



# BOOK OF DATA AND ORGANIZATIONS

A census of major health and health related data, capabilities, and talent in Indiana



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## PROLOGUE

The use of data in innovative ways is driving and transforming healthcare and life sciences more than ever. In healthcare, advanced analytics are improving clinical support, value-based care, population health, and management of at-risk populations. In life sciences, big data and advanced analytics are transforming clinical trials, precision health, diagnostics, and the drug development process, among a myriad of other areas. The availability of health and health related data assets is foundational to this advancement in health information technology (HIT).

Indiana's history of leadership in HIT spans more than 50 years. Many milestones and unique initiatives underscore this leadership, including:

- In the 1960's, Indiana entrepreneur Sam Regenstrief perfected the automatic front-loading dishwasher, and then became the first to install digital controls on these appliances. Regenstrief reasoned that the use of digital information could drive even more stunning advances in healthcare to improve care and reduce cost. Accordingly, in 1969, the Regenstrief Institute was established by Sam and Myrtie Regenstrief to improve quality of care, increase efficiency of healthcare delivery, prevent medical errors, and enhance patient safety.
- In 1994, the Indiana Network for Patient Care (INPC), was created by the Regenstrief Institute to enable the secure exchange of health information. In 2004, five premier and highly competitive primary and specialty care health systems in Central Indiana joined the INPC to improve communication among the systems and facilitate the delivery of better healthcare. In cooperation with Regenstrief and through the generous participation of leading philanthropic organizations, the Indiana Health Information Exchange (IHIE) was formed to manage the growing INPC. The INPC today is the nation's largest interorganizational clinical data repository and serves as a model for regional health exchanges.
- In 2017, the State of Indiana passed House Bill 1470 to establish the Management Performance Hub (MPH), the role of the Chief Data Officer, and formally codify the open sharing of information between state agencies, including public health data and statistics. Also known as the Open Data Bill, it formalized data-driven decision making to drive informed policy decisions as well as improve services and programs. This bill also tasked the MPH to reduce the technology and legal barriers for "unlocking" state data and sharing with community partners to improve outcomes, including public health outcomes.

Based on the data resources available within industry, government, health systems, academia, and digital health startups, Indiana has a potentially unique opportunity to anchor the state as the crossroads of data/analytics and healthcare/life sciences. However, the health data community must work together to ensure awareness of the data, talent, and technology resources available and build where there are gaps.

The COVID-19 pandemic created a unique opportunity to demonstrate the value of the health data community working together. From the start of this pandemic, a broad contingent of professionals across government, health systems, university, life sciences industry, and non-profit sectors came together to form the Indiana Pandemic Information Collaborative (IPIC). IPIC has allowed the health data organizations the ability to maximize the impact of their collective

efforts and to better inform key leaders about the health of our shared community. Public facing dashboards, predictive models for the state and hospital systems, accessibility of data for non-profit leaders, improved coordination around national collaborations, and connectivity to novel solutions from the for-profit sector have all been part of the platform. IPIC's goal is to work together to share data, information, and knowledge to beat COVID-19 and keep Indiana healthy and safe.

IPIC is one example of the community working together to tackle a major healthcare challenge, but there are other initiatives working on diabetes, Alzheimer's, and more. Still, there may be additional opportunities to extend this kind of collaboration to other disease states such as kidney disease and neurological disorders. BioCrossroads developed the Book of Data and Organizations based on this opportunity and its role as convener, since it does not directly own or analyze data.

There are numerous audiences for this resource, each of which will likely utilize it in a slightly different way. A few examples include:

- Health and health-related data organizations: to improve partnerships based on a heightened awareness of each other's assets and capabilities
- Community Based Organizations (i.e., community nonprofits): to improve coalition building (e.g., Monon Collaborative)
- Academic scientists: to improve awareness of data assets that can improve disease understanding, process improvements, or assessing new technologies and methods
- Industry partners: to better understand who has what data, what the data is used for, how to access the data, and where the talent and technology capabilities exists to analyze the data

Ideally, this resource reduces the need to seek health data assets elsewhere, establish more ideal partnerships locally, and attract outside organizations to collaborate with Indiana based organizations. Improved coordination across the health-data intersection can improve recruiting and retention, leverage investments, and drive economic growth for the state. The key to maximizing value is improving intentionality with collaborations, executing cross-organizational projects where partners can improve or accelerate efforts, and building in the "grey space", adjacent areas where the collective community lacks capacity. This document is one resource to support this opportunity.

## **ABOUT BIOCROSSROADS**

BioCrossroads advances Indiana's life sciences industry by connecting with corporate, academic, and philanthropic partners; facilitating investments in promising startups and building new enterprises; and educating through conferences, reports and market development knowledge. By collaborating with Indiana's research institutions, global companies, philanthropic organizations, and government to advance growth and innovation, we make connections for all of Indiana's life sciences community and work to accelerate its success. We are promoting and growing this critical sector for both the health of patients around the world as well as the economic health of Indiana.

## EXECUTIVE SUMMARY

There are tremendous data, talent, and technology resources available within Indiana's industry, government, health systems, academia, and digital health startups, giving Indiana a unique opportunity to innovate and collaborate together for better health outcomes and life sciences research.

This *Book of Data and Organizations* has been created to chronicle the assets Indiana has at the health-data intersection to help improve the coordination of these organizations and those that work with them. This resource is not an assessment, but a directory for some of our resources. There are extensive activities occurring here in Indiana that should be highlighted and promoted so that valuable relationships can be forged, and partnerships can be intentional.

This draft includes snapshots of organizations who control data assets – data sets, data talent, and/or data technology – as well as cross-organizational initiatives. It also includes how these assets can be accessed. The organization profiles include:

- Who has what data? How can this data be accessed?
- Where does the data analysis talent reside?
- What data technologies and capabilities exist?
- What are the key projects currently in process?
- What are the future projects and opportunities for engagement?

This document will continue to expand both in number of organizations represented as well as depth of information for each organization. It will also grow to describe additional cross-organizational initiatives where partnerships are critical to success. This document will be fully refreshed annually, with additional organizations and initiatives added on a rolling basis. The most recent version is available at [www.biocrossroads.com](http://www.biocrossroads.com). If you are interested in having your organization or initiative included, please contact Darshan Shah at [dshah@biocrossroads.com](mailto:dshah@biocrossroads.com).

## ORGANIZATION PROFILES

These organizations manage numerous data assets including clinical, lab, and pharmacy as well as social determinant data, demonstrating the breadth and depth of data assets available. These organizations are listed alphabetically within four groupings: Government, Nonprofit/Academia, For-profit, and Hospital System.



### Government

#### Indiana Department of Health (IDOH) – [Full profile on page 21](#)

- Agency within the State of Indiana which promotes, protects, and improves the health and safety of all Hoosiers. Includes a newly created Office of Data and Analytics (ODA) to provide broad support to agency programs and partners for the collection, analysis, and presentation of health data. Data includes Health Care Regulations,

Inspections, Vital Records, WIC, Trauma Registry, Communicable disease, Clinical laboratory results, Immunizations, Lead, Cancer Registry, and others.

### **Indiana Department of Homeland Security (IDHS) – [Full profile on page 23](#)**

- Agency within the State of Indiana with a mission to protect the people, property, and prosperity of Indiana. Emergency Medical Services (EMS) falls under the umbrella of the State Fire Marshall which is under Homeland Security. A key health data system, EMS run data is collected, reviewed, and analyzed through a system called ImageTrend to identify trends and optimize response/safety.

### **Indiana Family and Social Services Administration (FSSA) – [Full profile on page 26](#)**

- Agency within the State of Indiana which manages healthcare and social services programs including Medicaid and SNAP. Includes a dedicated Data & Analytics team to ensure secure availability of high-quality data to enable data-informed decision making. Data includes Medicaid claims, enrollment, provider data, and recently added Indiana 211.

### **Management Performance Hub (MPH) – [Full profile on page 29](#)**

- Agency within the State of Indiana codified into law in July 2017. Supports agencies within state government with data and analytics solutions. Also, “unlocks” state agency data to make it available to community entities to drive value. MPH reduces the technology and legal barriers to share state agency data within state government, and externally with community partners.

### **Marion County Public Health Department (MCPHD) – [Full profile on page 31](#)**

- Division of Health & Hospital Corporation (HHC) of Marion County. MCPHD’s mission is to promote and protect the health of everyone in the community and provide healthcare to those who are underserved. Data includes Marion County birth/death records, Community Health Assessment, Emergency Dept. Surveillance data, and clinical services and inspection data. MCPHD clinical services provides data on food inspections, surface water quality and more.



## **Nonprofit/Academia**

### **Datalys Center – [Full profile on page 34](#)**

- Independent, non-profit organization that collects and translates sport injury and treatment data and specializes in epidemiological research in sport and other physically active populations. Primary programs are with the NCAA, NAIA, and high schools as well as through concussion assessment, research, and education. Data collection is project-specific, and include areas such as athlete demographics, injury information, injury event information, and sport-specific information.

### **Indiana Biobank – [Full profile on page 36](#)**

- Formed in 2010 within the Indiana Clinical and Translational Sciences Institute (CTSI). Aids discovery research including academic, nonprofit, and commercial research entities to treat and prevent diseases. DNA is banked from patients with over 50,000

samples banked to date and growing. Other sample types such as serum, plasma, RNA, PBMC, urine, saliva and tissues are collected by request. All samples are linked to the INPC, and de-identified data linked to samples can be provided to researchers. Omics data is also available to academic and nonprofit collaborators.

### **Indiana Biosciences Research Institute (IBRI) – [Full profile on page 38](#)**

- Nonprofit, discovery science and applied research institute targeting diabetes, metabolic disease, poor nutrition, and related health data science. IBRI exists to bring together companies and universities to work collaboratively on interrelated health issues.

### **Indiana Business Research Center (IBRC) – [Full profile on page 40](#)**

- Data/Analytics center at the Kelley School within Indiana University. Forty billion data records, including historical and current census, vital statistics, economics, population, demographics, industry, real estate, property tax, local government finance, school finance, innovation metrics, occupation data, and opportunity zones. Data available through MPH data hub, STATS Indiana, StatsAmerica, Indiana Indicators, Hoosiers by the Numbers, Indiana Economic Digest, and Child Care Data Center.

### **Indiana CTSI Monon Collaborative Data Team – [Full profile on page 43](#)**

- Data team within the statewide Indiana Clinical and Translational Sciences Institute investigating social determinants of health, patterns of healthcare and social service utilization, justice involvement, and residential mobility to identify opportunities for intervention and improve health equity in Indiana. Leveraging clinical, justice, public health, and community-based organizational data in Marion County, representing 14 data sources and about 28 million individuals.

### **Indiana Health Information Exchange (IHIE) – [Full profile on page 45](#)**

- Nonprofit founded by healthcare, business, and academic stakeholders to manage the Indiana Network for Patient Care (INPC), the nation's largest interorganizational clinical data repository. IHIE enables access to the INPC data to support hospitals, physicians, laboratories, payers, and other health service providers avoid redundancy and deliver faster, more efficient, higher quality healthcare to patients in Indiana. The INPC includes 20+ years of clinical data across health systems and physician practices.

### **Indiana Hospital Association (IHA) – [Full profile on page 49](#)**

- IHA's mission is to provide leadership, representation, and services in the common best interest of its members as they promote the improvement of community health. IHA is responsible for collecting and validating both inpatient and outpatient administrative claims data from all licensed hospitals (Acute, Rehab, Psychiatric, and Long-Term) and provides flat files of cleansed data monthly to the Indiana Department of Health for research and public policy purposes.

### **Indiana University Center for Survey Research (CSR) – [Full profile on page 52](#)**

- Since the early 1980's, the Center for Survey Research (CSR) has partnered with researchers to plan for, gather, and analyze data that advance knowledge and humankind. The CSR has conducted thousands of quantitative and qualitative

research projects, using surveys, interviews, focus groups, and a wide range of other methods, including collection of medical specimens and environmental samples. Our partners include collaborators from universities, governmental agencies, nonprofit organizations, and businesses.

### **The Polis Center at IUPUI (Polis) – [Full profile on page 54](#)**

- University applied research center at IUPUI building capacity to understand and address population health and its social and environmental determinants through community research, collaboration, and application of geoinformatics, mapping, and spatial analysis. Leverages data from over 40 data sources to provide neighborhood level data for the SAVI Community Information System.

### **Purdue University – [Full profile on page 58](#)**

- A world-renowned, public research university that advances discoveries in science, technology, engineering and math. Through the five pillars of Purdue Moves — affordability and accessibility, online learning, transformative education, world-changing research, and STEM leadership — Purdue is leveraging its historic strengths to promote investment in new ideas and realize its mission to deliver higher education at the highest proven value. Purdue researchers are harnessing expertise across the life and engineering sciences to address some of the greatest challenges facing society today. Their mission is supported by the university's \$250 million initiative announced in 2016 to advance research that improves quality of life for people around the globe. The Purdue Life Sciences Initiative is supported by research cores, state-of-the-art facilities designed for cross-disciplinary collaboration, and interdisciplinary graduate programs.
- Within the profile for Purdue University are deeper profiles on 10 Centers and/or Institutes to highlight their work and invite engagement to collaborate.
  - Bindley Bioscience Center - [Full profile on page 60](#)
  - The Data Mine (TDM) - [Full profile on page 62](#)
  - Molecular Evolution, Protein Engineering, and Production Facility (MEPEP) - [Full profile on page 64](#)
  - Purdue Center for Cancer Research (PCCR) - [Full profile on page 65](#)
  - Purdue Institute for Drug Discovery (PIDD) - [Full profile on page 67](#)
  - Purdue Institute for Integrative Neuroscience (PIIN) - [Full profile on page 69](#)
  - Purdue Institute of Inflammation, Immunology, and Infectious Disease (PI4D) - [Full profile on page 71](#)
  - Regenstrief Center for Health Engineering (RCHE) - [Full profile on page 73](#)
  - Women's Global Health Institute (WGHI) - [Full profile on page 75](#)

### **Regenstrief Institute – [Full profile on page 77](#)**

- Nonprofit, world-renowned research organization founded in 1969. Innovation is driven by three interrelated research centers: Biomedical Informatics, Health Services, and Aging; and two external facing service units: Logical Observation Identifiers, Names

and Codes (LOINC®) health data standards, home of a globally adopted (in nearly every country) universal code system for tests, measurements, and observations and Regenstrief Data Services (RDS), providing research data management and services. Key data sources informing Regenstrief research and its applications include: i) Indiana Network Patient Care for Research (INPCR), ii) Electronic Health Record Systems for IU Health and Eskenazi Health, and iii) Research Networks – Patient Centered Outcomes Research Network (PCORnet), Accrual to Clinical Trials (ACT), and the Indiana Pandemic Information Collaborative (IPIC). In 2020, Regenstrief Institute was selected to become the Linkage Honest Broker (LHB) for the National COVID-19 Cohort Collaborative (N3C), a nationwide repository for COVID. The LHB is responsible to develop and operate a Privacy-Preserving Record Linkage platform that allows linkage of data, like mortality, viral variants, claims, testing and vaccine, keeping data anonymous.

### **University of Notre Dame – [Full profile on page 80](#)**

- The University of Notre Dame has a vibrant research community making advancements across many STEM disciplines. The University’s research profile has grown while focusing on a number of strategically important fields of study to deepen and engage with the community, including a commitment to address global and community issues including, Poverty, Health Disparities, Well-being, Education, Food Insecurity, Housing, Sustainability, Cancer, Mental Health and more. To this end, the University received \$172.5M in research grants in FY20.
- Within the profile for the University of Notre are deeper profiles on 10 Centers and/or Institutes to highlight their work and invite engagement to collaborate.
  - Berthiaume Institute for Precision Health (BIPH) – [Full profile on page 85](#)
  - Center for Civic Innovation (CCI) – [Full profile on page 87](#)
  - Children’s Environmental Health Initiative (CEHI) – [Full profile on page 89](#)
  - Eck Institute for Global Health (EIGH) – [Full profile on page 92](#)
  - Harper Cancer Research Institute (HCRI) – [Full profile on page 93](#)
  - IDEA Center – [Full profile on page 96](#)
  - Lucy Family Institute for Data & Society (LFIDS) – [Full profile on page 98](#)
  - The Pulte Institute for Global Development – [Full profile on page 100](#)
  - William J. Shaw Center for Children and Families (Shaw) – [Full profile on page 103](#)
  - The Wilson Sheehan Lab for Economic Opportunities (LEO) – [Full profile on page 105](#)



### **For-profit**

#### **Aunalytics, Inc. – [Full profile on page 107](#)**

- Private, for-profit company providing a data platform data to provide industry-specific data models with built-in queries and AI to ensure access to timely, accurate data and

answers to critical business and IT questions. Aunalytics cloud-native data platform is built for universal data access, advanced analytics and AI while unifying disparate data silos into a single golden record of accurate, actionable business information.

**CareAscend** – [Full profile on page 109](#)

- Private, for-profit company helping Post-Acute and Long-Term Care providers engage with their teams with purpose and full compliance to deliver quality care to patients and their families. Their tools assure Medical Director services are compliant with required regulatory frameworks, and deliver easy to use technical solutions to improve interdisciplinary team learning and collaboration.

**Diagnotes, Inc.** – [Full profile on page 111](#)

- Private, for-profit company focused on delivering communication tools to healthcare professionals and patients. Diagnotes is a mobile and web-based, HIPAA-compliant healthcare productivity suite that enables everyone involved in the delivery of patient care to collaborate in real-time, while automating critical clinical workflows. Diagnotes serves acute care hospitals and health systems, as well as medical groups and post-acute care organizations.

**hc1** – [Full profile on page 113](#)

- Private, for-profit company focused on clinical insights, healthcare analytics and driving actions for precision health. hc1's cloud-native technology connects patient health data sources across various silos in health IT to uncover actionable signals across patient populations and cohorts that inform individual patient care decisions. Data sources include live, transactional integrations to 20,000+ diagnostic ordering locations, data lake of 27B diagnostic results (increasing >100M per month), and 203M unique patient profiles with longitudinal lab testing records.

**LifeOmic** – [Full profile on page 115](#)

- Private, for-profit company focused on precision health. Provides informatics platform supporting the statewide Precision Health Initiative. Leverages cloud and mobile technologies to serve healthcare providers, academic research institutions, and consumers.

**Metamor** – [Full profile on page 117](#)

- Private, for-profit consultancy focused on helping their clients unlock insights from their healthcare data. 30-person team serving clients in both the public and private sector, focused on data solutions and application development. Core technologies include: Informatica, Datastage, SSIS, SSRS, Cognos, Teradata, Oracle, Microsoft SQL Server, MuleSoft, PostgreSQL, Tableau and Salesforce. Team provides leadership for the Indy Civic Hackathon every year in June.

**Olio** – [Full profile on page 119](#)

- Private, for-profit company supporting hospital systems, physicians and payers to actively engage with post-acute providers. Olio's software solutions help care management teams know where their patients are once they leave their care, what their status is, and have the ability to engage with post-acute clinicians to improve outcomes.

### **Onebridge** – [Full profile on page 121](#)

- Private, for-profit, employee-owned consultancy focused on BI, Data Analytics, and Enterprise Application Development. A workforce of 300+ comprised of employees and consultants; 40% focused on BI and Data Analytics, 40% focused on Enterprise Application, and 20% on functional and operations.

### **Resultant** – [Full profile on page 123](#)

- Private, for-profit consultancy focused on helping their clients overcome their most complex challenges with human-centered, technically advanced solutions. 300+ employees with 55% focused on Data, Development, and Technology services and 30% on strategic and delivery services. Data analytics team includes data scientists, engineers, architects, developers, and consultants

### **Springbuk** – [Full profile on page 126](#)

- Private, for-profit company focused on employee health. Health Intelligence platform intakes data from insurance carriers, TPAs, wellness vendors, disease management companies, ancillary benefits, vision, dental, etc. Provides employers with population health analytics and intelligence to reduce cost and improve population health.



## **Hospital Systems**

### **Ascension St. Vincent** – [Full profile on page 128](#)

- Nonprofit health system. Ascension Data Science Institute and Data Delivery and Governance departments provide system-wide ETL, data science, business intelligence, statistics, data architecture, and actuarial services. Indiana has additional local analytics resources and data teams that leverage national data sources while responding to custom state-level reporting and analytics needs.

### **Community Health Network** – [Full profile on page 129](#)

- Nonprofit health system. Community Health Network Dept. of Network Analytics is a 45-person team dedicated to analytics delivery (ETL, Data Science, BI, Infrastructure) with additional deployed analysts dedicated within specific business units.

### **Eskenazi Health** – [Full profile on page 131](#)

- Nonprofit health system, and one of the largest essential health care systems in the country. Includes an analytics team of 12 employees, covering business intelligence and clinical reporting. Analytics team is responsible for the extraction, aggregation, and quality assurance of data from multiple sources for analytics reporting, operational reporting, and quantitative analysis of data. The team is responsible for supporting and continually improving the effective utilization of accurate decision support data.



## **CROSS-ORGANIZATION INITIATIVE PROFILES**

The following are cross-organizational initiatives where partnerships are critical to their success. Roles and responsibilities for the partner organizations vary. Some may bring data, some may analyze the data, and others may drive outcomes by leveraging the data. All these initiatives are

relatively new, and there are opportunities to become engaged! These initiatives are listed alphabetically.

**Diabetes Data Linkage Pilot – [Full profile on page 133](#)**

- IBRI has a focus in diabetes and factors related to its risk and progression. This project is linking clinical data with Social Determinants of Health (SdoH), which are critical to identify key risk factors and interventions. Key partners include IHIE, IU Health, MPH, and Regenstrief Institute.

**Diabetes Impact Project, Indianapolis Neighborhoods (DIP-IN) – [Full profile on page 135](#)**

- DIP-IN is an initiative designed to build resources and connections within communities of Indianapolis with the goal of preventing diabetes, or better managing it, so that people can live long and healthy lives. Key partners include Eskenazi, Marion County Public Health Dept, LISC, Polis, Regenstrief Institute, and three community organizations.

**The Indiana CTSI Monon Collaborative Homeless Transitions-of-Care Pilot – [Full profile on page 137](#)**

- The Indiana Clinical & Translational Sciences Institute (CTSI) Monon Collaborative’s Social Determinants of Health (SdoH) Collaboration Network is a community-based working group focused on advancing coordination and collaboration of social services and resources to achieve better economic, educational, and health outcomes for vulnerable populations. Key partners include CHIP Indy, MPH, FSSA, IHIE, Community Health, Anthem, and CareSource.

**Indiana Data Partnership (IDP) – [Full profile on page 140](#)**

- IDP’s goal is to empower collaboration among government, non-profit and private sector entities to drive positive change in key challenges impacting Hoosiers. IDP is an enhancement to the state’s MPH to improve partnerships and minimize duplication of efforts through sharing common data and visualizing organization service networks. Key partners include MPH and three data centers within IU/IUPUI: IBRC, Polis, and PPI (Public Policy Institute).

**Indiana Pandemic Information Collaborative (IPIC) – [Full profile on page 143](#)**

- Members of IPIC are committed to working together to share data, information, and knowledge and coordinate efforts in order to beat COVID-19 and keep Indiana healthy and safe. Numerous parties engaged include: IDOH, FSSA, MPH, IHIE, Regenstrief Institute, Resultant, IHA (Indiana Hospital Assoc.), Fairbanks School of Public Health, Lilly Endowment, BioCrossroads, major hospital systems, and multiple community-based organizations.

The remainder of this document contains brief (two to four page) profiles for each of the organizations focusing on the following characteristics:

|         |  |
|---------|--|
| Role(s) | Key roles & responsibilities in Indiana’s data/analytics ecosystem |
| Mission | Mission/Vision   |

|                         |   |
|-------------------------|---|
| History                 | Key historical milestones leading to current structure and mission  |
| Organization            | Organizational details including leadership, number/types of employees                                    |
| Board                   | Board membership  |
| Finance                 | Key funding sources and amounts   |
| Data Sources            | Key data assets (and sources) responsible for managing  |
| Data Access             | Mechanism and process for accessing data sources listed above   |
| Tech Capabilities       | Core technologies and capabilities unique to the organization in Indiana's data landscape                 |
| Projects                | Top projects demonstrating focus areas, capabilities and uses of data. Includes key customers, and grants |
| Future Focus            | Next areas organization is likely heading   |
| Talent Development      | Talent development programs   |
| Data Sharing Agreements | Key data sharing agreements currently in place with partners  |
| Programs/ Publications  | Key programs, events, and publications hosted by the organization   |

## DATA SOURCES AND ACCESSIBILITY

Data sources and accessibility of these data sources are foundational to all health data analytics initiatives. Realizing that a substantial audience for this document will be seeking access to data sources, the following table has summarized the shareable data sources and methods to access these data sources. Organizations that do not have data sources that can be readily shared are not included in this table.

| Organization   | Data Sources  | Data Access   |
|--|---|---|
| <b>Indiana Department of Health (IDOH)</b>                 | <p>Data are collected from a broad range of programs within the agency including through systems for Health Care Regulation, Inspections, Vital Records, WIC, Trauma Registry, Communicable disease, Clinical laboratory results, Immunization, Lead, Cancer Registry, and others.</p>  | <p>Public data and statistics are available from many agency programs and are listed at <a href="https://www.in.gov/isdh/18888.htm">https://www.in.gov/isdh/18888.htm</a></p> <p>Stats Explorer provides a quick access to a standardized set of primarily county statistics available from agency programs and is available at <a href="https://gis.in.gov/apps/isdh/meta/stats_layers.htm">https://gis.in.gov/apps/isdh/meta/stats_layers.htm</a></p> <p>Access to record-level or sensitive data requires a formal request to Data-Analysis@isdh.in.gov, review, and agreement</p> <p>COVID-19 data sets are available from IDOH through the MPH Data Hub for public consumption at <a href="https://hub.mph.in.gov/dataset?q=COVID">https://hub.mph.in.gov/dataset?q=COVID</a></p>  |
| <b>Indiana Department of Homeland Security (IDHS)</b>      | <p>Emergency Medical Services (EMS) falls under the umbrella of the State Fire Marshall which is under Homeland Security</p> <p>A key health data system, EMS run data is collected, reviewed, and analyzed through a system called ImageTrend to identify trends and optimize response/safety.</p>   | <p>All data requests, outside of partner agencies, is done when requested via a public records request submitted to the Office of General Counsel.</p> <p>Partner state agencies with limited access to IDHS data include MPH, Indiana Dept. of Health, Family and Social Services, Professional Licensing, Department of Natural Resources, Indiana Law Enforcement Academy/Indiana State Police. Pre-approved data agreements exist.</p>  |
| <b>Indiana Family &amp; Social Services Administration</b> | <p>FSSA's data is generated by eight care divisions: Division of Family Resources, Office of Medicaid Policy and Planning, Division of Disability and Rehabilitative Services, Division of Mental Health and Addiction, Division of Aging, Office of Early Childhood and Out-of-School Learning, The Disability Determination Bureau, and Indiana 211. FSSA's data includes Medicaid claims, enrollment, and provider data.</p> <p>Information on 540 publicly available fields of FSSA data from 74 areas in 30 categories can be found within the MPH Data Catalog: <a href="https://datavizpublic.in.gov/views/MPHDataCatalog/MPHDataCatalog">https://datavizpublic.in.gov/views/MPHDataCatalog/MPHDataCatalog</a></p> <p>FSSA now includes Indiana 211, which manages databases that include thousands of health and human services agencies and resources for local community connections.</p> <p>Information on available resources by category are available at: <a href="https://in211.communityos.org/">https://in211.communityos.org/</a>. Weekly 211 Community Impact data reports, glossary, and request forms are available at: <a href="https://in211.communityos.org/datadashboard">https://in211.communityos.org/datadashboard</a>.</p> | <p>FSSA publishes 74 de-identified data sets on Indiana's Management Performance Hub: <a href="https://hub.mph.in.gov/dataset?organization=indiana-family-and-social-services-administration">https://hub.mph.in.gov/dataset?organization=indiana-family-and-social-services-administration</a></p> <p>Data access and provisioning is governed by State and Federal law in addition to the FSSA Privacy &amp; Security Policies.</p> <p>Information on how to submit a request for FSSA data access or data extracts can be found at: <a href="https://www.in.gov/fssa/fssa-data-and-analytics/general-non-apra-data-request-process/">https://www.in.gov/fssa/fssa-data-and-analytics/general-non-apra-data-request-process/</a> A data sharing agreement, professional services contract, business associate agreement, or data use agreement may be required in certain cases.</p> <p>FSSA shares data with other state agencies through Memorandums of Understanding (MOUs).</p> |
| <b>Management Performance Hub (MPH)</b>                    | <p>Wide ranging data from the State of Indiana including education (K-12, higher ed), workforce (wages, industries), public safety (ISP, crashes, EMS runs), and health (Medicaid, DCS, ER discharge, vital records)</p> <p>Searchable data dictionary and metadata located at <a href="https://www.in.gov/mph/1225.htm">https://www.in.gov/mph/1225.htm</a></p>  | <p>Open data hub freely available to all at <a href="http://hub.mph.in.gov">http://hub.mph.in.gov</a></p> <p>Sensitive data requests require data sharing agreements and security review. Formal process documented and data request forms available at <a href="https://www.in.gov/mph/935.htm">https://www.in.gov/mph/935.htm</a></p> <p>New data request portal shows progress back to the requestor for any data request made: <a href="https://request.mph.in.gov/">https://request.mph.in.gov/</a></p>  |

| Organization  | Data Sources  | Data Access  |
|---|---|--|
|   |   | Data is limited to upstream state agency providing approval to share data. Pre-approved data agreements exist for education, workforce, and Medicaid data  |
| <b>Marion County Public Health Department (MCPHD)</b> | <p>Marion County birth records</p> <p>Marion County death records</p> <p>MPCHD clinical services and inspection data</p> <p>Various national, state, county, and local data from external data sources, such as the US Census Bureau, CDC, Indiana Health Department, Indiana University, and Indiana Hospital Association.</p>   | <p>Marion County Community Health Assessment: <a href="https://drive.google.com/file/d/1bv3OcyYDpsg0OauNLHlgvFr1OegeKa7q/view">https://drive.google.com/file/d/1bv3OcyYDpsg0OauNLHlgvFr1OegeKa7q/view</a></p> <p>Emergency Department surveillance data: <a href="https://www.in.gov/isdh/27344.htm">https://www.in.gov/isdh/27344.htm</a></p> <p>Data requests can be emailed to <a href="mailto:epidemiology@marionhealth.org">epidemiology@marionhealth.org</a></p>   |
| <b>Indiana Biobank</b>                                | <p>To date, 50,000 DNA samples (and growing) available for broad sharing</p> <p>Precision Health Consent collaboration with IU Health and IUSM in progress to sample 300,000 IU Health patients over the next 5 years</p> <p>Other sample types such as serum, plasma, RNA, PBMC, urine, saliva and tissues are collected by request</p> <p>Omics data available by request to academic and nonprofit collaborators</p>   | <p>To gain approval for the use of de-identified samples and data, researchers must submit a proposal describing the planned use of the samples and data</p> <p>All samples are linked to the INPC, and thus, de-identified data linked to samples can be provided to approved academic, commercial, and nonprofit researchers</p>   |
| <b>Indiana Business Research Center (IBRC)</b>        | <p>Wide and deep, with a combination of warehouses and databases combining to 40 billion records, including historical and current census data, economic measures, demographics, industry, real estate, property tax, local government finance, school finance, innovation metrics, occupation data, opportunity zones, patents, and government records. Deep data for Indiana while curating nationwide data.</p> <p>Creators of Indiana's State Population Projections (age, race, sex for all counties and state); State Labor Force Projections (working age projections for counties and Economic Growth Regions); quarterly Economic Forecasts for Indiana and Metro areas; The Innovation Index; Measures 4 Development.</p> | <p>Provides data to MPH Open data hub freely available to all via <a href="http://hub.mph.in.gov">http://hub.mph.in.gov</a></p> <p><b>STATS Indiana</b> (<a href="http://www.stats.indiana.edu/">http://www.stats.indiana.edu/</a>), known as Indiana's data utility, has 200,000+ users and serves up key metrics via its city, town, county and regional profiles and interactive tools and visualizations to more than 200K users each year.</p> <p><b>StatsAmerica</b> (<a href="http://www.statsamerica.org/">http://www.statsamerica.org/</a>) grew out of a regional innovation project with Purdue in 2006 and has grown to include an array of measuring tools for counties, cities and economic development districts nationwide.</p> <p><b>Indiana Indicators</b> (<a href="http://indianaindicators.org/">http://indianaindicators.org/</a>) gives hospitals, communities and health departments the measures they need for community health assessments.</p> <p>Additional access sites listed in IBRC full profile <a href="#">here</a>.</p> |
| <b>Indiana Health Information Exchange (IHIE)</b>     | <p>Indiana Network for Patient Care (INPC), the nation's largest interorganizational clinical data repository, includes clinical information from Indiana hospitals, Accountable Care Organizations (ACOs), laboratories and imaging centers, payers, ambulatory practices (Federally Qualified Health Centers, Community Health Centers, clinics, physicians), government agencies, and employers.</p>   | <p>To access data, the requesting entity must sign an INPC subscription agreement</p> <p>Member organizations may access CareWeb application (OneCare) to view longitudinal data on one patient or request a CCD to electronically collect data on one patient</p> <p>To access data on patient populations, IHIE offers population health products and services such as its Clinical Value Report (PopCare), a</p>  |

| Organization                                     | Data Sources   | Data Access  |
|--|--|--|
|  | <p>A list of participants can be found here: <a href="https://www.ihie.org/participant-list/">https://www.ihie.org/participant-list/</a></p> <p>Clinical data Includes observations and results (e.g., discharge summaries, vitals, lab results), encounters (ambulatory, obstetrics, referrals), and pharmacy orders (placed orders, filled orders). Additional details can be found <a href="#">here</a> in IHIE's full profile</p>  | <p>customized report that assists organizations in care management for specific populations and quality metrics</p> <p>More information on IHIE's products and services: <a href="https://www.ihie.org/products-overview">https://www.ihie.org/products-overview</a></p> <p>Data Requests: Participants in the INPC can access INPC data for use cases within the following permitted purposes: Treatment, Payment, Healthcare Operations, Public Health, and Research. Treatment, payment, healthcare operations and public health data requests are managed by IHIE. Data requests for research are managed by the Regenstrief Institute. Data access rules are governed by the INPC Management Committee, which is comprised of representatives of INPC participating organizations, IHIE, and Regenstrief. The INPC Management Committee has the authority to approve new use cases and access rules.</p>  |
| <p><b>Indiana Hospital Association (IHA)</b></p> | <p>IHA is responsible for collecting and validating both inpatient and outpatient administrative claims data from all licensed hospitals (Acute, Rehab, Psychiatric, and Long-Term) and provides flat files of cleansed data monthly to the Indiana Department of Health for research and public policy purposes.</p> <p>IDOH uses this data to append its Hospital Epidemiology dataset for research and public policy purposes and makes a limited dataset available at <a href="https://www.in.gov/isdh/20624.htm">https://www.in.gov/isdh/20624.htm</a></p>  | <p>IHA makes an expanded data set available quarterly to its members through a variety of platforms, including flat files per organization data use agreements</p> <p>Administrative Claims Data is sent to IDOH monthly. IDOH makes this data available publicly at <a href="https://www.in.gov/isdh/20624.htm">https://www.in.gov/isdh/20624.htm</a></p> <p>IHA does provide a consumer facing tool around healthcare affordability. IHA operates <a href="https://www.mycareInsight.org">https://www.mycareInsight.org</a>, in which the top 100 diagnosis-related groups (DRGs) and Top 200 most commonly occurring outpatient procedures are aggregated and provided a pricing range from IHA members.</p>  |
| <p><b>The Polis Center at IUPUI (Polis)</b></p>  | <p>Polis uses data from a large number and variety of national, state, and local sources as listed in Polis's profile <a href="#">here</a>, including over 40 data sources for SAVI (<a href="http://savi.org/support-training/data-sources/">savi.org/support-training/data-sources/</a>). In addition to the numerous datasets that Polis makes readily available via SAVI and its other public websites (see Data Access), Polis collects and maintains a wealth of data "behind the scenes" for the research and analysis work of Polis and its public, non-profit and private sector partners. When feasible, Polis collects location attributes at the smallest geographic scale available in support of mapping and spatial analysis.</p> | <p>The <b>SAVI Community Information System</b> provides comprehensive, neighborhood level data for community assessments and asset mapping, clinical and public health research on social determinants of health (SDOH), grant writing, strategic planning, and community planning. (<a href="http://www.savi.org">www.savi.org</a>)</p> <p>The <b>Domestic Violence Dashboard</b> provides information about the extent and context of domestic violence in Indianapolis and the populations affected. (<a href="https://indydvdata.org/">https://indydvdata.org/</a>)</p> <p>The <b>Digital Atlas of American Religion</b> provides access to resources for the study and teaching of American religious history within a geographical and multimedia framework. (<a href="http://religionatlas.org">religionatlas.org</a>)</p> <p><b>IndyVitals</b> measures the long-term impact of Indianapolis Plan 2020 at the neighborhood level. It helps planners and policymakers ensure that neighborhoods of all types are improving by making comparative neighborhood-level data transparent. (<a href="http://indyvitals.org">indyvitals.org</a>).</p> <p>The <b>Indiana United Ways Community Report Card</b> provides a quick snapshot of how Indiana communities are doing in the areas of health,</p> |

| Organization   | Data Sources   | Data Access  |
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|  |  | <p>education, and income. Users can view 35 indicators to learn: if a community has gotten better or worse over time and how it compares to the state's trend. (<a href="http://indianaimpact.org">indianaimpact.org</a>)</p> <p>In addition to our publicly available datasets, we design datasets to meet research and community partners' specific needs. Contact: <a href="mailto:polis@iupui.edu">polis@iupui.edu</a> or (317) 274-2455.</p>  |
| <p><b>Regenstrief Center for Health Engineering (RCHE)</b></p> | <p>National data includes:</p> <p>Cerner Health Facts, which is made up of the electronic health records of approximately 70M patients for a 15-year period</p> <p>MIMIC III, an Intensive Care Unit database from Beth Israel Deaconess Medical Center, which includes matched waveform data</p> <p>Sources from State of Indiana including Medicaid claims, Minimum Data Set (MDS), and Purdue claims data</p> <p>REMEDI data includes medical device data from over 400 hospitals in 32 states</p>  | <p>Data goes through a process including a data sharing agreement and security review. The formal process documented at <a href="https://www.purdue.edu/discoverypark/rche/resources/hipaa.php">https://www.purdue.edu/discoverypark/rche/resources/hipaa.php</a></p>  |
| <p><b>Regenstrief Institute</b></p>                            | <p>Indiana Network for Patient Care Research (INPCR)</p> <p>See IHIE description above for additional Information about INPC. INPCR is a replicate of the INPC for research purposes</p> <p>Electronic Health Record (EHR) data for research</p> <p>IU Health and Eskenazi Health</p> <p>Research Networks</p> <p>Patient Centered Outcomes Research Network (PCORnet)</p> <p>Accrual to Clinical Trials (ACT)</p> <p>Open Health Data Sciences and Informatics Collaborative (OHDSI)</p> <p>Various health/healthcare and non-traditional data sources (e.g., claims, cancer registries, social determinants of health)</p> | <p>Regenstrief Data Services is the mechanism for accessing data sources. Services include feasibility requests, custom data sets and data integration</p> <p>Regenstrief Institute is the Honest Data Broker for INPCR and EHR data from Eskenazi Health and IU Health. Its team of analysts can extract data from those sources and deliver to researchers following appropriate compliance for privacy and bioethics</p> <p>Access to all of these data sets for research purposes are through the following access request forms</p> <p><a href="https://www.regenstrief.org/feasibility-request/">https://www.regenstrief.org/feasibility-request/</a></p> <p><a href="https://www.regenstrief.org/data-request/">https://www.regenstrief.org/data-request/</a></p> |

## SCOPE OF THE *BOOK OF DATA AND ORGANIZATIONS*

- This document is not comprehensive of all organizations that are involved with health data/analytics nor is it comprehensive of each organization's capabilities/assets. This resource is intended to capture primary assets for the organizations listed
- Included organizations may not solely be focused on healthcare/life sciences; however, they are included as their data assets support social determinants of health (SdoH)
- Information has been crowdsourced from the various organizations and will continue to improve with feedback. This resource will always be a work in progress, and will continue to evolve based on input from health data organizations
- Profiles will hyperlink to as many resources as possible as opposed to redocumenting what has already been documented elsewhere

By clarifying and outlining the organizations included in this directory, we hope that new partnerships and improved natural collisions occur within our ecosystem. A key component of BioCrossroads is being a connector and facilitator of collaborations, and we encourage health-related data organizations, community-based organizations, academia and industry partners to utilize this resource to find new partnerships, novel data sets, and talent and technology capabilities to drive their organizations forward.

