

USING BIG DATA TO SAVE LITTLE LIVES

How Ohio is transforming information into impact



A PRESSING ISSUE

Losing a child in the first year is an immeasurable tragedy for a family. Infant mortality is also an urgent public health issue.

The challenge has been especially dire in the State of Ohio, which has one of the highest infant mortality rates in the United States. In 2017, seven out of 1,000 babies died before the age of one year. But this aggregate statistic belies deeper inequities along racial lines. Compared to white babies, black babies in Ohio were more than three times as likely to die before their first birthday.

Recognizing the need for bold action, State of Ohio leaders began exploring how they could harness Big Data to better understand the complexity of this growing issue and transform interventions for at-risk mothers and babies.

A NOVEL APPROACH

States usually tackle an issue like infant mortality by designing programs to encourage top-down behavioral change by mothers who are deemed to be at-risk. **Ohio is taking a different approach**, without preconditioned assumptions, which combines comprehensive cross-agency data sharing and collaboration with intelligent analytics to uncover finely targeted pathways to better birth and infant mortality outcomes.

Led by the Ohio Department of Health and Department of Administrative Services, the State is analyzing information from a vast array of over 200 datasets, including, for the first time ever, 31 datasets from across Ohio's State agencies, as well as countless other public, federal and third-party sources. The State is attacking this unprecedented dataset in an innovative and collaborative fashion using fast-moving, cross-disciplinary teams, incorporating Human-Centered Service Design into the process and guided by appropriate ethical oversight and governance.

The end goals: to identify underlying and common drivers, to enable targeted, preventive interventions, and to drive effective programmatic action. With these data-driven insights, the State is focused on behavior change that will positively impact the quality and consistency of service delivery by the agencies and medical and service providers around the State, improving outcomes among Ohio families who may be at risk of losing their child.

Ohio is working with Accenture to unify and analyze the data, verging beyond traditional academic research. These data include information related to the health of Ohio’s infants and mothers—such as vital statistics, Child Fatality Review, claims history, as well as data pertaining to the Social Determinants of Health such as education, neighborhood and environment, transportation, and economic stability, as well as behavioral health and State benefits information. Combining these data with medical factors and demographic and census data, the team continued to answer three historically difficult questions:

Which mothers and infants are most at risk of infant death?

Which mothers and infants are most likely to benefit and participate in interventions?

Which interventions and programs yield the best return on investment in the form of saved infant lives?

RAPID RESULTS

In just three months, Accenture helped Ohio create a 360-degree view of the at-risk mother.

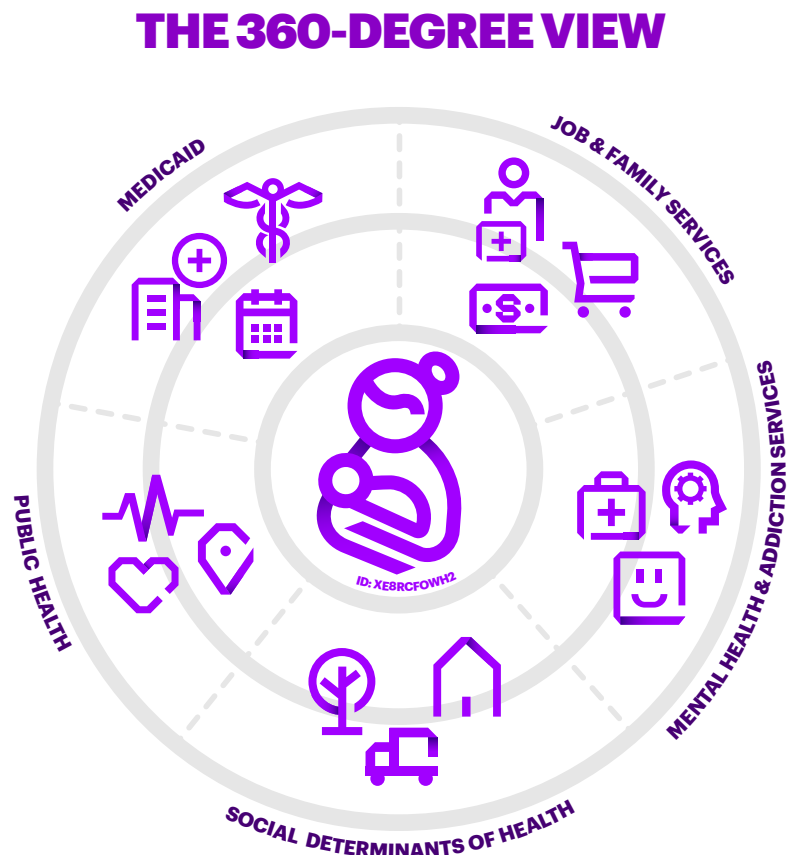
Data scientists employed machine learning techniques on the vast project dataset to develop a prioritized list of approximately 250,000 Ohio mothers across State agencies. Cases were stratified by risk and prescribed targeted interventions.

The team identified health risk factors impacting mothers and infants down to the community level, and developed performance views across health, social and behavioral data. Web portals serve up actionable information to the front lines, including:

Home Visiting Provider Scorecard
An interactive scorecard that tracks key metrics to improve Evidence-Based Home Visiting outcomes and performance across the State

State Health Assessment
Outlining 200+ State, county and national metrics on demographic characteristics, leading causes of death, population health, healthcare spending, healthcare system, access to healthcare, public health and prevention, social and economic environment, and physical environment

Birth mother characteristics
Tracking indicators of birth outcomes and characteristics across Ohio down to the community level



Ohio is now putting these insights into the hands of those on the front lines of the fight against infant mortality. The State is using data to create communities of learning, develop and refine best practices, and foster measured improvement across the programs in a virtuous cycle of better outcomes for Ohioans

The State is already applying the analytics to produce Intervention Protocols which reduce process hurdles identified in the data and increase uptake of evidence-based programming. The protocols focus on mitigating three primary risk factors for Ohio's babies: prematurity, safe sleep, and substance- and nicotine-exposed infants. The protocols are being created using Human-Centered Design—a methodology of co-creation and empathetic situation understanding with the end users of the service—in collaboration with healthcare providers, home visitation workers, community organizations, State agency staff and other stakeholders engaged to help the State understand challenges at the local level and craft effective interventions.

Ohio's efforts point to the power of cross-disciplinary collaboration, with sophisticated analytic tools and methods underpinned by a human-centered approach. **Combining Big Data and bold action is helping Ohio deliver an outcome that truly matters: healthier babies and families.**



MEET THE LEADERSHIP



JOSEPH FIORENTINO
Managing Director
joseph.fiorentino@accenture.com



CHARLIE HACK
Lead Data Scientist
charles.hack@accenture.com



ANIKA VINZÉ
Lead Epidemiologist
anika.vinze@accenture.com



LINDA PULIK
Design Director
linda.pulik@accenture.com

ABOUT ACCENTURE

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions — underpinned by the world's largest delivery network — Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With 469,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.