

Maternal and Infant Health Monthly Surveillance Report
Hamilton County
April 2010

Ted Folger, MS, Senior Epidemiologist
Debbie Gordon, BBA, Data Analyst



250 William Howard Taft Road, 2nd Floor
Cincinnati, OH 45219 • 513.946.7800
hamiltoncountyhealth.org

Introduction

The series of Maternal and Infant Health Monthly Surveillance Reports is part of a county-wide initiative to improve maternal and infant health and reduce infant mortality. In order to make effective actions that improve the health and safety of infants in the community, it is essential to identify, describe and monitor the problems and the populations at risk. This report characterizes the current status of infant mortality and select risk factors in Hamilton County.

Infant Mortality Surveillance

- Number of infant deaths by month
- Current monthly infant mortality rate
- Current monthly neonatal mortality rate
- Current monthly preterm birth rate

Infant Mortality Surveillance

Public health surveillance is the ongoing, systematic collection, analysis, interpretation and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health.¹ The Maternal and Infant Health Surveillance System is designed to better understand infant morbidity and mortality in our community, monitor infant deaths that occur and evaluate whether collective actions to prevent infant death are effective. The surveillance charts contained within this report are tools that are used to monitor infant mortality and select risk factors in our community. Please read the General Guidelines for Using Surveillance Charts in the Appendix.

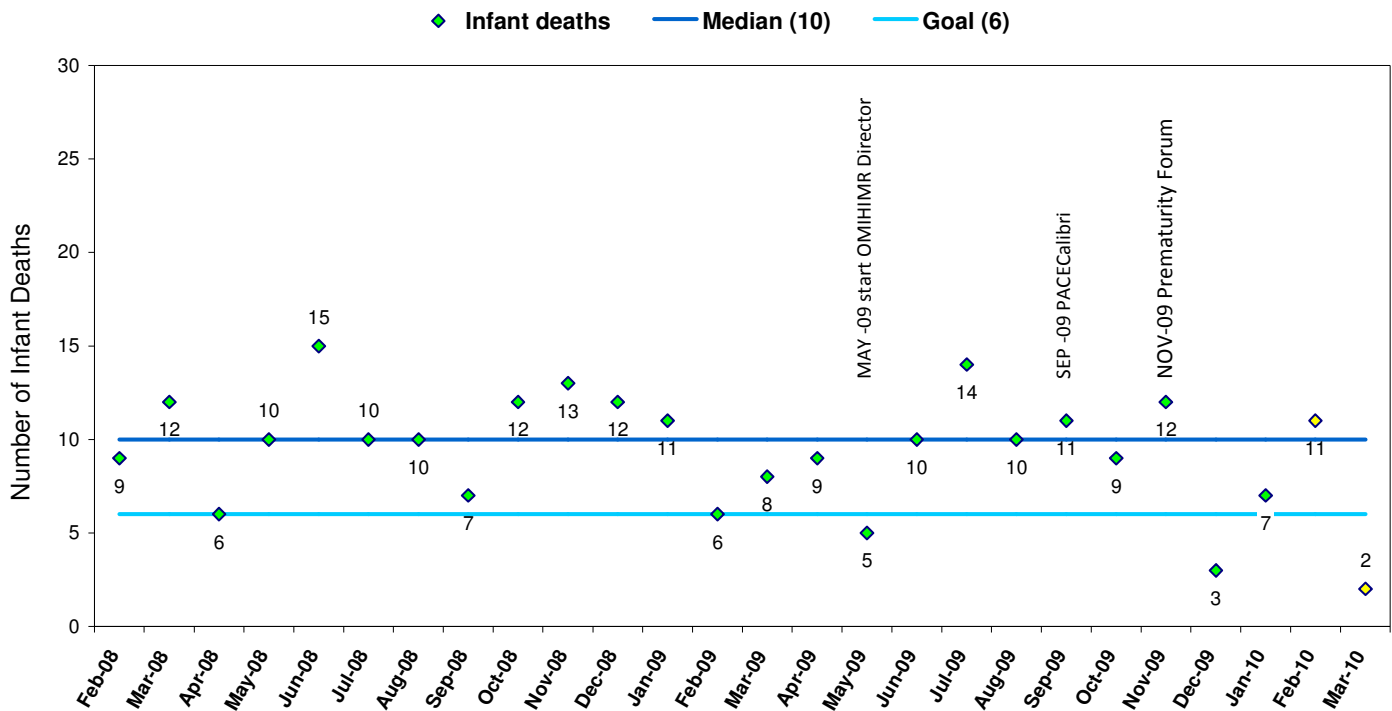
Number of Infant Deaths

There were 7 infant deaths in January 2010 and 3 infant deaths in December 2009.