# ORGANIZATION PROFILES

A decorative banner with a green-to-blue gradient background. It features a DNA double helix on the left and a network diagram with yellow nodes and lines on the right.

| Indiana Department of Health (IDOH)   |                  |
|---|------------------|
| 2 N. Meridian St., Indianapolis, IN 46204<br>health.in.gov<br>Contact: Data-Analysis@isdh.in.gov<br>Twitter: @StateHealthIN | State Government |



|                     |  |
|---------------------|--|
| <b>Role(s)</b>      | <ul style="list-style-type: none"> <li>IDOH develops and strengthens strategic partnerships to improve public health, promotes and provides transparent public health data, ensures the conditions for optimal health are available to all Hoosiers, and mitigates and prepares for public health threats.</li> <li>IDOH Office of Data and Analytics (ODA) provides broad support to agency programs and partners for the collection, analyzation, and presentation of health data.</li> </ul>  |
| <b>Mission</b>      | <ul style="list-style-type: none"> <li>To promote, protect, and improve the health and safety of all Hoosiers.</li> <li>Additional information available at: <a href="https://in.gov/isdh/18930.htm">in.gov/isdh/18930.htm</a></li> </ul>  |
| <b>History</b>      | <ul style="list-style-type: none"> <li>IDOH began as the State Board of Health through legislation passed in March 1881. At that time, the board's primary role was to register births and deaths and conduct sanitary inspections of state institutions. By 1900, however, laboratories were established, an industrial hygiene program was created, stream pollution control laws were enacted, sweeping efforts to control communicable diseases were instituted, and maternal and child health programs came into being.</li> <li>In 2020, the IDOH created the role of Chief Data Officer (CDO) to serve as agency lead on the implementation of data-driven processes and decisions. The CDO established the ODA which centralizes several existing data teams for improved accessibility to agency programs. Long-standing divisions such as the Data Analysis Team, Public Health Informatics, and Public Health Geographics are now housed within ODA. The CDO also assumed the role of leading COVID-19 data response efforts for the state.</li> <li>Additional information about the history of IDOH is available at: <a href="https://in.gov/isdh/28474.htm">in.gov/isdh/28474.htm</a></li> </ul> |
| <b>Org</b>          | <ul style="list-style-type: none"> <li>IDOH is led by a governor appointed State Health Commissioner and is comprised of four commissions which house numerous programs: Consumer Services &amp; Health Care Regulation, Health &amp; Human Services, Laboratory Services, and Public Health Protection. Additional programs fall under the direction of the Chief of Staff (including ODA), the State Epidemiologist, and the Chief Medical Officer.</li> <li>IDOH employs approximately 800 full-time state employees in addition to contractors and consultants.</li> <li>The current IDOH organization chart is located at: <a href="https://in.gov/isdh/files/isdh-mgmt-org-chart.pdf">in.gov/isdh/files/isdh-mgmt-org-chart.pdf</a></li> </ul>   |
| <b>Board</b>        | <ul style="list-style-type: none"> <li>In addition to an Executive Board, IDOH has several statutory boards and boards created by executive order. Boards can be found at: <a href="https://in.gov/isdh/25673.htm">in.gov/isdh/25673.htm</a></li> </ul>  |
| <b>Finance</b>      | <ul style="list-style-type: none"> <li>State General funds appropriated to the IDOH in State Fiscal Year 2020 total \$29.56M., approximately 0.7% of the Health and Human Services budget.</li> <li>During State Fiscal Year 2020, IDOH received 72.8% of its funding from federal sources.</li> <li>IDOH total expenditures in State Fiscal Year 2020 were \$438.3M.</li> </ul>   |
| <b>Data Sources</b> | <ul style="list-style-type: none"> <li>Data are collected from a broad range of programs within the agency including through systems for Health Care Regulation, Inspections, Vital Records, WIC, Trauma Registry, Communicable disease, Clinical laboratory results, Immunization, Lead, Cancer Registry, and others.</li> </ul>  |
| <b>Data Access</b>  | <ul style="list-style-type: none"> <li>Public data and statistics are available from many agency programs and are listed at: <a href="https://in.gov/isdh/18888.htm">in.gov/isdh/18888.htm</a>.</li> <li>Stats Explorer provides a quick access to a standardized set of primarily county statistics available from agency programs and is available at: <a href="https://gis.in.gov/apps/isdh/StatsExplorer">gis.in.gov/apps/isdh/StatsExplorer</a>.</li> <li>Access to record-level or sensitive data requires a formal request to <a href="mailto:Data-Analysis@isdh.in.gov">Data-Analysis@isdh.in.gov</a>, review, and agreement.</li> <li>COVID-19 data sets are available from IDOH through the MPH Data Hub for public consumption at <a href="https://hub.mph.in.gov/dataset?q=COVID">https://hub.mph.in.gov/dataset?q=COVID</a>.</li> </ul>   |

|                                |   |
|--------------------------------|---|
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Embedded epidemiological, statistical, and analysis skills throughout the agency</li> <li>• Centralized subject-matter expertise within the ODA for data analysis, data science, geospatial science, data automation, and data visualization.</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Please see <a href="http://health.in.gov">health.in.gov</a> for information regarding projects</li> </ul>  |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Improve public access to dynamic and interactive data content</li> <li>• Improve internal access to data housed within the agency</li> <li>• Improve general workflow from data collection to data analytics</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• ODA provides regular trainings and demonstrations for agency epidemiology or analytics staff embedded within programs.</li> <li>• ODA trains through self-paced learning opportunities or other short trainings as they become available.</li> <li>• IDOH provides courses for leadership development and is open to all staff.</li> </ul> |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Please see <a href="http://health.in.gov">health.in.gov</a> for information regarding data sharing agreements</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Annual Epidemiology Open House during late fall/early winter.</li> <li>• Numerous reports and publications can be found at <a href="http://health.in.gov">health.in.gov</a></li> </ul>   |

## Indiana Department of Homeland Security (IDHS)

302 W. Washington St., Indianapolis, IN 46204

Dhs.in.gov

Contact: pio@dhs.in.gov

Twitter: @IDHS

State  
Government



|                |   |
|----------------|---|
| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>IDHS is the state's primary emergency response agency, operating the State Emergency Operations Center (SEOC) when a situation surpasses the capabilities of a local government entity.</li> <li>The agency also is home to the State Fire Marshal, Fire Investigations Section and various sections of Code Enforcement, elevators, amusement rides, boilers. The agency also reviews all construction plans for Class 1 structures and tracks and responds to all hazardous materials transport and storage.</li> <li>IDHS is the primary training body for first responders, other than police officers. This includes all training, certifications, and licensing.</li> <li>Indiana EMS (Emergency Medical Services) certifies and provides licensure for all EMS personnel in Indiana, working closely with the Indiana EMS Commission in regulating and monitoring EMS protocols for Indiana. The EMS Section falls under the umbrella of the State Fire Marshal.</li> </ul> |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>Working for Hoosiers to provide a safe, secure and resilient Indiana</li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>2005: IDHS is created by legislative order, combining agencies from the State Emergency Management Agency, State Fire Marshal, and the State Building Commissioner.</li> <li>2014: IDHS Grants Section takes on responsibilities for the coordination, distribution, and prioritization for the Indiana Secured Schools Grant Fund.</li> </ul>   |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>200+ employees, including those stationed in the IGC building as well as multiple field employees.</li> <li>Sections include Division of Fire and Building Safety, Division of Response and Recovery, Executive Division.</li> <li>Steve Cox: Executive Director</li> <li>Joel Thacker: Indiana Fire Marshal</li> <li>Craig Burgess: Indiana Building Commissioner</li> <li>Narendra Nimmagadda: Chief Information Officer</li> <li>David Hosick: Chief Public Information Officer</li> <li>Adam Thiemann: Chief Finance Officer</li> <li>Jonathan Whitham: Chief Legal Counsel</li> <li>Michael Kaufmann, MD, State EMS Medical Director</li> <li>Kraig Kinney, State EMS Director</li> <li>Mary Moran, Director of Emergency Management</li> </ul>   |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>By statute, IDHS works closely and, in some cases, provides support staff for various commissions and bodies, including the Fire and Building Safety Commission, the EMS Commission, LEPC, and others (<a href="https://www.in.gov/dhs/about-idhs/idhs-annual-reports/">https://www.in.gov/dhs/about-idhs/idhs-annual-reports/</a>).</li> </ul>  |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>Approximately \$11 million from operating fees</li> <li>Federal Grants include approximately \$4-5 million to support IDHS operations.</li> </ul>  |

|                           |   |
|---------------------------|---|
| <b>Data Sources</b>       | <ul style="list-style-type: none"> <li>• ImageTrend, Acadis, DFBS, Public Safety Portal, Tier II, WebEOC, Milestone</li> <li>• Fire and EMS run data submitted by provider agencies/fire protection districts. (ImageTrend)</li> <li>• Training data includes courses catalog, registrations, certifications, licensure, continuing education. (Acadis)</li> <li>• Permitting data for code enforcement, boilers, elevators, fireworks, amusement rides, etc. is stored through the transactional services provided via DFBS and PSP.</li> <li>• Hazardous materials response and transport data is stored and tracked via Tier II.</li> <li>• WebEOC provides for real-time information sharing from local emergency management functions across Indiana in coordination with the State of Emergency Operations Center (SEOC). This is critical to evaluate preparedness and respond quickly to developing disasters.</li> </ul> |
| <b>Data Access</b>        | <ul style="list-style-type: none"> <li>• IDHS does not have a functioning, comprehensive data analytics platform.</li> <li>• All data requests, outside of partner agencies, is done when requested via a public records request submitted to the Office of General Counsel.</li> <li>• Partner state agencies with limited access to IDHS data include MPH, Indiana Dept. of Health, Family and Social Services, Professional Licensing, Department of Natural Resources, Indiana Law Enforcement Academy/Indiana State Police. Pre-approved data agreements exist.</li> </ul>   |
| <b>Tech Capabilities</b>  | <ul style="list-style-type: none"> <li>• Analyze run data for Fire/EMS via ImageTrend to identify trends and ensure optimal response and safety.</li> <li>• Code enforcement, licensure and status of permits ensure Indiana residents are protected from potential hazards, violations, and other risks to people or property.</li> <li>• Geographic Information System (GIS) mapping</li> <li>• Online training and testing</li> <li>• Electronically capture hazardous materials information regarding transport, incidents, storage.</li> <li>• IntelliGrants grant management system serves as the transactional resource for local governments, schools, entities in the distribution of federal/state grant dollars.</li> <li>• Mobile Command Center, response communications equipment, online video monitoring of downtown areas.</li> </ul>  |
| <b>Projects</b>           | <ul style="list-style-type: none"> <li>• Data Lake: IDHS has a critical need to house, analyze, and export data to internal and external partners. This is currently being explored.</li> <li>• Creation and growth of the Fire and Public Safety Training Academy</li> <li>• Ongoing development of Public Safety Portal for all transactional systems</li> <li>• Indiana Health Information Exchange project to share run data with hospitals directly in real-time.</li> <li>• Statewide coordination of Mobile Integrated Health (community paramedicine) programs</li> <li>• Comprehensive smoke alarm/fire safety education and outreach program via GetAlarmed (<a href="http://www.getalarmed.in.gov">www.getalarmed.in.gov</a>)</li> <li>• Naloxone heatmap</li> <li>• Fire Fatality Tracker map</li> </ul>  |
| <b>Future Focus</b>       | <ul style="list-style-type: none"> <li>• Expand access and analysis of available data through multiple systems to better serve the citizens of Indiana, improve fiscal responsibility of tax dollars, and provide optimal customer service.</li> <li>• The improvements of all systems and processes within IDHS will improve safety and security for Indiana in many respects.</li> </ul>  |
| <b>Talent Development</b> | <ul style="list-style-type: none"> <li>• No direct training/education programs</li> <li>• Unpaid internship program</li> <li>• Professional Development Leadership Training under development</li> <li>• Focus on diversity and inclusion</li> </ul>  |
|                           | <ul style="list-style-type: none"> <li>• Many agreements in place; however, they are use case specific</li> </ul>   |

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| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• MPH</li> <li>• Health</li> <li>• ILEA</li> <li>• FSSA</li> <li>• PLA</li> </ul>  | <ul style="list-style-type: none"> <li>• DNR</li> <li>• Criminal Justice Institute</li> <li>• INDOT</li> <li>• ...dozens of additional one-to-one relationships</li> </ul> |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Hoosier Responder magazine : <a href="https://www.in.gov/dhs/about-idhs/hoosier-responder-magazine/">https://www.in.gov/dhs/about-idhs/hoosier-responder-magazine/</a></li> <li>• (6 times per year)</li> <li>• EMS guidance manuals</li> <li>• Annual report; <a href="https://www.in.gov/dhs/about-idhs/idhs-annual-reports/">https://www.in.gov/dhs/about-idhs/idhs-annual-reports/</a></li> <li>• GetAlarmed smoke alarm and fire safety education program; <a href="https://www.in.gov/dhs/fire-and-building-safety/division-of-fire-and-building-safety-overview/get-alarmed/">https://www.in.gov/dhs/fire-and-building-safety/division-of-fire-and-building-safety-overview/get-alarmed/</a></li> <li>• GetPrepared comprehensive preparedness information; <a href="https://www.in.gov/dhs/get-prepared/">https://www.in.gov/dhs/get-prepared/</a></li> <li>• Fire and Public Safety Training Academy</li> </ul> |  |

## Indiana Family & Social Services Administration (FSSA)

402 W. Washington St., PO Box 7083, Indianapolis, IN 46207  
[IN.gov/fssa](http://IN.gov/fssa)

Contact: [data.analytics@fssa.IN.gov](mailto:data.analytics@fssa.IN.gov) Twitter: @FSSAIndiana

State  
Government



|                |   |
|----------------|---|
| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>FSSA is the state agency which manages healthcare and social services programs including Medicaid and SNAP.</li> <li>FSSA Data &amp; Analytics team ensures secure availability of high-quality data to enable integrated data-informed decision making with measurable outcomes.</li> <li>Additional information about FSSA’s programs and services can be found at: <a href="https://secure.in.gov/apps/fssa/providersearch/home">https://secure.in.gov/apps/fssa/providersearch/home</a> and at: <a href="https://www.in.gov/fssa/2406.htm">https://www.in.gov/fssa/2406.htm</a></li> </ul>   |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>To compassionately serve the diverse community of Hoosiers by dismantling long-standing, persistent inequity through deliberate human services system improvement.</li> <li>Additional information available at: <a href="https://www.in.gov/fssa/4839.htm">https://www.in.gov/fssa/4839.htm</a></li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>FSSA was established by the Indiana General Assembly in 1991 to consolidate and better integrate the delivery of human services by state government. FSSA is a healthcare and social services funding agency. Ninety-four percent of the agency’s total budget is paid to thousands of service providers ranging from major medical centers to a physical therapist working with a child or adult with a developmental disability. The six care divisions in FSSA administer services to more than 1.5 million Hoosiers.</li> <li>Office of Medicaid Policy and Planning (OMPP) – Administers Medicaid programs including the managed care system for Healthy Indiana Plan, Hoosier Care Connect and Hoosier Health Wise participants. OMPP performs medical review of Medicaid disability claims.</li> <li>Additional information available at: <a href="https://www.in.gov/fssa/2406.htm">https://www.in.gov/fssa/2406.htm</a></li> </ul>  |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>FSSA is organized into eight care divisions supported by administrative divisions. The Secretary of FSSA serves as the Head of Agency.</li> <li>Technology leadership includes Chief Information Officer, Chief Technology Officer, Chief Data Officer, and Chief Privacy &amp; Security Officer.</li> <li>FSSA’s current organizational chart can be found at: <a href="https://www.in.gov/fssa/4829.htm">https://www.in.gov/fssa/4829.htm</a> and FSSA’s list of key contacts can be found at: <a href="https://www.in.gov/fssa/3441.htm">https://www.in.gov/fssa/3441.htm</a>.</li> <li>FSSA employs more than 3,700 full-time state employees in addition to contractors and consultants.</li> <li>FSSA employs more than 60 full-time state employees in technology roles including data &amp; analytics, systems engineering, privacy &amp; security, and project management. FSSA is also supported by major world-class technology vendors.</li> <li>FSSA care divisions are:                         <ul style="list-style-type: none"> <li>Division of Family Resources</li> <li>Office of Medicaid Policy and Planning</li> <li>Division of Disability and Rehabilitative Services</li> <li>Division of Mental Health and Addiction</li> <li>Division of Aging</li> <li>Office of Early Childhood and Out-of-School Learning</li> <li>The Disability Determination Bureau</li> <li>Indiana 211</li> </ul> </li> </ul> |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>The Secretary of FSSA, who is a member of the State of Indiana Governor’s Cabinet, leads the agency. FSSA does not have a formal board of directors.</li> </ul>  |

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| <b>Finance</b>           | <ul style="list-style-type: none"> <li>FSSA’s total expenditures in State Fiscal Year 2021 were ~\$22.6 billion.</li> <li>FSSA receives federal matching funds. More information about federal matching can be found at: <a href="https://aspe.hhs.gov/federal-medical-assistance-percentages-or-federal-financial-participation-state-assistance-expenditures">https://aspe.hhs.gov/federal-medical-assistance-percentages-or-federal-financial-participation-state-assistance-expenditures</a></li> <li>Additional information about FSSA’s finances can be found at: <a href="https://www.in.gov/itp/1090.htm">https://www.in.gov/itp/1090.htm</a></li> </ul>   |
| <b>Data Sources</b>      | <ul style="list-style-type: none"> <li>FSSA’s data is generated by its eight care divisions and is stored in the FSSA Enterprise Data Warehouse using state-of-the-art Teradata servers in addition to cloud technology.</li> <li>FSSA’s data includes but is not limited to Medicaid claims, enrollment, and provider data.</li> <li>Information on 540 publicly available fields of FSSA data can be found at: <a href="https://datavizpublic.in.gov/views/MPHDataCatalog/MPHDataCatalog">https://datavizpublic.in.gov/views/MPHDataCatalog/MPHDataCatalog</a></li> <li>FSSA includes Indiana 211, which manages databases that include thousands of health and human services agencies and resources for local community connections.</li> <li>Information on available resources by category is available at: <a href="https://in211.communityos.org/">https://in211.communityos.org/</a></li> <li>The 211 Data Dashboard is available at: <a href="https://in211.communityos.org/datadashboard">https://in211.communityos.org/datadashboard</a></li> </ul>  |
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>FSSA publishes 74 de-identified data sets on Indiana’s Management Performance Hub: <a href="https://hub.mph.in.gov/dataset?organization=indiana-family-and-social-services-administration">https://hub.mph.in.gov/dataset?organization=indiana-family-and-social-services-administration</a></li> <li>Data access and provisioning is governed by State and Federal law in addition to the FSSA Privacy &amp; Security Policies.</li> <li>Information on how to submit a request for FSSA data access or data extracts can be found at: <a href="https://www.in.gov/fssa/fssa-data-and-analytics/general-non-apra-data-request-process/">https://www.in.gov/fssa/fssa-data-and-analytics/general-non-apra-data-request-process/</a></li> <li>A data sharing agreement, professional services contract, business associate agreement, or data use agreement may be required in certain cases.</li> <li>FSSA shares data with other state agencies through Memorandums of Understanding (MOUs).</li> </ul>  |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>Advanced data analytics: data strategy and governance, data science and engineering, data warehousing, business intelligence, data mining, dashboard tools, data acquisition and automation, metadata, etc.</li> <li>Information technology: Project management, systems engineering, application development, cybersecurity, Independent Verification &amp; Validation (IV&amp;V), cloud strategy and infrastructure, IT managed services, etc.</li> <li>Vendor-provided tech capabilities include: Medicaid Management Information System (MMIS), Pharmacy Benefit Management (PBM), Integrated Case Management Solution (ICMS), CMS-certified Management and Administrative Reporting System (IMARS), Symmetry Episode Risk Groups (ERGs), Symmetry Episode Treatment Groups (ETGs), Symmetry Evidence Based Medicine (EBM) Connect, Optum Performance Analytics for HHS (OPA).</li> </ul>   |
| <b>Projects</b>          | <ul style="list-style-type: none"> <li>FSSA partnered with Regenstrief Institute to develop a data dashboard to support the State of Indiana in the effort to track and respond to the COVID-19 outbreak.</li> <li>In partnership with Indiana Management and Performance Hub and the Indiana Department of Health, FSSA has also taken a unique approach to improve the monitoring of COVID-19 vaccination rates in some of the state’s most at-risk populations, including the aged and disabled.</li> <li>FSSA created an application to facilitate the submission of COVID-19-related school absences to distribute P-EBT funding to students and replace school lunches at home.</li> <li>To better understand what supports are needed for aging individuals experiencing social isolation and caregiver burn-out, FSSA collaborated with the WISE Indiana Initiative and AARP to conduct a consumer survey and implemented an innovative model to address the unmet needs of family caregivers.</li> <li>With IN211 now a part of FSSA, the agency has created a IN211 data model to support a public dashboard, reporting, and business intelligence needs.</li> <li>FSSA deployed a Cloud Analytics Environment, which allows for data sourced from multiple resources – internal and external – to be brought into one, comprehensive environment where records can be linked to one another, analyzed with powerful tools, and disseminated to stakeholders.</li> </ul> |

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| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Increase the awareness and understanding of the role both data and analytics plays in achieving FSSA’s vision.</li> <li>• Define what the future data and analytics-enabled workforce looks like at FSSA.</li> <li>• Increase consistent utilization of FSSA data and available analytical tools through improved end-user experience.</li> <li>• Ensures secure availability of data to enable integrated data-driven decision making.</li> <li>• Tell the story of FSSA’s populations and programs by uncovering the stories within the data.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• FSSA Data &amp; Analytics holds formal on-site and virtual training sessions which include data warehousing concepts and architecture, SQL, business Intelligence tools and methodologies.</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• FSSA has multiple data sharing partners including: <ul style="list-style-type: none"> <li>• Boston University (HRSA COIINs project)</li> <li>• Centers for Medicare &amp; Medicaid Services</li> <li>• Food and Nutrition Service</li> <li>• Indiana Department of Child Services</li> <li>• Indiana Department of Corrections</li> <li>• Indiana Department of Workforce Development</li> <li>• Indiana Health Information Exchange</li> <li>• Indiana Management Performance Hub</li> <li>• Indiana Office of Technology</li> <li>• Indiana State Department of Health</li> <li>• Indiana University Fairbanks School of Public Health</li> <li>• Indiana University Ostrom Workshop</li> <li>• Indiana University School of Medicine</li> <li>• Purdue College of Health and Human Sciences</li> <li>• Purdue Healthcare Advisors</li> <li>• Regenstrief Institute</li> </ul> </li> </ul> |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Indiana Medicaid publications can be found at: <a href="https://www.in.gov/medicaid/providers/index.html">https://www.in.gov/medicaid/providers/index.html</a></li> </ul>  |

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| <b>Management Performance Hub (MPH)</b>   |                         |
| 200 W. Washington St., Indianapolis, IN 46204<br>MPH.IN.gov<br>Contact: info@mph.in.gov<br>Twitter: @IndianaMPH | <b>State Government</b> |



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| <b>Role(s)</b>   | <ul style="list-style-type: none"> <li>Agency within the State of Indiana. Supports agencies within state government with data and analytics solutions, as well as “unlocks” state agency data to make it available to community entities to drive value for the state and its citizens.</li> <li>MPH reduces technology and legal barriers to share state agency data with community partners.</li> </ul>   |  |  |
| <b>Mission</b>   | <ul style="list-style-type: none"> <li>MPH provides analytics solutions tailored to address complex management and policy questions enabling improved outcomes for Hoosiers. MPH empowers partners to leverage data in innovative ways, facilitating data-driven decision making and data-informed policy making.</li> </ul>   |  |  |
| <b>History</b>   | <ul style="list-style-type: none"> <li>2014 – Executive Order from Gov. Pence created MPH as a department under OMB (Office of Management and Budget)</li> <li>2016 – Key demonstration projects regarding infant mortality and recidivism</li> <li>January 2017 – Executive Order renewed under Gov. Holcomb</li> <li>July 2017 – HEA 1470 codifies MPH</li> <li>Link to codified bill: <a href="http://iga.in.gov/legislative/2017/bills/house/1470">http://iga.in.gov/legislative/2017/bills/house/1470</a></li> <li>Summary from TechPoint: <a href="https://techpoint.org/2017/07/house-bill-1470/">https://techpoint.org/2017/07/house-bill-1470/</a></li> </ul>   |  |  |
| <b>Org</b>   | <ul style="list-style-type: none"> <li>30-person team. 75% on technology side (ETL, Data Science, BI, Infrastructure) and 25% on engagement side (PM, Partner Engagement, solution consulting)</li> <li>Formally codified in 2017 via HEA 1470. Established MPH, CDO and CPO roles</li> <li>Leadership: <ul style="list-style-type: none"> <li>Josh Martin: Chief Data Officer</li> <li>Ted Cotterill: Chief Privacy Officer</li> <li>Ashley Hungate: Communications Director</li> <li>Jeff Mullins: Communications Director</li> </ul> </li> </ul>  |  |  |
| <b>Board</b>   | <p>Formal board not required; however, MPH sustains an informal advisory board:</p> <table border="0"> <tr> <td> <p><b>State agencies:</b></p> <ul style="list-style-type: none"> <li>Management Performance Hub</li> <li>Office of Management and Budget</li> <li>Indiana Office of Technology</li> <li>Family and Social Services</li> <li>Department of Education</li> <li>Indiana Economic Development Corporation</li> </ul> <p>MPH also leads a Data Governance Council for state agencies.</p> </td> <td> <p><b>Non-state organizations:</b></p> <ul style="list-style-type: none"> <li>Lilly Endowment Inc. (LEI)</li> <li>Indiana Chamber of Commerce</li> <li>Central Indiana Corporate Partnership (CICP)</li> <li>AT&amp;T</li> <li>Regenstrief Institute</li> <li>City of Fishers</li> </ul> </td> </tr> </table> | <p><b>State agencies:</b></p> <ul style="list-style-type: none"> <li>Management Performance Hub</li> <li>Office of Management and Budget</li> <li>Indiana Office of Technology</li> <li>Family and Social Services</li> <li>Department of Education</li> <li>Indiana Economic Development Corporation</li> </ul> <p>MPH also leads a Data Governance Council for state agencies.</p> | <p><b>Non-state organizations:</b></p> <ul style="list-style-type: none"> <li>Lilly Endowment Inc. (LEI)</li> <li>Indiana Chamber of Commerce</li> <li>Central Indiana Corporate Partnership (CICP)</li> <li>AT&amp;T</li> <li>Regenstrief Institute</li> <li>City of Fishers</li> </ul> |
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| <b>Finance</b>   | <ul style="list-style-type: none"> <li>\$8.3M annually from state general budget</li> <li>Additional \$3M grant from LEI for 2018-2019 to improve external data sharing</li> <li>Match grants (~\$10M over 4 years 2019-2023) from CMS (90% or 75% reimbursed)</li> </ul>  |  |  |

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| <b>Data Sources</b>   | <ul style="list-style-type: none"> <li>Wide ranging data from the State of Indiana including education (K-12, higher ed), workforce (wages, industries), public safety (ISP, crashes, EMS runs), health (Medicaid, DCS, ER discharge, vital records)</li> <li>Searchable data dictionary and metadata at <a href="https://www.in.gov/mph/1225.htm">https://www.in.gov/mph/1225.htm</a></li> <li>Open data hub freely available to all via <a href="http://hub.mph.in.gov">http://hub.mph.in.gov</a></li> </ul>  |   |   |
| <b>Data Access</b>  | <ul style="list-style-type: none"> <li>Open data hub freely available to all via <a href="http://hub.mph.in.gov">http://hub.mph.in.gov</a></li> <li>More sensitive data goes through a process including a data sharing agreement and security review. Formal process documented and data request forms available at <a href="https://www.in.gov/mph/935.htm">https://www.in.gov/mph/935.htm</a></li> <li>New data request portal shows progress back to the requestor for any data request made: <a href="https://request.mph.in.gov/">https://request.mph.in.gov/</a></li> <li>Data is limited to upstream state agency providing “green light” to MPH to share data. Pre-approved data agreements exist for education, workforce, and Medicaid data</li> </ul> |   |   |
| <b>Tech Capabilities</b>  | <ul style="list-style-type: none"> <li>Enhanced ability to link individuals across various data sets</li> <li>External entities can share PII to MPH. MPH can link to those individuals to state data and share information back in an aggregate fashion, while ensuring security privacy are held to the fullest. This is primarily used for program evaluation (e.g., are workforce programs truly improving wages)</li> <li>Enhanced Research Environment (ERE) is a secure virtual environment whereby users can access industry leading data transformation/visualization tools to conduct research. Users will be enabled to conduct research on their own datasets as well as those that have been provided by the state.</li> </ul>                       |   |   |
| <b>Projects</b>   | <ul style="list-style-type: none"> <li>Opioids – Data linked at the individual level across 10+ state agencies. External researchers integrated into MPH team on \$0 contracts for mutual benefit</li> <li>Education/Workforce – Longitudinal record between K-12, higher ed, and workforce supporting state and external CBOs</li> <li>Government transparency – Broad BI skillset transforming government PeopleSoft financials into citizen facing dashboards</li> </ul>   |   |   |
| <b>Future Focus</b>   | <ul style="list-style-type: none"> <li>Opportunity to demonstrate linkage of State SdoH data (Education/Workforce) with clinical data to drive insights into population health</li> </ul>   |   |   |
| <b>Talent Development</b>   | <ul style="list-style-type: none"> <li>No direct training/education programs</li> <li>MPH does host multiple interns and fellows every year</li> <li>Unique “Employee Interchange” program allows for Indiana state employees (includes public university employees) to join MPH for \$0 contract for mutual benefit</li> </ul>   |   |   |
| <b>Data Sharing Agreements</b>  | <p>Many agreements in place; however, they are use case specific</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>Regenstrief Institute</li> <li>IBRI (in process)</li> <li>United Way</li> <li>Indiana Business Research Center</li> <li>Polis</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>EmployIndy</li> <li>Goodwill</li> <li>Notre Dame/Lab for Economic Opportunities</li> <li>...dozens of additional one-to-one relationships</li> </ul> </td> </tr> </table>   | <ul style="list-style-type: none"> <li>Regenstrief Institute</li> <li>IBRI (in process)</li> <li>United Way</li> <li>Indiana Business Research Center</li> <li>Polis</li> </ul> | <ul style="list-style-type: none"> <li>EmployIndy</li> <li>Goodwill</li> <li>Notre Dame/Lab for Economic Opportunities</li> <li>...dozens of additional one-to-one relationships</li> </ul> |
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| <b>Programs/ Publications</b>   | <ul style="list-style-type: none"> <li>MPH Data Day: Yearly each spring. 2022 date: April 26. Info: <a href="https://www.in.gov/mph/mph-data-day/">https://www.in.gov/mph/mph-data-day/</a></li> <li>Data Proficiency Program: <a href="https://www.in.gov/mph/data-proficiency-program/">https://www.in.gov/mph/data-proficiency-program/</a></li> </ul>   |   |   |

## Marion County Public Health Department (MCPHD)

3838 N. Rural St., Indianapolis, IN 46205  
<http://www.MarionHealth.org>  
 Contact: [Epidemiology@MarionHealth.org](mailto:Epidemiology@MarionHealth.org)  
 Twitter: @Marion\_Health

County  
Government



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>The Marion County Public Health Department (MCPHD) is a division of Health &amp; Hospital Corporation (HHC) of Marion County. It is committed to promoting good health throughout the community. We believe that every citizen of Marion County should receive medical treatment and other public health services in a friendly environment, free from access barriers resulting from race, gender, age, sexual orientation, or other cultural and social aspects.</li> </ul>  |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>To promote and protect the health of everyone in the community and provide healthcare to those who are underserved.</li> </ul>   |
| <b>History</b> | <ul style="list-style-type: none"> <li>City Hospital opened in 1859 as a Civil War military hospital</li> <li>In 1866, the hospital was turned over to the city and became a charity hospital. It expanded in the 1880s under the direction of William N. Wishard, M.D. City Hospital was renamed Indianapolis General Hospital in 1947, Wishard Memorial Hospital in 1975, and Sidney &amp; Lois Eskenazi Hospital in 2013 when it moved to an entirely new building.</li> <li>In the 1920s and '30s, City Hospital was the only institution in Indianapolis to care for African American patients</li> <li>In order to govern the hospital away from political influences, Health &amp; Hospital Corporation (HHC) of Marion County was formed in 1951 and was established by Indiana Code 16-22-8. MCPHD was established as a division within HHC.</li> <li>In the early 1990s, MCPHD worked with the Regenstrief Institute to convene local hospital systems to establish the data exchange which eventually evolved into IHIE. Since the 1990s, MCPHD has worked closely with the Regenstrief Institute in a series of projects and research grants to advance public health informatics.</li> </ul> |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>MCPHD Leadership:                             <ul style="list-style-type: none"> <li>Dr. Virginia A. Caine, M.D., Director of Public Health</li> <li>Tara L. Parchman, Director of Finance</li> <li>Dana Reed Wise, Bureau Chief Environmental Health</li> <li>Darren Klingler, Bureau Chief Population Health</li> <li>Karen Holly, Director of Operations</li> </ul> </li> <li>MCPHD comprises Public Health Administration, Bureau of Population Health, and Bureau of Environmental Health</li> </ul>  |
| <b>Board</b>   | <p>HHC Board of Trustees:</p> <ul style="list-style-type: none"> <li>Carl L. Drummer, Chairperson</li> <li>Monica Crain</li> <li>Gregory S. Fehribach</li> <li>Thomas Hanify</li> <li>Robert W. Lazard</li> <li>Dr. Geeta K. Mantravadi, M.D.</li> <li>Beverly Mukes-Gaither</li> </ul>   |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>The Health &amp; Hospital Corporation financial statements and current year budget can be found at: <a href="https://hccorp.org/Res_BudgetFinStatements.html">https://hccorp.org/Res_BudgetFinStatements.html</a></li> </ul>   |

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| <b>Data Sources</b>            | <ul style="list-style-type: none"> <li>• Marion County birth records</li> <li>• Marion County death records</li> <li>• Marion County Community Health Assessment; <a href="https://drive.google.com/file/d/11ZJbRSs0PKGwlftfprpY7mnYGxyCnuga/view">https://drive.google.com/file/d/11ZJbRSs0PKGwlftfprpY7mnYGxyCnuga/view</a></li> <li>• Emergency Department surveillance data; <a href="https://www.in.gov/health/erc/nedss-base-system-nbs-and-surveillance/syndromic-surveillance/">https://www.in.gov/health/erc/nedss-base-system-nbs-and-surveillance/syndromic-surveillance/</a></li> <li>• MPCHD clinical services; food, pool, and other inspection data; mosquito and rodent data; surface water quality; and more</li> <li>• Various national, state, county, and local data from external data sources, such as the US Census Bureau, CDC, Indiana Health Department, Indiana University, and Indiana Hospital Association.</li> <li>• MCPHD COVID-19 Dashboard (<a href="https://marionhealth.org/homeslider/latest-on-coronavirus/#citem_8bbb-859f">https://marionhealth.org/homeslider/latest-on-coronavirus/#citem_8bbb-859f</a>)</li> </ul>   |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• Data requests can be emailed to <a href="mailto:epidemiology@marionhealth.org">epidemiology@marionhealth.org</a></li> <li>• Data sharing is subject to limitations (HIPAA protections, etc.)</li> </ul>  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Data analysis</li> <li>• Data management</li> </ul>  |
| <b>Projects</b>                | <p>The MCPHD's Epidemiology Department supports multiple projects, including:</p> <ul style="list-style-type: none"> <li>• Diabetes Impact Project; <a href="https://fsph.iupui.edu/research-centers/centers/cheer/diabetes-impact-project.html">https://fsph.iupui.edu/research-centers/centers/cheer/diabetes-impact-project.html</a></li> <li>• Ryan White HIV Services Program; <a href="http://www.ryanwhiteindytdga.org/">http://www.ryanwhiteindytdga.org/</a></li> <li>• Surveillance</li> <li>• Maternal and child health</li> <li>• Overdose Data to Action; <a href="https://www.cdc.gov/drugoverdose/od2a/index.html">https://www.cdc.gov/drugoverdose/od2a/index.html</a></li> <li>• Mental Health</li> <li>• Infectious Disease</li> <li>• Sodium Reduction in Communities Program (ended in September 2021); <a href="https://www.cdc.gov/dhdsp/programs/sodium_reduction.htm">https://www.cdc.gov/dhdsp/programs/sodium_reduction.htm</a></li> <li>• Environmental health</li> <li>• Chronic disease</li> <li>• Racial and Ethnic Approaches to Community Health Program; <a href="https://www.cdc.gov/chronicdisease/resources/publications/factsheets/reach.htm">https://www.cdc.gov/chronicdisease/resources/publications/factsheets/reach.htm</a></li> <li>• Refugee health and tuberculosis</li> <li>• Public health informatics research projects</li> <li>• CDC-REACH Vaccine Hesitancy Extension</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Indianapolis will be the healthiest large city in the United States by the year 2025.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Tuition reimbursement program</li> <li>• MCPHD hosts interns and fellows</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• The MCPHD's Epidemiology Department has many data sharing agreements in place. In general, MCPHD provides data externally for research and external data visualizations such as those at <a href="http://www.savi.org">www.savi.org</a> or <a href="http://indyindicators.iupui.edu/">http://indyindicators.iupui.edu/</a>. MCPHD receives data via data sharing agreements from many organizations such as the Indiana Health Department and the Indiana Health Information Exchange. This data is used for surveillance, health assessments, planning, and program design.</li> </ul>  |

## Programs/ Publications

- Indy Indicators: <http://indyindicators.iupui.edu/default.aspx>
- MCPHD Community Health Assessment: <https://drive.google.com/file/d/11ZJbRSs0PKGwlftfprpY7mnYGxyCnuga/view>
- MCPHD Health Equity Report: <http://marionhealth.org/marion-county-health-equity-report>
- Others are listed at <http://marionhealth.org/programs/administration/epidemiology>

## Datalys Center for Sports Injury Research and Prevention, Inc.

6151 Central Ave., Suite 117, Indianapolis, IN 46220

[www.datalyscenter.org](http://www.datalyscenter.org)

Contact: [info@datalyscenter.org](mailto:info@datalyscenter.org)

Twitter: @DatalysCenter

Nonprofit



|                     |   |
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| <b>Role(s)</b>      | <ul style="list-style-type: none"> <li>The Datalys Center is an independent, non-profit organization that furthers the efforts of researchers, public health officials, associations, policy makers, and the public by collecting and translating sport injury and treatment data</li> <li>Specializes in epidemiological research in sport and other physically active populations including, but not limited to, study design and execution, database and application design and management, and data analysis and reporting</li> </ul>   |
| <b>Mission</b>      | <ul style="list-style-type: none"> <li>To collect and translate, often in collaboration with others, sports participation, injury and treatment data into more effective programs, policies, rules, and education aimed at preventing, mitigating, and treating sports injuries more effectively</li> <li>To be the trusted leader in making sports and physical activity safer through data-driven research</li> </ul>   |
| <b>History</b>      | <ul style="list-style-type: none"> <li>2006 – The Center for Sports Injury Research and Prevention, Inc. is incorporated through a collaborative effort between the National Collegiate Athletic Association (NCAA), BioCrossroads, and the American College of Sports Medicine (ACSM)</li> <li>2008 – Renamed the Datalys Center for Sports Injury Research and Prevention, Inc.</li> <li>2014 – Legal restructuring to a supporting organization of ACSM and American Orthopedic Society for Sports Medicine (AOSSM)</li> </ul>   |
| <b>Org</b>          | <ul style="list-style-type: none"> <li>Seven employees</li> <li>Leadership: Christy Collins, PhD, President</li> <li>Scientific Advisory Board which includes leaders in the sports epidemiology field</li> </ul>   |
| <b>Board</b>        | <ul style="list-style-type: none"> <li>Board of Directors:             <ul style="list-style-type: none"> <li>Lynette Craft, Chair, PhD, FACSM, ACSM</li> <li>Marje Albohm, Secretary, MS, ATC, LAT, Ossur Americas</li> <li>Kathleen McNeely, Treasurer, NCAA</li> <li>Greg Dummer, CAE, AOSSM</li> <li>Brian Hainline, MD, NCAA</li> <li>Stephanie Kliethermes, PhD, American Medical Society for Sports Medicine (AMSSM)</li> <li>Nico Pronk, PhD, FACSM, FAWHP, HealthPartners Institute</li> </ul> </li> </ul>   |
| <b>Finance</b>      | <ul style="list-style-type: none"> <li>Supported by grants and contracts</li> </ul>   |
| <b>Data Sources</b> | <ul style="list-style-type: none"> <li>Project-specific primary data collection for the projects listed in the Projects section below. For example, for High School RIO, the data collected includes the following categories:             <ul style="list-style-type: none"> <li>Athlete-exposures, athlete demographics (e.g., year in school, sex, age, etc.)</li> <li>Injury information (e.g., injured body part, diagnosis, need for surgery, outcome, etc.)</li> <li>Injury event information (e.g., level of sport, type of exposure, injury mechanism, etc.)</li> <li>Sport-specific information (e.g., player position, specific injury mechanism, field location, etc.)</li> </ul> </li> <li>Secondary data analysis of publicly available data related to illnesses and injuries (e.g., dew point and humidity used to evaluate impact of heat/humidity on injury rates)</li> </ul> |
| <b>Data Access</b>  | <ul style="list-style-type: none"> <li>Varies by project. Performed with appropriate agreements, IRB approval, and DUAs as outlined at the following link: <a href="https://www.datalyscenter.org/requesting-data/">https://www.datalyscenter.org/requesting-data/</a></li> </ul>   |

