MANAGEMENT PERFORMANCEHUB

Facilitating Data-Driven Innovation
How public-private collaboration improves outcomes

Category: Data management, analytics & visualization
State: Indiana
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and end dates: 2015-2017

Executive Summary

In the mid-2000s, the Governor of Indiana began to recognize the need to leverage data being created and maintained by state government agencies to inform efficiency efforts. In response to this recognition, Indiana formed a government division focused on data-driven analysis with the end-goal of providing services with improved quality at lower cost. During the last decade, the division became more focused on leveraging data across disparate systems to address complex policy issues. These efforts laid the foundation for what became the Indiana Management Performance Hub, or MPH. In 2017, Governor Eric Holcomb signed into law the Indiana Open Data Act, formally codifying MPH as a standalone state agency with the power to collect, analyze, and exchange data across all state agencies. Today, MPH is revolutionizing the way agencies in the State of Indiana access, share, analyze, and visualize data both internally and with citizens with projects that encompass everything from infant mortality and opioid abuse to workforce development and crash risk mitigation. As Indiana works to make data available for use by external partners and researchers, the MPH team remains focused on enabling its partners to improve outcomes for Hoosiers across Indiana.
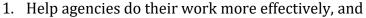

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MPH provides analytics solutions tailored to address complex management and policy questions enabling improved outcomes for Hoosiers. We empower our partners to leverage data in innovative ways, facilitating data-driven decision making and data-informed policy making.

New Data on the Hub

MPH is excited to announce the release of new public safety datasets on the Indiana Data Hub. Be one of the first to explore the data now!

Learn More

Concept

While MPH operates under an official mandate for state agencies to share their data, the agency's roots lie in a long-standing spirit of collaboration. Long before it was required, state agency officials willingly came together in collaboration, looking for ways to make government more effective through the use of data. While there was some cultural change required, by and large, officials showed broad support for the idea of open data sharing and looked to MPH to organize the effort.

MPH began with a two-pronged mission:

1. Help agencies do their work more effectively, and
2. Unlock state-curated data, enabling it to be leveraged outside the walls of government to allow the academic and private sectors to assist the state in its work.

Early in the history of MPH, the state was looking for ways to address its high infant mortality rate and state agencies had been directed to work together on the initiative. In 2015, MPH, along with private sector experts and analysts, combined and analyzed data from five agencies and four public sources to identify the addressable causes of the problem. A statewide education campaign was developed to focus on several of those issues, and legislation was enacted to address infant mortality in the 2015 legislative session of the Indiana General Assembly. MPH helped to find actionable insights from the vast and disparate datasets involved.

Creating Data Policies

In the Open Data Act, the legislature charged MPH with developing statewide policies to streamline and safeguard information maintained by state agencies. The first of the core policy developments addressed data quality. To avoid receiving data in various formats, which would require extensive cleansing and normalization for it to be usable, MPH approached the problem collaboratively. The team found that agencies were very willing to share their data in usable formats and would to agree to certain levels of standardization in the way data was handled once they understood the value to the mission. MPH also recognized that, in order to bring others on board, it needed to communicate that data owners would maintain ultimate control of their information. This was critical to achieving buy-in.

Additionally, during the last few years, MPH and all state agencies have dealt with the growing privacy concerns of handling sensitive citizen and state data. MPH was asked by the General Assembly to develop an overarching privacy policy to which each agency must adhere. The agencies could set additional privacy standards for their own data on top of this standard policy, but everyone was required to meet the State of Indiana's best practices, including the requirement to appoint a Privacy Officer for each agency.

Controlling Data Overload

Many big data projects fail simply because users are overwhelmed with the amount of data they are suddenly expected to ingest into their systems and use in their daily work. With this in mind, and with limited resources, MPH required agencies and, eventually, outside organizations and citizens to first submit a proposal for data requests that included a specific problem they were looking to solve. This helped prioritize projects and ensured a high quality of data being released. It also helped ensure an agile approach to delivering the data.

As part of this effort, MPH created a methodology for unlocking additional datasets for use by all agencies, outside parties and private citizens. The early datasets related to infant mortality, Medicaid, and crash statistics have now been joined by new datasets involving infrastructure maps, road weather sensors, drug analysis, intelligent transportation system sensors, vehicular crash data, and EMS runs.

Creating an Agile System

To make all of this possible, MPH needed an architecture capable of managing the massive datasets and allowing for secure access from outside the walls of government. To build this, the team utilized a combination of agile and waterfall approaches. They started with strict project requirements from the beginning, allowing for iterative development phases that left some flexibility to account for changing technical environments and fluid user stories.

MPH benefitted from having a consolidated IT organization in its sister agency, the Indiana Office of Technology. This allowed the MPH to develop a technical architecture and overarching approach to systems and processes capable of working with the existing infrastructure within each individual agency, without requiring buy-in from separate IT heads.

The open data hub is built on a "hot" SAP stack and a SQL database, allowing for dynamic tiering of data. This, in turn, delivers faster processing and increased performance across the system. Python serves as the general programming language for the system, while Tableau is used for data visualization.

Ownership of the data remains with the state agencies, while MPH uses cleansed and normalized copies for its work. All original data stays within the protected security zone to support security requirements.