One method used to monitor infant mortality is to sum the number of infant deaths that occur each month. Figure 1 shows the count of infant deaths in Hamilton County by month over the past two years. In January 2010, there were 7 infant deaths, and this number was below the current two-year median of 10 deaths per month (Figure 1). The number of infants deaths remained below the two-year median in December 2009 (n=3 deaths) and January 2010; however, provisional data indicate that the number climbed to 11 infant deaths in February 2010 (Figure 1).

¹Centers for Disease Control and Prevention. *Updated Guidelines for Evaluating Public Health Surveillance Systems: Recommendations from the Guidelines Working Group*, WMMR, July 27, 2001, Vol.50 No. RR—13

Figure 1. Number of Infant Deaths, Hamilton County 2008-2010*



NOTE: The median is calculated using two years of data from February 2008 – January 2010.
 NOTE: Yellow points are derived from preliminary data and are likely to change.
 * Data for 2009-2010 are provisional
 Data Source: Ohio Department of Health Vital Statistics

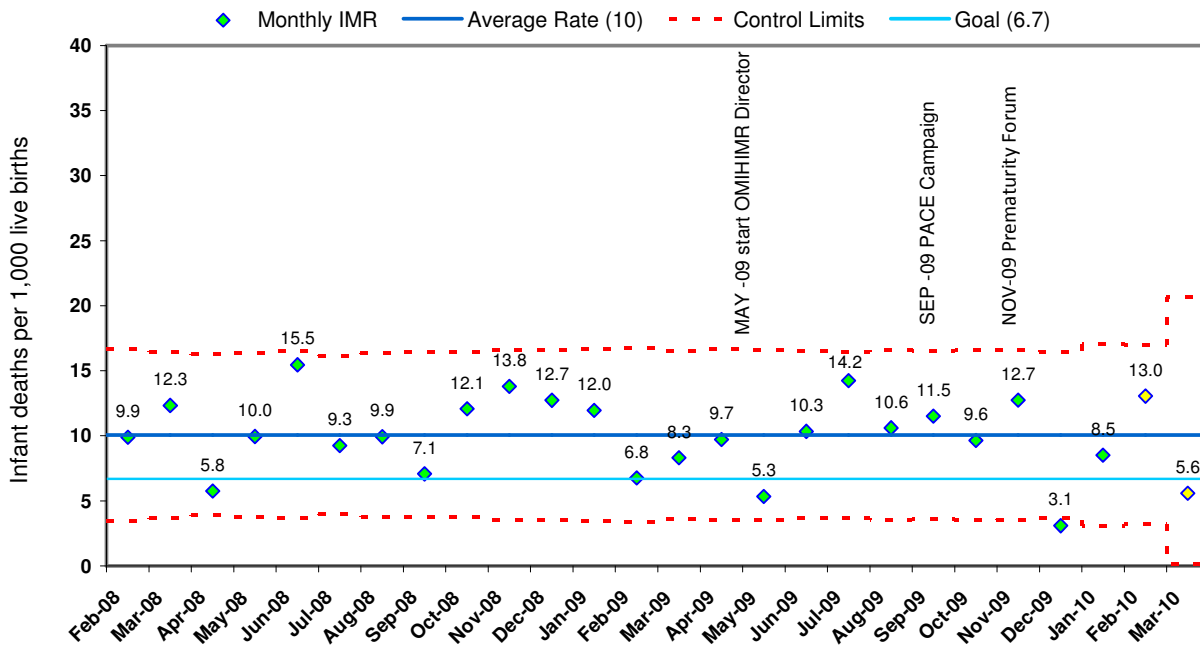
Infant Mortality Rates

Another method used to monitor infant mortality is to examine the number of infant deaths while also considering the number of births that occur. An increase in the number of infant deaths may not be surprising if there is also an increase in the overall number of babies born. To evaluate infant deaths with regard to the number of births, we use the Infant Mortality Rate (IMR), or the number of infants less than one year who died per 1,000 live births. The Neonatal Mortality Rate (NIMR) is a specific IMR for neonates, or infants less than 28 days who died per 1,000 live births.