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| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Database and application design and management</li> <li>• Injury Surveillance Tool (IST), a free web-based EMR system for participating schools</li> </ul>  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• NCAA Injury Surveillance Program</li> <li>• High School National Athletic Treatment, Injury, and Outcomes Network (NATION)</li> <li>• National High School Sports-Related Injury Surveillance Study (High School Reporting Information Online (RIO))</li> <li>• Concussion Assessment, Research and Education (CARE)</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Injury surveillance in other populations such as emergency responders, military service members, elite athletes, etc.</li> <li>• Providing research services to local and national organizations</li> <li>• Keeping athletes healthy across the life span</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Intern opportunities for students interested in injury surveillance and sports epidemiology</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Data Injury Statistics Clearinghouse (DISC)</li> <li>• Trusted Partner Data Use Agreements with researchers in both academic and industry settings</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Publications can be found at <a href="https://www.datalyscenter.org/publications">https://www.datalyscenter.org/publications</a></li> </ul>   |

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| <b>Indiana Biobank</b>  |                 |
| 351 W. 10 <sup>th</sup> Street, Indianapolis, IN 46202<br><a href="http://Indianabiobank.org">Indianabiobank.org</a><br>Contact: <a href="mailto:inbiobnk@iu.edu">inbiobnk@iu.edu</a> | <b>Academic</b> |



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| <b>Role(s)</b>           | <ul style="list-style-type: none"> <li>Formed In 2010 and supported by funds from the Lilly Endowment and the Indiana CTSI</li> <li>Support discovery research including academic, nonprofit, and commercial research entities</li> </ul>  |
| <b>Mission</b>           | <ul style="list-style-type: none"> <li>Aid discovery research that may lead to better ways to treat and prevent diseases. The Indiana Biobank works towards this goal by providing researchers with the tools and resources they need to advance their research. These tools and resources include providing researchers with banked samples, custom prospective collections of samples to meet a researcher's specific needs, sample collection kits, and repository infrastructure to support a larger coordinated collection.</li> </ul>  |
| <b>History</b>           | <ul style="list-style-type: none"> <li>2010 formed Indiana Biobank</li> <li>2014 started custom collections</li> <li>2015 began infrastructure support services</li> <li>2016 started kit production core</li> <li>2019 began Precision Health Consent Initiative</li> <li>2020 formed omics data warehouse</li> </ul>   |
| <b>Org</b>               | <ul style="list-style-type: none"> <li>Four-person management team with support from lab and IT teams</li> <li>Leadership: <ul style="list-style-type: none"> <li>Tatiana Foroud: Executive Dean for Research Affairs, IU School of Medicine and Scientific Director</li> <li>Brooke Patz: Program Manager</li> </ul> </li> </ul>  |
| <b>Board</b>             | <ul style="list-style-type: none"> <li>Formal board is not required; however, the Indiana Biobank maintains a scientific advisory board to review requests for sample/data and services</li> </ul>   |
| <b>Finance</b>           | <ul style="list-style-type: none"> <li>Supported by funds from the Lilly Endowment and the Indiana CTSI</li> <li>Funded by grants to researchers using the Indiana Biobank Infrastructure</li> <li>Recharge for services also supports the funding of the Biobank</li> </ul>   |
| <b>Data Sources</b>      | <ul style="list-style-type: none"> <li>Wide ranging data from the Indiana Network for Patient Care including over 8,000 variables encompassing clinical, laboratory, and outcomes data, mined in collaboration with Regenstrief Data Services</li> <li>DNA is regularly banked from patients with over 50,000 samples banked to date and growing</li> <li>Other sample types such as serum, plasma, RNA, PBMC, urine, saliva and tissues are collected by request.</li> <li>All samples are linked to the INPC, and thus, de-identified data linked to samples can be provided to approved academic, commercial, and nonprofit researchers</li> <li>Omics data including WES, GWAS, RNA seq as well as cytokine/chemokine and PBMC analyses data available by request to academic and nonprofit collaborators</li> </ul> |
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>De-Identified EMR data linked to biological samples is provided to approved researchers</li> <li>Data sets are designed to meet a researcher's specific needs; retrospective and prospective data from the time of sample collection is available</li> <li>Samples and data go through a review process before access is approved</li> <li>To gain approval for the use of de-identified samples and data, researchers must submit a proposal describing the planned use of the samples and data.</li> </ul>  |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>Enhanced ability to link individuals across various data sets</li> </ul>  |

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| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Precision Health Consent- collaboration with IU Health and IUSM to sample 300,000 IU Health patients over the next five years. To date, there have been over 10,000 samples collected in a year through this collaboration, which puts the Indiana Biobank at just over 50,000 (and growing) DNA samples available for broad sharing.</li> <li>• Provide infrastructure support to over 30 projects including multiple NIH, ISDH and DoD grants</li> <li>• Support more than 30 custom, prospective collections of samples each year for numerous commercial, academic, and nonprofit entities</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Opportunity to link biological samples to electronic medical record data to support research to better understand the causes of disease</li> <li>• Utilizing telephone and video consent along with the use of remnant samples to obtain large numbers of samples available for future research</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• No direct training/education programs</li> <li>• IB does host multiple interns every year</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Many agreements in place; however, they are use case specific</li> </ul>  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Reports are mostly internal, specific to the companies that work with the Indiana Biobank</li> </ul>  |

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| <b>Indiana Biosciences Research Institute (IBRI)</b>  |                  |
| 1210 Waterway Blvd., Ste. 2000, Indianapolis, IN 46202<br><a href="http://www.indianabiosciences.org">www.indianabiosciences.org</a><br>Contact: Dan Robertson @ drobertson@indianabiosciences.org<br>Twitter: @INBiosciences | <b>Nonprofit</b> |



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| <b>Role(s)</b>  | <ul style="list-style-type: none"> <li>The IBRI is an independent, discovery science, and applied research institute currently targeting diabetes, metabolic disease, poor nutrition, and related health data science.</li> <li>The IBRI exists to bring together companies and universities to work collaboratively on interrelated health issues that are of both global significance and have a disproportionate impact on Hoosiers.</li> </ul>   |   |  |
| <b>Mission/ Vision</b>  | <ul style="list-style-type: none"> <li>To become the leading independent, industry-inspired applied research institute in the discovery and development of innovative solutions to improve health, targeting diabetes, metabolic disease, and poor nutrition.</li> </ul>   |   |  |
| <b>Key Events</b>   | <ul style="list-style-type: none"> <li>2012 – Indiana state, civic, corporate, and academic leaders called for creating an independent applied research institute</li> <li>2015 – The IBRI finds its temporary home in the BRTC and starts staffing</li> <li>2016 – Additional funding provided through Lilly Endowment and matching funds</li> <li>2018 – The IBRI aligns around three centers: The IBRI Diabetes Center, (IDC) The Applied Data Sciences Center (ADSC), and The Pharmaceutical Biotechnology Center (PBC)</li> <li>2020 – IBRI moves to permanent home in Building One in 16Tech Innovation District</li> </ul>  |   |  |
| <b>Org</b>  | <ul style="list-style-type: none"> <li>Approximately 35 (2019) split into multiple centers and principle investigators</li> <li>CEO search underway</li> <li>Leadership: <ul style="list-style-type: none"> <li>Alan Palkowitz: President and CEO</li> <li>Jay McGill: Chief Operating Officer</li> <li>Mark Andersen: Chief Financial Officer</li> <li>Dan Robertson: VP Digital Technology &amp; Director of Applied Data Sciences</li> </ul> </li> </ul>  |   |  |
| <b>Board</b>  | <p>The IBRI has board membership that spans its stakeholder organizations:</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>Dan Evans, Chairman<br/>Fmr CEO, IU Health</li> <li>Dr, Kristina Box<br/>ISDH Commissioner</li> <li>Wayne Burris<br/>Fmr SVP &amp; CFO, Roche Diagnostics</li> <li>John C. Lechleiter, PhD<br/>Fmr CEO, Eli Lilly and Company</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Dan Peterson<br/>VP, Cook Group Inc.</li> <li>Bill Stephan<br/>VP, Indiana University</li> <li>Jon Serbousek<br/>Mid-Tech Industry Advisor</li> <li>Patricia Martin<br/>Pres. &amp; CEO, BioCrossroads, Inc.</li> </ul> </td> </tr> </table> | <ul style="list-style-type: none"> <li>Dan Evans, Chairman<br/>Fmr CEO, IU Health</li> <li>Dr, Kristina Box<br/>ISDH Commissioner</li> <li>Wayne Burris<br/>Fmr SVP &amp; CFO, Roche Diagnostics</li> <li>John C. Lechleiter, PhD<br/>Fmr CEO, Eli Lilly and Company</li> </ul> | <ul style="list-style-type: none"> <li>Dan Peterson<br/>VP, Cook Group Inc.</li> <li>Bill Stephan<br/>VP, Indiana University</li> <li>Jon Serbousek<br/>Mid-Tech Industry Advisor</li> <li>Patricia Martin<br/>Pres. &amp; CEO, BioCrossroads, Inc.</li> </ul> |
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| <b>Finance</b>  | <ul style="list-style-type: none"> <li>\$50M funding commitment from State + Industry matching funds (2014)</li> <li>\$100M from Lilly Endowment and Lilly Foundation (2016)</li> <li>\$20M State Funds (2017)</li> <li>IBRI Foundation holds key funding (\$126M – 2018 Form 990)</li> </ul>  |   |  |
| <b>Data</b>   | <ul style="list-style-type: none"> <li>Limited IBRI specific data sources – although growing in the IBRI Diabetes Center</li> <li>Applied Data Sciences Center (ADSC) works through data use agreements with partner organizations based on problem space</li> <li>Public Data Repository at <a href="https://data.indianabiosciences.org">https://data.indianabiosciences.org</a></li> </ul>  |   |  |

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| <b>Access</b>  | <ul style="list-style-type: none"> <li>All data access and collaborations are performed with appropriate Research Agreements, IRBs, and DUAs in place.</li> <li>The IBRI facility is designed to be an open collaborative environment facilitating research and innovation across industrial, academic, government, entrepreneurial, and other nonprofits.</li> <li>Security processes and measures in place to facilitate secure access and collaboration.</li> </ul>  |  |  |
| <b>Tech Capabilities</b>   | <ul style="list-style-type: none"> <li>Secure-cloud based (vendor-agnostic) technologies in place to facilitate secure collaborations.</li> <li>Expertise at defining applied problems and driving implementation across data and technology to support applied multi-organizational collaborations.</li> <li>Skills, software, expertise, and software for working across and integrating multiple types of data: EHR, deep biology, socio-economic, and electronic data.</li> </ul>   |  |  |
| <b>Projects</b>  | <ul style="list-style-type: none"> <li>ISDH Diabetes Strategy (Regenstrief Institute-MPH-IHIE-IBRI)</li> <li>Corteva-Lilly Toxicogenomic Collaboration</li> <li>Lilly-Roche-Regenstrief Institute Type 2 Diabetes Collaboration</li> <li>ISDH-MPH-IBRI-IHIE Obesity State-wide Prevalence and Data Availability</li> </ul>  |  |  |
| <b>Future Focus</b>  | <ul style="list-style-type: none"> <li>Building a population-diverse diabetes data set integrated with SdoH, biology, and digital data (wearables, CGSM...) to drive research and innovation.</li> <li>Working on specific public-health projects where data integration/exchange and evaluation are critical components to success.</li> </ul>   |  |  |
| <b>Talent Development</b>  | <ul style="list-style-type: none"> <li>Community-outreach in neighboring areas to 16Tech (High School)</li> <li>Summer HS and College Intern Research Programs</li> <li>Research partnerships with academic partners (college, graduate school)</li> </ul>  |  |  |
| <b>Data Sharing Agreements</b>   | <p>Many agreements in place; however, they are use case specific</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>Regenstrief Institute</li> <li>MPH (in process)</li> <li>Indiana Health Information Exchange</li> <li>IPHCA (in discussion)</li> <li>Indiana University Health</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>PCORI CAPriCORN (Chicago-area)</li> <li>Eli Lilly and Company</li> <li>FUSE by Cardinal Health</li> <li>...dozens of additional one-to-one relationships</li> </ul> </td> </tr> </table> | <ul style="list-style-type: none"> <li>Regenstrief Institute</li> <li>MPH (in process)</li> <li>Indiana Health Information Exchange</li> <li>IPHCA (in discussion)</li> <li>Indiana University Health</li> </ul> | <ul style="list-style-type: none"> <li>PCORI CAPriCORN (Chicago-area)</li> <li>Eli Lilly and Company</li> <li>FUSE by Cardinal Health</li> <li>...dozens of additional one-to-one relationships</li> </ul> |
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| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Annual report: <a href="https://www.indianabiosciences.org/annual-reports/">https://www.indianabiosciences.org/annual-reports/</a></li> </ul>  |  |  |

## Indiana Business Research Center (IBRC) at Indiana University

777 Indiana Avenue, Indianapolis, IN 46202; Hodge Hall,  
Kelley School of Business, Bloomington

[www.ibrc.indiana.edu](http://www.ibrc.indiana.edu)

Contact: Carol Rogers @ rogersc@iu.edu

Twitter: @Iuibr

University  
applied  
research  
center



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| <b>Role(s)</b>   | <ul style="list-style-type: none"> <li>Provide metric-intensive, research-powered reports, analytics, and data through partnerships, collaborations and multiple websites, dashboards, and analytical tools to the people of Indiana.</li> </ul>  |  |   |
| <b>Mission</b>   | <ul style="list-style-type: none"> <li>The IBRC provides innovative research-powered analysis and data to all Hoosiers seeking to understand their communities and economies, making it all available via its custom-built STATS platform while we strive to empower organizations to make informed decisions</li> </ul>  |  |   |
| <b>History</b>   | <ul style="list-style-type: none"> <li>Established in 1925 as one of the first research centers at Indiana University, as part of the Kelley School of Business</li> <li>1969 established a second office on the IUPUI campus</li> <li>1975 began providing digital (dial-up) access to its database to Indiana's Lt. Governor which became STATS Indiana</li> <li>1995 developed web-based access to its reports and databases</li> <li>2006 created the first Indiana state administrative record linkage system with CHE and DWD and support from Lilly Endowment, Lumina Foundation, and Joyce Foundation.</li> <li>2006 began a (still) running partnership with U.S. Economic Development Administration. Released StatsAmerica for use by communities across the nation</li> <li>2007 began to focus on metric-creation for understanding Innovation</li> <li>2015 celebrated 90 years and 20 billion record strong database platform</li> <li>2018 helped establish the Indiana Data Partnership with MPH and IU</li> </ul> |  |   |
| <b>Org</b>   | <ul style="list-style-type: none"> <li>30+ person team of analysts, programmers, data scientists plus graduate assistants and post-docs.</li> <li>Leadership: Carol O. Rogers and Timothy F. Slaper, Co-directors</li> </ul>  |  |   |
| <b>Board</b>   | <p>Formal board not required; however, IBRC sustains the following network of advisors:</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>AXIS</li> <li>BioCrossroads</li> <li>CHE</li> <li>Central Indiana Corporate Partnership</li> <li>DOE</li> <li>DWD</li> <li>Early Learning Indiana, Inc.</li> <li>Economic Development Coalition</li> <li>EDA</li> <li>FSSA</li> <li>Governor (office of)</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>IEDC</li> <li>IN Economic Development Assoc.</li> <li>IN Association of Realtors</li> <li>Indy Partnership</li> <li>ISDH</li> <li>ISL</li> <li>Lilly Endowment</li> <li>Marion County Health Department</li> <li>MPH</li> <li>Radius Indiana</li> <li>United Way of Central Indiana</li> </ul> </td> </tr> </table>   | <ul style="list-style-type: none"> <li>AXIS</li> <li>BioCrossroads</li> <li>CHE</li> <li>Central Indiana Corporate Partnership</li> <li>DOE</li> <li>DWD</li> <li>Early Learning Indiana, Inc.</li> <li>Economic Development Coalition</li> <li>EDA</li> <li>FSSA</li> <li>Governor (office of)</li> </ul> | <ul style="list-style-type: none"> <li>IEDC</li> <li>IN Economic Development Assoc.</li> <li>IN Association of Realtors</li> <li>Indy Partnership</li> <li>ISDH</li> <li>ISL</li> <li>Lilly Endowment</li> <li>Marion County Health Department</li> <li>MPH</li> <li>Radius Indiana</li> <li>United Way of Central Indiana</li> </ul> |
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| <b>Finance</b>   | <ul style="list-style-type: none"> <li>Supported by grants and contracts</li> </ul>   |  |   |

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| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>• Wide and deep, with a combination of warehouses and databases combining to 40 billion records, including historical and current census data, economic measures, demographics, industry, real estate, property tax, local government finance, school finance, innovation metrics, occupation data, opportunity zones, patents, and government records. Deep data for Indiana while curating nationwide data.</li> <li>• Creators of Indiana's State Population Projections (age, race, sex for all counties and state); State Labor Force Projections (working age projections for counties and Economic Growth Regions); quarterly Economic Forecasts for Indiana and Metro areas; The Innovation Index; Measures 4 Development.</li> <li>• Provides data to MPH Open data hub freely available to all via <a href="http://hub.mph.in.gov">http://hub.mph.in.gov</a></li> </ul>  |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• The IBRC has been providing open, digital, easy access to its data since the 1970s.</li> <li>• STATS Indiana (<a href="http://www.stats.indiana.edu/">http://www.stats.indiana.edu/</a>), known as Indiana's data utility, has 200,000+ users and serves up key metrics via its city, town, county and regional profiles and interactive tools and visualizations to more than 200K users each year.</li> <li>• StatsAmerica (<a href="http://www.statsamerica.org/">http://www.statsamerica.org/</a>) grew out of a regional innovation project with Purdue in 2006 and has grown to include an array of measuring tools for counties, cities and economic development districts nationwide.</li> <li>• Indiana Indicators (<a href="http://indianaindicators.org/">http://indianaindicators.org/</a>) gives hospitals, communities and health departments the measures they need for community health assessments.</li> <li>• Hoosiers by the Numbers (<a href="http://www.hoosierdata.in.gov/">http://www.hoosierdata.in.gov/</a>), in partnership with DWD, focuses on workforce and the workforce economy in our counties and regions with specialized outputs, tools and visualizations.</li> <li>• Indiana Economic Digest (<a href="https://indianaeconomicdigest.com/">https://indianaeconomicdigest.com/</a>) puts the news behind the numbers, a daily curation of news articles from 60+ newspapers in Indiana.</li> <li>• Child Care Data Center (<a href="http://datacenter.earlylearningin.org/">http://datacenter.earlylearningin.org/</a>) in partnership with Early Learning Indiana, provides critical information on child care centers and providers throughout Indiana, with an emphasis on quality programs and closing the gap for child care deserts.</li> <li>• Customized databases, warehousing, data and spatial data management with geodatabases and geocoding services</li> <li>• Partnership agreements included access to raw data for specialized uses</li> <li>• APIs are embedded in multiple sites and dashboards</li> </ul> |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Warehouse and database architecture; website development and hosting</li> <li>• Record linkage, data science, visualization</li> <li>• Custom tool builds to match the data and the project</li> <li>• Custom analysis by our economists and demographers, social scientists</li> </ul>  |
| <b>Selected Projects</b>       | <ul style="list-style-type: none"> <li>• Metrics for economic and community development</li> <li>• Creation of unconventional metrics for development</li> <li>• Data mining for economic intelligence</li> <li>• Workforce and education alignment</li> <li>• Census 2020 liaison for Indiana</li> </ul>   |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Mining federal grants data for social networking analysis; measuring economic and social injury due to Covid-19</li> <li>• Charting pathways to economic resilience</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Empowerment training for our partners and clients to learn to use data science, networking analysis and query tools on their own</li> <li>• Consultations on data use and interpretation</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• MPH, State Dept. of Health, Marion County Health Department, EmployIndy</li> </ul>   |

**Programs/  
Publications**

- Economic Outlook for Indiana – 12 locations throughout Indiana, a panel of economists share their “next year” Insights with the business community
- Indiana Business Review
- IN Context
- Census IN Indiana and serve as Governor’s Census Liaison
- Federal-State Cooperative with Census Bureau
- State Data Center Program

## Indiana CTSI Monon Collaborative Data Team

410 W. 10<sup>th</sup> St., HS 2000, Indianapolis, IN 46202  
 Contact: [ictsi@indianactsi.org](mailto:ictsi@indianactsi.org)

Academic



|                          |  |
|--------------------------|--|
| <b>Role(s)</b>           | <ul style="list-style-type: none"> <li>Investigate social determinants of health, patterns of healthcare and social service utilization, justice involvement and residential mobility to identify opportunities for intervention and improve health equity in Indiana.</li> <li>Engage community stakeholders in order to offer data-related needs assessment and evaluation resources (as part of the Monon Collaborative 'science in service to the community').</li> </ul>  |
| <b>Mission</b>           | <ul style="list-style-type: none"> <li>Address health inequity in Indiana through linking existing individual-level clinical and non-clinical data.</li> </ul>   |
| <b>History</b>           | <ul style="list-style-type: none"> <li>&gt;10 years of partnerships with justice, public health, and community agencies to establish trusted data-sharing agreements for the purpose of grant-funded research</li> <li>Recent shift to share aggregated (de-identified) data in response to community-driven questions, thereby deepening existing partnerships and establishing new ones</li> </ul>   |
| <b>Org</b>               | <ul style="list-style-type: none"> <li>Consortium of academic investigators (13), community partners (many), trainees (doctoral/post-doctoral students), and staff (4).</li> <li>Data use agreements managed by Indiana University and data reside on secure server maintained by Indiana University.</li> </ul>   |
| <b>Board</b>             | <ul style="list-style-type: none"> <li>There is no board of directors. Our team, however, has frequent engagement with our data-sharing partners to seek opportunities for collaboration, to disseminate findings, and to offer direct value back to each organization.</li> </ul>   |
| <b>Finance</b>           | <ul style="list-style-type: none"> <li>Extramural grant funding (NIH/AHRQ: ~\$1M/year) and intramural grant funding (e.g., IU Addictions Grand Challenge and IU Health: ~\$100K/year)</li> </ul>   |
| <b>Data Sources</b>      | <ul style="list-style-type: none"> <li>Clinical, justice, public health, community-based organizational data in collaboration with many community partners, primarily focused on Marion County, Indiana, representing 14 data sources (see data sharing agreements section below for specific agencies with whom we are collaborating) and about 28 million individuals (based on cumulative person-level identifiers from each data source).</li> <li>Most data sources include longitudinal person-level and event-level (such as encounter, test, or justice interaction) records from 2000 to 2019, with periodic data refreshes performed as allowed by funding/other resources and as indicated by community and/or research need.</li> </ul>  |
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>No data access available to any individual without approval by the IU IRB which necessitates completion of CITI training, a Conflict of Interest statement, and server security training.</li> </ul>  |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>Identified a population health identifier across multiple data sets using individual-level data elements (name, date of birth, social security number, other) and 19 deterministic matching algorithms and 24 probabilistic matching algorithms over multiple rounds. All output was reviewed by three individuals to identify thresholds above which were considered true matches. Post linkage quality checks performed to assess match validity. For the current data set of 28 million person-level identifiers, ~4.2 million unique population health identifiers were defined using this process.</li> <li>All data geocoded and geotagged at multiple geographies</li> <li>Definition of multiple clinical phenotypes both based on established metrics (e.g., Charlson Co-Morbidity Index domains) and as developed by our team (e.g., mental health measures based on DSM criteria)</li> </ul> |

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| <b>Projects</b>  | <ul style="list-style-type: none"> <li>Assess care management and clinical care outcomes for people living with HIV (PLWH), including offenders and recidivists diagnosed with HIV before, during and following interaction with the justice system.</li> <li>Describe if, when, where, at what frequency, and for what purposes (e.g., mental illness, substance use disorder or overdose, violent injury) individuals utilize clinical care and social services, including individuals from vulnerable populations such as PLWH, recent offenders and recidivists, or individuals with violent injury, trauma, mental illness and/or substance misuse.</li> <li>Assess whether migration, contextual determinants, or community events relate to clinical care or social service utilization and clinical care outcomes among individuals including vulnerable populations such as PLWH, recent offenders and recidivists, or individuals with violent injury, trauma, mental illness and/or substance misuse.</li> <li>Investigate healthcare and social service utilization and opportunities for intervention among women with an opioid use disorder and/or opioid use during pregnancy and their child(ren).</li> <li>Identify school-, justice-, and clinically-based individual-level and social network factors associated with firearm violence perpetrator and violence outcomes among adolescents and young adults.</li> <li>Map and describe area level social determinants of health and health outcomes (various use cases; Marion County).</li> </ul> |  |   |
| <b>Future Focus</b>  | <ul style="list-style-type: none"> <li>Expand collaboration with additional community stakeholders in Marion County and across Indiana.</li> <li>Explore whether a broader use of data by community stakeholders might be acceptable outside of the scope of grant-funded research (in order to be even more responsive to community needs and for use by trainees and junior faculty who often do not have funding to compile and link data resources such as used by our team).</li> </ul>   |  |   |
| <b>Talent Development</b>  | <ul style="list-style-type: none"> <li>Mentor and work with multiple doctoral, post-doc, and junior faculty members</li> </ul>   |  |   |
| <b>Data Sharing Agreements</b>   | <p>Many agreements are in place, some of which are specific to individual grants:</p> <table border="0" data-bbox="367 1012 1479 1482"> <tr> <td data-bbox="367 1012 935 1482"> <ul style="list-style-type: none"> <li>Regenstrief Institute (INPC, IU Health EDW, Eskenazi Health WISH-P/Epic)</li> <li>Marion County Public Health Department (eHARS, RISE, SWIMMS, Insight, IPHIS-DC, birth certificates, death certificates)</li> <li>Indiana Department of Corrections</li> <li>Marion County Sheriff's Office</li> <li>Indianapolis Metropolitan Police Department and City of Lawrence Police Department</li> <li>Marion County Courts, Juvenile Division and Indiana Supreme Court (QUEST)</li> <li>911 call data for Marion County</li> </ul> </td> <td data-bbox="941 1012 1479 1482"> <ul style="list-style-type: none"> <li>Contextual data from Census and elsewhere that are publicly available</li> <li>Indiana Medicaid</li> <li>Indianapolis Emergency Medical Systems</li> <li>Marion County Coroner</li> <li>IU Health Trauma Registry</li> <li>Shepherd Community Center (Indianapolis)</li> <li>Department of Education (in development)</li> <li>Management Performance Hub and Indiana Family and Social Services Agency (in development)</li> <li>Coalition for Homelessness Intervention &amp; Prevention (in development)</li> </ul> </td> </tr> </table>  | <ul style="list-style-type: none"> <li>Regenstrief Institute (INPC, IU Health EDW, Eskenazi Health WISH-P/Epic)</li> <li>Marion County Public Health Department (eHARS, RISE, SWIMMS, Insight, IPHIS-DC, birth certificates, death certificates)</li> <li>Indiana Department of Corrections</li> <li>Marion County Sheriff's Office</li> <li>Indianapolis Metropolitan Police Department and City of Lawrence Police Department</li> <li>Marion County Courts, Juvenile Division and Indiana Supreme Court (QUEST)</li> <li>911 call data for Marion County</li> </ul> | <ul style="list-style-type: none"> <li>Contextual data from Census and elsewhere that are publicly available</li> <li>Indiana Medicaid</li> <li>Indianapolis Emergency Medical Systems</li> <li>Marion County Coroner</li> <li>IU Health Trauma Registry</li> <li>Shepherd Community Center (Indianapolis)</li> <li>Department of Education (in development)</li> <li>Management Performance Hub and Indiana Family and Social Services Agency (in development)</li> <li>Coalition for Homelessness Intervention &amp; Prevention (in development)</li> </ul> |
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| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Regularly publish in peer-reviewed literature. Please see the following link for a paper describing our data-sharing partnership approach: <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6108450/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6108450/</a></li> </ul>   |  |   |

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| <b>Indiana Health Information Exchange (IHIE)</b>  |                  |
| 846 N. Senate Avenue, Indianapolis, IN 46202<br>200 W. Colfax Avenue, South Bend, IN 46601<br><a href="http://www.ihie.org">www.ihie.org</a><br>Contact: info@ihie.org<br>Twitter: @IndianaHIE | <b>Nonprofit</b> |



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| <b>Role(s)</b>   | <ul style="list-style-type: none"> <li>IHIE was founded as a not-for-profit organization in 2004 to support the Charter Hospital Systems (IU Health, Community Health Network, Health &amp; Hospital Corp. of Marion County, St. Vincent Health, Franciscan Health); Healthcare Provider Associations (Indiana Hospital Assoc., Indiana State Medical Assoc., Indianapolis Medical Society); State and Local Public Health Agencies (Indiana State Dept. of Health, Marion Co. Public Health Dept.); and other key stakeholders such as Indiana University and Central Indiana Corp. Partnership, Inc. (BioCrossroads)</li> <li>IHIE enables hospitals, physicians, laboratories, payers, and other health service providers to avoid redundancy and deliver faster, more efficient, higher quality healthcare to patients in Indiana</li> </ul>   |  |   |
| <b>Mission</b>   | <ul style="list-style-type: none"> <li>Through information exchange, we improve health and healthcare.</li> </ul>  |  |   |
| <b>History</b>   | <ul style="list-style-type: none"> <li>1994: Indiana Network for Patient Care (INPC), now the nation's largest interorganizational clinical data repository, was established by the Regenstrief Institute</li> <li>2004: IHIE was founded by healthcare, business, and academic stakeholders with the charge to manage the INPC</li> <li>2010: ONC awards IHIE \$16M Beacon grant</li> <li>2015: IHIE joins Strategic Health Information Exchange Collaborative (SHIEC) as founding member</li> <li>2020: IHIE and Michiana Health Information Network (MHIN) consolidate under IHIE's name to become Indiana's sole HIE</li> </ul>  |  |   |
| <b>Org</b>   | <ul style="list-style-type: none"> <li>102 employees; 21 developers</li> <li>Founded in 2004</li> <li>Organizational functions include: Business and Product Development, Service Delivery, Solution Engineering, Architecture, Implementations and Data, Analytics, Planning and Administration, Legal, Privacy and Compliance, and Finance and Accounting</li> <li>Leadership: <ul style="list-style-type: none"> <li>John Kansky: President and Chief Executive Officer, Keith Kelley: Chief Operating Officer, Shaun Grannis: Chief Medical Information Officer, Jeff Good: Chief Financial Officer, Drew Richardson: VP, Business and Product Development, Becky Learn: VP, Service Delivery, Brian Lawson: VP, Solution Engineering and Technology, Laura Orcutt: VP, Planning &amp; Administration, Kelly Hahaj: VP, Implementations and Data, Ammon Fillmore: General Counsel</li> </ul> </li> </ul> |  |   |
| <b>Board</b>   | <p>IHIE's Board of Directors includes the following organizations:</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> <li>Indiana University Health</li> <li>St. Vincent Health</li> <li>Franciscan Health</li> <li>Community Health Network</li> <li>Health &amp; Hospital Corp (Eskenazi)</li> <li>Regenstrief Institute</li> <li>Indiana Hospital Association</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Indiana State Dept of Health</li> <li>Marion County Public Health Dept</li> <li>Indianapolis Medical Society</li> <li>IU School of Medicine</li> <li>Indiana State Medical Association</li> <li>BioCrossroads</li> <li>Anthem</li> </ul> </td> </tr> </table>   | <ul style="list-style-type: none"> <li>Indiana University Health</li> <li>St. Vincent Health</li> <li>Franciscan Health</li> <li>Community Health Network</li> <li>Health &amp; Hospital Corp (Eskenazi)</li> <li>Regenstrief Institute</li> <li>Indiana Hospital Association</li> </ul> | <ul style="list-style-type: none"> <li>Indiana State Dept of Health</li> <li>Marion County Public Health Dept</li> <li>Indianapolis Medical Society</li> <li>IU School of Medicine</li> <li>Indiana State Medical Association</li> <li>BioCrossroads</li> <li>Anthem</li> </ul> |
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| <b>Finance</b>   | <ul style="list-style-type: none"> <li>\$16M annually</li> </ul>   |  |   |

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| <b>Data Source</b> | <p>Data sources include hospitals, Accountable Care Organizations (ACOs), laboratories and imaging centers, payers, ambulatory practices (Federally Qualified Health Centers, Community Health Centers, clinics, physicians, etc.), government agencies, and employers. A list of our participants can be found here: <a href="https://www.ihie.org/participant-list/">https://www.ihie.org/participant-list/</a></p> <p>The following list provides a breakdown of IHIE's INPC data.</p>   |  |
|                    | <p><b>Observations &amp; Results</b></p> <ul style="list-style-type: none"> <li>• Pathology Reports</li> <li>• Admission Notes</li> <li>• Discharge Summary</li> <li>• Visit Note</li> <li>• Radiology Report</li> <li>• Nuclear Med. Report</li> <li>• Operative Report</li> <li>• Vitals</li> <li>• Chemistry Studies</li> <li>• Hematology Studies</li> <li>• Urine Studies</li> <li>• Microbiology Studies</li> <li>• Serology Studies</li> <li>• Chromosome &amp; Molecular Pathology</li> <li>• TDM &amp; Toxicology Studies</li> <li>• Surgical Pathology &amp; Cytology</li> <li>• Cardiology Studies</li> <li>• Gastroenterology Studies</li> <li>• Neurology Studies</li> <li>• Pulmonary Studies</li> <li>• Radiology &amp; Nuclear Medicine</li> <li>• Encounter Data</li> <li>• Psychiatric Data</li> <li>• OB/GYN/Perinatal</li> <li>• Eye &amp; Ear Studies</li> <li>• Preventive Care</li> <li>• Provider Notes</li> <li>• Questionnaires</li> <li>• Associated Data: Medical Orders, Binary Documents</li> </ul> | <p><b>Encounters</b></p> <ul style="list-style-type: none"> <li>• Obstetrics</li> <li>• Recurring</li> <li>• Outpatient</li> <li>• ER</li> <li>• Observation</li> <li>• Ambulatory</li> <li>• Pre-admit</li> <li>• Series (Unlimited)</li> <li>• Series (Limited)</li> <li>• Inpatient</li> <li>• Doctor Referral</li> <li>• Associated Data:</li> <li>• Diagnoses</li> <li>• Procedures</li> <li>• Charges</li> <li>• Insurance</li> <li>• Participating Providers</li> <li>• Medical Orders</li> </ul> <p><b>Pharmacy Orders</b></p> <ul style="list-style-type: none"> <li>• Placed Orders</li> <li>• Filled Orders</li> <li>• Associated Data</li> <li>• Medical Orders</li> </ul> |

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| <p><b>Data Access</b></p>       | <ul style="list-style-type: none"> <li>IHIE has formal systems for managing data access within rules set by data contributors, agreements, and applicable laws. To access data, the requesting entity must sign an INPC subscription agreement that describes the terms and conditions of participation and membership. IHIE's products are organized into two suites: OneCare, which offers solutions to improve the health of the individual patient; and PopCare, which provides insight into population health. Member organizations may access IHIE's CareWeb application (OneCare) to view longitudinal data on one patient or request a CCD to electronically collect data on one patient. To access data on a population of patients, IHIE offers population health products and services such as its Clinical Value Report (PopCare), a customized report that assists organizations in care management for specific populations and quality metric efforts. More information on IHIE's products and services can be found here: <a href="https://www.ihie.org/products-overview/">https://www.ihie.org/products-overview/</a>.</li> <li>Participants in the INPC can access INPC data for use cases within the following permitted purposes: Treatment, Payment, Healthcare Operations, Public Health, and Research. Most organizations access and use INPC data via various services offered by IHIE. Data requests for research are managed by the Regenstrief Institute. Data access rules are governed by the INPC Management Committee, which is comprised of representatives of INPC participating organizations, IHIE, and Regenstrief Institute. The INPC Management Committee has the authority to approve new use cases and access rules.</li> </ul>   |
| <p><b>Tech Capabilities</b></p> | <ul style="list-style-type: none"> <li>The following are the primary systems that we operate for managing data:</li> <li>Repository Management: Clinical data management systems for normalizing, storing, and retrieving data from discrete and document repositories</li> <li>Patient Matching: Systems for matching patients across all data sources to support extracting data through the governance system</li> <li>Master Data Management: Systems for managing code set lists, demographics mappings, provider lists, and other data from outside the organization</li> <li>Data Quality: Processes and systems for classifying incoming data quality and perform repairs where needed</li> </ul>  |
| <p><b>Projects</b></p>          | <p>The following highlights recent products and projects.</p> <p>Products:</p> <ul style="list-style-type: none"> <li>CareWeb: A secure and robust application that displays billions of data elements from the clinical data repository, the Indiana Network for Patient Care (INPC). It includes Single Sign On capability and a search feature to help users find specific data, including locating terms within free text and PDFs.</li> <li>In 2020, we introduced a powerful search functionality, called Clinical Data Search (CDS), as a stand-alone application. This mobile-friendly, secure, and accessible application allows clinicians to perform keyword searches across a patient's longitudinal record to give a more streamlined user experience.</li> <li>We have recently enhanced our Admission, Discharge, Transfer (ADT) alerts to allow physicians and care managers to receive them in near real time by integrating the encounter notifications into our customers' care management systems.</li> <li>Other IHIE products, including Population Health products, can be found here: <a href="https://www.ihie.org/products-overview/">https://www.ihie.org/products-overview/</a></li> </ul> <p>State Projects:</p> <ul style="list-style-type: none"> <li>Support COVID surveillance activities by gathering and sending registration and clinical information generated by our customers and other testing sources to IDOH/FSSA and Regenstrief to support data modeling and dashboarding efforts.</li> <li>Support expanded COVID testing and share results with clinicians and public health.</li> <li>Electronic Case Reporting with Indiana Department of Health for COVID-19 and opioids.</li> <li>Maternal Opioid Misuse Indiana Initiative (MOMII).</li> <li>Provide daily encounter notifications to care coordinators for My Healthy Baby program for Medicaid patients.</li> <li>Store vaccine data from IDOH in the INPC and make available to participating providers and health plans statewide.</li> <li>Match vaccine data with employee files from participating hospitals to facilitate HHS reporting.</li> </ul> |

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|                                | <ul style="list-style-type: none"> <li>Support health systems vaccination outreach to their workforce and patients.</li> </ul> <p>Federal Projects:</p> <ul style="list-style-type: none"> <li>Partnering with 5 other HIEs through the Consortium for State and Regional Interoperability (CSRI, <a href="http://thecsri.org/">http://thecsri.org/</a>) on a multi-state COVID-19 dashboard for ONC/CDC.</li> </ul>  |
| Future Focus                   | <p>IHIE is well educated in new and upcoming national interoperability approaches that will impact the health IT industry and IHIE customers. Examples include, but are not limited to:</p> <ul style="list-style-type: none"> <li>ONC's Information Blocking Rule: released in March 2020, effective in early 2021; purpose is to make sure patient's information is not withheld when it is supposed to be shared.</li> <li>ONC's Trusted Exchange Framework and Common Agreement (TEFCA): anticipated release is 2021; hospitals, HIEs, health plans, etc. must decide whether to participate; purpose is to enable nationwide.</li> </ul> <p>We have added emphasis in our 5-year strategic plan to serving new market segments, as well as strengthening existing relationships, such as that with State government. Additionally, we will continue to focus on building analytics to meet population health, public health, and industry needs.</p> |
| <b>Talent Development</b>      | <p>No direct training/education programs</p> <p>IHIE does host several fellows, interns, and/or externs each year</p>   |
| <b>Data Sharing Agreements</b> | <p>IHIE maintains data sharing agreements with all INPC members and business associates. Our data sharing agreements are governed by the INPC Management Committee.</p>   |
| <b>Programs/ Publications</b>  | <p>HIEs Are Vital to Public Health, But Need Reshaping by David Horrocks, President, CRISP and John Kansky, President, Indiana Health Information Exchange<br/> <a href="https://www.himss.org/resources/hies-are-vital-public-health-need-reshaping">https://www.himss.org/resources/hies-are-vital-public-health-need-reshaping</a></p>   |

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| <b>Indiana Hospital Association (IHA)</b>  |                                 |
| 500 N. Meridian St., Ste 250, Indianapolis, IN 46204<br><a href="http://www.ihaconnect.org">www.ihaconnect.org</a><br>Contact: Matt Browning @ mattbrowning@IHAconnect.org<br>Twitter: @IHAConnect | <b>Healthcare<br/>Nonprofit</b> |



