

Using Data to Actualize Efforts to Reduce Infant Mortality Rates in Georgia

Overview

In 2006, the infant mortality rate (IMR) in Georgia was 8.1 per 1,000 live births. While the state's IMR has declined by 20 percent since 1994, it still remains higher than the U.S. average and was 10th highest among the 50 U.S. states in 2005. Moreover, there is a significant disparity between the IMR of black and white infants in Georgia: The IMR for black infants (12.8) is more than double that for white infants (6.0).

There has not been significant progress in decreasing infant mortality rates in Georgia in the past several years. In response, the Georgia Department of Public Health (DPH) is implementing a statewide infant mortality reduction effort. Health department staff have used an innovative strategy to identify geographical clusters of infant mortality, instead of the traditional statewide approach. Previous analyses of infant mortality rates using districts, counties, and ZIP code subdivisions have not been beneficial in a public health context. Geographic units are arbitrary and are created for administrative purposes. Especially in states like Georgia with multiple large counties, analyzing data at a smaller level of geography will allow for identification of clear clusters of high infant mortality within counties or across county boundaries.

Epidemiologists at DPH divided the state into a grid and obtained the infant mortality rate for each square mile (also known as a 1x1 mile fishnet cast) across the state, based on mother's residence at time of delivery, to identify significant clusters of infant mortality. DPH found that investment in these targeted, geographical clusters may be more effective and is currently planning multiple prevention and intervention strategies to improve perinatal outcomes related to infant mortality.

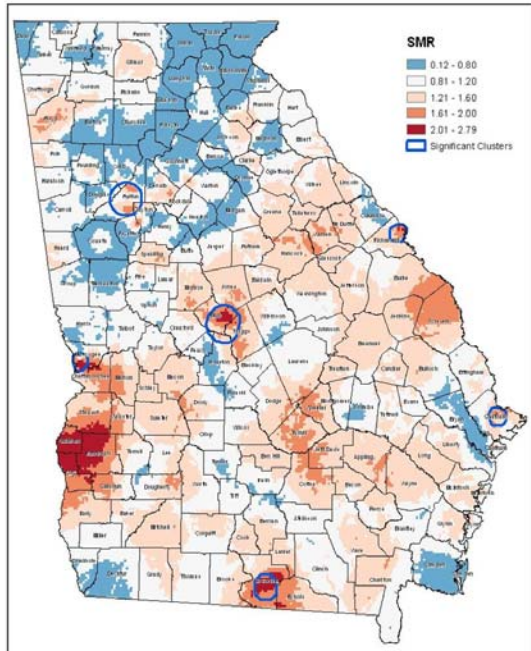
Strategy

To identify specific areas to implement infant mortality reduction interventions, the Office of Maternal and Child Health (MCH) Epidemiology in the MCH Program within DPH conducted an analysis of areas in Georgia with high infant mortality rates. The analysis allowed them to determine if geographical clusters of infant mortality exist and to assess whether the modifiable risk factors for infant mortality are the same for the entire state.

Steps Used to Identify Significant Clusters of Infant Mortality:

1. Linked birth and death certificate data for the 2002-2006 birth cohorts.
2. Cast a 1x1 mile fishnet across the state to calculate standardized infant mortality rate ratios per square mile based on the mother's residence at time of delivery.
3. Created smoothed surface of the standard infant mortality rate ratio using the Spatial Filtering Method.
4. Used the Spatial Scan statistic to detect clusters.
5. Identified six significant clusters in the state (those with a p-value of less than 0.05).

Figure 1: Georgia's Clusters of High Infant Mortality Rates



Reference: Chapple-McGruder T, Ammons K, Zhou Y, Freymann G, Weldon A, Csukas S, Castrucci B. *Using Data to Actualize Efforts to Reduce Infant Mortality Rates for Georgia*. Atlanta, GA: Georgia Department of Public Health. 2012.

The circles in Figure 1 indicate the six significant geographical clusters of infant mortality identified from the analyses. One of the identified clusters crosses four county lines. This cluster would never have been found with traditional methods of analysis using county lines as cutoff points, because the lower rates from the rest of each county would bring down the county's average rate. Looking at the IMRs per square mile allowed epidemiologists to obtain a more accurate picture of high-IMR locations.

Moving Forward: Putting Data into Action

Once the clusters were identified, staff used the Perinatal Periods of Risk (PPOR) approach, a community approach and an analytic framework for investigating and addressing high infant mortality rates in urban settings, to examine infant mortality in those areas. DPH was then able to compare leading causes of infant death and the prevalence of modifiable risk factors for the state versus the identified clusters. DPH will use the described analyses to inform the planning of an intervention in the designated areas of need.

Target Population

DPH conducted an analysis of the identified clusters, breaking down the IMR by women who were high school graduates and below, 18-34 years old, and those with no previous adverse birth outcomes, birth defects in current delivery, chronic hypertension, or chronic diabetes. They were then able to determine who is eligible for the intervention as well as the size and scope of the project.

Key Partners

Georgia DPH is a partner with the Governor's Office for Children and Families, the state agency administering the federal Maternal, Infant, and Early Child Home Visiting (MIECHV) program. Currently, one of the identified clusters is also a MIECHV site and is implementing Nurse Family Partnership and Healthy Families America. Both of these home-visiting models have shown improvements related to infant mortality. If there is opportunity for future expansion of the number of MIECHV sites, this analysis may inform the selection process.

In-depth analysis of the clusters will provide many opportunities for future partnerships across organizations and programs in the state of Georgia and for targeting and approaching infant mortality at a community level.



State Initiatives to Improve Birth Outcomes

Future Opportunities

The Georgia Department of Public Health has used an innovative analysis technique to identify areas with high infant mortality in Georgia. Had they employed more traditional techniques, these areas might never have been identified. The results of these analyses will provide evidence to inform planning and implementation of infant mortality reduction interventions in the future, as well as opportunities for partnerships and collaborations with numerous organizations and agencies focusing on infant mortality efforts in the state of Georgia.

References

Chapple-McGruder T, Ammons K, Zhou Y, Freymann G, Weldon A, Csukas S, Castrucci B. *Using Data to Actualize Efforts to Reduce Infant Mortality Rates for Georgia*. Atlanta, GA: Georgia Department of Public Health. 2012.

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