In January 2010, the monthly IMR (8.5) was below the expected rate; whereas, the NIMR (7.3) was similar to the expected rate. There were 823 live births.

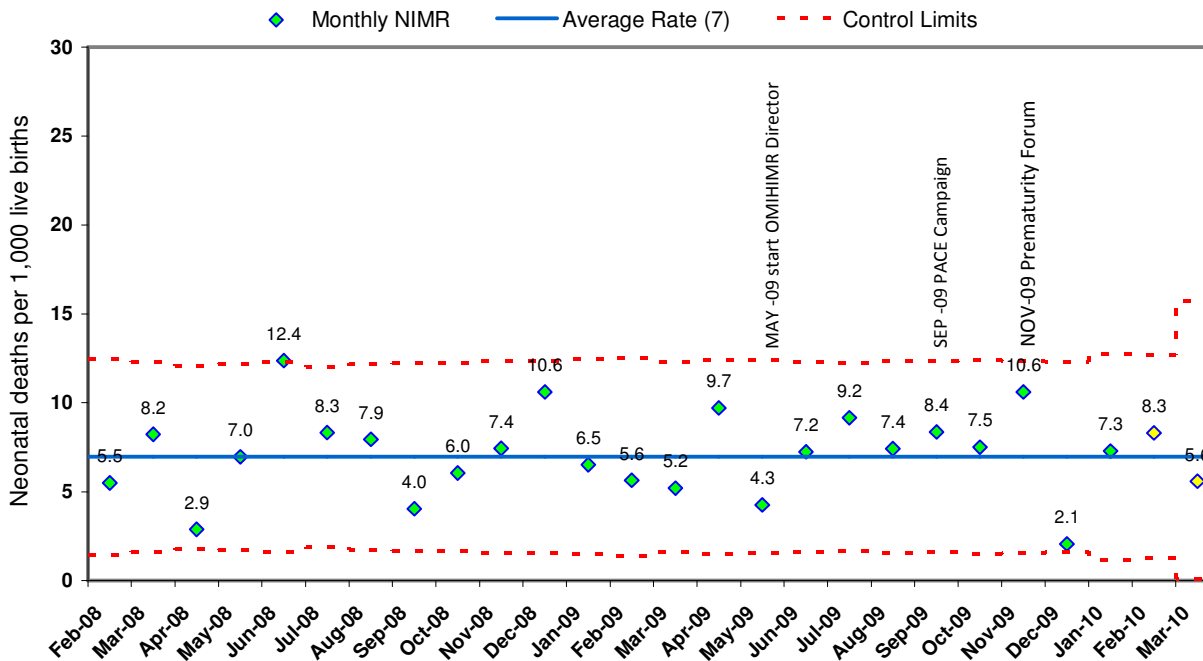
The IMR in January (8.5 deaths per 1,000 live births) was below the two-year monthly average (10.0); the IMR was based on 823 live births (Figure 2). The NIMR (7.3) was similar to the expected rate of 7 deaths per 1000 live births (Figure 3). The provisional IMR and NIMR rates calculated for February 2010 indicated a subsequent increase in rates (see Figures 2 & 3).

Figure 2. Infant Mortality Rate Surveillance Chart, Hamilton County 2008-2010*



NOTE: The mean is calculated using two years of data from February 2008 – January 2010.
 NOTE: Yellow points are derived from preliminary data and are likely to change.
 * Data for 2009-2010 are provisional
 Data Source: Ohio Department of Health Vital Statistics