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>• Represents 170+ hospitals, including Acute Care, Psychiatric, Long-Term Care, and Rehabilitation facilities across the state of Indiana</li> <li>• Provides leadership in three key disciplines: Public Affairs/Advocacy, Patient Safety and Quality, and Business Intelligence/Data Analytics</li> </ul>  |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>• The Indiana Hospital Association's mission is to provide leadership, representation, and services in the common best interest of its members as they promote the improvement of community health status.</li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>• Formed in 1921, IHA was initially organized as a section of the American Hospital Association with 34 charter members. Throughout its history, IHA counts several significant contributions:             <ul style="list-style-type: none"> <li>○ 1944: IHA Leads the launch of Indiana's first hospital insurance plan</li> <li>○ 1964: IHA leads effort to allow hospital pharmacies to operate</li> <li>○ 1990: IHA commences data collection efforts as named vendor in support of ISDH</li> <li>○ 2006: The Indiana Patient Safety Center is launched by IHA</li> <li>○ 2015: IHA helps lead the passage of the Healthy Indiana Plan (HIP 2.0)</li> <li>○ 2019: IHA launches DataLink, a comprehensive claims reporting system to membership</li> </ul> </li> </ul> |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>• 30 member organization</li> <li>• Leadership:             <ul style="list-style-type: none"> <li>• Brian Tabor, President</li> <li>• Terry Cole, Senior Vice President, Finance</li> <li>• Matthew Browning, Senior Vice President, Member Solutions and Engagement</li> <li>• Andy VanZee, Vice President – Regulatory and Hospital Operations</li> <li>• Karin Kennedy, Vice President – Quality and Patient Safety</li> <li>• Laura McCaffery, Vice President – Public Affairs &amp; Communications</li> <li>• Trent Fox, Vice President – Government Relations</li> </ul> </li> </ul>  |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>• 38 Member Board; appointments made by vote and nomination process.</li> </ul>  |

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| <p><b>Data Sources</b></p> | <ul style="list-style-type: none"> <li>• IHA is responsible for “Patient Information Reports” as part of State law IC 16-21-6-6 and collects both inpatient and outpatient administrative claims data. All licensed hospitals (Acute, Rehab, Psychiatric, and Long-Term) are required to comply with the code. IHA is responsible for all data validation efforts and provides flat files of cleansed data monthly to the Indiana Department of Health. IDOH uses this data to append its Hospital Epidemiology dataset for research and public policy purposes and makes a limited dataset available at <a href="https://www.in.gov/isdh/20624.htm">https://www.in.gov/isdh/20624.htm</a>. Additionally, IHA then makes an expanded data set available quarterly to its members through a variety of platforms: <ul style="list-style-type: none"> <li>○ INHDS Platform – a web portal designed to make submission of 837 claims information efficient. The portal allows for SFTP functionality as well as on the fly edits to ensure data integrity by membership.</li> <li>○ DataLink – a Tableau based reporting system that includes over 42 standard reports that fall into three broad categories: <ul style="list-style-type: none"> <li>▪ Business Development and Marketing – DataLink provides views into market share reporting, patient in and out migration, and segmentation of that data by key service lines and payor categories.</li> <li>▪ Patient Safety &amp; Quality – DataLink has several reporting modules around Sepsis outcomes, Suicide Ideations, Social Determinants of Health, and Health equity topics. Also included are external data sources that help IHA members understand their organization’s performance on CMS Quality Programs.</li> <li>▪ Emergency Preparedness – DataLink was heavily revised and used during the COVID-19 Pandemic to provide insights into hospital and emergency preparedness district reporting. This enabled better collaboration among IHA members to care and prepare for potential patient surges.</li> </ul> </li> <li>○ Dimensions – Dimensions is designed to give analysts more control and ability to query the IHA patient dataset. Essentially, it is a web enabled pivotable that sits atop the patient data warehouse and allows for in depth querying and filtering abilities.</li> <li>○ ChimeMaps – Similarly, ChimeMaps uses the same dataset, but applies a GIS Mapping tool to it to provide hospital analysts visualizations of patient migration patterns and potential locations for service expansions. Additionally, many analysts use ChimeMaps to determine hospital service areas by leveraging its Drive Time report, showing what zip codes within given radius can be reached in 10, 15, and 30 minutes.</li> <li>○ Flat Files – IHA also supports member hospitals Business Intelligence teams by making the dataset available via flat file. Members are able to define the dataset by geography, hospital, or request the whole state.</li> </ul> </li> <li>• Besides the Administrative Claims dataset that state statute requires to be collected, IHA also works with voluntary collection efforts to help apprise membership of benchmarks and actionable data. <ul style="list-style-type: none"> <li>○ Human Resources – Members can access an annual salary survey of 200 of the most common roles in a hospital to ensure market competitiveness. IHA partners with an outside organization to provide this service.</li> </ul> </li> </ul> <p>Accounting and Finance – Members can access a reporting module called Databank to have applicable benchmarks for key financial metrics, including average Days cash on hand, Accounts Payable, Length of stay, etc.</p> |
| <p><b>Data Access</b></p>  | <ul style="list-style-type: none"> <li>• Data is available for active IHA members, per the organization’s data use agreement. IHA is exploring ways to enhance more public facing data sharing.</li> <li>• Administrative Claims Data is sent to IDOH monthly. IDOH makes this data available publicly at <a href="https://www.in.gov/isdh/20624.htm">https://www.in.gov/isdh/20624.htm</a></li> <li>• IHA does provide a consumer facing tool around healthcare affordability. IHA operates <a href="https://www.mycareInsight.org">https://www.mycareInsight.org</a>, in which the top 100 diagnosis-related groups (DRGs) and Top 200 most commonly occurring outpatient procedures are aggregated and provided a pricing range from IHA members.</li> </ul>   |

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| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Tableau reporting system – DataLink available for members</li> <li>• Additional BI platforms – Dimensions (Pivotable analysis) and ChimeMaps (GIS Mapping), DataBank (Financial and HR reporting)</li> <li>• INHDS (Indiana Hospital Data Submission) – Data Submission Portal and ETL efforts</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• mycareINsite (<a href="http://www.mycareinsight.org/">http://www.mycareinsight.org/</a>) – Price Transparency website for public consumption</li> <li>• Development of agnostic data collection platform to ease member data lift. Currently, IHA collects information from members through a variety of means (Excel, SurveyMonkey, Submission of the IDS dataset, ad-hoc Requests). IHA is seeking a way to consolidate its collection process to utilize best practices and make data collection easier for members.</li> <li>• Special topics: <ul style="list-style-type: none"> <li>○ Rural Healthcare</li> <li>○ Suicide Ideation and Self Harm Reporting</li> <li>○ Health Equity</li> </ul> </li> <li>• Social Determinants of Health</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Exploring opportunity to expand outpatient data collection</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• No direct training/education programs</li> <li>• IHA does host multiple interns and fellows every year</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• DUA established with all licensed hospitals in state</li> <li>• Indiana Department of Health</li> <li>• INPC (Currently in process with IHIE. Joining the INPC would enable IHA to potentially have more insights into sepsis outcomes as well as benefitting the INPC with comprehensive claims coverage from the entire state.)</li> </ul>  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Harmony Magazine, Quarterly release to membership</li> </ul>  |

| Indiana University Center for Survey Research  |   |
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| 2805 E. 10 <sup>th</sup> Street, Smith Research Center 123<br>Bloomington, IN 47408<br>csr.indiana.edu<br>Contact: <a href="mailto:csr@indiana.edu">csr@indiana.edu</a><br>Twitter: @lucsr | <b>University<br/>applied<br/>research<br/>center</b> |



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| <b>Role(s)</b>      | Since the early 1980's, the Center for Survey Research (CSR) has partnered with researchers to plan for, gather, and analyze data that advance knowledge and humankind. The CSR has conducted thousands of quantitative and qualitative research projects, using surveys, interviews, focus groups, and a wide range of other methods, including collection of medical specimens and environmental samples. Our partners include collaborators from universities, governmental agencies, nonprofit organizations, and businesses.   |
| <b>Mission</b>      | <ul style="list-style-type: none"> <li>To partner with leading researchers in developing, implementing, and analyzing state-of-the-art qualitative and quantitative research</li> <li>To teach and inspire by sharing cutting-edge knowledge of research methods</li> <li>To collaborate with senior organizational leadership in gathering and analyzing data that will inform sound data-driven decision making</li> <li>To be a leader in methodological and management innovation and research among academic research organizations</li> </ul>   |
| <b>History</b>      | <ul style="list-style-type: none"> <li>1982: Established by two Indiana University faculty members with university support, primarily to assist in conducting telephone surveys</li> <li>late 1980's-1990's: Expanded to include mail and online survey data collection capabilities and the Center grew to 20 full-time and 75 part-time staff</li> <li>1995: Began conducting annual survey of 3,000 mental health services recipients for the Indiana Division of Mental Health and Addiction</li> <li>1990's-2000's: Established many new partnerships, including collaborations with nursing faculty conducting randomized trials and the Knee Replacement Patient Outcome Research Team</li> <li>2010's: Built a wide range of new research collaborations, including data collection and consulting partnerships with health departments, hospital systems, and physician researchers</li> <li>2016: Obtained Indiana CTSI core status. CTSI cores are facilities that provide CTSI research investigators with equipment, training, or technical services (like research design, data collection, and analysis support) across multiple departments. Core status is obtained through a rigorous approval process and is reviewed annually by CTSI. There are funding programs specific to working with a CTSI core (more information available here: <a href="http://indianactsi.org/researchers/services-tools/translational-research-development/all-ctsi-funding/">indianactsi.org/researchers/services-tools/translational-research-development/all-ctsi-funding/</a>)</li> <li>2018: Expanded to provide statewide field data collection and medical specimen collection capabilities; completed the first interview for the Precision Health Initiative Person to Person Health Interview Study</li> <li>2020: Expanded to provide environmental sample collection capabilities (dust, tap water, air quality monitor, etc.)</li> </ul> |
| <b>Org</b>          | <ul style="list-style-type: none"> <li>Highly experienced team of project managers, technologists, methodologists, operations staff, and graduate assistants</li> <li>Leadership             <ul style="list-style-type: none"> <li>Center Director: Ashley Clark</li> <li>Director, Research Project Management Services: Erica Moore</li> <li>Director, Research Data Management Services: Jamie Roberts</li> <li>Director, Research Technologies: Joe Wilkerson</li> <li>Director, R&amp;D and Research Laboratory, &amp; Senior Methodologist: Lilian Yahng</li> <li>Director, Research Field Operations: Karen Tucker</li> </ul> </li> </ul>   |
| <b>Board</b>        | The CSR has an advisory committee comprised of faculty and campus leadership that provides input on strategic initiatives, assists in efforts to expand the CSR's portfolio, and oversees general operations.   |
| <b>Finance</b>      | Supported primarily by recharge for services provided to collaborators. Funding also provided by the Office of the Vice Provost for Research at Indiana University Bloomington.   |
| <b>Data Sources</b> | The CSR can facilitate access to data that were collected using surveys, medical specimens, and environmental samples (as allowed by collaborators' data sharing policies). These data come from a wide range of health and medical research studies examining topics from social determinants of health to community health needs to professional training of medical professionals. Samples include statewide representative samples of adults, samples of health professionals, and experimental research study participants.  |

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| <b>Data Access</b>             | Data are the property of the CSR's collaborators, but access can be facilitated by CSR staff (as allowed by collaborators' data sharing policies).  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Support for developing research designs and proposals (using methods such as surveys, interviews, focus groups, etc.)</li> <li>• Instrument design and testing, including cognitive interviewing</li> <li>• Database and data collection instrument programming, including REDCap and Qualtrics</li> <li>• Sampling and subject recruitment</li> <li>• Quantitative data collection (in person, online, mail, and telephone) and qualitative data collection (focus groups, semi-structured interviews, observations, etc.)</li> <li>• Standardized collection of medical specimens (including saliva, blood, and urine), anthropometric measurements, and environmental samples (including dust and tap water)</li> <li>• Forms scanning, data entry, and coding</li> <li>• Data processing and analysis, including weighting</li> </ul>  |
| <b>Projects</b>                | <p>The CSR conducts 35-45+ projects of diverse size, complexity, and substantive focus each year. Examples include:</p> <p><b><u><a href="#">Indiana University Precision Health Initiative Grand Challenge – Person to Person Health Interview Study</a></u></b>: As part of a multi-million dollar collaborative effort of numerous internal and external stakeholders and world-class faculty with the goal of achieving biomedical breakthroughs in cancer, childhood, chronic, and neurodegenerative diseases, CSR conducted 2,600+ in-person interviews with a representative sample of Indiana households to gauge health and to assess the impact of social networks, as well as collect biomarker samples.</p> <p><b>Comparing Interventions to Increase Colorectal Cancer Screening in Low-Income and Minority Patients</b>: This Patient-Centered Outcomes Research Institute (PCORI)-funded randomized clinical trial study continued longstanding collaborations with IU School of Nursing researchers on intervention strategies and special populations for cancer screenings, utilizing multi-wave standardized telephone interviews to assess efficacy of methods.</p> <p><b>Indiana Community Health Needs Study</b>: Partnering with the IU School of Public Health and local health departments, this health needs assessment surveyed six counties in Indiana: Clark, Dubois, Lawrence, Jackson, Madison, and Monroe. Randomly-sampled household residences were invited to participate in a mailed survey seeking to understand the health needs of communities from the people who live in them.</p> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Continue to develop and expand capabilities to contribute to cutting-edge health sciences research</li> <li>• Build new partnerships with researchers in health and medicine</li> <li>• Develop methodological innovations to improve the quality and cost-effectiveness of research</li> <li>• Increase awareness of best practices in conducting high-quality research</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Offer free consulting hours to share best practices in research design, data collection, and analysis</li> <li>• Provide specialized trainings and workshops for businesses, university departments, and faculty research teams</li> <li>• Offer seminars and workshops in collaboration with the <a href="#">SSRC</a></li> <li>• Offer campus courses and guest lectures</li> <li>• Provide hands-on experience in the design, implementation, and analysis of research studies to undergraduate and graduate students employed at the CSR</li> <li>• Provide graduate students with experience on how to implement population-based research as a partner in the <a href="#">Sociological Research Practicum</a></li> </ul>  |
| <b>Data Sharing Agreements</b> | Data are the property of the CSR's collaborators, but access can be facilitated by CSR staff (as allowed by collaborators' data sharing policies).  |
| <b>Programs/ Publications</b>  | More information about our projects, publications, and resources can be found at <a href="http://csr.indiana.edu">csr.indiana.edu</a> .   |

## The Polis Center at IUPUI (Polis)

535 W. Michigan St, Indianapolis, IN 46202

polis.iupui.edu

Contact : polis@iupui.edu

Twitter : @polisiupui, @SAVIonline

University  
applied  
research  
center



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>The Polis Center at IUPUI (Polis) collaborates with the public health, healthcare, social service, government, and academic sectors to enhance the use of place-based information for the improvement of health and resiliency in Indiana and beyond. We build local capacity to understand and address population health and its social and environmental determinants through community research, collaboration, and application of advanced information technologies.</li> </ul>   |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>Polis works with its partners to define, measure, and actively improve community health, wellbeing, and resiliency.</li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>1989: Established by IUPUI as soft-funded center to link academic and community expertise</li> <li>1994:             <ul style="list-style-type: none"> <li>Published The Encyclopedia of Indianapolis (<a href="https://polis.iupui.edu/encyclopedia-of-indianapolis/">polis.iupui.edu/encyclopedia-of-indianapolis/</a>), providing a comprehensive social, cultural, economic, historical, political, and physical description of Indianapolis</li> <li>Began development of the Social Assets and Vulnerabilities Indicators (SAVI) database project under auspices of United Way of Central Indiana/Community Service Council</li> </ul> </li> <li>1996: Published first version of SAVI Community Information System (<a href="https://savi.org">savi.org</a>), which went online in 1998</li> <li>2008: Established IUPUI Signature Center for Health Geographics</li> <li>2010: Developed geocoded web service for Indiana Network for Patient Care with Regenstrief Institute, as part of CDC-funded Indiana Center of Excellence in Public Health Informatics</li> <li>2012: Began partnering with hospital systems on community health needs assessments</li> <li>2014: In cooperation with the Indiana Department of Homeland Security, published the 2014 State of Indiana Standard Multi-Hazard Mitigation Plan.</li> <li>2016: Published IndyVitals (<a href="https://indyvitals.org/">indyvitals.org/</a>) in partnership with the Greater Indianapolis Progress Committee and City of Indianapolis</li> <li>2018:             <ul style="list-style-type: none"> <li>Helped establish Indiana Data Partnership (<a href="https://in.gov/idp">in.gov/idp</a>) with MPH and IU</li> <li>Polis became a FEMA Cooperating Technical Partner, working closely with the Indiana Department of Natural Resources to update Indiana's flood hazard maps and data.</li> </ul> </li> <li>2019:             <ul style="list-style-type: none"> <li>Commenced work on Digital Encyclopedia of Indianapolis (<a href="https://polis.iupui.edu/about/community-culture/the-digital-encyclopedia-of-indianapolis/">polis.iupui.edu/about/community-culture/the-digital-encyclopedia-of-indianapolis/</a>), to be published in 2021 for Indianapolis bicentennial.</li> <li>In cooperation with the Indiana Department of Homeland Security, published the 2019 State of Indiana Multi-Hazard Mitigation Plan.</li> </ul> </li> <li>2020:             <ul style="list-style-type: none"> <li>Started collaboration with the Indiana Geographic Information Office (GIO) on a data sharing program (<a href="https://www.in.gov/gis/data-sharing/">https://www.in.gov/gis/data-sharing/</a>) named GIS Data Harvest to aggregate address points, street centerlines, parcels, and administrative boundaries from all 92 Indiana counties into a statewide dataset.</li> <li>Joined the IUPUI School of Informatics and Computing to extend our collaborative, community-based work via informatics-enhanced solutions.</li> </ul> </li> <li>2021: Released the 2020 GIS Data Harvest data (<a href="https://iu.maps.arcgis.com/apps/dashboards/4302f9d9fd2a4915b5d49826e457d003">https://iu.maps.arcgis.com/apps/dashboards/4302f9d9fd2a4915b5d49826e457d003</a>).</li> <li>2022: Released the 2021 GIS Data Harvest data (<a href="https://www.arcgis.com/apps/dashboards/9566075da8f2493bbd706b3452944867">https://www.arcgis.com/apps/dashboards/9566075da8f2493bbd706b3452944867</a>).</li> </ul> |

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| <b>Org</b>          | <ul style="list-style-type: none"> <li>Polis has 24 full time staff including research analysts, GIS analysts, data scientists, developers, and project managers, plus part-time staff and graduate assistants</li> <li>Leadership: <ul style="list-style-type: none"> <li>Sharon Kandris – Interim Executive Director</li> <li>Karen Comer – Interim Associate Director</li> <li>Marianne Cardwell – Director, Geoinformatics</li> <li>Matt Nowlin – Interim Community Analysis Manager</li> <li>Neil Devadasan – Lead System Engineer</li> <li>Kevin Mickey – Director, Geospatial Technologies Education</li> </ul> </li> </ul>   |
| <b>Board</b>        | <ul style="list-style-type: none"> <li>Formal board is not required. Polis maintains advisory committees for major projects including SAVI, State of Aging in Central Indiana Report (SoAR), and Digital Encyclopedia of Indianapolis (DEOI).</li> </ul>   |
| <b>Finance</b>      | <ul style="list-style-type: none"> <li>Supported by grants and contracts, with an annual budget of \$3 million.</li> </ul>   |
| <b>Data Sources</b> | <ul style="list-style-type: none"> <li>Polis uses data from a large number and variety of national, state, and local sources as listed below, including over 40 data sources for SAVI (<a href="http://savi.org/support-training/data-sources/">savi.org/support-training/data-sources/</a>). In addition to the numerous datasets that Polis makes readily available via SAVI and its other public websites (see Data Access), Polis collects and maintains a wealth of data “behind the scenes” for the research and analysis work of Polis and its public, non-profit and private sector partners. When feasible, Polis collects location attributes at the smallest geographic scale available in support of mapping and spatial analysis. The best way to learn whether Polis has data to support a particular research question or application is to contact Polis and speak to one of our directors or senior data analysts.</li> </ul> <p>National Sources</p> <ul style="list-style-type: none"> <li>US Census Bureau, US Department of Housing and Urban Development (HUD), Agency for Health Research and Quality (AHRQ), US Department of Justice (DOJ), National Housing Preservation Database, US Bureau of Labor Statistics, Centers for Disease Control and Prevention (CDC), Federal Financial Institution Examination Council (FFIEC), Federal Deposit Insurance Corporation (FDIC), US Environmental Protection Agency (EPA), Atmospheric Composition Analysis Group, Federal Emergency Management Agency (FEMA), Pew Research Center, US Department of Homeland Security (DHS), National Archive of Criminal Justice Data (NACJD) at ICPSR, US Department of Agriculture (USDA), Administrative Office of the US Courts, National Archive of Criminal Justice Data, International Trade Administration, Urban Institute, University of Wisconsin, United Way, WalkScore.com</li> </ul> <p>State Sources</p> <ul style="list-style-type: none"> <li>Indiana State Management Performance Hub (MPH), Indiana Department of Local Government Finance (IDLGF), Indiana State Department of Education (DOE), Indiana State Department of Health (ISDH), Indiana State Library, Indiana Family and Social Services Administration (FSSA), Indiana Department of Natural Resources (DNR), Indiana Geographic Information Office (GIO), Indiana Department of Homeland Security (IDHS), Indiana State Police, IN 211, Indiana Commission for Higher Education, Indiana Youth Institute, Indiana Business Research Center, Indiana Department of Workforce Development, Indiana Supreme Court</li> </ul> <p>Local Sources</p> <ul style="list-style-type: none"> <li>Indianapolis Department of Public Works, Marion County Public Health Department, <a href="http://indy.gov">indy.gov</a>, Marion County Juvenile Division, United Way of Central Indiana, United Way of Madison County, Shelby County United Fund, United Way of Johnson County, Keep Indianapolis Beautiful, Indianapolis Public Library, Marion County Treasurer’s Office, IU Public Policy Institute, IndyGo, Indianapolis Center for Congregations, Encyclopedia of Indianapolis, Indianapolis Metropolitan Police Department, Lawrence Police Department, Beech Grove Police Department, Marion County Superior Court, Marion County Prosecutor’s Office, The Julian Center, Domestic Violence Network, Indianapolis Neighborhood Housing Partnership, Metropolitan Indianapolis Board of Realtors, Regenstrief Institute</li> </ul> |

|                          |  |
|--------------------------|--|
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>• The SAVI Community Information System provides comprehensive, neighborhood level data for community assessments and asset mapping, clinical and public health research on social determinants of health (SDOH), grant writing, strategic planning, and community planning. (<a href="http://www.savi.org">www.savi.org</a>)</li> <li>• The Domestic Violence Dashboard provides information about the extent and context of domestic violence in Indianapolis and the populations affected. (<a href="http://indydvdata.org">indydvdata.org</a>)</li> <li>• The Digital Atlas of American Religion provides access to resources for the study and teaching of American religious history within a geographical and multimedia framework. (<a href="http://religionatlas.org">religionatlas.org</a>)</li> <li>• IndyVitals measures the long-term impact of Indianapolis Plan 2020 at the neighborhood level. It helps planners and policymakers ensure that neighborhoods of all types are improving by making comparative neighborhood-level data transparent. (<a href="http://indyvitals.org">indyvitals.org</a>)</li> <li>• The Indiana United Ways Community Report Card provides a quick snapshot of how Indiana communities are doing in the areas of health, education, and income. Users can view 35 indicators to learn: if a community has gotten better or worse over time and how it compares to the state's trend. (<a href="http://indianaimpact.org">indianaimpact.org</a>)</li> <li>• In addition to our publicly available datasets, we design datasets to meet research and community partners' specific needs. Contact: polis@iupui.edu or (317) 274-2455.</li> </ul> |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>• Polis curates community data, spatially-enables and integrates clinical data, generates descriptive and inferential statistics, builds spatial information infrastructure, and develops information systems and decision support tools. Core technology capabilities include: <ul style="list-style-type: none"> <li>• Geo-spatial data warehousing, geo-referencing and geo-processing</li> <li>• Data linkage and integration</li> <li>• Online data visualization and dissemination</li> <li>• System integration, software development, and management</li> </ul> </li> <li>• Development of tools for community health planning, population health management and patient-center decision support (<a href="http://polis.iupui.edu/wp-content/uploads/2019/10/health-geo-small-flap-Brochure-update.pdf">polis.iupui.edu/wp-content/uploads/2019/10/health-geo-small-flap-Brochure-update.pdf</a>)</li> <li>• Development and delivery of multiple courses in the application of geospatial technologies for the visualization, modeling, and sharing of information.</li> </ul>   |
| <b>Projects</b>          | <ul style="list-style-type: none"> <li>• In partnership with the Central Indiana Senior Fund (CISF), Polis is developing the State of Aging in Central Indiana Report to provide sustainable, online access to information needed for programming, funding, and policymaking to ensure Central Indiana seniors have equal opportunity for a healthy, dignified, and enjoyable life.</li> <li>• In collaboration with the IU School of Medicine, IU School of Science, and Indiana Poison Control Center, Polis is creating an online dashboard for the Chemical Surveillance System for the Synthetic Drug Crisis to allow clinicians, researchers, public safety professionals, and policymakers to monitor the drug compounds causing emergency department overdose visits.</li> <li>• Other key community health initiatives: <a href="http://polis.iupui.edu/wp-content/uploads/2019/10/health-geoinformatics-flyer-FINAL.pdf">polis.iupui.edu/wp-content/uploads/2019/10/health-geoinformatics-flyer-FINAL.pdf</a></li> <li>• The Polis Center has extensive experience working with Indiana local governments and other community level stakeholders throughout the state in the development of multi-hazard mitigation plans that improve community resilience to natural hazards and other adverse circumstances.</li> </ul>   |
| <b>Future Focus</b>      | <ul style="list-style-type: none"> <li>• Predictive modeling and advanced spatial analysis of health outcomes and risk factors</li> <li>• Expanded development of information for small scale geographies</li> <li>• Advanced data visualization and computational analysis using artificial intelligence</li> <li>• Expansion of community research infrastructure</li> </ul>   |

|   |  |  |   |   |
|---|--|--|---|---|
| <p><b>Talent Development</b></p>  | <ul style="list-style-type: none"> <li>• Train individuals and organizations to access and use place-based information to better understand their communities and social and environmental determinants of health, wellbeing, and resiliency</li> <li>• Consult on the development and use of evidence-based methods for assessing the needs of individuals, organizations, and communities (<a href="https://polis.iupui.edu/wp-content/uploads/2019/10/CHNA-brochure-FINAL.pdf">polis.iupui.edu/wp-content/uploads/2019/10/CHNA-brochure-FINAL.pdf</a>)</li> <li>• Host multiple interns and research assistants each year</li> <li>• SAVI Data Literacy Training (<a href="http://www.savi.org/support-training/savi-training/">www.savi.org/support-training/savi-training/</a>)</li> </ul>  |  |   |   |
| <p><b>Data Sharing Agreements</b></p>   | <p><b>Many agreements in place; however, they are use case specific</b></p> <table border="1" data-bbox="355 468 1487 835"> <tr> <td data-bbox="355 468 935 835"> <ul style="list-style-type: none"> <li>• Regenstrief Institute</li> <li>• IN Management Performance Hub</li> <li>• Indiana State Department of Health</li> <li>• Indiana 211</li> <li>• Marion County Public Health Department</li> <li>• Indiana Department of Education</li> <li>• Indiana Supreme Court</li> <li>• Indianapolis Metropolitan Police Department</li> <li>• Marion County Prosecutor's Office</li> </ul> </td> <td data-bbox="935 468 1487 835"> <ul style="list-style-type: none"> <li>• Lawrence Police Department</li> <li>• Beech Grove Police Department</li> <li>• Marion County Superior Court</li> <li>• The Julian Center Domestic Violence Network</li> <li>• Center for Congregations</li> <li>• Indianapolis Public Library</li> <li>• ...dozens of additional one-to-one relationships</li> </ul> </td> </tr> </table> |  | <ul style="list-style-type: none"> <li>• Regenstrief Institute</li> <li>• IN Management Performance Hub</li> <li>• Indiana State Department of Health</li> <li>• Indiana 211</li> <li>• Marion County Public Health Department</li> <li>• Indiana Department of Education</li> <li>• Indiana Supreme Court</li> <li>• Indianapolis Metropolitan Police Department</li> <li>• Marion County Prosecutor's Office</li> </ul> | <ul style="list-style-type: none"> <li>• Lawrence Police Department</li> <li>• Beech Grove Police Department</li> <li>• Marion County Superior Court</li> <li>• The Julian Center Domestic Violence Network</li> <li>• Center for Congregations</li> <li>• Indianapolis Public Library</li> <li>• ...dozens of additional one-to-one relationships</li> </ul> |
| <ul style="list-style-type: none"> <li>• Regenstrief Institute</li> <li>• IN Management Performance Hub</li> <li>• Indiana State Department of Health</li> <li>• Indiana 211</li> <li>• Marion County Public Health Department</li> <li>• Indiana Department of Education</li> <li>• Indiana Supreme Court</li> <li>• Indianapolis Metropolitan Police Department</li> <li>• Marion County Prosecutor's Office</li> </ul> | <ul style="list-style-type: none"> <li>• Lawrence Police Department</li> <li>• Beech Grove Police Department</li> <li>• Marion County Superior Court</li> <li>• The Julian Center Domestic Violence Network</li> <li>• Center for Congregations</li> <li>• Indianapolis Public Library</li> <li>• ...dozens of additional one-to-one relationships</li> </ul>  |  |   |   |
| <p><b>Programs/ Publications</b></p>  | <ul style="list-style-type: none"> <li>• The Polis annual report and other Polis publications may be found here: <a href="https://polis.iupui.edu/resources/reports/">polis.iupui.edu/resources/reports/</a></li> <li>• SAVI Talks: Data-informed public conversations about pressing issues in our community: <a href="http://www.savi.org/savi-talks/">www.savi.org/savi-talks/</a></li> <li>• Community-friendly reports on topics such as poverty, education, equity, crime and safety, and health: <a href="http://www.savi.org/reports/">www.savi.org/reports/</a></li> </ul>  |  |   |   |

## Purdue University

610 Purdue Mall, West Lafayette, IN 47907  
<https://www.purdue.edu>

Education  
and  
Research



**Purdue University** is a world-renowned, public research university that advances discoveries in science, technology, engineering, and math. Through the five pillars of **Purdue Moves** — affordability and accessibility, online learning, transformative education, world-changing research, and STEM leadership — Purdue is leveraging its historic strengths to promote investment in new ideas and realize its mission to deliver higher education at the highest proven value. Purdue researchers are harnessing expertise across the life and engineering sciences to address some of the greatest challenges facing society today. Their mission is supported by the university's \$250 million initiative announced in 2016 to advance research that improves quality of life for people around the globe. The **Purdue Life Sciences Initiative** (<https://www.purdue.edu/research/life-sciences/>) is supported by research cores, state-of-the-art facilities designed for cross-disciplinary collaboration, and interdisciplinary graduate programs.

On the following pages, we have highlighted various Centers and Institutes at Purdue to share our work and invite engagement to collaborate:

| Organization   | Role/Mission   | Contact email   | More info                   |
|--|--|---|-----------------------------|
| Bindley Bioscience Center  | The vision of the Bindley Bioscience Center is to integrate interdisciplinary life sciences research with engineering to create unique opportunities to solve global challenges in the life sciences.  | Natasha Nikolaidis,<br><a href="mailto:nnikolai@purdue.edu">nnikolai@purdue.edu</a> | <a href="#">See page 60</a> |
| The Data Mine  | A living, learning and research-based community created to introduce students to data science concepts and equip them to create solutions to real-world problems. Members of The Data Mine are part of a team, living, studying and ultimately, performing data-driven research together. The Data Mine is part of Purdue University's <a href="#">Integrative Data Science Initiative</a> , which is designed to train students across all majors with the data literacy needed to succeed in a data-driven world.  | Mark Daniel Ward,<br><a href="mailto:datamine@purdue.edu">datamine@purdue.edu</a>   | <a href="#">See page 62</a> |
| Molecular Evolution, Protein Engineering and Production Facility (MEPEP) | MEPEP is focused on bringing multiple research areas together and filling the gaps that exist in individual research groups by providing knowhow and top of the line infrastructure/equipment to address recombinant protein expression, purification, optimization and characterization   | Raluca Ostafe,<br><a href="mailto:rostafe@purdue.edu">rostafe@purdue.edu</a>        | <a href="#">See page 64</a> |
| Purdue Center for Cancer Research (PCCR)                                 | Focused on basic discovery as the foundation for innovative cancer solutions. One of seven centers designated by the U.S. National Cancer Institute, it brings together more than 100 Purdue researchers and collaborators around the world to share ideas, insights and findings. Research strengths encompass cell identity and signaling, chemical and structural biology, drug delivery and molecular sensing, and medicinal chemistry to further leverage Purdue's talents in engineering, veterinary medicine, nutrition science, analytical chemistry, medicinal chemistry, pharmacy, structural biology and biological sciences. | Doug Cuttell,<br><a href="mailto:dcuttell@purdue.edu">dcuttell@purdue.edu</a>       | <a href="#">See page 65</a> |

| Organization  | Role/Mission  | Contact email  | More info                   |
|---|---|--|-----------------------------|
| Purdue Institute for Drug Discovery (PIDD)                                  | Combines clinical and basic research to advance innovative drug candidates for cancer, neurological disorders, trauma, immunology, inflammation, infectious diseases, and other diseases. PIDD supports this research with infrastructural capabilities in nano-scale analysis, live cell visualization, and whole animal advanced imaging.   | Karson Putt,<br><a href="mailto:puttk@purdue.edu">puttk@purdue.edu</a>             | <a href="#">See page 67</a> |
| Purdue Institute for Integrative Neuroscience (PIIN)                        | Addressing the greatest challenges in mental illness and neurological disorders while revolutionizing diagnostic and treatment capabilities. Biomedical discoveries and creative technologies combine to alleviate suffering associated with trauma, disease, and disorders of the nervous system.  | Chris Rochet,<br><a href="mailto:icrochet@purdue.edu">icrochet@purdue.edu</a>      | <a href="#">See page 69</a> |
| Purdue Institute of Inflammation, Immunology, and Infectious Disease (PI4D) | Committed to improve the quality of life for people around the globe. Leveraging Purdue's capabilities in structural biology, analytical chemistry and engineering, PI4D brings together experts from across campus to conduct fundamental research on complex diseases, with a focus on new diagnostic methods and treatments.   | Tommy Sors,<br><a href="mailto:tsors@purdue.edu">tsors@purdue.edu</a>              | <a href="#">See page 71</a> |
| Regenstrief Center for Healthcare Engineering (RCHE)                        | Conducts research to improve the quality, accessibility and affordability of healthcare delivery. Harnessing the power of data and employing the latest in systems engineering, RCHE researchers and implementation team enable science-based approaches to personalized care, match health resources with community needs, and address health inequities in rural communities around the world.  | Allison Bryan Jungels,<br><a href="mailto:abryan@purdue.edu">abryan@purdue.edu</a> | <a href="#">See page 73</a> |
| Women's Global Health Institute (WGHI)                                      | The Women's Global Health Institute (WGHI) at Purdue University serves as a nexus of interdisciplinary research to create partnerships, promote research and develop training opportunities to improve the health of women globally. The Institute uniquely strives to promote research on the prevention and early detection of diseases, rather than the classic medical model focusing on treatment, and research to understand sex-differences in health across the lifespan. | Luanne Bermel,<br><a href="mailto:lmi@purdue.edu">lmi@purdue.edu</a>               | <a href="#">See page 75</a> |

## Bindley Bioscience Center

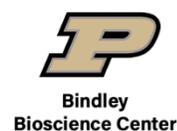
Address: 1203 W State St., West Lafayette, IN 47907

Website: <https://www.purdue.edu/discoverypark/bioscience/>

Contact: Natasha Nikolaidis, [nnikolai@purdue.edu](mailto:nnikolai@purdue.edu)

Social Media (Twitter/Facebook, etc.): @PurdueBBC

**Research  
and  
Education**



|                    |   |
|--------------------|---|
| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Located in Discovery Park at Purdue University, the Bindley Bioscience Center provides an integrated platform of infrastructure, advanced instrumentation, disciplinary expertise, data analysis, consulting, and training to advance life sciences research</li> <li>Bindley provides a unique infrastructure to support interdisciplinary research. Laboratory space and high-end scientific equipment is shared and available to support diverse projects.</li> <li>Bindley core facilities offer scientific expertise and access to high -end instrumentation to the research community. The expert staff can collaborate on projects, as well as offer research consultation and technical support</li> </ul> |
| <b>Mission</b>     | <ul style="list-style-type: none"> <li>The vision of the Bindley Bioscience Center is to integrate interdisciplinary life sciences research with engineering to create unique opportunities to solve global challenges in the life sciences.</li> </ul>   |
| <b>History</b>     | <ul style="list-style-type: none"> <li>2005 - Created as a Center in Purdue's Discovery Park with funding from William E. Bindley</li> <li>2010 - Received NIH Construction grant to build an addition dedicated to cancer research</li> <li>2014 - Multidisciplinary Cancer Research Facility opens as a part of Bindley</li> </ul>  |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>Staff of 12 research scientists</li> <li>Two Research Faculty</li> <li>Two operations and administrative staff</li> <li>One IT specialist</li> <li>Leadership: <ul style="list-style-type: none"> <li>Ramaswamy Subramanian: Bindley Director (<a href="mailto:subram68@purdue.edu">subram68@purdue.edu</a>)</li> <li>Natasha Nikolaidis: Associate Director of Operations (<a href="mailto:nnikolai@purdue.edu">nnikolai@purdue.edu</a>)</li> <li>Bruce Cooper: Associate Scientific Director (<a href="mailto:brcooper@purdue.edu">brcooper@purdue.edu</a>)</li> </ul> </li> </ul>   |
| <b>Board</b>       | N/A   |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Annual support from Purdue Executive Vice President for Research and Partnerships (EVPRP)</li> <li>Support from Purdue Center for Cancer Research, Center for Plant Biology, and various departments</li> <li>Seven core facilities generating recharge income</li> <li>Sponsored program funding from a variety of sources including NIH, NSF, DOD, and USDA</li> </ul>   |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>Various research projects</li> </ul>   |
| <b>Data Access</b> | <ul style="list-style-type: none"> <li>Data are generated in the core facilities via individual faculty projects, and owned by the researchers. Samples, products derived from samples, data obtained from the analysis of samples, and data and analyses obtained from a facility user are considered confidential, and are not to be shared, published, reanalyzed, reprocessed, or in any other way shared or used for additional analyses without the facility user's express written permission.</li> </ul>  |

|                                |  |
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| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Global and targeted metabolomics, proteomics, and lipidomics</li> <li>• Protein and small molecule identification, and quantitation</li> <li>• Analysis of post-translationally modified proteins, peptides, and protein complexes</li> <li>• Cell cycle analysis, immunophenotyping, antibody binding evaluation,</li> <li>• Drug response and apoptosis assays</li> <li>• First in animal PK/PD studies, ADME, and bioavailability studies</li> <li>• Implantable device testing</li> <li>• Live animal imaging -fluorescent, bioluminescent, C, or nuclear</li> <li>• Live cell and deep tissue imaging</li> <li>• High resolution imaging for multiple sample types and preparations</li> <li>• High throughput and next generation genomic sequencing</li> <li>• CRISPR vector construction and edited cell lines</li> <li>• Statistical and bioinformatic collaboration, data analysis support</li> </ul> |
| <b>Projects</b>                | <p>Bindley focuses on the following key research areas:</p> <ul style="list-style-type: none"> <li>• Cancer Research</li> <li>• Infectious Diseases</li> <li>• Instrument technology development</li> <li>• Basic Biomedical Science</li> <li>• Translational Research</li> </ul>  |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Opportunities to launch scientific discoveries toward commercialization, supporting promising academic discoveries still in the laboratory, as well as fragile early-stage companies so that these entities can more rapidly and effectively obtain their proof-of-concept data or build their prototype to attract external funding and move to the next stage.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Bindley employs both graduate and undergraduate students in the core research facilities.</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Data sharing agreements are negotiated between individual researchers</li> </ul>  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Newsletters: <a href="https://www.purdue.edu/research/life-sciences/news/newsletter-archive.php">https://www.purdue.edu/research/life-sciences/news/newsletter-archive.php</a></li> </ul>   |

## The Data Mine (TDM)

1301 Third Street, West Lafayette, IN 47906-4206

<https://datamine.purdue.edu>

Contact: Mark Daniel Ward, [datamine@purdue.edu](mailto:datamine@purdue.edu)

Education  
and  
Research



### Role(s)

- Located in the heart of Purdue University, The Data Mine gives hundreds of students from a wide variety of backgrounds and majors, both graduate and undergraduate, the opportunity to learn data science skills and apply them to research projects.
- Our most popular track is Corporate Partners, where a team of students works on a real, data-centered, academic-year project with a corporate mentor, faculty mentors, and peer mentors. Corporate Partners description: <https://datamine.purdue.edu/corporate/>
- In TEconomy's 2020 BioCrossroads report (<https://biocrossroads.com/artificial-intelligence-and-advanced-analytics-in-indiana/>), they characterized The Data Mine as a "signature example of industry-facing, immersive talent pipeline program" (p. 55), and "an example of a developing world class DSE [Data Science Education] program that is organized around industry engagement and immersive skills-building in data sciences that can serve as a model for other universities" (p. 86).

