City of Detroit, 2012-2016.

From 2012 to 2016, among the **355** census tracts in the City of Detroit, **three** census tracts had no live births and **69** census tracts had no infant deaths.

From 2012 to 2016, among those **283** census tracts with live births and infant deaths in the City of Detroit, the average infant mortality rate was between 0.1 and 6.9 (mean) per 1,000 live births in **34** census tracts; between 7.0 and 14.6 (mean: 6.9 + standard deviation: 7.7 = 14.6) per 1,000 live births in **114** census tracts; and over 14.7 per 1,000 live births in **135** census tracts.

From 2012 to 2016, among those **283** census tracts with live births and infant deaths in the City of Detroit, **88.0** percent of census tracts (249 out of 283) had infant mortality rate greater than the mean for the state of Michigan; **47.7** percent of census tracts (135 out of 283) had infant mortality rates greater than one standard deviation above the state average.

Average Infant Mortality Rate by Census Tract, City of Flint, 2012-2016



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

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This map shows the average infant mortality rate by census tract for the City of Flint, 2012-2016.

From 2012 to 2016, among the **54** census tracts in the City of Flint, **one** census tract had no live births and **nine** census tracts had no infant deaths.

From 2012 to 2016, among the **44** census tracts with live births and infant deaths in the City of Flint, the average infant mortality rate was between 0.1 and 6.9 (mean) per 1,000 live births in **10** census tracts; between 7.0 and 14.6 (mean: 6.9 + standard deviation: 7.7 = 14.6) per 1,000 live births in **17** census tracts; and over 14.7 per 1,000 live births in **17** census tracts.

From 2012 to 2016, among those **44** census tracts with live births and infant deaths in the City of Flint, **77.3** percent of census tracts (34 out of 44) had infant mortality rate greater than the mean for the state of Michigan; **38.6** percent of census tracts (17 out of 44) had infant mortality rates greater than one standard deviation above the state average.