Figure 3. Neonatal Mortality Rate Surveillance Chart, Hamilton County 2008-2010*



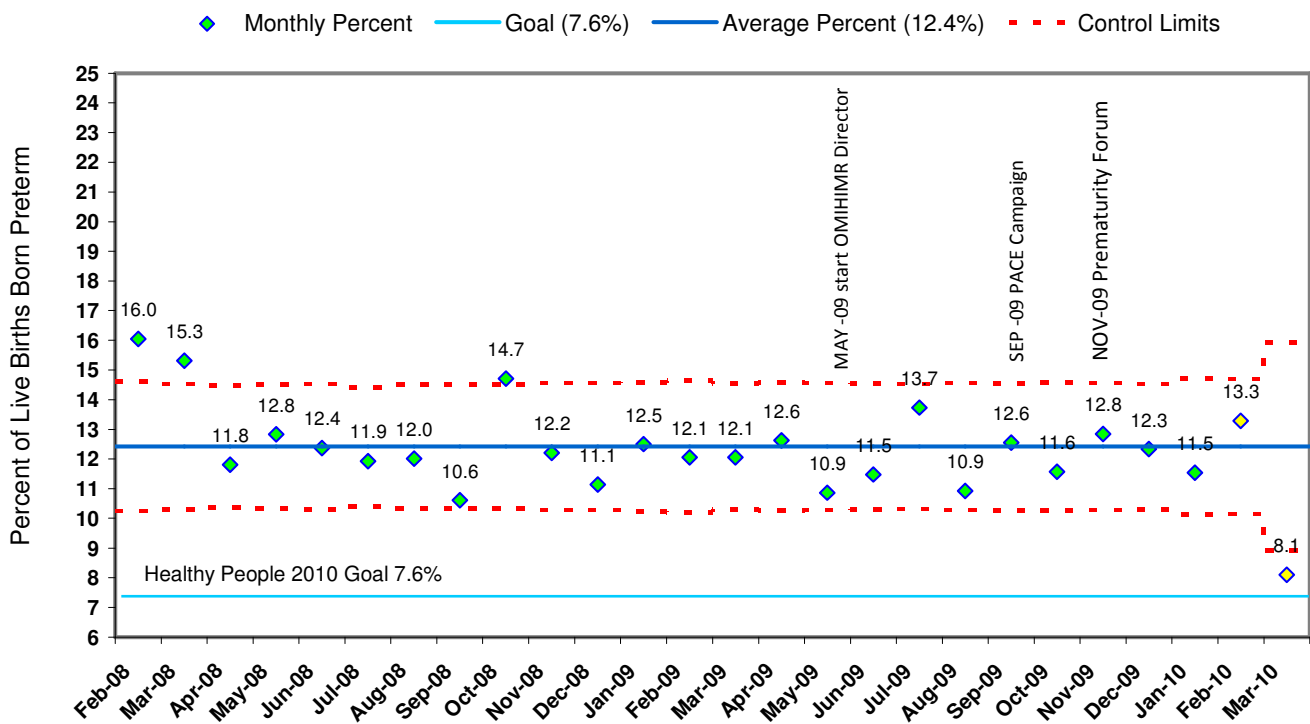
NOTE: The mean is calculated using two years of data from February 2008 – January 2010.
 NOTE: Yellow points are derived from preliminary data and are likely to change.
 * Data for 2009-2010 are preliminary
 Data Source: Ohio Department of Health Vital Statistics

Preterm Birth Rates

The preterm birth rate is the percentage of infants born before 37 weeks gestation; prematurity is a significant risk factor for infant mortality. An overall significant decline in the preterm birth rate throughout 2008 was first noted in the February 2009 surveillance report. This decline continued through the first half of 2009, and the rate remained relatively stable in the latter half of 2009. The January preterm birth rate (11.5%) was lower than the two-year average rate of 12.4% (Figure 4). The provisional preterm birth rate in February climbed to a six-month high; this increase may be associated with the concurrent increase observed in the IMR (Figures 2 & 4).

The percentage of births born preterm in January 2010 (11.5%) was lower than the average rate of 12.4%.

Figure 4. Preterm Birth Rate Surveillance Chart, Hamilton County 2008-2010*



Yellow points are derived from preliminary data and are likely to change.

NOTE: The mean is calculated using two years of data from February 2008 – January 2010.

NOTE: Yellow points are derived from preliminary data and are likely to change.