### Mission

- The Data Mine is a living, learning and research-based community created to introduce students to data science concepts and equip them to create solutions to real-world problems. Members of The Data Mine are part of a team, living, studying and ultimately, performing data-driven research together. The Data Mine is part of Purdue University's Integrative Data Science Initiative, which is designed to train students across all majors with the data literacy needed to succeed in a data-driven world.

### History

- 2014-19 – Statistics Living Learning Community funded by a \$1.5 million NSF grant for 20 sophomore students per year. These 102 students produced more than 175 journal articles and conference presentations/posters on topics ranging from human development and family studies to marine biology and image processing.
- 2018-19 – The Data Mine was piloted with 100 undergrad students with one Corporate Partner
- 2019-20 – The Data Mine rolled out to ~600 undergrad students with 12 Corporate Partners
- 2020-21 – The Data Mine continued to serve ~600 undergrad students and ~70 grad students with 26 Corporate Partners
- 2021-22 – Approximately 800 undergrad and grad students; 45 Corporate Partners

### Org

- Professional Staff of fourteen
- Director and three Managing Directors (Corporate Partners, Academics & Outreach, Data Mine)
- One Operations Manager
- One Senior Administrative Assistant
- Two Corporate Partners Senior Managers
- Two Senior Data Scientists
- One Associate Research Engineer
- One ASL Interpreter and Strategic Initiatives Coordinator
- Two Limited Term Lecturers
- Additional faculty mentors, support staff, and teaching assistants
- Leadership (all can be reached at [datamine@purdue.edu](mailto:datamine@purdue.edu)):
  - Maggie Betz: Managing Director Corporate Partners ([betz@purdue.edu](mailto:betz@purdue.edu))
  - Nicole Finley: Operations Manager ([kingman@purdue.edu](mailto:kingman@purdue.edu))
  - Dave Kotterman: Managing Director ([dkotter@purdue.edu](mailto:dkotter@purdue.edu))
  - Rebecca Sharples: Managing Director for Academic Programs & Outreach ([rebecca@purdue.edu](mailto:rebecca@purdue.edu))
  - Mark Daniel Ward: Director ([mdw@purdue.edu](mailto:mdw@purdue.edu))

|                                |   |
|--------------------------------|---|
| <b>Board</b>                   | The Data Mine has an External Advisory Council ( <a href="https://datamine.purdue.edu/corporate/">https://datamine.purdue.edu/corporate/</a> ), with rotating representatives from Corporate Partners.  |
| <b>Finance</b>                 | <ul style="list-style-type: none"> <li>• Corporate Partnerships</li> <li>• Grants, including Lilly Foundation and National Science Foundation</li> <li>• Office of the Provost, Purdue University</li> </ul>  |
| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>• Corporate Partners provide data for their projects. Students usually sign NDAs.</li> <li>• Publicly available data used for training purposes in the data science skills seminar.</li> <li>• Faculty provide mentoring and data for research projects.</li> </ul>  |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• Data goes through a process including a data sharing agreement and security review. The formal process is managed through Purdue's Office of the Executive Vice President for Research and Partnerships.</li> </ul>  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Secure cluster computing resources available through Purdue's Research Computing (RCAC).</li> <li>• Data Scientists on staff can help plan projects.</li> </ul>  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Examples of Corporate Partners projects: <a href="https://datamine.purdue.edu/symposium/welcome.html">https://datamine.purdue.edu/symposium/welcome.html</a></li> <li>• Our Examples Book, which includes the data-infused seminar material taught to all students: <a href="https://thedatamine.github.io/the-examples-book/">https://thedatamine.github.io/the-examples-book/</a></li> </ul>   |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• The Data Mine is a program that embodies Purdue's vision of offering Data Science for All.</li> <li>• The Indiana Data Mine is a statewide expansion, supporting regional opportunities for students in a way that also addresses the workforce talent needs in the state of Indiana.</li> <li>• The National Data Mine Network is a nationwide expansion, with more than 100 Minority Serving Institution partners. The NDMN enables students at MSIs to have access to Data Mine courses, research opportunities, and industry partnerships.</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Talent development is our primary goal—we want to empower data scientists of the future.</li> <li>• Students from all majors need to have strong data science skills.</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Sponsor Acknowledgment: <a href="https://datamine.purdue.edu/corporate/docs/sponsoracknowledgment.docx">https://datamine.purdue.edu/corporate/docs/sponsoracknowledgment.docx</a></li> </ul>   |
| <b>Selected Publications</b>   | <ul style="list-style-type: none"> <li>• Gundlach E and Ward MD. The Data Mine: Enabling Data Science Across the Curriculum. Journal of Statistics and Data Science Education. 2021; 29(1):1-14. Available from: <a href="https://doi.org/10.1080/10691898.2020.1848484">https://doi.org/10.1080/10691898.2020.1848484</a></li> <li>• Betz M, Gundlach E, Hillery E, Rickus J, Ward MD. The Next Wave: We Will All be Data Scientists. Statistical Analysis and Data Mining: The ASA Data Science Journal. 2020 July 25; 13(6):544-547. Available from: <a href="https://onlinelibrary.wiley.com/doi/10.1002/sam.11476">https://onlinelibrary.wiley.com/doi/10.1002/sam.11476</a> DOI: <a href="https://doi.org/10.1002/sam.11476">10.1002/sam.11476</a></li> <li>• Hillery E, Ward M, Rickus J, Younts A, Smith P, Adams E. Undergraduate Data Science and Diversity at Purdue University. Proceedings of the Practice and Experience in Advanced Research Computing on Rise of the Machines (learning). PEARC '19: Practice and Experience in Advanced Research Computing; 28 0 19; Chicago IL USA. New York, NY, USA: ACM; c2019. Available from: <a href="https://dl.acm.org/doi/10.1145/3332186.3332202">https://dl.acm.org/doi/10.1145/3332186.3332202</a> DOI: <a href="https://doi.org/10.1145/3332186.3332202">10.1145/3332186.3332202</a></li> <li>• Parker L, Ward, MD. Aligning Institutional Support for Student Success: Case Studies of Sophomore-Year Initiatives. Skipper T, editor. University of South Carolina: National Resource Center for The First-Year Experience &amp; Students in Transition; 2019. Purdue University: Statistics Living Learning Community.</li> <li>• Yavuz F, Ward MD. Fostering Undergraduate Data Science. The American Statistician. 2018 June 05; 74(1):8-16. Available from: <a href="https://www.tandfonline.com/doi/full/10.1080/00031305.2017.1407360">https://www.tandfonline.com/doi/full/10.1080/00031305.2017.1407360</a> DOI: <a href="https://doi.org/10.1080/00031305.2017.1407360">10.1080/00031305.2017.1407360</a></li> </ul> |

## Molecular Evolution, Protein Engineering and Production Facility (MEPEP)

Hall for Discovery and Learning Research  
 207 S. Martin Jischke Dr., West Lafayette, IN 47907  
<https://www.purdue.edu/discoverypark/pi4d/facilities/mepep/index.php>  
 Contact: Raluca Ostafe, PhD; [rostafe@purdue.edu](mailto:rostafe@purdue.edu)

Education  
and  
Research



Molecular Evolution,  
Protein Engineering and  
Production Facility

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| <b>Role(s)</b>                 | <ul style="list-style-type: none"> <li>The Molecular Evolution, Protein Engineering, and Production (MEPEP) Facility, part of the Purdue Institute of Inflammation, Immunology and Infectious Disease (PI4D), is a discovery resource facility designed to serve the research community at Purdue University and their partner institutions and organizations</li> </ul>  |
| <b>Mission</b>                 | <ul style="list-style-type: none"> <li>MEPEP is focused on bringing multiple research areas together and filling the gaps that exist in individual research groups by providing know how and top of the line infrastructure/equipment to address recombinant protein expression, purification, optimization, and characterization</li> </ul>  |
| <b>History</b>                 | <ul style="list-style-type: none"> <li>MEPEP was founded in 2019</li> </ul>   |
| <b>Org</b>                     | <ul style="list-style-type: none"> <li>MEPEP has a staff of three people. Additional people are hired based on project needs.</li> <li>Leadership: Raluca Ostafe, PhD, Director</li> </ul>  |
| <b>Board</b>                   | <ul style="list-style-type: none"> <li>MEPEP is not a board run institution</li> </ul>  |
| <b>Finance</b>                 | <ul style="list-style-type: none"> <li>MEPEP is supported by research projects from Purdue University and its partner institutions as well as by research contracts from industry partners</li> </ul>   |
| <b>Data Source</b>             | N/A   |
| <b>Data Access</b>             | N/A   |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>MEPEP focuses on recombinant protein production using <i>E. coli</i>, <i>Bacillus</i>, yeast and mammalian cell lines; protein purification; protein optimization by directed evolution and protein engineering including the development of ultra-high-throughput screening system based on FACS and microfluidic devices; protein characterizations related to kinetics or protein-protein interactions (SPR)</li> </ul> |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>MEPEP is involved in multiple projects in collaboration with industrial and non-profit partners covering a multitude of topics from antibody discovery &amp; production, vaccine development, new diagnostics and novel antimicrobial compound discovery</li> </ul>  |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Increase the number of collaborations and developed standardized methodologies that can help bring products closer to the market</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>MEPEP has multiple interns, undergrad and graduate students working in the labs every year</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>Data sharing agreements are project specific</li> </ul>  |
| <b>Program/Publications</b>    | <ul style="list-style-type: none"> <li>Annual Reports, Newsletters</li> </ul>   |

## Purdue University Center for Cancer Research (PCCR)

201 South University Street, West Lafayette, IN 47907

<https://www.purdue.edu/cancer-research/>

Contact: Douglas Cuttell, [dcuttell@purdue.edu](mailto:dcuttell@purdue.edu)

Twitter: @PUCancerCenter,

Facebook: @PurdueCancerResearch

**Basic  
Science  
Cancer  
Research**



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| <b>Role(s)</b>           | <ul style="list-style-type: none"> <li>National Cancer Institute (NCI) - Designated Cancer Centers dedicate significant resources toward developing research programs, faculty, and facilities that will lead to better and innovative approaches to cancer prevention, diagnosis, and treatment. With NCI support, the PCCR research infrastructure aims to advance scientific goals and foster cancer programs that draw together investigators from different disciplines.</li> </ul>  |
| <b>Mission</b>           | <ul style="list-style-type: none"> <li>The PCCR's mission is different than the missions of clinical and comprehensive cancer centers. The PCCR does not treat patients. Rather, its mission focuses on basic discovery - discovery that is the foundation upon which the PCCR fosters innovative cancer solutions.</li> </ul>  |
| <b>History</b>           | <ul style="list-style-type: none"> <li>The Purdue University Center for Cancer Research (PCCR) was established as an NCI-designated basic science cancer center in 1978 and has maintained its excellence for over 40 years of funding consecutively. As such, the PCCR's mission focuses on basic discovery - discovery that is the foundation through which the PCCR fosters innovative cancer solutions. Notably, the PCCR not only supports basic discovery but also facilitates discovery application and, where possible, positions discoveries for transfer to the public domain. Purdue core strengths in engineering, veterinary medicine, nutrition science, chemistry, medicinal chemistry, pharmacy, structural biology, and biological sciences, are coalesced by the PCCR.</li> </ul>   |
| <b>Org</b>               | <ul style="list-style-type: none"> <li>Six Research Operations Staff</li> <li>124 Faculty Members of various scientific disciplines</li> <li>Leadership: Dr. Timothy L. Ratliff, Director; Dr. Andrew D. Mesecar, Deputy Director</li> </ul>  |
| <b>Board</b>             | <ul style="list-style-type: none"> <li>The PCCR operates with an external advisory board of cancer research experts and leaders throughout the United States.</li> </ul>  |
| <b>Finance</b>           | <ul style="list-style-type: none"> <li>Annual support for the PCCR is from the National Cancer Institute, generous philanthropic gifts from donors and foundations. The research faculty obtain a research base of \$26M from a variety of sources from NSF to NIH to industry partners.</li> </ul>   |
| <b>Data Source</b>       | <ul style="list-style-type: none"> <li>Data sources are specific to individual needs of research faculty and so there are variety of sources from national databases, NIH/NCI initiatives and other cancer focused institutions.</li> </ul>   |
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>The PCCR does not control data access for its research mission since data sources are maintained elsewhere.</li> </ul>   |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>Ability to collaborate amongst internal faculty and across other cancer centers as well as internationally. The PCCR has experts in a variety of cancers.</li> </ul>   |
| <b>Projects</b>          | <ul style="list-style-type: none"> <li>Specifically, as a matrix center, PCCR leadership draws on core capabilities through its 124 members (spanning veterinary clinicians to engineers) from 21 academic departments and seven colleges across Purdue, to organize an infrastructure of discovery through three Research Programs: Cell Identity and Signaling (CIS), the newly formed Targets, Structures and Drugs (TSD) and Drug Delivery and Molecular Sensing (DDMS). The CIS Research Program advances discovery of novel molecular mechanisms of cell identity and signaling, applies this knowledge towards understanding cancer pathogenesis and uses this knowledge to develop novel, mechanism -based approaches to prevent or inhibit cancer. The TSD Research Program focuses on basic discovery of small molecule agents and biologics with anti-cancer potential. TSD members work to identify new cancer targets, accelerate drug development through synthetic expertise and structure-based drug design, and evaluate developing therapies in appropriate animal models. The DDMS Research Program provides physical science, engineering and technology solutions to advance the understanding of cancer biology and to improve prevention, detection and treatment of cancers.</li> </ul> |

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| <b>Future Focus</b>            | <p>The PCCR is rooted in fundamental disciplines and will continue to integrate the scientific diversity into collaborations in the following areas:</p> <ul style="list-style-type: none"> <li>• biology of cancer cells and their environment,</li> <li>• mechanism- and target-based therapeutics,</li> <li>• synthesis of unique therapeutic chemical entities,</li> <li>• novel delivery technology,</li> <li>• innovative engineering/ physical science technology to probe cancer-related phenomena, and</li> <li>• diagnostic and imaging tools.</li> </ul> |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• The PCCR is focused on the success of undergraduate and graduate student trainees. The PCCR is committed to certificate programs, curriculum and experiential learning.</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Genomic and other data are uploaded centrally to the NIH according to NIH/NCI policy.</li> </ul>   |
| <b>Programs/ Publications</b>  | <p>Announcements, News, Annual reports:</p> <p><a href="https://www.purdue.edu/cancer-research/communication/index.php">https://www.purdue.edu/cancer-research/communication/index.php</a></p> <p><a href="https://www.purdue.edu/cancer-research/about/annual-reports.php">https://www.purdue.edu/cancer-research/about/annual-reports.php</a></p>   |

## Purdue Institute for Drug Discovery (PIDD)

720 Clinic Drive, West Lafayette, IN 47907  
[www.purdue.edu/discoverypark/drug-discovery/](http://www.purdue.edu/discoverypark/drug-discovery/)  
 Contact: Karson Putt @ puttk@purdue.edu

Education  
and  
Research



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| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Located at Purdue University, the Institute for Drug Discovery provides a collaborative platform that brings together biologists, chemists, pharmaceutical scientists, veterinary clinicians, and engineers in order to translate basic discoveries into new diagnostics and therapeutics that will directly impact patient care.</li> </ul>   |
| <b>Mission</b>     | <ul style="list-style-type: none"> <li>At the Purdue Institute for Drug Discovery, we focus on improving the quality of life for people around the world. As one of the preeminent drug discovery centers in the United States, we engage in drug discovery across disciplines and institutions, translate basic research into clinical applications, educate the next generation of researchers in drug discovery and commercialize innovations for the marketplace – all with the goal of developing new diagnostic tools and treatments for people in need.</li> </ul> |
| <b>History</b>     | <ul style="list-style-type: none"> <li>2013 – PIDD was founded as one of two Purdue's Big Moves</li> <li>2018 – PIDD and the Indiana University School of Medicine were awarded a grant by the NIH to form the TREAT-AD Center, which is dedicated to discovering new therapeutics to treat Alzheimer's disease</li> </ul>  |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>Staff of research scientists, drug discovery experts, and management</li> <li>Group of &gt;125 affiliated faculty (across all colleges at Purdue)</li> <li>Leadership:                             <ul style="list-style-type: none"> <li>Zhong-Yin Zhang, Director (zhang-zy@purdue.edu)</li> <li>Karson Putt, Managing Director (puttk@purdue.edu)</li> </ul> </li> </ul>  |
| <b>Board</b>       | <ul style="list-style-type: none"> <li>PIDD sustains internal and external advisory boards which can be found here: <a href="https://www.purdue.edu/discoverypark/drug-discovery/about-us/Leadership%20Team%20.php">https://www.purdue.edu/discoverypark/drug-discovery/about-us/Leadership%20Team%20.php</a> and <a href="https://www.purdue.edu/discoverypark/drug-discovery/about-us/External%20Advisory%20Board.php">https://www.purdue.edu/discoverypark/drug-discovery/about-us/External%20Advisory%20Board.php</a></li> </ul>                                      |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Annual support from Purdue University</li> <li>Center funding from the NIH</li> </ul>  |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>Purdue's faculty</li> </ul>  |
| <b>Data Access</b> | <ul style="list-style-type: none"> <li>PIDD maintains the Purdue drug pipeline (<a href="https://www.purdue.edu/discoverypark/drug-discovery/clinical-translation/pipeline.php">https://www.purdue.edu/discoverypark/drug-discovery/clinical-translation/pipeline.php</a>) and makes information available on the current status of drug discovery/development projects, and Purdue-discovered drugs in clinical trials</li> </ul>  |

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| <b>Tech Capabilities</b>       | <p>The Drug Discovery building provides facilities for organic synthesis, cell culture, analytical chemistry, molecule purification, biochemistry, molecular biology and fluorescent imaging. Core facilities located within the building include:</p> <ul style="list-style-type: none"> <li>• <u>High-throughput/high-content chemical genomics screening facility</u> – PIDD houses a state-of-the-art HTS facility with capabilities to screen biochemical and cell -based system with colorimetric, fluorimetric, lumimetric, and high-content read-outs. The facility also contains equipment for continuous live-cell imaging and hit confirmation.</li> <li>• <u>Purdue compound repository</u> – with &gt;500,000 compounds formatted for HTS, Purdue has one of the largest academic screening libraries in the country</li> <li>• <u>NMR satellite facility</u> – part of the interdepartmental NMR facility, the PIDD NMR facility contains a 500 MHz Bruker NMR with cryo-probe and autosampler</li> <li>• <u>Mass spectrometry satellite facility</u> – part of the campus-wide mass spectrometry facility, the PIDD MS facility contains GC-MS, MALDI, and high-resolution LC-MS QTOF instruments</li> <li>• <u>Radioactive "Hot" Lab</u> – facilities to safely handle, synthesize, and radioactive compounds and imaging agents. In conjunction with the imaging facility, PIDD also has the capability to perform high-resolution CT, SPECT, and PET imaging in rodents.</li> </ul> |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Hundreds of active drug discovery/development projects in oncology, CNS/neuro, immunology, and anti-microbials including: <ul style="list-style-type: none"> <li>&gt;75 actively tracked drugs in the pipeline</li> <li>&gt;25 drugs advanced into human clinical trials</li> </ul> </li> <li>• TREAT-AD Center, a \$36 million NIH-funded center for the discovery of new therapeutics for Alzheimer's disease</li> </ul>   |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• The continued translation of academic discovered drugs into the clinic</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Graduate student training in a NIH-funded T32 training program</li> <li>• Workshops, seminars, retreats, and an annual symposium</li> </ul>  |
| <b>Data Sharing Agreements</b> | N/A   |
| <b>Programs/ Publications</b>  | Newsletters: <a href="https://www.purdue.edu/research/life-sciences/news/newsletter-archive.php">https://www.purdue.edu/research/life-sciences/news/newsletter-archive.php</a>  |
| <b>Resources</b>               | <ul style="list-style-type: none"> <li>• Additional information can be found at our website: <a href="http://www.purdue.edu/discoverypark/drug-discovery/">www.purdue.edu/discoverypark/drug-discovery/</a></li> <li>• News and updates can be found on social media: <ul style="list-style-type: none"> <li><a href="https://www.facebook.com/PurdueCenterforDrugDiscovery/">https://www.facebook.com/PurdueCenterforDrugDiscovery/</a></li> <li><a href="https://www.linkedin.com/in/purdue-institute-for-drug-discovery-4abb93130/">https://www.linkedin.com/in/purdue-institute-for-drug-discovery-4abb93130/</a></li> </ul> </li> </ul>  |

## Purdue Institute for Integrative Neuroscience (PIIN)

207 S. Martin Jischke Drive, West Lafayette, IN 47907  
<https://www.purdue.edu/dp/neuroscience>  
 Contact: neuro@purdue.edu  
 Twitter: @PurdueLifeSci

Education,  
 Research,  
 and Training



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| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Located in Discovery Park at Purdue University, the Purdue Institute for Integrative Neuroscience (PIIN) fosters interdisciplinary partnerships among life scientists and engineers, as well as basic scientists and clinicians.</li> <li>The Institute aims to achieve national and international impact by unraveling the mysteries of normal brain function and elucidating molecular underpinnings of neurologic disease.</li> </ul>   |
| <b>Mission</b>     | The mission of the Purdue Institute for Integrative Neuroscience is to bring together experts in science and engineering to unravel the mysteries of the healthy brain, as well as alleviate suffering associated with trauma, disease, or disorders of the nervous system, through biomedical discoveries and creative technologies.   |
| <b>History</b>     | 2016 – Established as one of the institutes in Purdue’s Pillars of Excellence in Life Sciences initiative.  |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>Members of PIIN - Faculty and staff - &gt;140 across 6 colleges and 25 departments</li> <li>Leadership Team:                             <ul style="list-style-type: none"> <li>Jean-Christophe (Chris) Rochet – John and Donna Krenicki Director (jrochet@purdue.edu)</li> <li>Edward Bartlett (ebartle@purdue.edu)</li> <li>Michael Heinz (mheinz@purdue.edu)</li> <li>Sebastien Helie (shelie@purdue.edu)</li> <li>Peristera (Perry) Paschou (ppaschou@purdue.edu)</li> <li>Riyi Shi (riyi@purdue.edu)</li> </ul> </li> </ul> |
| <b>Board</b>       | <ul style="list-style-type: none"> <li>The <u>Liaison Committee</u> provides guidance to the PIIN Leadership Team regarding its strategic directions and facilitates communications to neuroscience researchers across campus.</li> </ul>   |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Initial funding of \$13.7M to establish PIIN. Annual operational budget of \$570,000 from a variety of sources including annual support from subsidy from EVPRP and Krenicki Director Endowment Funds</li> </ul>   |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>Purdue University Sponsored Program Services</li> <li>Purdue Research Foundation – Office of Technology and Commercialization</li> <li>Regenstrief Center for Healthcare Engineering and Regenstrief Institute (e.g., electronic healthcare records)</li> <li>Government partners (e.g., Lewis Burke firm hired by Purdue University to provide information about new government initiatives that result in funding opportunities)</li> <li>Online news resources and search engines</li> </ul>                                  |
| <b>Data Access</b> | <ul style="list-style-type: none"> <li>Funded research awards by various agencies (e.g., NIH, NSF, DOD, Michael J. Fox Foundation)</li> <li>Funded research projects by industry partners</li> <li>Tracking of patents granted and patents pending</li> <li>Tracking progress of internally funded projects</li> </ul>  |

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| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>Brain neurocircuitry mapping via high-resolution imaging and electrophysiology</li> <li>Cutting-edge technologies for rodent behavioral analysis in the <a href="#">Purdue Animal Behavior Core</a></li> <li>Human stem cell-based disease modeling in the <a href="#">Neuroscience Cell Engineering Core</a></li> <li>Data science capabilities for analysis of large clinical and preclinical datasets</li> <li>Project management for biomedical research</li> <li>Research translation and commercialization</li> </ul>  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>Interdisciplinary projects at the interface of life sciences and engineering in addiction, hearing science, neurodegenerative disorders, neurodevelopmental disorders (funded by the PIIN Grand Challenges initiative)</li> <li>Projects focused on key topics relevant to Alzheimer's disease and related dementias (ADRDs), including disease etiology, animal models, biomarkers, and druggable targets (funded by the PIDD/PIIN ADRD Joint Program)</li> <li>Projects addressing the role of the gut-brain axis in neurologic disorders (e.g. cognitive decline following recovery from COVID-19)</li> <li>Wide array of extramurally funded projects relevant to nervous system function and dysfunction</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Map/modulate neurocircuitry spanning the gut-brain axis using innovative engineering technologies</li> <li>Advance personalized medicine for neurological disorders by leveraging digital biomarkers</li> <li>Interdisciplinary programs supported by large center grants</li> <li>New opportunities for technology development and commercialization</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li><a href="#">Graduate and undergraduate student research opportunities</a></li> <li><a href="#">Graduate &amp; MD-PhD training</a></li> <li><a href="#">Graduate courses in neuroscience</a></li> <li><a href="#">Training of NIH T32 trainees through the Interdisciplinary Training Program in Auditory Neuroscience (TPAN)</a></li> <li><a href="#">Graduate student travel grants</a></li> <li><a href="#">Faculty and trainee mentoring (e.g., for extramural applications)</a></li> <li>Post-Doctoral Fellowship in Neuroscience</li> <li><a href="#">Collaborative initiatives and workshops</a></li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>Project-dependent</li> </ul>   |
| <b>Programs/ Publications</b>  | <p>News: <a href="https://www.purdue.edu/discoverypark/institute-for-integrative-neuroscience/news/index.php">https://www.purdue.edu/discoverypark/institute-for-integrative-neuroscience/news/index.php</a></p> <p>Newsletters: <a href="https://www.purdue.edu/discoverypark/institute-for-integrative-neuroscience/resources/newsletters.php">https://www.purdue.edu/discoverypark/institute-for-integrative-neuroscience/resources/newsletters.php</a></p>  |

## Purdue Institute of Inflammation, Immunology and Infectious Disease (PI4D)

207 S. Martin Jischke Drive, West Lafayette, IN 47907 [www.purdue.edu/discoverypark/pi4d/](http://www.purdue.edu/discoverypark/pi4d/)

Contact: Thomas G. Sors, [tsors@purdue.edu](mailto:tsors@purdue.edu)

Twitter: @purduepi4d

**Education  
Research  
and Training**



**Institute of Inflammation,  
Immunology and  
Infectious Disease**

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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>Located in Discovery Park at Purdue University, the Purdue Institute of Inflammation, Immunology and Infectious Disease (PI4D) is leveraging the significant diversity of life sciences, physical sciences and engineering on campus to develop and integrate basic immunologic advances and new diagnostics, probe basic biological and inflammatory processes, and develop and commercialize novel intervention methods to control an array of chronic inflammatory conditions, cancer and infectious diseases.</li> <li>PI4D performs research in four strategic areas: i) Imaging and diagnostics, ii) Immunology and Inflammation, iii) Infectious diseases, and iv) Control and Intervention</li> <li>By integrating across program areas and leveraging Purdue's vast expertise and resource in inflammation, immunology and infectious disease, the institute is able to partner across campus and with private and public partner institutions across Indiana, creating synergies for maximum human impact.</li> </ul> |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>Provided the foundation for collaborative research across a broad spectrum of disciplines at Purdue that leads to increased funding in the life sciences and national and international recognition. Our focus is to seed and promote new relationships that leverage existing strengths, utilize untapped human and infrastructure resources, and continually recruit additional faculty expertise to further strengthen and expand core strengths.</li> </ul>   |
| <b>History</b> | <ul style="list-style-type: none"> <li>2015 – Created as one of the institutes in Purdue's Pillar of Excellence in Life Sciences initiative.</li> </ul>  |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>Staff of eight</li> <li>Members of PI4D - Faculty and staff - 215 across nine colleges and 40 departments</li> <li>Leadership: <ul style="list-style-type: none"> <li>Richard J. Kuhn: Krenicki Family Director (<a href="mailto:kuhnr@purdue.edu">kuhnr@purdue.edu</a>)</li> <li>Thomas G. Sors: Assistant Director (<a href="mailto:tsors@purdue.edu">tsors@purdue.edu</a>)</li> </ul> </li> </ul>  |
| <b>Board</b>   | <p>PI4D sustains an advisory board which includes the following individuals:</p> <ul style="list-style-type: none"> <li>Pamela Aaltonen, Nursing</li> <li>Cate Hill, Entomology</li> <li>Harm HogenEsch, Comparative Pathobiology</li> <li>Chris Hrycyna, Chemistry</li> <li>Mike Ladisch, Ag and Bio Engineering</li> <li>Andy Mesecar, Biochemistry</li> <li>Tim Ratliff, Comparative Pathobiology</li> <li>Joe Pekny, Chemical Engineering</li> <li>Sunil Prabhakar, Computer Science</li> <li>Ali Shakouri, Electrical and Computer Engineering</li> <li>Liz Topp, IPPH</li> </ul>   |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>Initial funding of \$15M to develop PI4D. Annual operational budget of \$590,000 from a variety of sources including annual support from subsidy from EVPRP and Krenicki Director Endowment Funds</li> </ul>  |

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| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>• Purdue University Sponsored Program Services</li> <li>• Purdue Research Foundation – Office of Technology and Commercialization</li> <li>• Online news resources and search engines</li> <li>• Government partners (i.e., Lewis Burke firm hired by Purdue University to provide information about new initiatives in government that result in funding opportunities)</li> </ul>  |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• Funded research awards by various agencies including NIH, NSF, USDA, etc.</li> <li>• Funded research projects by industry partners</li> <li>• Tracking of patents granted and patents pending</li> <li>• Tracking progress of internally funded projects</li> </ul>  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Multidisciplinary research administration</li> <li>• Project management for biomedical research</li> <li>• Research translation and commercialization</li> <li>• Deep knowledge and access to facilities to do research and development of emerging pathogens in a high-containment environment</li> <li>• Deep knowledge and access to facilities to do research and development of protein engineering and production</li> <li>• Access to Purdue's distributed computing for high-content genomic research and image reconstruction analyses</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Various projects with industry related to protein engineering, biomedical devices development, virus contact testing, antiviral screening, novel therapeutics formulations, adjuvant testing, microbiome, anti-microbials, immune therapy and oncology.</li> </ul>   |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Large center grants for sustainability, new opportunities to develop novel technologies, commercialization.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Lecture Hall Series, this entails graduate students presenting scientific topics to local high school students.</li> <li>• Training of NIH T32 trainees through the Purdue University Molecular Biophysics Training Program and Drug Discovery in Infectious Disease Training.</li> <li>• For staff, students and faculty we host seminars, most recently seminars have been called Covid Research Spotlight series.</li> <li>• Mentoring postdoctoral research associated and faculty through programs including the Indiana CTSI - PDT, Postdoc challenge, Disease Diagnostic INventors Challenge, Access to Detection Technology.</li> <li>• New Purdue faculty reception</li> <li>• Leadership development of PI4D graduate students through our Ambassador's program.</li> <li>• Career development efforts by bridging graduate students and postdocs with industry through an organized conference called "Leap from Lab."</li> </ul> |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• This is project dependent.</li> </ul>  |
| <b>Programs/ Publications</b>  | <p>Annual reports: <a href="https://www.purdue.edu/discoverypark/pi4d/">https://www.purdue.edu/discoverypark/pi4d/</a></p> <p>Newsletters: <a href="https://www.purdue.edu/research/life-sciences/news/newsletter-archive.php">https://www.purdue.edu/research/life-sciences/news/newsletter-archive.php</a></p>  |

| <b>Regenstrief Center for Healthcare Engineering (RCHE)</b>  |                                       |
|--|---------------------------------------|
| 203 S. Martin Jischke Drive, West Lafayette, IN 47907<br>www.purdue.edu/discoverypark/rche/<br>Contact: Pavlos Vlachos, pvlachos@purdue.edu<br>Twitter: @PURDUE_RCHE | <b>Education<br/>and<br/>Research</b> |



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| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Located in Discovery Park at Purdue University, the Regenstrief Center for Healthcare Engineering (RCHE) brings together researchers and practitioners from multiple disciplines to collaboratively improve healthcare delivery and empower individuals to live their highest quality of life.</li> <li>Purdue Healthcare Advisors (PHA) serves as the not-for-profit implementation arm for RCHE with service lines in process improvement, quality services, and health IT security. <a href="https://pha.purdue.edu/">https://pha.purdue.edu/</a></li> <li>RCHE performs research in three strategic areas: i) developing data science-based approaches to personalized care, ii) using a systems approach to matching health resources to need, and iii) improving access to care for vulnerable populations</li> </ul> |
| <b>Mission</b>     | <ul style="list-style-type: none"> <li>RCHE pursues a proactive, patient-centered, and wellness-focused healthcare delivery system by conducting impactful research that leverages collaborative partnerships.</li> </ul>  |
| <b>History</b>     | <ul style="list-style-type: none"> <li>2005 – Created as a center in Purdue’s Discovery Park based on funding from the Regenstrief Foundation</li> <li>2015 – Purdue Healthcare Advisors (PHA) becomes part of RCHE</li> <li>2017 – Renewed with commensurate funding from the Regenstrief Foundation</li> </ul>   |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>Staff of 33 across RCHE</li> <li>Group of 53 Faculty and Clinical Affiliates (across all colleges at Purdue)</li> <li>Leadership: <ul style="list-style-type: none"> <li>Pavlos Vlachos: Director (<a href="mailto:pvlachos@purdue.edu">pvlachos@purdue.edu</a>)</li> <li>Allison Bryan Jungels: Assistant Director – Operations, Outreach and Partnerships (<a href="mailto:abryan@purdue.edu">abryan@purdue.edu</a>)</li> </ul> </li> </ul>   |
| <b>Board</b>       | <p>RCHE sustains an advisory board which includes the following individuals (<a href="https://www.purdue.edu/discoverypark/rche/people/advisory-board.php">https://www.purdue.edu/discoverypark/rche/people/advisory-board.php</a>):</p> <ul style="list-style-type: none"> <li>D. Craig Brater, MD</li> <li>Joanne Burns, RN</li> <li>Robert Dittus, MD, MPH</li> <li>Steve Dumbauld, MD</li> <li>Al Gatmaitan, DSc</li> <li>Jennifer Sullivan, MD, MPH</li> <li>Tim Vanderveen, PharmD</li> </ul>  |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Annual support from the Regenstrief Foundation</li> <li>Funding of \$14M to \$20M annually from a variety of sources including AHRQ, CMS, FSSA, HHS, NIH, and NSF</li> </ul>  |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>Collaborative agreements pending with EHR vendors for broad data access.</li> <li>State based data sources including Indiana Medicaid claims, Minimum Data Set (MDS), and Purdue claims data.</li> <li>REMED1 data includes medical device data from over 400 hospitals in 32 states.</li> <li>Other specific data sources from a variety of providers for specific research questions.</li> </ul>  |
| <b>Data Access</b> | <ul style="list-style-type: none"> <li>Data goes through a process including a data sharing agreement and security review. The formal process documented at <a href="https://www.purdue.edu/discoverypark/rche/resources/hipaa.php">https://www.purdue.edu/discoverypark/rche/resources/hipaa.php</a></li> </ul>   |

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| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Ability to de-identify data and store in HIPAA compliant environment.</li> <li>• External entities can share PHI to RCHE and have access to computational environment.</li> <li>• IT support staff can help researchers design and perform analysis</li> </ul>  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Opioids – Data linked at the individual level for researchers that are part of the IRB.</li> <li>• Health Equity- compiling vast data assets from Indiana to address health disparities at the local level</li> <li>• Artificial Intelligence Methods – Broad computer science and engineering skillset to construct artificial intelligence and machine learning methods on retrospective data.</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Opportunity to demonstrate linkage of State Social Determinants of Health (SDoH) data (Education/Workforce) with clinical data to drive population health research and improve outcome</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• PHA offers various training programs for continuous professional development</li> <li>• RCHE supports the academic development of undergraduate and graduate students at Purdue by engaging them in cross-disciplinary research.</li> </ul>   |
| <b>Data Sharing Agreements</b> | <p>Many agreements in place; however, they are use case specific</p> <ul style="list-style-type: none"> <li>• Geisinger Health</li> <li>• St. Vincent Heath</li> <li>• IU Health</li> <li>• MIT</li> <li>• IU School of Medicine</li> <li>• Northwestern School of Medicine</li> <li>• ...dozens of additional one-to-one relationships</li> </ul>   |
| <b>Programs/ Publications</b>  | <p>Website: <a href="https://www.purdue.edu/discoverypark/rche/">https://www.purdue.edu/discoverypark/rche/</a></p>  |

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| <b>Women's Global Health Institute (WGHI)</b>   |                              |
| 203 S. Martin Jischke Drive, West Lafayette, IN 47907<br>https://www.purdue.edu/discoverypark/WGHI/<br>Contact: wghi@purdue.edu<br>Twitter: @PurdueWGHI | <b>Research and Training</b> |



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| <b>Role(s)</b> | The Women's Global Health Institute (WGHI) at Purdue University serves as a nexus of interdisciplinary research to create partnerships, promote research and develop training opportunities to improve the health of women globally. The Institute uniquely strives to promote research on the prevention and early detection of diseases, rather than the classic medical model focusing on treatment, and research to understand sex-differences in health across the lifespan.  |
| <b>Mission</b> | Developing and implementing innovative interventions and technologies to prevent disease and improve the quality of life of women globally based on creative interdisciplinary research and education.   |
| <b>History</b> | 2012 - created as a center with Purdue's Discovery Park and College of Health and Human Sciences   |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>• More than 250 affiliated faculty members from nine colleges and 41 departments</li> <li>• Leadership: <ul style="list-style-type: none"> <li>• Dorothy Teegarden, Director (dteegard@purdue.edu)</li> <li>• Ulrike Dydak, Associate Director (dydak@purdue.edu)</li> <li>• Luanne Bermel, Managing Director (lmi@purdue.edu)</li> </ul> </li> </ul>   |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>• <u>External Advisory Council:</u> <ul style="list-style-type: none"> <li>• Rita R. Colwell, NSF Director (1998-2004)</li> <li>• Rebecca Doerge, Dean at Carnegie Mellon Univ</li> <li>• Ann Gerber, Founder of Wellness On the Run</li> <li>• Jennifer Kerr, President of Cook Research Inc.</li> <li>• Katey Owen, Director at Gates Foundation</li> <li>• Belinda Seto, Deputy Director at NIH</li> <li>• JoAnn A. Suzich, Past Vice President at MedImmune Development &amp; Family Studies</li> <li>• Elaine Wedral, Past President of International Life Sciences Institute</li> <li>• Nishka Wickramasingha, Director of Ceylon Biscuits Limited</li> <li>• Shea Wickramasingha, Managing Director of Ceylon Biscuits Limited</li> </ul> </li> <li>• <u>Internal Steering Committee:</u> <ul style="list-style-type: none"> <li>• Rosalee Clawson, Political Science</li> <li>• Janice Evans, Biological Science</li> <li>• Sherry Harbin, Biomedical Engineering</li> <li>• Laurie Jaeger, Basic Medical Sciences</li> <li>• Richard Kuhn, Biological Sciences</li> <li>• Shelley MacDermid Wadsworth, Human Development &amp; Family Studies</li> </ul> </li> </ul> |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>• Funding for operation from Purdue Institute of Inflammation, Immunology, and Infectious Disease (PI4D), College of Health and Human Sciences (HHS), and donations</li> <li>• Seed grants from donations, gifts, and foundations including Catherine Peachey Fund</li> </ul>   |