Significance

In the mid 2000s, employees at state agencies in Indiana and businesses everywhere were being overwhelmed by data. As the costs to store data fell sharply, extensive data capture and storage became the norm. What was missing was ability to leverage the vast amounts of information in meaningful ways. As the era of "big data" descended, Indiana stopped reacting to the data ocean and looked for ways to make its data usable—to solve problems that affected Hoosiers in every corner of the state.

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"It's really exciting because no other states have an open data bill like we have in Indiana," says Darshan Shah, Indiana's chief data officer. "[MPH] gets to play the role of convener, bringing together data and agencies. It's a big, hairy, audacious mission: to share data, crowdsource solutions, and be an internal consulting group to state agencies."

In a 2017 Wired Magazine article, Silvia Martins, an epidemiologist specializing in substance-abuse research at Columbia's Mailman School of Public Health, said of MPH - *"This is the largest, most comprehensive approach I've heard of to date. A lot of states have different initiatives, but the initiatives aren't coordinated at all levels."*

Opening Data to All

In the spirit of collaboration, MPH went out to the community and talked to partners about the outcomes they wanted to achieve. The MPH team, working with its partners at the Indiana Family and Social Services Administration (FSSA), then worked backwards to find and open datasets to support those outcomes.

In addition to opening data to the public, MPH partnered with multiple state agencies to inspire innovation by hosting data challenges and making data available for civic hackathons. At the first of these, in 2017, 25 teams presented ideas relating to the best ways leverage the state's Medicaid data to address public health issues. As part of this challenge, MPH, working with its partners and FSSA, created Indiana's first open data hub, which housed available datasets in an open source format. In the spring of 2018, the Indiana AT&T IoT Civic Hackathon brought together 600 developers and first responders to address public safety issues using datasets coordinated by the MPH team. The ability to crowdsource new solutions to Indiana's most pressing problems is now part of the fabric of how Indiana's state agencies meet their respective missions.

Impact

The projects developed from MPH datasets epitomize NASCIO's Top Ten Priorities in the areas of shared services, data management, and digital government. MPH was the first state agency codified into law to leverage data to address complex policy and societal problems as its core mission.

To promote its success to date and encourage other agency projects, MPH hosted its first-annual Data Day in 2018. The projects of 14 partner organizations were showcased to an audience of nearly 500 people from a cross section of the technology community, consultants, agency leadership, legislators, external partners, and research organizations, including universities.
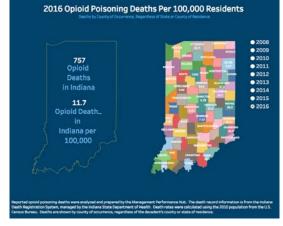
Key MPH-Enabled Projects

- Infant Mortality
- Opioid Abuse Mitigation
- Crash Risk Map
- Accident Response Time Reduction
- Education and Workforce Development
- Medicaid Optimization
- Pharmacy Loss Analysis
- Recidivism

MPH has been remarkably successful and has spurred new insights into ways to address challenges that have had profound impacts on the state. For example, today more than 16 agencies, including some local government units, are sharing data to combat the opioid epidemic. By leveraging this data, MPH was able to inform efforts by FSSA to place new opioid treatment programs around the state. As such, five new opioid treatment facility locations were announced in July 2017. The result is a data-driven approach within the executive levels of one of Indiana's key social services agencies. The interactive graphic at the right shows the number of opioid poisonings by county, something that required input from several agencies to develop.

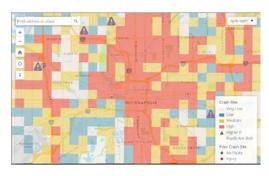In addition to the treatment facilities, policy makers were able to use the interactive map to track opioid usage over time. Based on these findings, naloxone, the life-saving overdose prevention drug, was distributed to state and local police based on need, which happened to mostly be rural areas. Prior to MPH, these drugs would have been likely been sent out based on population, with little insight into effectiveness.

Similarly, the Indiana State Police used several datasets from across agencies to create an [interactive crash risk map](#) to show where accidents were most likely to occur on Indiana roadways. From 2013 – 2016, there were approximately 30,000 additional accidents, including an increase of 7.5% fatal accidents.

The map (right) is being utilized by law enforcement and first responders to strategically allocate resources to anticipated areas of need, with the goal of reducing accident response time. Launched in November 2016, the map has helped lead to a huge decrease in accidents. In 2017, the number of accidents compared to 2016 decreased by ≈4,000. Each accident costs the State and its citizens ≈$18,000 in total economic impact. A reduction of 4,000 correlates to a $72 million impact. With the power of data analytics, the Indiana State Police and MPH created this award-winning tool that is helping to prevent car accidents and save Hoosier lives.

Future

MPH will be working behind the scenes activating new datasets to meet growing demand as the open data hub continues to expand and community organizations and academia partner with government to develop data-driven solutions to complex challenges. The team is looking ahead to new major data initiatives focused on improving the state's financial transparency and launching a single sign on for all state services. Later in 2018, MPH will launch an authenticated access hub allowing "trusted" organizations the ability to use some of the state's more sensitive data in specific projects. On the operations side, MPH will soon begin measuring the efficacy and cost savings of programs it has helped launch.

As data projects grow more sophisticated, the MPH team expects there will be no end to the challenges it faces to meet the demand for insight into the state's most pressing issues. With leadership from Indiana Governor Eric Holcomb, and the foundation built for MPH and its work, Indiana can be assured it is up to the task.