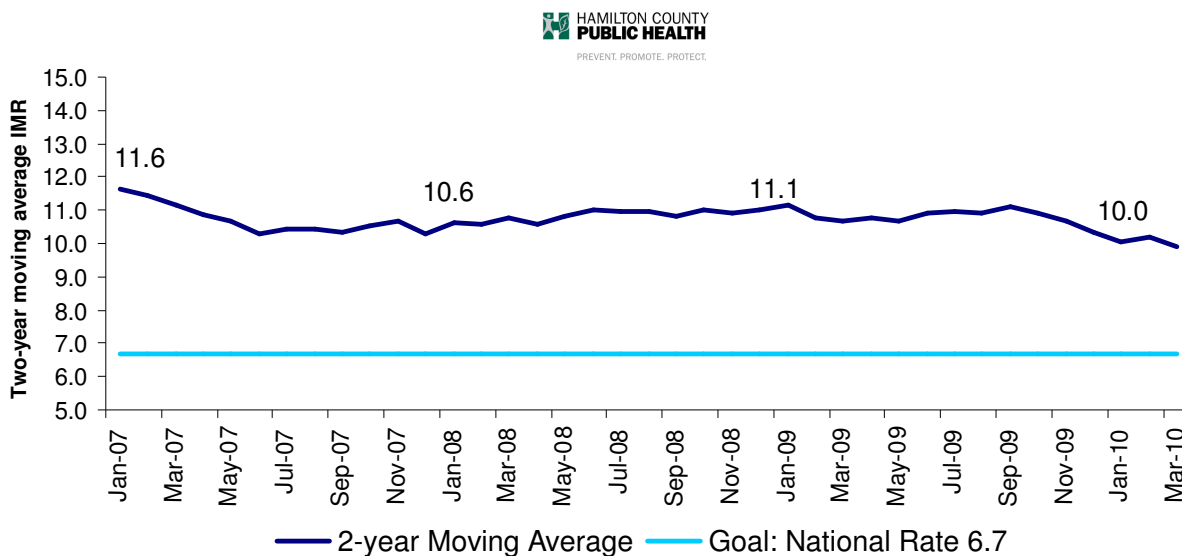
*Data for 2009-2010 are provisional

Data Source: Ohio Department of Health Vital Statistics

Two Year Moving Average

Reviewing monthly rates is one approach used to determine whether there has been a change over time; however, monthly rates have a tendency to fluctuate and may disguise emerging trends. An alternative measure is the un-weighted, monthly moving average, which can provide a more stable picture of evolving trends. In Figure 5, the infant mortality rate for each month is the twenty-four month average of months immediately prior to and including the current month. The two-year moving average decreased from January 2007 (11.6) to January 2010 (10.0). Although an upward trend was observed in 2008, this trend was flanked by significant, downward trends in 2007 and 2009 (Figure 5). Figure 5 shows a decrease in approximately one infant death per 1000 live births since January 2009.

Figure 5. Two Year Moving Average Infant Mortality Rate by Month, Hamilton County 2008-2010*



NOTE: The infant mortality rate for each month is the average of twenty-four months immediately prior to and including that month.
 NOTE: Data for 2009-2010 are provisional
 Data Source: Ohio Department of Health Vital Statistics

Appendix

General Guidelines for Using Surveillance Charts

The Hamilton County Infant Mortality Surveillance System, part of the Office of Maternal and Infant Health and Infant Mortality Reduction, uses **surveillance charts** to monitor infant mortality rates and preterm birth rates. These charts provide a method for monitoring the status of infant health over time and provide timely feedback on the effectiveness of local efforts to reduce infant deaths and preterm births.

Several tools are included in the surveillance charts that help facilitate interpretation: (1) a baseline - the center line [solid] which is the average number of deaths or births per month over the preceding two years, (2) a goal line which shows the goal that has been established by the community and (3) upper and lower control limits [dashed] that allow users to detect unusual events. Annotations indicate when certain interventions began or special changes occurred.

Here are some types of unexpected events that could be detected within surveillance charts:

- * A single point outside of the control limit
- * A run of eight or more consecutive points below or above the center line
- * Six consecutive decreasing or increasing points
- * Two out of three consecutive points near a control limit

This report was prepared for the Office of Maternal and Infant Health and Infant Mortality Reduction, now known as the Women and Infant Vitality Network.



Thank you to John Paulson and Inez Williams at the Ohio Department of Health for providing data for this report, the Child Policy Research Center at Cincinnati Children's Hospital Medical Center for ongoing quality improvement support and the HCIMSS Data Work Group for input and guidance.