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| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>• Purdue University Sponsored Program Services</li> <li>• Purdue Research Foundation - Office of Technology and Commercialization</li> <li>• Online news resources and search engines</li> <li>• Government partners (i.e., Lewis Burke firm hired by Purdue University to provide information about new initiatives in government that result in funding opportunities)</li> <li>• Cancer Care Engineering (CCE) Data Repository - Colorectal cancer datasets contain tissue and blood samples collected from 523 healthy, polyp-bearing, and colorectal cancer patients, along with extensive sample annotation and lifestyle data.</li> </ul> |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• Funded research awards by various agencies including NIH, NSF, USDA, etc.</li> <li>• Tracking progress of internally funded projects</li> <li>• Cancer Care Engineering (CCE) Data Repository</li> </ul>   |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Multidisciplinary and translational research administration</li> <li>• Project management for research in women's health, disease prevention, and early detection</li> <li>• Women in science: equality, inclusion, sexism, and leadership</li> </ul>  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Colorectal cancer - CCE datasets to develop novel screening and risk assessment tools to prevent cancer and decision-making tools to personalize cancer therapy for optimal response.</li> <li>• Various research projects funded by the WGHI on women's health including disease prevention, early detection, sex differences, health risk assessments, breast cancer, neurodegenerative disorders, bone health, drug delivery, mental health and improving life quality of women and girls.</li> </ul>   |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Sex and gender desegregated datasets in disease prevention and early detection</li> <li>• Large center grants in women's health or sex gender differences for sustainability</li> <li>• Large training grants in women's health for career development of junior faculty, postdoc, and graduate students</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Annual symposium and invited talks on women's health and sex differences research</li> <li>• Annual seed grants in women's health, sex differences, disease prevention, and early detection</li> <li>• Group and peer mentoring of Purdue faculty by support circle with the Butler Center</li> <li>• Coordinate and facilitate large scale grant applications for Purdue faculty</li> <li>• Encourage graduate students presenting their work on women's health through Student Poster Award</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• This is project dependent.</li> </ul>  |
| <b>Programs/ Publications</b>  | Newsletters: <a href="https://www.purdue.edu/discoverypark/WGHI/about/newsletters.php">https://www.purdue.edu/discoverypark/WGHI/about/newsletters.php</a>  |

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| <b>Regenstrief Institute</b>  |                               |
| 1101 W 10th St, Indianapolis, IN 46202<br>Regenstrief.org<br>Contact: Joyce Hertko @ jhertko@regenstrief.org<br>Twitter: @Regenstrief | <b>Nonprofit<br/>Research</b> |



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>Regenstrief Institute, through its advanced Informatics and data capabilities/services, and outstanding research prowess, drives innovation in healthcare, accelerates clinical translational research and enables learning health systems and development of real-world evidence to improve health.</li> </ul>  |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>Founded in 1969 in Indianapolis, the Regenstrief Institute is a local, national, and global leader dedicated to a world where better information empowers people to end disease and realize true health.</li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>The Regenstrief Institute was established by Sam and Myrtie Regenstrief and the Regenstrief Foundation to improve quality of care, increase efficiency of healthcare delivery, prevent medical errors, and enhance patient safety. A key research partner to Indiana University and Indiana University School of Medicine, the Institute and its researchers have been making a difference in human health for more than 50 years and are responsible for a growing number of major healthcare innovations and studies. Milestones include the development of global health information technology standards that enable the use and interoperability of electronic health records, improvement of patient-physician communications and creation of models of care that inform practice and improve the lives of patients and populations around the globe.</li> </ul>   |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>As of January 2022: more 60 Investigators, more than 95 Affiliate Researchers and 175 Staff Members including Research Specialists, Data Analysts, Informaticians, System and Technical Engineers, and Project Managers</li> <li>Senior Leaders:             <ul style="list-style-type: none"> <li>Umberto Tachinardi, MD, MS, Interim President and CEO and Chief Information Officer</li> <li>Shaun Grannis, MD, MS, VP Data and Analytics</li> <li>David Haggstrom, MD, MAS, Director, Center for Health Services Research</li> <li>Joyce Hertko, PhD, Chief Operating Officer</li> <li>Susan Hickman, PhD, Director, Center for Aging Research</li> <li>Eneida Mendonca, MD, PhD, VP Research and Director, Center for Biomedical Informatics</li> <li>Marjorie Rallins, DPM, MS, Executive Director, LOINC® at Regenstrief Institute</li> <li>Todd Saxton, PhD, VP Business Development</li> <li>Deb Stombaugh, MS, Chief Financial Officer</li> </ul> </li> </ul> |

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| <b>Board</b>             | <p>Board of Directors and Officers</p> <ul style="list-style-type: none"> <li>• <u>Officers</u> <ul style="list-style-type: none"> <li>• Chairman – D. Craig Brater, MD, Regenstrief Foundation and Walther Cancer Foundation</li> <li>• Interim President – Umberto Tachinardi, MD, MS, Regenstrief Institute, Indiana CTSI, IU School of Medicine</li> <li>• Treasurer – Patricia Martin, MBA, BioCrossroads</li> <li>• Secretary – Joyce Hertko, PhD, MS, Regenstrief Institute</li> </ul> </li> <li>• <u>Directors</u> <ul style="list-style-type: none"> <li>• Virginia Caine, MD, Marion County Public Health Department</li> <li>• Aaron Carroll, MD, MS, IU School of Medicine</li> <li>• Claire Fiddian-Green, MBA, Richard M. Fairbanks Foundation</li> <li>• Tatiana Foroud, PhD, IU School of Medicine</li> <li>• Lisa E. Harris, MD, Eskenazi Health</li> <li>• Jay L. Hess, MD, PhD, MHSA, IU School of Medicine</li> <li>• Michelle Janney, PhD, RN, IU Health</li> <li>• John P. Kansky, MSE, MBA, Indiana Health Information Exchange</li> <li>• Sarah Wiehe, MD, MPH, IU School of Medicine</li> </ul> </li> </ul> |
| <b>Finance</b>           | <ul style="list-style-type: none"> <li>• Revenue (FY21) - \$23.87M</li> <li>• Key annual funding sources <ul style="list-style-type: none"> <li>• Federal Grants/Contracts</li> <li>• Regenstrief Foundation</li> <li>• IU School of Medicine</li> <li>• Licensing Income</li> </ul> </li> </ul>   |
| <b>Data Sources</b>      | <ul style="list-style-type: none"> <li>• Indiana Network for Patient Care Research (INPCR)</li> <li>• Electronic Health Record Systems (EHR) data for IU Health and Eskenazi Health</li> <li>• Various health/healthcare and non-traditional data which include but are not limited to claims, various disease registries [e.g., COVID, diabetes, cirrhosis, etc.], social determinants of health [e.g., Indiana Addictions Data Commons]</li> <li>• Research Networks - Patient Centered Outcomes Research Network (PCORnet), Accrual to Clinical Trials (ACT), Open Health Data Sciences and Informatics Collaborative (OHDSI)</li> </ul>  |
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>• Regenstrief Data Services is the mechanism for accessing data sources listed above. Services include feasibility requests, custom data sets and data integration.</li> <li>• Access request forms can be found: <a href="https://www.regenstrief.org/feasibility-request/">https://www.regenstrief.org/feasibility-request/</a> and <a href="https://www.regenstrief.org/data-request/">https://www.regenstrief.org/data-request/</a></li> <li>• Regenstrief Institute is the Honest Data Broker for INPCR and EHR data from Eskenazi Health and IU Health. Its team of analysts is able to extract data from those sources and deliver to researchers following appropriate compliance for privacy and bioethics.</li> </ul>   |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>• Database, Data Lake, Security and Privacy (e.g., HIPAA, OMOP, i2b2, Hadoop/Spark, REDCap)</li> <li>• Software development methods and tools (e.g., Agile, UX, Java, Python, R)</li> <li>• Healthcare standards (e.g., LOINC®, FHIR/HL7)</li> <li>• Data synthetization, patient matching and de-identification processes</li> <li>• Data integration, augmentation, harmonization (e.g., linkage, de-duplication, data cleansing, natural language processing, dashboard development), real world implementation of machine learning models</li> <li>• Analytics and bioinformatics (e.g., machine learning, artificial intelligence, biostatistics, genomics)</li> </ul>   |

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| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• National Institutes of Health National COVID-19 Cohort Collaborative (N3C): Regenstrief is the Linkage Honest Broker (LHB) for this U.S.-wide effort to gather COVID-19 medical record data</li> <li>• Real World Data/Real World Evidence – leveraging HIEs and other data sources to generate real world evidence in support of research</li> <li>• Health Equity -- research directed toward addressing health disparities and making healthcare more accessible</li> <li>• COVID-19 Data Sharing Collaboration -- Indiana Department of Health (IDOH), FSSA, Indiana Management Performance Hub (MPH), IHIE, IU School of Medicine, IU Richard M. Fairbanks School of Public Health</li> <li>• LOINC® and Health Data Standards (develop and maintain universal codes to identify and track lab results across the healthcare spectrum, including a large influx related to COVID-19) -- US Centers for Disease Control and Prevention</li> <li>• Indiana Addictions Data Commons (IADC) -- IHIE, the Polis Center, MPH</li> <li>• Precision Health Initiative (PHI) -- Indiana University</li> <li>• Informatics core leadership and support for the CTSI</li> <li>• Learning Health Systems -- IU Health</li> <li>• Global Health Initiative -- OpenMRS, OpenHIE</li> <li>• Public and Population Health Informatics -- active collaboration with the CDC to evaluate COVID Vaccine Effectiveness and Outcomes</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Regenstrief Institute is poised to fundamentally change the way we combat today’s healthcare issues. We have experienced a productive and rich history of significant research accomplishments contributing significantly to the fields of informatics, aging and health services research. Future directions include further advances in AI, data science, implementation science, enabling real-world evidence generation, population health and the creation of learning health systems.</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Partner with IU School of Medicine, IU Fairbanks School of Public Health and additional IU graduate programs in data sciences, analytics, and informatics</li> <li>• Fellowships in Clinical Informatics, Public and Population Health Informatics, VA Health Services Research &amp; Development with foci on patient safety, medical informatics and learning health systems, and Learning Health Systems Young Investigator two-year awards. Regenstrief faculty lead and provide mentorship for outside fellowship programs including the Indiana Alzheimer’s Disease and Related Dementias Medical Scientist Training Program and the Advanced Scholars Program for Internists in Research and Education (ASPIRE).</li> <li>• Training in LOINC® and Health Data Standards</li> <li>• Internships for high school and post-secondary students</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• See Data Sources above</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Health Disparities Equity Research Program</li> <li>• Informatics Programs for Public Health, Global Health, Dental Health, and Cancer</li> <li>• Regenstrief Entrepreneurial Ecosystem Forum</li> <li>• Indiana COVID-19 Recovery (IRecovery) Program for Older Adults -- working to create a statewide discovery-to-delivery clinical research laboratory to help survivors of COVID-19.</li> <li>• Annual Regenstrief Venture Fellows</li> <li>• Nearly 300 publications annually with Regenstrief Institute Authors<br/><a href="https://www.regenstrief.org/about-us/institute-multimedia/#annual-reports">https://www.regenstrief.org/about-us/institute-multimedia/#annual-reports</a></li> </ul>  |

## University of Notre Dame

940 Grace Hall, Notre Dame, IN 46556  
Contact: Jessica Brookshire, [jbrooksh@nd.edu](mailto:jbrooksh@nd.edu)  
<https://www.nd.edu/>

Education  
and  
Research



The University of Notre Dame was founded in 1842 by Rev. Edward F. Sorin, C.S.C., a priest of the Congregation of Holy Cross, a French missionary order. Fr. Sorin believed, “This college will be one of the most powerful means for doing good in this country.”

Located adjacent to South Bend in northern Indiana, the University of Notre Dame has a vibrant ecosystem of scholars, and it shines brightly through research that combines expertise from its diverse researchers to make advancements across many STEM disciplines.

The University’s five goals provide a framework for Notre Dame’s distinctive vision.

- Goal I. Catholic Character
  - Ensure that our Catholic character informs all our endeavors
- Goal II. Undergraduate Education
  - Offer an unsurpassed undergraduate education that nurtures the formation of mind, body and spirit
- Goal III. Research and Scholarship
  - Advance human understanding through scholarship, research, and post-baccalaureate programs that seek to heal, unify and enlighten
- Goal IV. Stewardship
  - Foster the University’s mission through superb stewardship of its human, physical, and financial resources
- Goal V. External Engagement
  - Engage in external collaborations that extend and deepen Notre Dame’s impact

We are proud of our recognized research enterprise. The University received \$172.5M in awards in FY20.

The University’s research profile has grown while focusing on a number of strategically important fields of study to deepen and engage with the community, including a commitment to address global and community issues including, Poverty, Health Disparities, Well-being, Education, Food Insecurity, Housing, Sustainability, Cancer, Mental Health and more.

On the following pages, we have highlighted various Centers and Institutes to highlight our work and invite engagement to collaborate:

| Organization                                      | Role/Mission  | Contact email                   | Areas for collaboration   | More info                   |
|---|---|---------------------------------|---|-----------------------------|
| Berthiaume Institute for Precision Health (BIPH)  | Seeks to prevent and treat disease, promote wellness, and reduce health disparities by developing new tools to understand human variability at the molecular and cellular levels.   | Arnie Phifer,<br>aphifer@nd.edu | <p>Projects associated with:</p> <ul style="list-style-type: none"> <li>• Molecular Mining</li> <li>• Molecular Recognition</li> <li>• Microbiome and Human Health</li> <li>• Micro and Nanoscale Biomedical Instrumentation</li> </ul> <p>Point of Use Platforms</p>   | <a href="#">See page 85</a> |
| Center for Civic Innovation (CCI)                 | To address community-identified civic priorities in our region by integrating principles of design and innovation from engineering and the social sciences into interdisciplinary research and education projects.  | Jay Brockman<br>jbb@nd.edu      | <p>The Center for Civic Innovation research agenda is driven by regional needs and national interests, with broad research domains including:</p> <ul style="list-style-type: none"> <li>• Safe and affordable housing</li> <li>• Urban environmental sustainability and resilience</li> <li>• Equitable community health and well-being</li> </ul> <p>Data-informed decision support for community development.</p>  | <a href="#">See page 87</a> |
| Children's Environmental Health Initiative (CEHI) | Leads multiple environmental and public health research projects emphasizing the special vulnerabilities of children. CEHI projects focus on incorporating innovative spatial analysis in combination with field-based sampling into environmental and public health research. CEHI maintains a deep institutional commitment to issues of social justice and thus focuses much of its work in low income and minority communities. | cehi@nd.edu                     | <p>Use of spatial design of environmental health research. CEHI's long-term vision is to forge a whole new approach to addressing environmental health issues. CEHI has developed, maintains, and extends an extensive fully spatially referenced data architecture on environmental health. This makes it possible to jointly consider diverse variables collected by different disciplines, creating the opportunity to explore the complex and dynamic relationships among the components of health.</p> <p>Projects associated with:</p> <ul style="list-style-type: none"> <li>• Extending CEHI's research to Indiana data sets</li> <li>• An emphasis on spatial analytic approaches and GIS capacity building efforts with a special interest in issues of environmental justice</li> </ul> <p>Innovative and flexible data architectures, statistical method development, characterization of exposomes and social correlates of health</p> | <a href="#">See page 87</a> |

| Organization                                       | Role/Mission   | Contact email                     | Areas for collaboration  | More info                   |
|--|--|-----------------------------------|--|-----------------------------|
| Eck Institute for Global Health (EIGH)             | Serves as a university-wide enterprise that recognizes health as a fundamental human right and works to promote research, training, and service to advance health standards and reduce health disparities for all. Brings together multidisciplinary teams to understand and address health challenges that disproportionately affect the poor and to train the next generation of global health leaders.  | Kelly Thomson<br>kthomson@nd.edu  | The Eck Global Health has four objectives: <ul style="list-style-type: none"> <li>• Serve as a central organizing and coordinating Institute for global health activities across the University</li> <li>• Generate and share knowledge to address health problems endemic to the global poor</li> <li>• Train a new generation of global health researchers</li> <li>• Undertake service and service-learning in global health</li> </ul>   | <a href="#">See page 92</a> |
| Harper Cancer Research Institute (HCRI)            | The fight against cancer requires a team-approach and HCRI brings researchers and clinicians from several different backgrounds to help create efficient and effective research team. HCRI serves as a conduit that translates basic laboratory science into advances in clinical cancer care by engaging partners in academia and industry. HCRI is dedicated to training the next generation of cancer researchers   | Aviva Wulfsohn<br>awulfsoh@nd.edu | Innovative and integrative research confronting the complex challenges of cancer. The majority of research at HCRI is divided between these two research programs: <ul style="list-style-type: none"> <li>• Tumor-Host Communication</li> <li>• Mechanisms of Tumor Targeting</li> </ul>   | <a href="#">See page 93</a> |
| IDEA Center  | Notre Dame's collaborative innovation hub dedicated to expanding the technological and societal impact of the University's innovations through nurturing and facilitating the movement of the best ideas of faculty, staff, and students from discovery to commercial application.   | James Thompson<br>jthomp22@nd.edu | The Center provides the necessary space, services, and expertise for idea development, commercialization, business formation, prototyping, entrepreneurial education, and student entrepreneurial efforts.<br><br>The Center is open to any University researcher and student with an idea they want to commercialize. Future focus is to increase the number of life-science and medical technologies.  | <a href="#">See page 96</a> |
| Lucy Family Institute for Data and Society (LFIDS) | Notre Dame's intellectual, interdisciplinary hub for students, faculty, and research scientists, an incubator for existing and emerging data science and analytics programs across the colleges, and a collaborator with leaders from industry, government, and academia to advance data innovations and to help transform society and individual lives.<br><br>Combining core capabilities in data science, network science, artificial intelligence and statistical and mathematical modeling enables research teams aligned toward specific societal challenges that translate out of research and into practice. | lucyinstitute@nd.edu              | Projects requiring or associated with: <ul style="list-style-type: none"> <li>• AI and Ethics</li> <li>• Computational Biology and Chemistry</li> <li>• Health and Well Being (i.e., child malnutrition, successful aging)</li> <li>• Molecular Synthesis</li> <li>• Neural Science and Brain Networks</li> <li>• Social and Information Systems (i.e., Social Sensing, Using Smart Devices to Capture the Emotionality of Offline Communication, Dynamics of Human Behavior)</li> </ul> | <a href="#">See page 98</a> |

| Organization  | Role/Mission  | Contact email                       | Areas for collaboration   | More info                    |
|---|---|-------------------------------------|---|------------------------------|
| Pulte Institute for Global Development                | <p>The Pulte Institute for Global Development — an integral part of the Keough School of Global Affairs at the University of Notre Dame — combines the existing world-class teaching and research faculty of Notre Dame with a dedicated staff of experienced international development professionals, administrators, and researchers in order to address global poverty and inequality through policy, practice, and partnership.</p> <p>The Pulte Institute cuts across academic fields to produce multidisciplinary knowledge on complex development challenges in areas related to: Sustainability; Humanitarianism; Effective States and Development; Business in Development; and Global Health.</p> | Paul Perrin<br>pperrin@nd.edu       | <p>The Pulte Institute's vision is to enhance human dignity, equity, and well-being for the world's poorest and most vulnerable populations by addressing today's most compelling global issues. Mission: The Pulte Institute works to address global poverty and inequality through policy, practice, and partnership.</p> <p>The Pulte Institute has identified five new domains of thematic focus to expand its level of investment:</p> <ul style="list-style-type: none"> <li>• Sustainability</li> <li>• Humanitarianism</li> <li>• Effective States and Development</li> <li>• Business in Development</li> <li>• Global Health</li> </ul> <p>The Institute's active and past project information can be accessed at <a href="https://pulte.nd.edu/projects/">https://pulte.nd.edu/projects/</a></p> | <a href="#">See page 100</a> |
| William J. Shaw Center for Children & Families (Shaw) | <p>An integrated research and clinical services center dedicated to the advancement and wellbeing of children and families in both our local community and around the world.</p> <p>Translate science into practice by providing and evaluating evidence-based prevention, intervention, and clinical services.</p>   | Jen Burke Lefever<br>jburke2@nd.edu | <p>Projects associated with:</p> <ul style="list-style-type: none"> <li>• Child maltreatment</li> <li>• Intimate partner violence</li> <li>• Couples' communications</li> <li>• Sensitive parenting</li> <li>• Minority youth mental health</li> <li>• Food insecurity</li> </ul>   | <a href="#">See page 103</a> |
| Wilson Sheehan Lab for Economic Opportunities (LEO)   | <p>LEO believes that academic researchers, service providers, and policymakers all play a critical role in ending poverty. LEO matches top researchers with passionate leaders in social service agencies to conduct impact evaluations that identify the innovative, effective, and scalable programs and policies that help people move permanently out of poverty.</p>   | Heather Reynolds<br>hreynol5@nd.edu | <p>LEO is a domestic anti-poverty research lab committed to reducing poverty and improving lives through evidence-based programs and policies.</p> <p>LEO's impact evaluations generate evidence that is shared with social service organizations, policymakers, funders, and others who can put it to use to help move more families out of poverty.</p> <p>LEO performs research in 6 focus areas:</p> <ul style="list-style-type: none"> <li>• Education</li> <li>• Health</li> <li>• Housing</li> <li>• Criminal justice</li> <li>• Self-sufficiency</li> <li>• Emerging issues</li> </ul>  | <a href="#">See page 105</a> |

In addition to the various Centers and Institutes, [The Notre Dame Health and Well-being Initiative \(HWI, hwi.nd.edu\)](https://hwi.nd.edu) was created to focus the University's current efforts and to seek new opportunities to connect individual research programs to broad, significant, and emerging health-related challenges.

[The Office of Clinical Partnerships \(https://hwi.nd.edu/about/office-of-clinical-partnerships/\)](https://hwi.nd.edu/about/office-of-clinical-partnerships/) was built to serve as a connector for external partners and campus colleagues to partner in the areas of education, research and scholarship related to health and well-being. Jessica Brookshire, Senior Program Director in the Office of Clinical Partnerships is available to assist with questions and opportunities regarding HWI and campus collaborations.

The University of Notre Dame is a partner with the [Indiana Clinical and Translational Sciences Institute \(CTSI, https://indianactsi.org/\)](https://indianactsi.org/), a statewide collaboration that works to promote and support translational research through strong collaboration and making research connections across Indiana. The Indiana CTSI is dedicated to leveraging and strengthening the state's life sciences community to achieve better health for people in Indiana. Notre Dame is also home to the Indiana CTSI [Structural and Social Determinants of Health Project Development Team \(PDT, https://hwi.nd.edu/indiana-ctsi/\)](https://hwi.nd.edu/indiana-ctsi/) that comprises multidisciplinary faculty members from the University of Notre Dame, Indiana University, and Purdue University. This PDT supports basic, clinical and translational research that: Enables a deeper understanding of how social, economic, and environmental contexts shape patterns of health and wellness, including onset of diseases and disorders, within communities; and informs effective treatments and interventions to promote equitable opportunities for good health and wellbeing.

Through interdisciplinary work and expertise in hard sciences as well as data science, analytics and policy, we are well suited to lead and collaborate to improve the health of Indiana. For assistance in connecting or discussing opportunities, please contact [Jessica Brookshire \(jbrooksh@nd.edu\)](mailto:jbrooksh@nd.edu).

| Berthiaume Institute for Precision Health (BIPH)   |                        |
|--|------------------------|
| 105 McCourtney Hall, Notre Dame, IN 46530<br><a href="http://precisionhealth.nd.edu">precisionhealth.nd.edu</a><br>Contact: Arnie Phifer, <a href="mailto:aphifer@nd.edu">aphifer@nd.edu</a><br>Twitter: @ND_IPH | Education and Research |



|                |  |
|----------------|--|
| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>The Berthiaume Institute for Precision Health (BIPH) serves its community by fostering both discovery-based and hypothesis-driven research, educating and training students, and moving proven ideas out of the lab and into broader use.</li> <li>Institute members conduct research into the molecular, cellular, and environmental factors underlying each person's health, particularly those in underserved populations, and work to ensure new discoveries, data, and technologies benefit all populations.</li> <li>To advance its goals, the institute engages scientists, engineers, clinical practitioners, and industry partners in five cross-cutting, multidisciplinary research themes: Molecular Mining, Molecular Recognition, Microbiome and Human Health, Micro- and Nanoscale Biomedical Instrumentation, and Point-of-Use Platforms.</li> <li>BIPH also manages and staffs the <a href="#">Center for Bioanalytic Metrology</a>, an NSF Phase I Industry-University Cooperative Research Center, on behalf of Notre Dame, Indiana University Bloomington, Purdue University, and the center's industry partners.</li> </ul> |
| <b>Mission</b> | The Berthiaume Institute for Precision Health at Notre Dame seeks to prevent and treat disease, promote wellness, and reduce health disparities by developing new tools to understand human variability at the molecular and cellular levels.  |
| <b>History</b> | <p>2008 – Launched as the Advanced Diagnostics &amp; Therapeutics (AD&amp;T) Initiative through an internal Strategic Research Investment by the university</p> <p>2019 – AD&amp;T reclassified as a university research center</p> <p>2019 – Center for Bioanalytic Metrology (CBM) launched</p> <p>2020 – AD&amp;T expands and rebrands as the Berthiaume Institute for Precision Health</p>   |
| <b>Org</b>     | <p>Steering Committee of ten faculty members</p> <p>Five faculty theme leaders</p> <p>72 affiliated faculty from across disciplines</p> <p>Leadership:</p> <ul style="list-style-type: none"> <li>Paul Bohn: Faculty Director (<a href="mailto:pbohn@nd.edu">pbohn@nd.edu</a>)</li> <li>Prakash Nallathamby: Assoc. Director for Research (<a href="mailto:Prakash.D.Nallathamby.1@nd.edu">Prakash.D.Nallathamby.1@nd.edu</a>)</li> <li>Arnie Phifer: Associate Director (<a href="mailto:aphifer@nd.edu">aphifer@nd.edu</a>)</li> </ul>   |
| <b>Board</b>   | <p>BIPH Advisory Board (<i>in planning</i>)</p> <p>CBM Industry Advisory Board includes representatives from: AbbVie, Agilent, Bristol-Myers Squibb, Corteva Agriscience, ExxonMobil, Genentech, Indiana Biosciences Research Institute, Lilly, Merck, Pfizer, Sartorius, Takeda</p>   |
| <b>Finance</b> | <p>Funding from NSF, NIH, and other government sources</p> <p>Funding from industry partners</p> <p>Annual endowment distributions</p> <p>Annual support from the university</p>   |

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|--------------------------------|--|
| <b>Data Source</b>             | N/A  |
| <b>Data Access</b>             | N/A  |
| <b>Tech Capabilities</b>       | BIPH faculty, students, and partners can access a wide range of tools and capabilities through Notre Dame's comprehensive <a href="#">research cores</a> , including the <a href="#">Analytical Science and Engineering Core Facility</a>  |
| <b>Projects</b>                | <p>BIPH supports a wide range of projects that advance <a href="#">the institute's research themes</a>.</p> <p><b>Molecular Mining:</b> The ability to identify and characterize the molecules of life is an essential scientific challenge. Modern analytical techniques provide unprecedented breadth and depth, but the ability to detect does not necessarily translate into structural identification or understanding of how molecules function, interact, and change. Progress will be made by developing new methods of identifying complex molecules at sufficient bandwidth to enable real-time identification, and these methods will require advanced instrumentation with unprecedented sensitivity, throughput, and spectral resolution.</p> <p><b>Molecular Recognition:</b> In efforts to improve the efficacy of diagnostic assays and therapeutic agents, precise molecular recognition of disease-specific markers remains a major hurdle. Innovations in the development of instrumentation, imaging modalities, and spectroscopic techniques support and empower new approaches, enabling bias-free routes to achieve a holistic understanding and treatment of disease states with spatiotemporal precision.</p> <p><b>Microbiome and Human Health:</b> Current understanding has just scratched the surface of the deep and complex connections between humans and the diverse microbial communities that cohabitate the human biosphere—in the gut and on the skin, inside buildings, in the soil, and on every surface imaginable. Great strides have been made through discovery-based science. However, in order to design rational hypotheses for new experimental approaches, a better understanding is needed of the specific mechanisms by which the microbiome mediates the health and well-being of individuals and how to exploit this understanding for improved microbiome-based diagnostics and therapeutics.</p> <p><b>Micro- and Nanoscale Biomedical Instrumentation:</b> Seminal advances in the miniaturization of instrumentation has led to a growing range of smart, accurate, and low-powered biomedical devices and portable biomolecular diagnostics. Microscale architectures make it possible to address ultralow fluid volumes and achieve rapid assays, while nanoscale devices do this in addition to accessing new physical phenomena, e.g. permselectivity, not present in larger structures. Research in this theme includes advanced optical and terahertz imaging, in vitro and in vivo sensor applications, and biomedical instrumentation development with the ultimate goal of rendering sensors capable of personalized bioassays supporting therapies targeted to the individual.</p> <p><b>Point-of-Use Platforms:</b> Point-of-use platforms seek to bring bioanalytical assays to the individual, thus enhancing the speed with which results are available to caregivers and empowering individuals to exert more control over their own health and wellness. Key challenges include: (a) adapting state-of-the-art bioassays, such as nucleic acid amplification and detection, microfluidic device design, and digital fluidics methods, so that they yield timely, point-of-use diagnoses, and (b) creating smart systems that can translate laboratory innovations into technically effective devices engineered to survive operation in the field. Additional hurdles to implementation may be posed by differing legal, regulatory, political, and social constraints imposed in the local environment.</p> |
| <b>Future Focus</b>            | N/A  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>Through annual competitive competitions, BIPH supports graduate students and their projects and research experiences for undergraduates.</li> </ul>   |
| <b>Data Sharing Agreements</b> | N/A  |
| <b>Programs/ Publications</b>  | N/A  |
| <b>Resources</b>               | N/A  |

|   |                               |
|---|-------------------------------|
| <b>Center for Civic Innovation (CCI)</b>  |                               |
| 1045 W. Washington St., South Bend, IN 46601<br>www.civinnovation.nd.edu<br>Contact: Jay Brockman, jbb@nd.edu | <b>Education and Research</b> |



|                    |   |
|--------------------|---|
| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Support Notre Dame Engineering students, with an emphasis on underrepresented groups, by providing opportunities to apply technical and social skills to real-world civic and industry projects requiring innovative, interdisciplinary solutions.</li> <li>Support Notre Dame Engineering faculty research by defining and executing projects that advance the state of the art in research and have community impact. Research areas include safe and affordable housing, urban environmental sustainability and resilience, and equitable access to health and well-being.</li> <li>Support the regional community by leveraging campus and community assets to design inclusive programming focused on innovative approaches to community-identified civic and industry issues.</li> </ul> |
| <b>Mission</b>     | <ul style="list-style-type: none"> <li>The mission of CCI is to address community-identified civic priorities in our region by integrating principles of design and innovation from engineering and the social sciences into interdisciplinary research and education projects.</li> </ul>  |
| <b>History</b>     | <ul style="list-style-type: none"> <li>2015 – First Interns are hired within the UND College of Engineering to work on community-engaged projects full-time for the summer</li> <li>2016 – National Science Foundation Improving Undergraduate STEM Education grant awarded to PI Jay Brockman supporting development of Community-Engaged Educational Ecosystem Model</li> <li>2018 – The University of Notre Dame College of Engineering, Office of Research, and IDEA Center invest in the creation of the Center for Civic Innovation at Notre Dame</li> <li>2021 – Operates a sustainable summer internship program including 50+ K-12 and college interns from across the South Bend-Elkhart region; leads and supports multidisciplinary research efforts with federal and regional foundation support.</li> </ul>             |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>Team of six full-time personnel including Director (faculty), Associate Director of Research (faculty), Managing Director (staff), two Internship Program Managers (staff), and Administrative Assistant</li> <li>Quarter-time Assistant Director for Community Health and Policy (faculty)</li> <li>Group of 14 Faculty Affiliates across College of Engineering, College of Science, College of Business, and College of Arts &amp; Letters</li> <li>Leadership: <ul style="list-style-type: none"> <li>Jay Brockman, Director (jbb@nd.edu)</li> <li>Alisa Zornig Gura: Managing Director (azornig2@nd.edu)</li> <li>Danielle Wood: Associate Director for Research (dwood@nd.edu)</li> </ul> </li> </ul>  |
| <b>Board</b>       | <p>CCI's Steering Committee includes:</p> <ul style="list-style-type: none"> <li>Patricia Culligan, PhD (Dean, College of Engineering)</li> <li>Robert Bernhard, PhD (Vice President for Research)</li> <li>Timothy Sexton (Associate Vice President for Public Affairs)</li> <li>Bryan Ritchie, PhD (Vice president and Cathy and John Martin Associate Provost for Innovation)</li> </ul>   |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Funding of \$250,000 from external grants for internships</li> <li>Funding of \$450,000 for operations</li> <li>Research grants vary annually (average \$1.5M)</li> </ul>  |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>Use Indiana Data Partnership</li> <li>Use Indiana Department of Education Data</li> <li>Produce primary data on food pantries and neighborhood housing and lot conditions for datamichiana platform (<a href="https://datamichiana-notredame.hub.arcgis.com">https://datamichiana-notredame.hub.arcgis.com</a>).</li> </ul>  |

|                                |   |
|--------------------------------|---|
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>Currently, GIS layers are not held publicly but will be part of the datamichiana platform (<a href="https://datamichiana-notredame.hub.arcgis.com">https://datamichiana-notredame.hub.arcgis.com</a>).</li> </ul>  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>Primary data collection with handheld devices</li> <li>Data aggregation from secondary sources</li> <li>Data cleaning</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>Average 14 community-engaged projects annually in the areas of safe and affordable housing, urban environmental sustainability and resilience, and equitable access to health and well-being.</li> </ul>   |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Bringing better public access to data we create via datamichiana platform (<a href="https://datamichiana-notredame.hub.arcgis.com">https://datamichiana-notredame.hub.arcgis.com</a>).</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>Internships for K-12 and college students</li> <li>Mentoring opportunities for STEM professionals</li> <li>Community-engaged project management for K-12 teachers</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>In process with MACOG (Michiana Area Council of Governments), and ISDP (Indiana Data Partnership)</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Annual reports: <a href="https://civicinnovation.nd.edu/assets/407143/2020_cci_internship_annual_report.pdf">https://civicinnovation.nd.edu/assets/407143/2020_cci_internship_annual_report.pdf</a></li> <li>News: <a href="https://civicinnovation.nd.edu/news/">https://civicinnovation.nd.edu/news/</a></li> <li>Publications: <a href="https://civicinnovation.nd.edu/research/research-publications">https://civicinnovation.nd.edu/research/research-publications</a></li> </ul> |
| <b>Resources</b>               | <ul style="list-style-type: none"> <li><a href="https://civicinnovation.nd.edu/">https://civicinnovation.nd.edu/</a></li> </ul>   |

## Children's Environmental Health Initiative (CEHI)

10N Flanner Hall, Notre Dame, IN 46556, USA  
cehi.nd.edu  
Contact: cehi@nd.edu

Education,  
Outreach and  
Research



|                 |  |
|-----------------|--|
| <b>Role(s)</b>  | <ul style="list-style-type: none"> <li>The Children's Environmental Health Initiative (CEHI) leads multiple environmental and public health research projects focused on people, data, and maps. CEHI's projects incorporate innovative spatial analysis into environmental and public health research. CEHI maintains a deep institutional commitment to issues of social justice and thus focuses much of its work in low income and minority communities.</li> <li>CEHI develops, maintains and extends an extensive fully spatially referenced data architecture; this makes it possible to jointly consider diverse variables collected by different disciplines, creating the opportunity to explore the complex and dynamic relationships among the components of health. CEHI works collaboratively across disciplines to develop methods for identifying and understanding the pathways through which features in the physical and social environments influence individual health and development.</li> </ul>  |
| <b>Mission</b>  | <ul style="list-style-type: none"> <li>CEHI is a research, education, and outreach program committed to fostering environments where all people can prosper.</li> </ul>  |
| <b>History</b>  | <ul style="list-style-type: none"> <li>Late 1990's: Established by Marie Lynn Miranda as a soft-funded initiative at Duke University in North Carolina to foster research that leads to action.</li> <li>2002-present: Developed new GIS models for directing childhood lead poisoning prevention programs (doi: 10.1289/ehp.02110947; doi:10.1289/ehp.9994; doi:10.1289/ehp.11540.)</li> <li>2004-present: Created new GIS models of air pollution to study its impact on environmental justice (doi:10.1289/ehp.7066; doi: 10.3390/ijerph8061755)</li> <li>2008: Received the 2008 U.S. Environmental Protection Agency's Environmental Justice Award.</li> <li>2010 - 2015: Built and maintained the first University of Michigan HIPAA-compliant research computing environment (CEHI-VDI).</li> <li>2011-present: Developed a new measure for racial residential segregation known as the racial isolation index; RI (doi:10.1016/j.sste.2011.06.002)</li> <li>2015 - 2020: Built and maintained the first Rice University HIPPA-compliant computing environment (Virtual Research Desktop Environment – VRDE); supported the creation, development and establishment of the first Urban Data Platform in the city of Houston, Texas in collaboration with the Rice University Kinder Institute.</li> <li>2018: Established the first registry to collect and maintain health and economic information about environmental exposures following a major U.S. flooding event such as Hurricane Harvey.</li> <li>2020-present: Built and maintain, in collaboration with the Center for Research Computing (CRC), the first University of Notre Dame's HIPAA-compliant computing environment (On-Premises Environment for Research Analytics (OPERA)) which provides a variety of GIS and statistical software for state-of-art analyses.</li> </ul> |
| <b>Org</b>      | <p>Staff of 11 full time staff including project managers, research scientists, research analysts, statisticians, GIS analysts, data manager, plus part-time staff and undergraduate assistants.</p> <p>Leadership:</p> <ul style="list-style-type: none"> <li>Marie Lynn Miranda: Director (<a href="mailto:cehi@nd.edu">cehi@nd.edu</a>)</li> <li>Joshua Tootoo: CEHI Director of Training and Geo Spatial Sciences (<a href="mailto:tootoo@nd.edu">tootoo@nd.edu</a>)</li> <li>Carolina Avendano: CEHI Director of Research Operations (<a href="mailto:cavendan@nd.edu">cavendan@nd.edu</a>)</li> <li>Claire Osgood: CEHI Data Manager (<a href="mailto:cosgood@nd.edu">cosgood@nd.edu</a>)</li> </ul>   |
| <b>Board</b>    | Formal board is not required   |
| <b>Finances</b> | Supported by grants and contracts from the NIH, National Association of Chronic Disease Directors, CDC, and private foundations with an annual budget of \$2 million   |

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|---------------------------------|---|
| <p><b>Data Sources</b></p>      | <p>CEHI uses data from a large number and variety of national, state, and local sources, and is also involved in primary data collection. CEHI collects location attributes at the smallest geographic scale available in support of mapping and spatial analysis. The DUA's signed with the local and states sources allow CEHI to link the datasets resulting in a collection of curated datasets ready for analyses.</p> <p>Primary Data Collection</p> <ul style="list-style-type: none"> <li>• Texas Flood Registry</li> <li>• COVID-19 Registry, Texas</li> <li>• COVID-19 Registry, Indiana</li> </ul> <p>Local Sources</p> <ul style="list-style-type: none"> <li>• University of Texas Health Science Center at Houston</li> <li>• North Carolina Education Research Data Center at Duke University</li> </ul> <p>State Sources</p> <ul style="list-style-type: none"> <li>• North Carolina Department of Health and Human Services, Vital Statistics; North Carolina Department of Health and Human Services, Department of Public Health; North Carolina Department of Public Instruction; Michigan Department of Health and Human Services</li> </ul> <p>National Sources</p> <ul style="list-style-type: none"> <li>• US Census Bureau, US Department of Housing and Urban Development (HUD), Agency for Health, Research and Quality (AHRQ), US Bureau of Labor Statistics, Centers for Disease Control and Prevention (CDC), Centers for Medicare and Medicaid Services (CMS), US Environmental Protection Agency (EPA), Atmospheric Composition Analysis Group, Federal Emergency Management Agency (FEMA), Health and Human Services Administration (HRSA), Pew Research Center, US Department of Homeland Security (DHS) and US Department of Agriculture (USDA)</li> </ul> |
| <p><b>Data Access</b></p>       | <ul style="list-style-type: none"> <li>• A list of CEHI data can be accessed at the CEHI DataHub (<a href="http://www.cehidatahub.org/hub">www.cehidatahub.org/hub</a>). CEHI's datahub contains the metadata and attributes of datasets created and curated by CEHI from the data sources described above.</li> <li>• Any of CEHI's datasets that are governed by a data use agreement (DUA) with a data provider are considered private and access to them requires a formal collaboration agreement with CEHI and the submission of a <a href="#">Research Project Plan</a>.</li> </ul>  |
| <p><b>Tech Capabilities</b></p> | <p>CEHI curates community data, spatially-enables and integrates administrative and health outcome data, builds spatial information infrastructure, and develops information systems and decision support tools.</p> <p>Core capabilities include:</p> <ul style="list-style-type: none"> <li>• Geo-spatial data warehousing, geo-referencing and geo-processing</li> <li>• Data linkage and integration</li> <li>• Ability to de-identify data and store in HIPAA-compliant environment</li> <li>• GIS support for research design and analysis</li> </ul>   |
| <p><b>Projects</b></p>          | <ul style="list-style-type: none"> <li>• Powering Research Through Innovative Methods for Mixtures in Epidemiology (PRIME): The central objective of this project is to develop new data architecture, statistical, and machine learning methods to assess how exposure to environmental mixtures (air pollution and childhood lead) shapes educational outcomes in the presence or absence of social stressors.</li> <li>• Building GIS Capacity: This project brings together CEHI and Health Departments (HDs) in a collaborative partnership under the advice and guidance of the Centers for Disease Control and Prevention and the National Association of Chronic Disease Directors to: (1) to build capacity in HDs to use GIS to improve heart disease and stroke prevention and treatment programs and policies and (2) to develop guidelines for developing GIS capacity in HDs across the country.</li> <li>• COVID Registries: the COVID-19 Registry in Indiana and Texas is a research study designed to capture, measure, and understand the economic and health impacts of the pandemic in local communities across each state.</li> </ul>  |

