Relative Roles of Medical Interventions and Infrastructure in an Urban Community’s Infant Mortality Rate: 100 Years of Infant Mortality in the City of Worcester

Maya Y. Mauch
*University of Massachusetts Medical School*

*Et al.*

Let us know how access to this document benefits you.
Follow this and additional works at: [https://escholarship.umassmed.edu/ssp](https://escholarship.umassmed.edu/ssp)

Part of the Epidemiology Commons, Maternal and Child Health Commons, and the Obstetrics and Gynecology Commons

Repository Citation
Mauch MY, Magee BD. (2013). Relative Roles of Medical Interventions and Infrastructure in an Urban Community's Infant Mortality Rate: 100 Years of Infant Mortality in the City of Worcester. Senior Scholars Program. [https://doi.org/10.13028/keyr-bh77](https://doi.org/10.13028/keyr-bh77). Retrieved from [https://escholarship.umassmed.edu/ssp/150](https://escholarship.umassmed.edu/ssp/150)

This material is brought to you by eScholarship@UMassChan. It has been accepted for inclusion in Senior Scholars Program by an authorized administrator of eScholarship@UMassChan. For more information, please contact Lisa.Palmer@umassmed.edu.
We propose that interventions addressing societal factors could have the potential to mitigate infant mortality. Our study, focusing on the city of Worcester, MA, includes an analysis of infant death certificates from 2012, which showed a significant decrease in infant mortality rates.

### Methods

From August - September 2012, 3,045 infant death certificates were analyzed. Data was collected in 10-year intervals between 1906 and 2006, including: date of death, age of infant, cause of death, and mother’s place of birth. Specific causes of death were transformed into general categories. A subsequent comparative analysis was performed.

### Results

In 1906, the overall IMR was 143 (per 1000 live births). By 1936, total IMR dropped significantly to 52, a drop of 64%. By 2006, the IMR dropped to 4.6, a decrease of almost 97%.

### Conclusion

- Worcester’s IMR has undergone a dramatic reduction over 100 years, driven in large part by reductions in infant deaths from infectious causes.
- A large part of the reduction in infectious IMR occurred by 1936, prior to the widespread availability of antibiotics and vaccines against infectious diseases starting in the 1940s.
- Changes in public health infrastructure, water, sewage and housing, and access to better nutrition and education likely played a significant role in decreased infectious IMR prior to the development of medical interventions.
- A number of medical developments are likely responsible for the decreased IMR due to malformations and prematurity seen after 1976.
  - 1960s - Advent of neonatal surgery, introduction of Neonatal Intensive Care Units (NICUs).
  - 1970s - Development of amniocentesis (for lung maturity and genetic testing), ultrasound (for dating), Roe vs. Wade and use of fetal heart monitoring.
  - 1980s - Alpha-fetoprotein testing, folic acid supplementation and corticosteroids for fetal lung maturation.
- The large decrease in IMR due to infectious causes over the last 100 years highlights IMR’s sensitive relationship to societal factors and suggests that deteriorations in living conditions during difficult economic times could result in high and increasing IMRs among vulnerable subpopulations.
- We propose that interventions addressing societal factors could have the greatest impact in preventing infant mortality in Worcester.

---

**Relative Roles of Medical Interventions and Infrastructure in an Urban Community’s Infant Mortality Rate: 100 Years of Infant Mortality in the City of Worcester**

Maya Y. Mauch MPH, MSIV, B. Dale Magee MD, MS
University of Massachusetts Medical School, Worcester, MA, Shrewsbury Ob-Gyn