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| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Expand our research portfolio to involve work based on Indiana data sets where we can attach geography and time stamp to the data.</li> <li>• Continue our emphasis on spatial analytic approaches and GIS capacity building efforts with a special interest in issues of environmental justice.</li> <li>• Invest simultaneously on innovative and flexible data architectures, statistical method development, characterization of exposomes and social correlates of health.</li> </ul> |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• GIS Capacity Building Project provides technical training to State, Local and Tribal health organizations.</li> <li>• Train individuals (staff, graduate students, post-docs, etc.) and organizations (government, non-profit and private) to access and use spatial information with clinical data to drive population health research and improve outcome.</li> <li>• Host multiple undergraduate research interns each year.</li> </ul>   |
| <b>Data Sharing Agreements</b> | <p>Many agreements in place which are use case specific: NC State Center for Vital Statistics (NC Birth and Death certificate data); NC DHHS, Department of Public Health (NC Blood lead level surveillance data and interventions/abatement data); NC Education Research Data Center (NC K-12 education data); MI DHHS (MI Birth and Death certificate data); MI DHHS (MI Blood lead level surveillance data); and UT Health Science Center (Stroke registry data).</p>  |
| <b>Programs/ Publications</b>  | <p>CEHI's publications can be found here: <a href="https://cehi.nd.edu/publications/">https://cehi.nd.edu/publications/</a></p>   |

| <b>Eck Institute for Global Health (EIGH)</b>  |                               |
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| 4147 Jenkins Nanovic Halls,<br>Notre Dame, IN 46556<br><a href="https://globalhealth.nd.edu/">https://globalhealth.nd.edu/</a><br>Contact: Kelly Thomson, <a href="mailto:kthomson@nd.edu">kthomson@nd.edu</a><br>Twitter: @ndeckinstitute | <b>Education and Research</b> |



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| <b>Role(s)</b>                 | <ul style="list-style-type: none"> <li>The Eck Institute for Global Health (EIGH), an integral part of Notre Dame Research at the University of Notre Dame, recognizes health as a fundamental human right and promotes research, training, and service to advance health standards for all people.</li> <li>The EIGH has four objectives: i) serve as a central organizing and coordinating Institute for global health activities across the University; ii) generate and share knowledge to address health problems endemic to the global poor; iii) train a new generation of global health researchers; and iv) undertake service and service-learning in global health.</li> </ul> |
| <b>Mission</b>                 | <ul style="list-style-type: none"> <li>The University of Notre Dame's Eck Institute for Global Health (EIGH) serves as a university-wide enterprise that recognizes health as a fundamental human right and works to promote research, training, and service to advance health standards and reduce health disparities for all. The EIGH brings together multidisciplinary teams to understand and address health challenges that disproportionately affect the poor and to train the next generation of global health leaders.</li> </ul>   |
| <b>History</b>                 | <ul style="list-style-type: none"> <li>2010 – EIGH established with endowment funding from the Eck family</li> <li>2011 – Inaugural Master of Science in Global Health (MSGH) cohort begins one-year program</li> <li>2022 – The MSGH program transitions to a two-year program</li> </ul>   |
| <b>Org</b>                     | <ul style="list-style-type: none"> <li>Nine staff members</li> <li>89 affiliated faculty from various departments and programs at the University of Notre Dame</li> <li>Leadership: <ul style="list-style-type: none"> <li>Bernard Nahlen: EIGH Director (<a href="mailto:bnahlen@nd.edu">bnahlen@nd.edu</a>)</li> <li>Heidi Beidinger-Burnett: Acting Director, MSGH program (<a href="mailto:hbeiding@nd.edu">hbeiding@nd.edu</a>)</li> <li>Marian Botchway: Assistant Director (<a href="mailto:mbotchwa@nd.edu">mbotchwa@nd.edu</a>)</li> <li>Nydia Morales-Soto: Assistant Director (<a href="mailto:nsoto@nd.edu">nsoto@nd.edu</a>)</li> </ul> </li> </ul>                         |
| <b>Board</b>                   | N/A  |
| <b>Finance</b>                 | <ul style="list-style-type: none"> <li>Funding from the Eck Family Global Health and Infectious Disease Endowment (original gift of \$19.5 million)</li> </ul>   |
| <b>Data Source</b>             | N/A  |
| <b>Data Access</b>             | N/A  |
| <b>Tech Capabilities</b>       | N/A  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>Find information about EIGH faculty research projects at: <a href="https://globalhealth.nd.edu/research/">https://globalhealth.nd.edu/research/</a></li> </ul>  |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Grow engagement and research synergies with faculty across the University</li> <li>Strengthen research collaborations and develop MOUs for multi-PI interdisciplinary research with sites in Bangladesh, Kenya, and Mexico</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>The EIGH has a Master of Science in Global Health program and a graduate student fellowship for those enrolled in a doctoral program at the University of Notre Dame.</li> </ul>  |
| <b>Data Sharing Agreements</b> | N/A  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Newsletters: <a href="https://globalhealth.nd.edu/news-events/news/newsletter-archive/">https://globalhealth.nd.edu/news-events/news/newsletter-archive/</a></li> </ul>   |
| <b>Resources</b>               | <ul style="list-style-type: none"> <li><a href="https://globalhealth.nd.edu/">https://globalhealth.nd.edu/</a></li> </ul>  |

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| <b>Harper Cancer Research Institute (HCRI)</b>   |                               |
| 1234 N Notre Dame Ave, South Bend, IN 46617<br><a href="http://harpercancer.nd.edu">harpercancer.nd.edu</a><br>Contact: Aviva Wulfsohn, <a href="mailto:awulfsoh@nd.edu">awulfsoh@nd.edu</a> | <b>Education and Research</b> |



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>The fight against cancer requires a team-approach and HCRI brings researchers and clinicians from several different backgrounds to help create efficient and effective research team.</li> <li>HCRI serves as a conduit that translates basic laboratory science into advances in clinical cancer care by engaging partners in academia and industry</li> <li>HCRI is dedicated to training the next generation of cancer researchers</li> </ul>   |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>Innovative and integrative research confronting the complex challenges of cancer</li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>2011 – With the opening of Harper Hall, HCRI launched as a collaboration between the University of Notre Dame and the Indiana University School of Medicine – South Bend with co-directors from each institution.</li> <li>2012 – HCRI opens a Tissue Biorepository</li> <li>2013 – The co-director approach ends and M. Sharon Stack is promoted to Director.</li> <li>2019 – HCRI completes most recent external review with endorsements on strategic priorities in basic and translational research, training future oncology leaders, and engaging partners to address cancer health disparities.</li> </ul>  |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>73 affiliated faculty members from the University of Notre Dame College of Science, College of Engineering, College of Arts &amp; Letters, and the Indiana University School of Medicine – South Bend</li> <li>Administrative staff of 8, including the HCRI Tissue Biorepository</li> <li>Leadership: <ul style="list-style-type: none"> <li>M. Sharon Stack, PhD, The Ann F. Dunne and Elizabeth Riley Director</li> <li>Stewart A. Bullock, PhD, MBA, Associate Director</li> </ul> </li> <li>Executive Committee <ul style="list-style-type: none"> <li>Basar Bilgicer, PhD, Associate Professor of Chemical and Biomolecular Engineering</li> <li>Brian Blagg, PhD, Charles Huiscking Professor of Chemistry</li> <li>Siyuan Zhang, PhD, Nancy Dee Associate Professor of Cancer Research</li> <li>Pinar Zorlutuna, PhD, Seehan Family Associate Director of Engineering</li> </ul> </li> </ul> |

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| <b>Board</b>              | <ul style="list-style-type: none"> <li>External Advisory Board: advise on the scientific direction of HCR and evaluate the institute programs and research. <ul style="list-style-type: none"> <li>M. Eileen Dolan, PhD, University of Chicago</li> <li>Paul J. Hergenrother, PhD, University of Illinois</li> <li>Beatrice Knudsen, MD, PhD, Cedars-Sinai Medical Center</li> <li>Lynn M. Matrisian, PhD, MBA, Pancreatic Cancer Action Network</li> <li>Tom O'Halloran, PhD, Northwestern University</li> <li>Cynthia Reinhart-King, PhD, Vanderbilt University</li> <li>Anil K. Sood, MD, MD Anderson Cancer Center</li> </ul> </li> <li>Campus Advisory Board: Designs and helps implement synergistic opportunities with other facets of the University of Notre Dame.</li> <li>Industry Advisory Board: provide feedback and insight to HCRI faculty to facilitate industry collaborations, assist HCRI trainees as they launch their careers, and help launch startup companies.</li> <li>Community Engagement Steering Committee: address the needs of local cancer patients and help HCRI coordinate with community organizations to design impactful interventions.</li> </ul>  |
| <b>Finance</b>            | <ul style="list-style-type: none"> <li>Annual support from the University of Notre Dame</li> <li>Affiliated faculty annually generate around \$40M in peer-reviewed funding</li> </ul>  |
| <b>Data Source</b>        | <ul style="list-style-type: none"> <li>The institute and its affiliated researchers have several sources of data. Most of these are specific to the particular researcher or project.</li> <li>Storage and annotation of mouse tumor models</li> <li>Annotation on samples included in the HCRI Tissue Biorepository</li> </ul>   |
| <b>Data Access</b>        | <ul style="list-style-type: none"> <li>Data goes through a process including a data sharing agreement and security review. Notre Dame Research reviews and approves all Data Sharing Agreements with external partners.</li> </ul>  |
| <b>Tech Capabilities</b>  | <ul style="list-style-type: none"> <li>The HCRI Tissue Biorepository has several tissue processors, microscopy and slide scanning technologies, as well as laser capture microdissection.</li> <li>A list of core facilities supported by Notre Dame Research is available at <a href="https://research.nd.edu/our-research/facilities-and-resources/">https://research.nd.edu/our-research/facilities-and-resources/</a></li> </ul>  |
| <b>Projects</b>           | <ul style="list-style-type: none"> <li>The majority of research at HCRI is divided between these two research programs <ul style="list-style-type: none"> <li><u>Tumor-Host Communication</u>: areas of research include a focus on multi-omics analysis &amp; integration, single cell analytics, tumor &amp; host exosome analysis, micro and nano fluidics and detection technologies, cell, organotypic, ex vivo, and organoid models as well as in vivo pre-clinical models</li> <li><u>Mechanisms of Tumor Targeting</u>: areas of research include target identification and high throughput drug screening, SAR &amp; computational modeling, drug delivery, counterfeit drug detection, biophysics of immune recognition, immunotherapy, combination therapy, in vivo imaging of target engagement and therapeutic response</li> </ul> </li> <li>International collaborations include the development of an early-stage diagnostic for pediatric leukemia. Collaborators include Una Nueva Esperanza (<a href="https://unanuevaeesperanza.mx/">https://unanuevaeesperanza.mx/</a>) and Universidad Popular Autónoma del Estado de Puebla (<a href="https://upaep.mx/">https://upaep.mx/</a>).</li> <li>Tissue Biorepository projects include the development of a patient-derived organoid core facility.</li> </ul> |
| <b>Future Focus</b>       | <ul style="list-style-type: none"> <li>In addition to enhancing its focus on exceptional basic and translational cancer research, HCRI is devoting additional resources to creating effective interventions against cancer outcome disparities.</li> </ul>  |
| <b>Talent Development</b> | <ul style="list-style-type: none"> <li>The Interdisciplinary Interface Training Program provides HCRI graduate students guidance and support from dual mentors from distinct fields converging on single project.</li> <li>The Strategic Management Initiative is a series of seminars designed to offer HCRI students training in management, negotiation, and communication. It is offered through a partnership with the Mendoza College of Business</li> </ul>  |

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| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>Data sharing agreements are case specific</li> </ul>  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Newsletters: <a href="https://harpercancer.nd.edu/news-events/news/">https://harpercancer.nd.edu/news-events/news/</a></li> <li>HCRI does not produce an external report</li> </ul>   |
| <b>Resources</b>               | <ul style="list-style-type: none"> <li>HCRI membership: <a href="https://harpercancer.nd.edu/people/">https://harpercancer.nd.edu/people/</a></li> <li>HCRI Tissue Biorepository: <a href="https://harpercancer.nd.edu/research-programs/tissue-biorepository/">https://harpercancer.nd.edu/research-programs/tissue-biorepository/</a></li> </ul> |

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| <b>IDEA Center</b>  |   |
| 1400 E. Angela Blvd., South Bend, IN 46617<br>https://ideacenter.nd.edu<br>Contact: James Thompson, jthomp22@nd.edu<br>Twitter: @ndideacenter | <b>Education and<br/>Technology<br/>Commercialization</b> |



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| <b>Role(s)</b>            | <p>The IDEA Center is the University of Notre Dame's collaborative innovation hub dedicated to expanding the technological and societal impact of the University's innovations. We do this by nurturing and facilitating the movement of the best ideas of faculty, staff, and students from discovery to commercial application.</p> <p>The Center provides the necessary space, services, and expertise for idea development, commercialization, business formation, prototyping, entrepreneurial education, and student entrepreneurial efforts.</p> <p>The Center is open to any University researcher and student with an idea they want to commercialize.</p>  |
| <b>Mission</b>            | <ul style="list-style-type: none"> <li>• Unlock Discoveries. Fuel Genius. Advance the Common Good.</li> </ul>  |
| <b>History</b>            | <ul style="list-style-type: none"> <li>• January 2017 – Created by the University</li> </ul>   |
| <b>Org</b>                | <ul style="list-style-type: none"> <li>• Staff of 30, including technology managers, patent specialists, and investment fund professionals</li> <li>• Leadership: <ul style="list-style-type: none"> <li>• Bryan Ritchie, director (britchie@nd.edu)</li> <li>• James Thompson, associate director (jthomp22@nd.edu)</li> </ul> </li> </ul>  |
| <b>Board</b>              | <ul style="list-style-type: none"> <li>• Private information</li> </ul>  |
| <b>Finance</b>            | <ul style="list-style-type: none"> <li>• Private information</li> </ul>  |
| <b>Data Source</b>        | N/A  |
| <b>Data Access</b>        | N/A  |
| <b>Tech Capabilities</b>  | <ul style="list-style-type: none"> <li>• Ability to de-risk technologies. The IDEA Center takes early-stage disclosures through the process of derisking and transforms them into life-changing and productive applications.</li> <li>• Prototype development. The IDEA Center's Innovation Lab is equipped with all the latest equipment capable of creating prototypes for early-stage inventions in a variety of industries and disciplines.</li> </ul>   |
| <b>Projects</b>           | <ul style="list-style-type: none"> <li>• The IDEA Center measures its projects by startups. The following links list the IDEA Center's startups. They contain promising life science companies including, Claris Genomics, which is commercializing a colon cancer diagnostic; VitalView which is commercializing a no-touch fluid build-up sensor; TayCo Brace, which sells a highly stable ankle brace; and SalvePeds, which is creating a topical drug treatment for diabetic foot ulcers. <ul style="list-style-type: none"> <li>• 2020: <a href="https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-26-startups-from-2020/">https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-26-startups-from-2020/</a></li> <li>• 2019: <a href="https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-32-startups-from-2019/">https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-32-startups-from-2019/</a></li> <li>• 2018: <a href="https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-8-startups-from-2018/">https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-8-startups-from-2018/</a></li> <li>• 2017: <a href="https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-fy2017-18-startups/">https://ideacenter.nd.edu/news-events/news/the-university-of-notre-dames-fy2017-18-startups/</a></li> </ul> </li> </ul> |
| <b>Future Focus</b>       | <ul style="list-style-type: none"> <li>• To increase the number of life-science and medical technologies</li> </ul>  |
| <b>Talent Development</b> | <ul style="list-style-type: none"> <li>• Multiple young entrepreneur mentoring programs, including Race to Revenue and the Pit Road CEO program,</li> </ul>  |

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| <b>Data Sharing Agreements</b> | N/A   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• <a href="https://ideacenter.nd.edu/news-events/">https://ideacenter.nd.edu/news-events/</a></li> </ul> |
| <b>Resources</b>               | <ul style="list-style-type: none"> <li>• <a href="https://ideacenter.nd.edu/about/">https://ideacenter.nd.edu/about/</a></li> </ul>             |

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| <b>Lucy Family Institute for Data &amp; Society (LFIDS)</b>   |                                       |
| 384 E Nieuwland Science Hall, Notre Dame, IN 46556 USA<br>lucyinstitute.nd.edu<br>Contact: lucyinstitute@nd.edu | <b>Education<br/>and<br/>Research</b> |



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| <b>Role(s)</b>           | <p>The Lucy Family Institute for Data &amp; Society serves as Notre Dame's intellectual, interdisciplinary hub for students, faculty, and research scientists, an incubator for existing and emerging data science and analytics programs across the colleges, and a collaborator with leaders from industry, government, and academia to advance data innovations and to help transform society and individual lives.</p> <p>Combining core capabilities in data science, network science, artificial intelligence and statistical and mathematical modeling enables the Lucy Family Institute to compile best-in-class research teams aligned toward specific societal challenges that translate out of research and into practice.</p>   |
| <b>Mission</b>           | Contribute to scholarship and education related to the relationship between data and society, with the goal of using data and innovation as a force for good in the world.  |
| <b>History</b>           | <p>2019 – Founded in December of 2019 with a gift from alumnus Robert Lumpkins and his wife, Sara</p> <p>As a part of its establishment, the Lucy Family Institute integrated two existing research centers that have a primary focus on data science, societal interface, and interdisciplinary applications of data science: the Center for Network and Data Science (CNDS) and the Center for Social Science Research (CSSR).</p>  |
| <b>Org</b>               | <p>Institute staff of 14 data scientists, research analysts, programmers, and project managers</p> <p>Leadership: Nitesh Chawla, Director; Brian Fogarty, Assoc Director (CSSR); Ying (Alison) Cheng, Assoc Director of Education; Natalie Meyers, Assoc Director Operations; Katie Liu, Research Program Manager</p> <p>96 Affiliated faculty and staff (<a href="https://lucyinstitute.nd.edu/people/affiliates/">https://lucyinstitute.nd.edu/people/affiliates/</a>)</p>  |
| <b>Board</b>             | Steering Committee of interdisciplinary faculty ( <a href="https://lucyinstitute.nd.edu/people/steering-committee/">https://lucyinstitute.nd.edu/people/steering-committee/</a> )   |
| <b>Finance</b>           | <p>Endowment from the Robert Lumpkins Family</p> <p>Operational support from Office of Research, Notre Dame</p> <p>Project funding from a variety of sources including NIH, NSF, Lilly Endowment, USAID</p>   |
| <b>Data Source</b>       | <p>Lucy provides geo-tagged open data for Northern Indiana through the dataMichiana portal (<a href="https://datamichiana-notredame.hub.arcgis.com">https://datamichiana-notredame.hub.arcgis.com</a>). The data includes bespoke collections (e.g., lead exposure in South Bend) as well customized secondary data from national sources (e.g., US Census Bureau), state sources (e.g., Indiana Department of Education), and local sources (e.g., City of South Bend). In collaboration with Pulte Institute for Global Development and the City of South Bend, Lucy co-develops the South Bend Economy Dashboard: <a href="https://lucyinstitute.nd.edu/SBEconDB">https://lucyinstitute.nd.edu/SBEconDB</a></p> <p>Other specific data sources from a variety of providers for specific research questions</p>   |
| <b>Data Access</b>       | Publicly available data on the dataMichiana portal & SBN Economy dashboard can be accessed through ( <a href="https://datamichiana-notredame.hub.arcgis.com">https://datamichiana-notredame.hub.arcgis.com</a> ) & ( <a href="https://lucyinstitute.nd.edu/SBEconDB">https://lucyinstitute.nd.edu/SBEconDB</a> )  |
| <b>Tech Capabilities</b> | <p>The Applied Analytics &amp; Emerging Technology Lab (AeTL) pilots ideas and proof-of-concepts, accelerates use-inspired research that leads to application of analytics in relevant industry, and cultivates societal impact through community partnerships (e.g., collaboration with iNDustry Labs and <a href="#">Labs for Industry Futures and Transformation (LIFT) Network</a>, a regional consortium of colleges and non-profits, led by the University of Notre Dame and the South Bend – Elkhart Regional Partnership).</p> <p>Center for Social Science Research (CSSR) is dedicated to improving the quality and efficiency of social science research at the University of Notre Dame by working with faculty, students, and staff across all academic disciplines. The CSSR's highly trained team offers expertise in research design, data collection, modeling and analysis, and visualization. The CSSR also offers training, database resources, and a virtual help desk available to anyone at Notre Dame needing quick assistance with statistics.</p> |

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| <p><b>Projects</b></p>               | <p><b>AI &amp; Ethics</b> Researchers at the Lucy Family Institute bring forth innovation in AI algorithms to address 21st century challenges, including innovation in design thinking to develop a coherent framework collaboration with stakeholders about AI use and applications as well as inclusion of social responsibility and engagement elements such as issues ethics, trust, and bias from the very beginning of any initiative.</p> <p><b>Chemistry:</b> Blockchain pilot project between the University’s Distributed Pharmaceutical Analysis Lab (DPAL) and ARTiFACTs that applies blockchain to organize and manage key data generated during the DPAL workflow, including a sample’s progress through the workflow, its physical location, provenance of metadata, and lab reputability. DPAL offers over 50 Primarily Undergraduate Institutions an opportunity for their analytical labs to demonstrate system suitability for an essential medicine and then carry out assays of samples from partners in low and middle income countries. The companion MICRO project provides paper analytical devices for hands-on active learning, including acid-base and redox titrations, design-your-own-device millifluidics, electrochemistry, spectrophotometry, and equilibrium and stoichiometry activities.</p> <p><b>Health and Wellbeing:</b> Child Malnutrition, Successful Aging, MomLink, NetHealth, Pediatric Cancer and Neutropenia monitoring using AI and machine learning to understand social determinants of health and healthcare access.</p> <p><b>Molecular Synthesis:</b> The <a href="#">Center for Computer Aided Synthesis</a> (C-CAS) uses quantitative, data-driven approaches to make synthetic chemistry more predictable.</p> <p><b>Neural Science and Brain Networks:</b> Neural Dynamics and Computing, Brain Networks</p> <p><b>Social and Information Systems:</b> Social Sensing, Using Smart Devices to Capture the Emotionality of Offline Communication, Dynamics of Human Behavior, Science of Science, Online Health and Wellness Information Consumption</p> |
| <p><b>Talent Development</b></p>     | <p>The Lucy Family Institute is committed to training the next generation of data scientists to guide data-driven discoveries. Affiliated students develop an interdisciplinary understanding of networked and data-driven systems, and have the ability to design rigorous algorithms and models applicable to a broad range of careers. At the Institute, students are also trained to engage stakeholders and to incorporate the societal impacts and considerations of their craft.</p> <p>The newly launched Interdisciplinary Traineeship for Socially Responsible and Engaged Data Scientists (iTREDS) program trains undergraduate students in data science through a lens of social responsibility and community engagement, including rigor and responsibility, ethics, society, and policy. The goal of the 15-credit program is to develop scholars with an in-depth data science background as well as communication, critical thinking, teamwork, and other skills necessary for professional development.</p> <p>Offers data science and statistical software workshops &amp; training programs</p> <p>Offers opportunities for visiting scholars, interns and fellows annually</p>  |
| <p><b>Programs/ Publications</b></p> | <p><a href="https://lucyinstitute.nd.edu/news-events/">https://lucyinstitute.nd.edu/news-events/</a></p>  |

## The Pulte Institute for Global Development

3150 Jenkins Nanovic Hall, Notre Dame, IN 46556  
 pulte.nd.edu  
 Contact: Paul Perrin, pperrin@nd.edu

Education  
and  
Research



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| <p><b>Role(s)</b></p> | <p>The Pulte Institute for Global Development — an integral part of the Keough School of Global Affairs at the University of Notre Dame — combines the existing world-class teaching and research faculty of Notre Dame with a dedicated staff of experienced international development professionals, administrators, and researchers in order to address global poverty and inequality through policy, practice, and partnership.</p> <p>The Pulte Institute cuts across academic fields to produce multidisciplinary knowledge on complex development challenges in areas related to: Sustainability; Humanitarianism; Effective States and Development; Business in Development; and Global Health.</p> <p>The Institute seeks to work creatively and collaboratively with faculty, researchers, and students at the Keough School of Global Affairs, and across the University of Notre Dame, in building a reputation for excellence on each of these themes. Additionally, we maximize our impact through partnership with government agencies, non-governmental agencies, humanitarian organizations, foundations, individual donors, and private corporations in the U.S. and overseas.</p>   |
| <p><b>Mission</b></p> | <p>The Pulte Institute's vision is to enhance human dignity, equity, and well-being for the world's poorest and most vulnerable populations by addressing today's most compelling global issues. Mission: The Pulte Institute works to address global poverty and inequality through policy, practice, and partnership.</p>  |
| <p><b>History</b></p> | <p>The Pulte Institute for Global Development was established in 2012 as the Notre Dame Initiative for Global Development. Led by Notre Dame Research, it was created to be a primary University contact point with potential partners and funding agencies outside of Notre Dame and in the larger development community within the United States and around the world.</p> <p>The Institute was also designed to serve the University's institutes, centers, and programs by providing monitoring and evaluation, assessments, training, and strategic planning support for global development projects. The Institute was also tasked with providing information, advice, and assistance in identifying and obtaining international contract and grant funds from government or private agencies to contribute to global development.</p> <p>Perhaps most importantly, the Pulte Institute was designed to help the University live up to Fr. Edward Sorin's original mission of making the University a "powerful force for good."</p> <p>Since its founding, the Institute has proven to be an impactful new addition to the Notre Dame family of international-focused units. It helped grow the University's research portfolio with the U.S. Agency for International Development (USAID) from no active USAID grants in 2012 to over 16 in 2017. By 2015, "NDIGD" (now the Pulte Institute) was a part of approximately half of all of the University's grants and contracts related to international development.</p> <p>The Pulte Institute has also successfully helped connect the University with new partners and strengthen ties with existing partners. The Initiative has helped develop 10 private sector partnerships to provide research and education and help improve lives in developing countries, including partnerships with Accenture, HP, IBM Corporation, Coca-Cola, Verizon, GE, Bisk Education, Capsim, VWR, and Lenovo. Additionally, the Pulte Institute (formerly NDIGD) was awarded the first-ever research grants to the University from numerous organizations, including the Millennium Challenge Corporation, Blue Planet Network, Project Concern International, International Justice Mission, FHI360, and others.</p> |

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| <b>Org</b>               | <ul style="list-style-type: none"> <li>• 23 staff who provide administrative, program management, educational fundraising, communications, and research support</li> <li>• 4 faculty and one post-doctoral research associate, including the Institute Director</li> <li>• 115 faculty fellows making up an interdisciplinary network of scholars from institutions across the country who bring expertise and capacity to the Pulte Institute's projects</li> <li>• 40 Notre Dame undergraduate and graduate students supporting Pulte Institute operations and research</li> <li>• Leadership: <ul style="list-style-type: none"> <li>• Raymond Offenheiser, William J Pulte Institute Director and Keough School Professor of the Practice</li> <li>• Michael Sweikar, Pulte Institute Founder, Executive Director, and Keough School Assistant Professor of the Practice</li> <li>• Tom Purekal, Program Director, Innovation in Practice Division</li> <li>• Melissa Paulsen, Associate Director over Entrepreneurship and Education Programs</li> <li>• Dr. Paul Perrin, Evidence and Learning Director and Keough School Associate Professor of the Practice</li> </ul> </li> </ul>  |
| <b>Board</b>             | University of Notre Dame Board of Trustees: <a href="https://www.nd.edu/about/leadership/trustees/">https://www.nd.edu/about/leadership/trustees/</a>   |
| <b>Finance</b>           | Funding sources include private and government grants, individual donations, and endowment payouts.   |
| <b>Data Source</b>       | The Indiana Sustainable Development Goals (SDG) database project comprises an Indicator Registry that contains the definitions and metadata for each of <u>the relevant SDG indicators that have been officially defined at the global level</u> . The indicator registry serves as the basis for a database that has extracted data from existing public data sources for the state of Indiana that allows the team to calculate the SDG indicators as defined. In addition to the indicator data itself, we have captured metadata around each standard indicator for which data was available (particularly at the county level or lower), including the relevant variables, the granularity of the data in terms of administrative level of detail, the frequency of data collection, the data steward, and the front-end and back-end links to the dataset. The intent is to allow a comparative look at the data across time and between counties or sub-counties around performance against the SDGs. We are currently building a staging database that is designed to host the extracted data for each of the indicators in the registry along with a suite of technology solutions that will meet the defined parameters for the staging database. |
| <b>Data Access</b>       | Data goes through a process including a data sharing agreement and security review. Notre Dame Research reviews and approves all Data Sharing Agreements with external partners. We are exploring options in the future to make data available in a public-facing portal so that users can access the data more easily.   |
| <b>Tech Capabilities</b> | Notre Dame has recently adopted a HIPAA-compatible environment.<br>Notre Dame IT support staff and CRC scientists can help researchers store and access data.   |

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| <p><b>Projects</b></p>                | <p>The Pulte Institute implements a number of projects across the world. The Institute's active and past project information can be accessed at <a href="https://pulte.nd.edu/projects/">https://pulte.nd.edu/projects/</a></p> <p>The data described here is derived from the <i>Indiana Sustainable Development Goals Database Project</i>. Recognizing a need for a global blueprint for global development efforts, the eight Millennium Development Goals (MDGs) – which range from halving extreme poverty rates to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015 – were codified in the United Nations Millennium Declaration in the year 2000. Over the course of the subsequent 15 years, the MDGs in many ways were successful in helping to shape an international development agenda between the years 2000 and 2015, for which there is significant evidence of improvement globally across the goals. Nevertheless, one of the key criticisms of the MDGs were that they were largely focused the lens on “developing” nations, thus failing to recognize the vulnerabilities and inequities that continue to persist among many populations living in “developed” countries. It was in this context that the next generation of international goals--the Sustainable Development Goals--were adopted worldwide beginning in 2016. As with the MDGs, the SDGs identify goals--expanding the number to 17--and targets for reducing vulnerability and increasing wellbeing and equity across the world. Unlike the MDGs, the SDGs are explicitly designed to be universal in scope irrespective of the state of development of a given country. Nevertheless, many citizens of developed countries, including the various constituent states comprising the USA, are unaware of the existence of these goals, let alone the targets they espouse. As a university with both domestic and global focus and influence, the University of Notre Dame seeks to demonstrate its commitment to the universality of the SDGs as well as its commitment to its home state of Indiana by launching a project to improve state-level availability of data related to social and environmental performance against the SDGs. In so doing, the University hopes to increase awareness and commitment to achieving the SDGs within our borders while also serving as a potential model for other states and countries to follow if successful.</p> |
| <p><b>Future Focus</b></p>            | <p>The Pulte Institute 2019-2024 Strategic Plan is available online at <a href="https://pulte.nd.edu/about/history-strategic-plan/">https://pulte.nd.edu/about/history-strategic-plan/</a></p>  |
| <p><b>Talent Development</b></p>      | <p>Pulte Institute faculty and staff are an important part of the Keough School of Global Affairs and other academic entities on campus, wherein they teach courses, advise and otherwise mentor students, organize academic events, and provide lectures and other speeches across campus. Through our academic engagement, we train students and partners in global development in how to link policy, practice, and research.</p> <p>The Pulte Institute actively seeks to employ a number of undergraduate and graduate students every year on a wide variety of our policy, practice, and research projects.</p>   |
| <p><b>Data Sharing Agreements</b></p> | <p>N/A</p>  |
| <p><b>Programs/ Publications</b></p>  | <p>Journal publications: <a href="https://pulte.nd.edu/research-policy/publications/">https://pulte.nd.edu/research-policy/publications/</a><br/> News: <a href="https://pulte.nd.edu/news-and-highlights/">https://pulte.nd.edu/news-and-highlights/</a></p>   |
| <p><b>Resources</b></p>               | <p>Pulte Institute partners: <a href="https://pulte.nd.edu/partnership-support/">https://pulte.nd.edu/partnership-support/</a><br/> Pulte Institute Opportunities: <a href="https://pulte.nd.edu/opportunities/">https://pulte.nd.edu/opportunities/</a></p>  |

## William J. Shaw Center for Children and Families (Shaw)

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shaw.nd.edu  
Contact: Jen Burke Lefever, jburke2@nd.edu

### Education and Research



William J. Shaw  
Center for Children  
and Families

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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>Conduct research to understand and support healthy development across the lifespan along the themes of: helping families thrive through adversity; developing and testing interventions by translating science to practice; supporting healthy relationships through meaningful interactions; and promoting healthy development and well-being.</li> <li>Provide clinical services through the Child and Family Therapy clinic <a href="https://psychology.nd.edu/about/psychological-services-center/">https://psychology.nd.edu/about/psychological-services-center/</a></li> <li>Located in the community, with approximately 10,000 square feet of human subjects laboratory and office space</li> <li>Provide faculty and students space and equipment to conduct research, grant-writing support, methodological consultation, expertise in conducting ethical research with vulnerable populations, and recruitment support.</li> <li>Undergraduate summer research internship program</li> </ul> |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>An integrated research and clinical services center dedicated to the advancement and wellbeing of children and families in both our local community and around the world.</li> <li>Translate science into practice by providing and evaluating evidence-based prevention, intervention, and clinical services.</li> </ul>  |
| <b>History</b> | <ul style="list-style-type: none"> <li>2001 – began as a community-based center for research with initial support from the Institute for Educational Initiatives</li> <li>2008 – endowed by William J. Shaw to support multiple faculty lines and research infrastructure</li> </ul>  |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>Faculty director and 2.5 FTE staff (managing director, center coordinator, and community liaison and recruitment coordinator)</li> <li>Four faculty chairs whose research aligns with the Shaw Center themes</li> <li>Approximately 20 grant-funded staff conducting human subjects research</li> <li>35 Faculty Affiliates across colleges at the University of Notre Dame</li> <li>Leadership:             <ul style="list-style-type: none"> <li>Kristin Valentino: Director and Collegiate Chair, Professor of Psychology (kvalent1@nd.edu)</li> <li>Jen Burke Lefever: Managing Director (jburke2@nd.edu)</li> </ul> </li> </ul>  |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>Endowment from William J. Shaw to support faculty chairs and center infrastructure</li> <li>Staff and facility support from the College of Arts &amp; Letters and Notre Dame Research</li> <li>Funding of ~\$3M annually from NIH and foundations</li> </ul>   |

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| <b>Resources</b>          | <ul style="list-style-type: none"> <li>• Ten shared lab spaces, eight equipped with integrated audio and camera equipment manipulated in two control rooms</li> <li>• Satellite facility in Fort Wayne, IN</li> <li>• Biological sample lab for collection, processing, and storage (biohazard II level certified for saliva and blood)</li> <li>• Fourteen offices and six cubicles for grant-supported faculty, students, and staff</li> <li>• Psychological measurement and clinical assessment library</li> <li>• Access to multiple archived longitudinal data sets with samples at-risk for child maltreatment (see the following sites for more information or contact Jen Burke Lefever; jburke2@nd.edu) <ul style="list-style-type: none"> <li>○ <a href="https://shaw.nd.edu/research/adolescent-parenting-project/">https://shaw.nd.edu/research/adolescent-parenting-project/</a></li> <li>○ <a href="https://shaw.nd.edu/research/parenting-for-the-first-time/">https://shaw.nd.edu/research/parenting-for-the-first-time/</a></li> <li>○ <a href="https://shaw.nd.edu/research/promoting-positive-parenting/">https://shaw.nd.edu/research/promoting-positive-parenting/</a></li> </ul> </li> </ul>  |
| <b>Current Projects</b>   | <ul style="list-style-type: none"> <li>• Child maltreatment: Exploring the emotional and physiological impacts of a brief dyadic information designed to ameliorate the effect of child maltreatment (PI: Kristin Valentino) <ul style="list-style-type: none"> <li>○ Currently collecting survey data, coded behavioral interactions, clinical and developmental assessments, and physiological measurements (e.g., salivary cortisol, cytokines, height, weight, blood pressure)</li> </ul> </li> <li>• Intimate Partner Violence: Supporting and empowering pregnant women who have experienced intimate partner violence in the US, Mexico, and Peru (PI: Laura Miller Graff) <ul style="list-style-type: none"> <li>○ Currently collecting survey data, coded behavioral interactions, and clinical and developmental assessments</li> </ul> </li> <li>• Couples communication: Assessing the efficacy of a communication intervention on families with a child with an Intellectual and Developmental Disability and its effectiveness in three communities in Indiana (PI: Mark Cummings &amp; Joshua John Diehl) <ul style="list-style-type: none"> <li>○ Currently collecting survey data, coded behavioral interactions, and clinical and developmental assessments</li> </ul> </li> <li>• Sensitive parenting: Evaluating the impact of a parenting sensitivity intervention on mothers and fathers of young infants (PI: Julie Braungart-Rieker &amp; Mark Cummings) <ul style="list-style-type: none"> <li>○ Currently collecting survey data, coded behavioral interactions, and clinical and developmental assessments</li> </ul> </li> <li>• Minority youth mental health: Identifying risk and protective factors for the mental health of Mexican-origin youth (PIs: Margarita Alegria, Kristin Valentino, &amp; Lijuan Wang) <ul style="list-style-type: none"> <li>○ Currently collecting survey data and coded behavioral interactions</li> </ul> </li> <li>• Food insecurity: Evaluating the impact of providing meals to children in poverty with rescued food (PIs: Jen Burke Lefever &amp; Marian Botchway) <ul style="list-style-type: none"> <li>○ Currently collecting survey data</li> </ul> </li> </ul> |
| <b>Future Focus</b>       | <ul style="list-style-type: none"> <li>• Developing partnerships to support effectiveness trials of promising interventions</li> <li>• Increased focus on eliminating physical and mental health disparities</li> </ul>   |
| <b>Talent Development</b> | <ul style="list-style-type: none"> <li>• Assists in the training of future researchers by supporting graduate students in collaborative and independent work and offering undergraduate research assistants engaging experiences in research with families.</li> <li>• Provide new faculty with the supports needed to develop a successful line of funded research</li> </ul>  |

## Wilson Sheehan Lab for Economic Opportunities (LEO)

3060-I Jenkins Nanovic Hall, Notre Dame, IN 46556  
 www.leo.nd.edu  
 Contact: Heather Reynolds, hreynol5@nd.edu  
 Twitter: @LEOatND

Education  
and  
Research



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| <b>Role(s)</b>     | <p>Located within the Department of Economics at the University of Notre Dame, LEO is a domestic anti-poverty research lab committed to reducing poverty and improving lives through evidence-based programs and policies.</p> <p>LEO's impact evaluations generate evidence that is shared with social service organizations, policymakers, funders, and others who can put it to use to help move more families out of poverty.</p> <p>LEO performs research in six focus areas: education, health, housing, criminal justice, self-sufficiency, and emerging issues.</p>   |
| <b>Mission</b>     | <p>LEO believes that academic researchers, service providers, and policymakers all play a critical role in ending poverty. LEO matches top researchers with passionate leaders in social service agencies to conduct impact evaluations that identify the innovative, effective, and scalable programs and policies that help people move permanently out of poverty.</p>   |
| <b>History</b>     | <p>2012 – Founded by Notre Dame Economics Professors Bill Evans and Jim Sullivan as a research center within the Department of Economics, the only domestic poverty lab at that time focused on conducting randomized controlled trials.</p> <p>2019 – Inaugural Managing Director Heather Reynolds joins the LEO team, ushering in a new era of growth and setting the lab on a path to double its number of active and completed research projects within the next two years.</p> <p>2021 – LEO launched a 10-year strategic plan to become the go-to research lab for innovative providers building and using evidence-based domestic poverty solutions.</p>   |
| <b>Org</b>         | <p>Sixteen staff who provide administrative, fundraising, communications, and research support</p> <p>Eight research faculty, including LEO's two co-founders</p> <p>Fifty-one faculty affiliates making up an interdisciplinary network of scholars from institutions across the country who bring expertise and capacity to LEO's research projects</p> <p>Fourteen Notre Dame undergraduate interns and two Notre Dame graduate students supporting LEO operations and research</p> <p>Leadership:</p> <ul style="list-style-type: none"> <li>• Dr. Bill Evans, Keough-Hesburgh Professor of Economics, LEO Co-founder</li> <li>• Dr. Jim Sullivan, Gilbert F. Schaefer College Professor of Economics, LEO Co-founder</li> <li>• Heather Reynolds, LEO Managing Director</li> </ul> |
| <b>Board</b>       | <p>LEO's Advisory Board provides guidance on the lab's strategic direction and work:<br/> <a href="https://leo.nd.edu/people/our-board/">https://leo.nd.edu/people/our-board/</a></p>   |
| <b>Finance</b>     | <p>FY2022 budget of \$4.8M, forecasted to grow to \$18M by FY31.</p> <p>Funding sources include private and government grants, individual donations, and endowment payouts.</p>   |
| <b>Data Source</b> | <p>Three national data sets are used across many LEO projects: Infutor (a commercial dataset allowing us to measure housing stability), Experian (a commercial dataset allowing us to measure financial stability via debt and savings levels), and National Student Clearinghouse Data (allowing us to measure higher education persistence and completion outcomes).</p> <p>Primary Indiana source has been via the Management Performance Hub (MPH) to gain access to education and labor outcomes for studies including Indiana participants.</p> <p>We source state data from the following states: IN, TX, CA, WA, NY, IL, WI, SD and OH.</p> <p>County-level data comes from HMIS systems, school systems, Departments of Human Services, and Transportation Departments.</p>    |
| <b>Data Access</b> | <p>Data goes through a process including a data sharing agreement and security review. Notre Dame Research reviews and approves all Data Sharing Agreements with external partners.</p>   |

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| <b>Tech Capabilities</b>       | <p>Notre Dame has recently adopted a HIPAA-compatible environment available to LEO.</p> <p>We have in-house expertise utilizing Infutor and Experian national datasets. We perform monthly data extracts, clean data, and match to study data via identifiers.</p> <p>Notre Dame IT support staff and CRC scientists can help researchers store and access data.</p>   |
| <b>Projects</b>                | <p>Goodwill Excel Center - evaluating the impact of program that works with high school dropouts to complete the IN high school diploma and improve earnings and employment outcomes.</p> <p>Ivy Tech Success Coaches - evaluating the impact of a program that works with community college students to improve persistence and completion of an associate degree (or transfer to 4-year program).</p> <p>PACE Indy - evaluating the impact of a program that connects employers with individuals re-entering society after involvement with the criminal justice system.</p> |
| <b>Future Focus</b>            | <p>This year, LEO launched a new strategic plan to reach its goal to become the go-to research lab for innovative providers building and using evidence-based domestic poverty solutions. Some metrics that will be crucial for meeting this goal including increasing LEO's number of partners and projects, increasing LEO journal publications of our research, and growing our dissemination work.</p>   |
| <b>Talent Development</b>      | <p>LEO trains new social service provider partners in impact evaluations and creating a culture of evidence at their organizations.</p> <p>LEO employs a number of undergraduate and graduate students every year.</p>   |
| <b>Data Sharing Agreements</b> | <p>Many agreements in place; however, they are use-case specific</p> <ul style="list-style-type: none"> <li>• National Student Clearinghouse</li> <li>• Ray Marshall Center at UT Austin</li> <li>• Management Performance Hub, Indiana</li> <li>• Chapin Hall, University of Chicago</li> <li>• US Census Data Center (in progress)</li> <li>• New York Department of Labor</li> </ul>  |
| <b>Programs/ Publications</b>  | <p>Journal publications: <a href="https://leo.nd.edu/impact/our-publications/">https://leo.nd.edu/impact/our-publications/</a></p> <p>Quarterly newsletters: <a href="https://leo.nd.edu/act/news/newsletter/">https://leo.nd.edu/act/news/newsletter/</a></p>   |
| <b>Resources</b>               | <p>LEO partners and projects: <a href="https://leo.nd.edu/partners-projects/">https://leo.nd.edu/partners-projects/</a></p> <p>LEO-generated evidence: <a href="https://leo.nd.edu/impact/lessons-learned/">https://leo.nd.edu/impact/lessons-learned/</a></p> <p>Partnering with LEO: <a href="https://leo.nd.edu/mission/how-to-partner-with-us/">https://leo.nd.edu/mission/how-to-partner-with-us/</a></p>   |

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| <b>Aunalytics, Inc.</b>  |                   |
| 460 Stull St., South Bend, IN 46601<br>Website: <a href="http://www.aunalytics.com">www.aunalytics.com</a><br>Contact: <a href="mailto:info@ aunalytics.com">info@ aunalytics.com</a><br>LinkedIn: <a href="https://www.linkedin.com/company/aunalytics/mycompany/">https://www.linkedin.com/company/aunalytics/mycompany/</a> | <b>For-Profit</b> |



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li><a href="#">Aunalytics</a> is a data platform company delivering answers for your business. Aunalytics provides Insights-as-a-Service to answer enterprise and midsized companies' most important IT and business questions. The Aunalytics® cloud-native data platform is built for universal data access, advanced analytics and AI while unifying disparate data silos into a single golden record of accurate, actionable business information. Its <a href="#">Daybreak™</a> industry intelligent data mart combined with the power of the Aunalytics data platform provides industry-specific data models with built-in queries and AI to ensure access to timely, accurate data and answers to critical business and IT questions. Through its side-by-side digital transformation model, Aunalytics provides on-demand scalable access to technology, data science, and AI experts to seamlessly transform customers businesses.</li> <li>Our healthcare industry revenue cycle management analytics focus provides AI and machine learning driven insights for reducing insurance reimbursement underpayments and streamlining billing to provide a data <a href="#">driven</a> practice management solution.</li> </ul> |
| <b>Mission</b> | We use data and technology to improve the lives of others.   |
| <b>History</b> | Aunalytics began in 2011 when successful data center entrepreneurs in South Bend, Indiana partnered with data scientists from the University of Notre Dame to provide end to end business and IT analytic solutions backed by a cloud data center. Aunalytics aims to bring data and analytics to mid-market businesses, healthcare systems, and providers by our side by side model to provide clients with access to our data engineer and data science experts to harness data driven insights to better compete with large nationals. We provide healthcare industry specific data models and mine your data for insights to reduce operational costs and drive revenue.   |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>250 team members in Indiana, Michigan and Ohio</li> <li>Enterprise cloud, data analytics, data management, security, and managed services offerings powered by our data platform</li> <li>Industry specific data analytics – built for healthcare providers for revenue cycle management</li> <li>HIPAA compliant enterprise cloud</li> <li>Leadership: <ul style="list-style-type: none"> <li>Tracy Graham, CEO</li> <li>Rich Carlton, President and CRO</li> <li>Nitesh Chawla, Ph.D., CPO</li> <li>Terry Gour, COO</li> <li>Marian Hodges, CSO</li> <li>Travis Alexander, CFO</li> <li>Katie Horvath, J.D., CMO</li> <li>David Cieslak, Ph.D., CDS</li> <li>Kerry Vickers, CISO</li> </ul> </li> </ul>   |
| <b>Board</b>   | Aunalytics has a Board of Directors.   |
| <b>Finance</b> | Aunalytics is a privately held corporation.  |

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| <b>Data Source</b>             | Aunalytics provides a data platform with built in data integration, governance, data quality, data accuracy, matching and merging to bring data from multiple disparate systems together into a golden record of accurate business information. We use API connectors to connect to EMRs, government data sources such as the National Provider database, insurance carrier data sources, billing applications, appointment scheduling applications and more. We can connect to most anything and everything. We bring the data silos together into a real-time stream to feed our analytics for up to date and actionable insights for practice management.   |
| <b>Data Access</b>             | We are HIPAA compliant. We use encryption at rest and in motion, hashing, role based access, identity management, MFA and other techniques to restrict data access.  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Ability to combine multiple data sources into patient 360, billing 360 and other views of data</li> <li>• Ability to create single source of truth ready for analytics, reporting and better decision-making from multiple data silos, line of business applications and third party sources</li> <li>• Healthcare industry specific data models inform AI and machine learning powered analytics for better revenue cycle management</li> <li>• Data analytics platform built for non-technical business users to query data for answers to pressing business questions</li> <li>• HIPAA compliant environment, controlled PHI access</li> <li>• Enterprise cloud</li> <li>• Managed services include IT and security experts providing data driven solutions backed by our data platform. We provide managed analytic services for access to data scientists and data engineers.</li> </ul> |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Provider practice revenue cycle management</li> <li>• Combine billing, provider, facilities, insurance contracted amount, insurance reimbursement data together to identify underpayments by carriers to prevent write-offs where revenue is owed</li> <li>• Combine data sets together for centralized reporting for healthcare system with multiple facilities, EMRs, billing systems, appointment scheduling systems</li> <li>• Integrate and synch data sources for patient portal</li> <li>• Help healthcare systems meet compliance standards required for data</li> <li>• Provide advanced security solutions for IT and data, including security operations center</li> </ul>   |
| <b>Future Focus</b>            | Continue to develop healthcare industry analytics answers for better practice management and make AI and machine learning analytics accessible to organizations not having a data science department on staff  |
| <b>Talent Development</b>      | Aunalytics offers various training programs for our employees and for yours  |
| <b>Data Sharing Agreements</b> | Agreements may be put in place for client specific use cases   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• <a href="https://www.aunalytics.com/solutions/industry/healthcare/">https://www.aunalytics.com/solutions/industry/healthcare/</a></li> <li>• <a href="https://www.aunalytics.com/solutions/focus/revenue-cycle-analytics/">https://www.aunalytics.com/solutions/focus/revenue-cycle-analytics/</a></li> <li>• <a href="https://www.aunalytics.com/products/aunsight-golden-record/">https://www.aunalytics.com/products/aunsight-golden-record/</a></li> <li>• <a href="https://www.aunalytics.com/products/daybreak/">https://www.aunalytics.com/products/daybreak/</a></li> <li>• <a href="https://www.aunalytics.com/products/enterprise-cloud/">https://www.aunalytics.com/products/enterprise-cloud/</a></li> </ul>  |
| <b>Resources</b>               | <ul style="list-style-type: none"> <li>• <a href="https://www.aunalytics.com/resources/news/">https://www.aunalytics.com/resources/news/</a></li> <li>• <a href="https://www.aunalytics.com/resources/blog/">https://www.aunalytics.com/resources/blog/</a></li> <li>• <a href="https://www.aunalytics.com/resources/events/">https://www.aunalytics.com/resources/events/</a></li> <li>• <a href="https://www.aunalytics.com/resources/media-mentions/">https://www.aunalytics.com/resources/media-mentions/</a></li> <li>• <a href="https://www.aunalytics.com/resources/case-studies/">https://www.aunalytics.com/resources/case-studies/</a></li> <li>• <a href="https://www.aunalytics.com/resources/white-papers">https://www.aunalytics.com/resources/white-papers</a></li> </ul>   |

## CareAscend, LLC.

12486 Shadow Cove Way, Carmel, IN 46033  
 www.CareAscend.com  
 Contact: [info@careascend.com](mailto:info@careascend.com)

**For-Profit**



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>• Help Post-Acute and Long-Term Care providers to engage with their teams with purpose and full compliance to deliver quality care to patients and their families</li> <li>• Assures Medical Director services are compliant with required regulatory frameworks</li> </ul>   |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>• Deliver easy to use technical solutions to improve interdisciplinary team learning and collaboration, with purpose and full compliance to deliver highest quality care to patients and their families.</li> </ul>   |
| <b>History</b> | <ul style="list-style-type: none"> <li>• August 2017 - Conception of idea for CareAscend</li> <li>• Nov/Dec 2017 - Demo of MVP at American Medical Directors Association (AMDA)</li> <li>• Jan 2018 - Agreements with two Skilled Nursing Home operators for pilot (Genesis Health Care, #1 in the industry with 325+ facilities and Signature HealthCARE, #8 in the industry with 111 facilities)</li> <li>• Feb 2018 - Pilot started</li> <li>• May 2018 - Formation of CareAscend, LLC.</li> <li>• May 2018 - Seed Round - Raised \$75,000</li> <li>• August 2018 - First paid customers - Genesis Health Care &amp; Signature HealthCARE</li> <li>• March 2019 - Implement in 150 Facilities</li> <li>• December 2019 - Implemented in 200 Facilities</li> <li>• January 2020 - Pilot started with US Post Acute, aa provider company</li> <li>• June 2020 - Conception of GeriBytes for inter-professional engagement and skill development</li> <li>• August 2020 - Agreement with 5 Star Senior Living, #21 in industry with 50 facilities</li> <li>• October 2020 - Agreement with Avalon Healthcare, #30 in industry with 44 facilities</li> <li>• November 2020 - CareAscend in 25 States, 302 facilities and 243 Medical Directors</li> </ul> |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>• One full time and five part-time team. 75% on technology and 25% on business development and customer engagement side.</li> <li>• Leadership:             <ul style="list-style-type: none"> <li>• Bharath Bynagari: Chief Executive Officer</li> <li>• Arif Nazir: Chief Medical Officer</li> <li>• Prasanth Krishnam: Chief Technology Officer</li> <li>• Andrew Heideman: Software Engineer</li> </ul> </li> </ul>   |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>• Bharath Bynagari: Chief Executive Officer</li> <li>• Arif Nazir, MD: CMO of Signature HealthCARE</li> <li>• Joe Steier: Co-founder and CEO of Signature HealthCARE</li> </ul>   |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>• Projected to make \$1M in 2021</li> </ul>   |

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| <b>Data Sources</b>            | <ul style="list-style-type: none"> <li>• Medical Director Contract Hours at each Skilled Nursing Facility</li> <li>• Medical Director Hourly Contract Rate</li> <li>• Medical Director's Fair Market Value assessment data</li> <li>• Tasks performed by each Medical Director at a Skilled Nursing Facility</li> <li>• CMS's Project Based Journal Data for Medical Directors</li> <li>• GeriBytes (Geriatrics Bytes): Crowd-sourced 5-10 minute structured information to empower inter-professional teams by actionable knowledge dissemination for care teams at front-lines.</li> </ul>   |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• De-identified data provided to partners via project specific data sharing agreements</li> </ul>   |
| <b>Tech Capabilities</b>       | N/A  |
| <b>Projects</b>                | <p><b>Medical Director Compliance</b></p> <ul style="list-style-type: none"> <li>• Medical Director contract management</li> <li>• Medical Director activity documentation and approval by facility Administrator</li> <li>• AP reports and integration to accounts receivables systems</li> <li>• Quarterly PBJ reports for CMS</li> <li>• Task Analysis</li> <li>• Compliance Dashboards</li> <li>• Eliminate risk of over-reporting of hours and thus over-payments</li> </ul> <p><b>GeriBytes</b></p> <ul style="list-style-type: none"> <li>• Empowers teams by actionable knowledge dissemination of care at the frontlines</li> <li>• 5-7 minute structured information (Text, PDF, Video, Audio etc.)</li> <li>• Rolls up to 1 hour CME credit</li> <li>• Pre &amp; post test question and evaluation question after each GeriByte</li> <li>• Track actionable techniques to be implemented later</li> <li>• Interdisciplinary Idea Board for each Facility</li> </ul> |
| <b>Future Focus</b>            | Integrate the non-patient care workflows into CareAscend like OSHA Respirator Questionnaire for N95 mask fit testing etc.  |
| <b>Talent Development</b>      | N/A  |
| <b>Data Sharing Agreements</b> | <p>Many agreements in place; however, they are use case</p> <ul style="list-style-type: none"> <li>• American Medical Directors Association - We share Medical director tasks performed at skilled nursing facilities and time spent on each task.</li> </ul> <p>Can share de-identified information with specific partners</p>  |
| <b>Programs/ Publications</b>  | N/A  |

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| <b>Diagnotes, Inc.</b>  |                   |
| 5255 N. Winthrop Ave., Suite 430, Indianapolis, IN 46220<br>www.diagnotes.com<br>Contact: info@diagnotes.com<br>Twitter: @diagnotes | <b>For-profit</b> |



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| <b>Role(s)</b>           | <ul style="list-style-type: none"> <li>Diagnotes is a mobile and web-based, HIPAA-compliant healthcare productivity suite that enables everyone involved in the delivery of patient care to seamlessly and efficiently collaborate in real-time, while automating the critical clinical workflows that often cause communication lags.</li> <li>Diagnotes serves as a hub for physicians, nurses, and other healthcare professionals in patient care, treatment, and follow-up. Using our platform's team-focused and patient-centric virtual workspaces, healthcare professionals can collaborate whenever required, with all team members having access to the same information and receiving priority notifications whenever needed. Clinicians can dialogue and share information within their health system, with other health systems and affiliated organizations, and with patients and caregivers, via video, voice, and text.</li> <li>Diagnotes serves acute care hospitals and health systems across the U.S., as well as medical groups and post-acute care organizations.</li> <li>More information available at LinkedIn at <a href="https://www.linkedin.com/company/diagnotes-inc">https://www.linkedin.com/company/diagnotes-inc</a></li> </ul> |
| <b>Mission</b>           | <ul style="list-style-type: none"> <li>We deliver communication tools that reflect the natural habits of healthcare professionals and patients.</li> </ul>  |
| <b>History</b>           | <ul style="list-style-type: none"> <li>Founded in 2011, Diagnotes has a successful history of providing innovations to healthcare professionals that help them do their jobs more efficiently and, with greater satisfaction, while improving the patient (and extended care team) experience.</li> </ul>   |
| <b>Org</b>               | <ul style="list-style-type: none"> <li>Diagnotes currently has 20+ employees and contractors across marketing and sales, engineering, client services and administration.</li> <li>Leadership: Sherry Henricks, CEO; Jamie Kurtz, CTO; Marie Powell, CFO</li> </ul>   |
| <b>Board</b>             | <ul style="list-style-type: none"> <li>Directors: Bill McConnell (Chairman); Tim Davenport; Matt Hall; Todd Saxton; Teri Willey; Dave Wortman (Co-founder)</li> <li>Advisory Council: Alan Snell, MD (Chairman); Don Brown, MD; Traci Dolan; Sam Odle; Seung Park, MD; Doug Rosendale, DO; Howard Silverman, MD</li> </ul>  |
| <b>Finance</b>           | <ul style="list-style-type: none"> <li>Raised \$7M in capital from institutional, angel and individual investors including IU Ventures, Purdue Ventures, Elevate Ventures, BioCrossroads and VisionTech Angels.</li> </ul>  |
| <b>Data Source</b>       | <ul style="list-style-type: none"> <li>Diagnotes leverages integrations with our clients' existing systems, including EHRs, portals, call centers, paging, dispatch, on-call schedules, labs, and image storage solutions. A range of integrations are available to support workflows implemented on the platform, including HL7 and FHIR. HL7 messages are accepted via different inbound and outbound transfer protocols, with strict adherence to data security and privacy requirements.</li> </ul>   |
| <b>Data Access</b>       | <ul style="list-style-type: none"> <li>Diagnotes clients have full control over their services and data, providing access to Diagnotes for specific purposes and under strict security protocols.</li> </ul>  |
| <b>Tech Capabilities</b> | <ul style="list-style-type: none"> <li>Leveraging Amazon Web Services, Diagnotes securely stores, processes, and transmits sensitive health-related information, in conformance with HIPAA privacy and security regulations.</li> <li>Diagnotes uses blockchain technology to safeguard patient information and provide an advanced level of data and message integrity.</li> <li>Diagnotes is a healthcare-specific platform architected to meet the unique challenges of healthcare organizations, including a mobile-first architecture and user experience for healthcare professionals on the go; real-time, high throughput messaging; robust logging for auditing and reporting; and a multi-level notification architecture that reflects the specific demands of healthcare.</li> </ul>  |
| <b>Projects</b>          | <ul style="list-style-type: none"> <li>Diagnotes is actively engaged with all clients to streamline and automate critical communication and collaboration workflows, with the goal of reducing healthcare costs, improving the quality of care and enhancing both patient and clinician satisfaction.</li> </ul>  |

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| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Continue enhancing and broadening our team-based, patient-centric communication and collaboration platform, associated analytics and the services we provide in order to deliver increasing levels of clinical and operational value to our clients, their partners and affiliates, and their patients.</li> </ul> |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>We support the professional growth and development of all our employees, providing training and education, mentoring, and increasing levels of responsibility. We also support Indiana talent development organizations such as TechPoint and Apprentice University.</li> </ul>                                    |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>Diagnotes utilizes master services agreements, business associate agreements, and other legal and privacy agreements required with all our clients and partners.</li> </ul>  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Diagnotes regularly participates in programs and contributes to publications sponsored by professional organizations including HIMSS, AMDIS, AMIA and Becker's Healthcare.</li> </ul>  |

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| <b>hc1</b>   |                   |
| 6100 Technology Center Drive Indianapolis, IN 46278<br>hc1.com<br>Contact: <a href="mailto:info@hc1.com">info@hc1.com</a><br>Twitter: @hc1dotcom | <b>For-profit</b> |



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>• hc1 is a bioinformatics leader in critical insights, analytics, and driving actions for precision health.</li> <li>• hc1 enables healthcare providers to deliver personalized healthcare to every patient, efficiently and profitably, at scale, by identifying bioinformatics signals within vast data sets in real-time. hc1 drives action for patients to get precise diagnostic tests and prescription regimens needed to improve outcomes while lowering costs.</li> <li>• Who hc1 serves: Diagnostic laboratories, health systems, health plans, and IDNs</li> </ul>   |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>• Vision: Improving Lives with Precision Health™</li> <li>• Mission: Right Patient. Right Test. Right Prescription®</li> </ul>   |
| <b>History</b> | <ul style="list-style-type: none"> <li>• 2011: hc1 is founded with the belief that transforming lab data into personalized healthcare insights at scale could bring precision medicine to all patients.</li> <li>• 2013: Sonic Healthcare, the largest international lab and third-largest commercial lab in the US, adopts hc1 CRM™ to power its US division, driving hc1 platform and development process improvements.</li> <li>• 2016: Amazon Web Services certifies hc1 as an APN Advanced Technology Partner with AWS Healthcare Competency Status.</li> <li>• 2017: Based on client feedback, KLAS Research rates hc1 CRM™ as the highest-scoring Healthcare CRM platform.</li> <li>• 2017: The hc1 Opioid Dashboard delivers national insights aimed at decreasing opioid abuse.</li> <li>• 2019: hc1 purchases assets of GeneAlign, LLC to accelerate the development of precision prescribing solutions.</li> <li>• 2019: Quest Diagnostics, the largest provider of lab testing in the US, partners with hc1 to offer Quest® Lab Stewardship™ to optimize laboratory test utilization.</li> <li>• 2020: In response to the COVID-19 pandemic, hc1 builds the free public health CV19 Lab Testing Dashboard™ to show the prevalence of SARS-CoV-2 in communities nationwide and hc1 Workforce Advisor™ to support safe return-to-work programs.</li> <li>• 2020: hc1 and Becker's Healthcare host the first Precision Health Virtual Summit, which introduces the category of Precision Health Insight Networks (PHINs).</li> <li>• 2021: hc1 celebrated a 10th year of successful operations.</li> </ul> |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>• 65 full-time team members in Indiana, 14 full-time team members in other states, and 20+ contractors (67% engineering and technical services). Plus, more than 200 quota-carrying sales representatives dedicated to marketing and selling hc1's solutions via distribution partners.</li> <li>• Leadership: <ul style="list-style-type: none"> <li>○ Brad Bostic, Founder, Chairman, and CEO</li> <li>○ Chris Brown, COO</li> <li>○ Charlie Clarke, SVP Technology,</li> <li>○ Michael Braverman, SVP Service Delivery</li> <li>○ Laura Breedlove, SVP Product</li> <li>○ Lori Smith, SVP Talent</li> <li>○ Ray Iburguen, SVP Sales &amp; Marketing</li> </ul> </li> </ul>  |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>• Brad Bostic, Chairman, John Baker, Dr. John Mills, &amp; Mark Shary</li> </ul>   |

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| <b>Finance</b>                 | <ul style="list-style-type: none"> <li>• Approximate Institutional Equity Funding Raised To-Date: ~\$67M</li> <li>• Key Funding Sources: <ul style="list-style-type: none"> <li>○ Health Cloud Capital</li> <li>○ NWS Holdings</li> <li>○ Elevate Ventures</li> </ul> </li> </ul>  |
| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>• Live, transactional integrations to over 20,000 diagnostic ordering locations nationally.</li> <li>• Massively Parallel Processing (MPP) cloud data lake of over 27 billion diagnostic results, increasing by &gt;100M results per month, which are organized into a rich health matrix and enriched via hc1 machine learning (ML) models</li> <li>• 203 million unique patient profiles with longitudinal lab testing records</li> </ul>   |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• The hc1 Connect® integration engine can ingest data from EMRs, LIS, and other systems via any data format and protocol. Most integrations are via live HL7 feeds or real-time APIs. File-based integrations are used in less sophisticated client settings.</li> </ul>  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Software architecture takes full advantage of AWS HIPAA-compliant offerings, providing a secure, scalable, and performant environment for enterprise workloads.</li> <li>• hc1 Connect® combined with the hc1 data refinery can ingest, normalize, and organize live data from disparate sources and feed it into user-friendly analytics and services.</li> <li>• The hc1 Platform® can be modified to meet differing organizational needs, such as authentication, automation, user interface customization, and notification.</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• hc1 Analytics™ provides daily real-time insights and reporting that save valuable time and reduce costs.</li> <li>• hc1 Operations Management™ combines clinical and business data in a HIPAA-compliant environment to provide analytics to manage client, provider, and patient relationships.</li> <li>• hc1 PrecisionDx Advisor™ analyzes test orders for adherence to clinical guidelines to reduce clinical variation in testing, which in turn reduces costs and improves patient outcomes.</li> <li>• hc1 PrecisionRx Advisor® combines medication therapy management, pharmacogenomics, clinical lab data, and patient engagement and monitoring to help ensure patients are taking effective medication and eliminate unnecessary prescription costs.</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• The ability to digitally model a patient's unique characteristics and risk factors then simulate how their body will respond to their treatment plan prior to acting will revolutionize how we deliver health care. Many negative outcomes could be avoided simply by identifying risks and proactively adjusting care and treatment plans. hc1 is revolutionizing the future of health care by infusing the concept of the digital twin in our Platform. Our precision health journey sees the digital twin modality as part of the patient care workflow over the next decade.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• We support Indiana talent development organizations such as TechPoint (Xtern Program). We also support our employees' request to participate in training with approval by their manager.</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Standard client agreements enable aggregation of normalized, enriched, de-identified, longitudinal data to power insights for benchmarking, local risk analysis, and research.</li> <li>• Bamboo (formerly Appriss) Health agreement to integrate with their live PDMP data to deliver hc1 Opioid Advisor®, which compares toxicology drug test results to prescription data to ensure patients are complying with safe medication programs.</li> </ul>   |
| <b>Programs/ Publications</b>  | <p>hc1 and Becker's Healthcare host together an annual Precision Health Virtual Summit each fall. This special, 2-day virtual event brings together healthcare leaders and industry experts to focus on making precision health achievable in all aspects of care delivery and accessible to everyone. More information about the Summit is available at <a href="http://www.hc1.com/Summit">www.hc1.com/Summit</a>.</p>   |

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| <b>LifeOmic</b>   |   |  |
| Emerging Technology Center, 351 W. 10th St, Indianapolis, IN 46202<br><a href="http://www.lifeomic.com">www.lifeomic.com</a><br>Contact: <a href="mailto:info@lifeomic.com">info@lifeomic.com</a><br>Twitter: @LifeOmic |   |   |
| <b>Role(s)</b>  | <ul style="list-style-type: none"> <li>LifeOmic was founded in late 2016 by Indianapolis based, serial entrepreneur Dr. Don Brown to realize the promise of precision health. First customer was Indiana University School of Medicine. Started by providing the informatics platform supporting the statewide Precision Health Initiative. Grown to support many organizations both inside and outside of Indiana.</li> </ul>  |   |
| <b>Mission</b>  | <ul style="list-style-type: none"> <li>To activate the promise of precision health by leveraging cloud and mobile technologies to help people live longer and healthier. Serve a broad range of customers from the largest healthcare providers and academic research institutions to consumers.</li> </ul>   |   |
| <b>History</b>  | <ul style="list-style-type: none"> <li>Founded in late 2016 by Dr. Don Brown and several other key leaders from his prior company, Interactive Intelligence.</li> <li>September 2017, announced our collaboration with Indiana University and the Regenstrief Institute on a broad intellectual property agreement in exchange for a minority equity stake in LifeOmic.</li> <li>November 2017, publicly disclosed that our Precision Health Cloud was the bioinformatics platform supporting the Indiana Precision Health Initiative – an initiative to cure two types of cancer as well as preventing a pediatric cancer, Alzheimer’s disease and diabetes.</li> <li>May 2018, launched first consumer mobile application after identifying that a patient facing tentacle was critical to fulfill the promise of precision health.</li> <li>September 2018, launched our consumer health content site, LIFE Apps and JupiterOne, a productized version of the security automation and operations framework developed to secure our Precision Health Cloud platform.</li> <li>December 2018, announced 100,000 downloads of our first mobile application.</li> <li>July 2019, launched second mobile app in partnership with the All IN initiative supported by the Clinical Translational Sciences Institute (CTSI), a collaboration between Indiana University, Purdue and Notre Dame. All IN’s goal is to improve health literacy and outcome for all Indiana residents.</li> <li>August 2019, selected by Fast Company as one of the top 50 workplaces for innovators.</li> <li>October 2019, announced one million downloads of our mobile apps.</li> <li>November 2019, named by Outside Magazine as one of the top 50 workplaces.</li> <li>April 2020, announced two million downloads of our mobile apps.</li> <li>June 2020, named by ClinicalOMICs as one of the Precision Medicine Companies Making Their Mark in 2020.</li> <li>September 2020, announced sale of JupiterOne, a digital asset management cybersecurity tool, to Bain Capital Ventures.</li> <li>January 2021, announced launch of corporate wellness solution.</li> <li>June 2021, announced achievement of FedRAMP Ready status to bring precision health and wellness solutions to the federal market.</li> <li>December 2021, announced relaunch of personal health optimization program</li> <li>February 2022, more than four million downloads of our mobile apps.</li> </ul> |   |

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| <b>Org</b>                     | <ul style="list-style-type: none"> <li>• 114 employees. &gt;80% in engineering, science, bioinformatics or technical roles.</li> <li>• Leadership: <ul style="list-style-type: none"> <li>• Dr. Don Brown: Chief Executive Officer, Founder</li> <li>• Jeff Swartz: Chief Operating Officer, Co-Founder</li> <li>• Tom Barber: Chief Science Officer</li> <li>• Peter Liebert: Chief Information Security Officer</li> <li>• Lisa Hawke: Chief Legal Officer</li> <li>• Shelagh Frazer: Chief Medical Officer</li> </ul> </li> </ul>   |
| <b>Board</b>                   | <ul style="list-style-type: none"> <li>• No Board of Directors.</li> <li>• Advisory board consists of leaders from medical, science and healthcare IT</li> </ul>   |
| <b>Finance</b>                 | <ul style="list-style-type: none"> <li>• Self-Funded</li> </ul>  |
| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>• Precision Health Cloud is a data aggregation and analytics platform. Customers bring, and maintain ownership, of their own data assets.</li> </ul>  |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>• Precision Health Cloud is an open API platform. Data is accessible via standards-based APIs including comprehensive support for FHIR (Fast Healthcare Interoperability Resources) and GA4GH (Global Alliance for Genomics and Health) genomics APIs.</li> </ul>   |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>• Core team of cloud software developers at LifeOmic built real-time, secure, globally distributed cloud platform on Amazon Web Services. Has both an extremely scalable, secure cloud platform for multimodal analysis and over two million consumer app users.</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Supporting the Indiana Precision Health Initiative which has made incredible strides in precision health treatments.</li> <li>• The All IN initiative has thousands of users in the state. Collaborated on several content pieces that address critical health issues like vaping &amp; COVID-19</li> <li>• Working with Community Health to streamline the evaluation of electrophysiology patients by combining information from the implanted device's home monitoring server, patient reported outcomes via the mobile app and clinical data. Developed several Lifeology courses to educate these patients.</li> <li>• Working with Eli Lilly to improve individual health literacy and increase representation in clinical trials for COVID-19, cancer and others.</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Continuing to aggressively invest in R&amp;D to enrich product portfolio – allowing organizations to build their own solutions on top of the platform using existing infrastructure, security architecture and tools.</li> <li>• A patient recovery solution combining data analytics, intervention, health literacy and engagement where medical device manufacturers, clinicians or researchers can centralize their workflow and maximize their impact.</li> <li>• A corporate health and wellness solution based on our Precision Health Cloud platform and the LIFE Extend mobile application. Started development on a personal wellness solution to help people improve their health spans</li> </ul>  |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Continued education and learnings for the LifeOmic team, including topics like genomics, epigenetics, stress, etc.</li> </ul>   |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• LifeOmic customers provide their own data. We provide the storage and analysis, tooling, and the ability to securely share data between organizations as well as managing informed consent, enrollment and revocation.</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Host many meetups around technology topics (e.g., machine learning, devops)</li> </ul>  |

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| <b>Metamor Systems (formerly known as IT Transformers)</b>   |                       |
| 12821 East New Market St, Suite #310 Carmel, IN 46032<br>http://metamorsys.com<br>Twitter: @MetamorSystems | <b>Private Sector</b> |



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| <b>Role(s)</b> | <ul style="list-style-type: none"> <li>We are data people focused on solving business problems. We have many years of experience in the healthcare space and we work with clients to unlock insights from their healthcare data.</li> <li>We are a certified Minority Business Enterprise (MBE) with the State of Indiana, City of Indianapolis, and a member of the National Minority Supplier Diversity Council. So, you know we promote inclusion and embrace diversity!</li> </ul>  |
| <b>Mission</b> | <ul style="list-style-type: none"> <li>Our vision is to be our client's trusted go-to partner, providing innovative solutions through the efforts of our diverse and talented people who ensure the growth and success of our clients. We'll learn your business and understand your goals. We then align our work to deliver innovative solutions that provide real business value.</li> <li>Our mission is to combine our industry expertise with the client needs to provide reliable, technology-enabled solutions quickly, cost effectively and successfully.</li> </ul>   |
| <b>History</b> | <ul style="list-style-type: none"> <li>2008 – IT Transformers was established by experienced software professionals</li> <li>2009 – Secured our first contract with DCS Child Welfare to provide Data and reporting Services</li> <li>2011 – Secured a contract for building a web-based application to assist DCS's Special Needs Adoption Program</li> <li>2012 – MSP Vendor for all State of Indiana agencies</li> <li>2014 – Secured a contract to provide data related services for Indianapolis Airport Authority to upgrade their Oracle ERP Systems</li> <li>2018 – Contracted to provide Data Analytics Support to FSSA</li> <li>2019 – Unified Data Model for Pharmacy Claims (Private Sector)</li> <li>2020 – INVEST Contracts, OECOSL Contracts</li> <li>2021 – <ul style="list-style-type: none"> <li>Implemented the DBA name: Metamor Systems for branding and marketing purposes (the legal entity is the same)</li> <li>Preferred staffing with partner netlogx for Health and Hospital Corporate (HHC)</li> <li>Partnered with Syra Health on winning proposal for project at the Indiana Family and Social Services Administration, Department of Mental Health and Addiction</li> </ul> </li> </ul> |
| <b>Org</b>     | <ul style="list-style-type: none"> <li>30+ person team focused on data solutions and application development. Our core technologies include: Informatica, Datastage, SSIS, SSRS, Cognos, Teradata, Oracle, Microsoft SQL Server, MuleSoft, PostgreSQL, Tableau and Salesforce</li> <li>Leadership: <ul style="list-style-type: none"> <li>Bala Krishnamurthy: Chief Executive Officer</li> <li>Krishnakumar Padmanabhan: Chief Operations Officer</li> <li>Scott Moshier: VP of Data Solutions</li> </ul> </li> </ul>   |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>A formal board is engaged with local industry leaders as advisers</li> </ul>   |
| <b>Finance</b> | <ul style="list-style-type: none"> <li>Supported by public and private sector contracts</li> </ul>  |

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| <b>Data Source</b>             | <ul style="list-style-type: none"> <li>As a data focused organization, we work with most health and human services client data sources such as: <ul style="list-style-type: none"> <li>Medicaid claims</li> <li>Medicaid eligibility</li> <li>Cash Assistance Data</li> <li>Supplemental Nutrition Assistance Program (SNAP)</li> <li>Child Support</li> <li>Child Welfare (Abuse/Neglect/Fatality Data)</li> <li>Child Care Development Fund</li> <li>ISDH Vital Records</li> <li>Student Education Data</li> </ul> </li> </ul>  |
| <b>Data Access</b>             | <ul style="list-style-type: none"> <li>Data access is determined by our clients and varies by projects and performed with agreements.</li> </ul>  |
| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>Metamor Systems is a full-service, enterprise-grade data and application consultancy. A sampling of our services includes: <ul style="list-style-type: none"> <li>Data Warehousing</li> <li>Data Governance</li> <li>Data Visualization</li> <li>Business Intelligence</li> <li>Master Data Management</li> <li>Advanced Analytics</li> <li>IOT System Design and Analytics</li> <li>Data Conversions</li> <li>Cloud Migrations</li> <li>Case Management Software Development</li> <li>Application Modernization</li> </ul> </li> </ul>  |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li><b>Public Sector</b> <ul style="list-style-type: none"> <li>FSSA – Social Services Data Warehouse</li> <li>Child Support Data Warehouse</li> <li>DCS Master Data Management</li> <li>Child Support System Modernization (INVEST)</li> <li>OECSL – QA System Modernization</li> </ul> </li> <li><b>Private Sector</b> <ul style="list-style-type: none"> <li>Unified Data Model for Pharmacy Claims</li> <li>Tracking application for children awaiting adoption and related events</li> <li>Cloud-based human resources solution for employees to enter time, expenses, and access a knowledge base of HR information</li> </ul> </li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Metamor Systems serves both the public and private sector. We will continue to serve the public and our community through federal, state, and local projects. We will continue to focus our private sector projects in central Indiana.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>Metamor Systems organizes the Indy Civic Hackathon annually to bring technology to social issues.</li> <li>Recruiting at Indiana-based colleges and universities for internships and permanent employment.</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>Data sharing is determined by our clients. We have Data Use and Master Services Agreement with our clients.</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Indy Civic Hackathon: June each year</li> <li>Whitepapers and Case Studies</li> </ul>  |

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| <b>Olio</b>  |                   |
| 6202 Carrollton Ave., Suite A, Indianapolis, IN 46220<br>Olio.health<br>Contact: hello@olio.health | <b>For-profit</b> |



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| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Olio is a software solution that makes it simple for hospital systems, physicians and payers to actively engage with post-acute providers about each patient's care.</li> <li>With Olio, care management teams know where their patients are once they leave their care, what their status is and have the ability to engage with post-acute clinicians to ensure better healthcare outcomes.</li> <li>Health systems, physicians and payers can successfully manage post-acute networks and deliver a high standard of care at scale.</li> <li>Olio serves health systems, physicians, payers, ACOs, and full spectrum of post-acute providers.</li> </ul>   |
| <b>Mission</b>     | <ul style="list-style-type: none"> <li>Help the vulnerable and sick through a technology solution that innovates, simplifies and scales post-acute strategy for health systems, physicians and payers.</li> </ul>  |
| <b>History</b>     | <ul style="list-style-type: none"> <li>The precursor to Olio was a moon lighting consulting entity that embarked at the advent of CMS' mandatory bundled payments bringing hospitals, physicians and PAC entities together to improve outcomes. The result was two years of focused research, lowering PAC spend by &gt;30%, and a clear understanding that results were not sustainable with people and process. Olio pivoted and poured all those learnings into building technology to fill this gap between acute and PAC environments.</li> <li>Olio Health, Inc., a software-as-a-service (SaaS) product, solves for a universal healthcare problem that providers don't know where their patients are, how they are doing, and if they are trending in the right direction after they leave the hospital and enter post-acute care (PAC).</li> <li>This problem that has been floodlit within the pandemic as coordination of hospital and PAC care (i.e., nursing homes, home health, and acute rehab) has fallen woefully short under the stress test. Further, sweeping regulatory changes from the Centers for Medicare and Medicaid Services and private payers have been systematically imposing accountability and financial risk on providers. The economic shift for providers is transforming how patients are cared for and managed.</li> <li>Olio simplifies and scales the way providers work with vast networks of PAC partners that creates clinical and economic alignment. Olio connects acute, physician, payers and PAC providers in a software platform that supports all patient populations, lowers total cost of care, and allows for operational efficiencies in the delivery of care in a mobile and web application.</li> </ul> |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>21 full-time team members in Indiana</li> <li>Leadership: Ben Forrest, Chief Executive Officer; Sean Mullins, Chief Operating Officer; Sean Lavies, Chief Technology Officer; Eric Huebner, VP of Business Development; Eddie Keever, VP of Customer Engagement; Kaleb Kuhl, Vice President of Sales; Rachel Kilroy, Director of Product; Kristy Esch, Director of Marketing</li> </ul>   |
| <b>Board</b>       | <ul style="list-style-type: none"> <li>Private</li> </ul>  |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Raised to-date - \$4.8M Seed Funding</li> <li>Key Funding Sources - Angel investors</li> </ul>  |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>Olio leverages its own data captured in the software solution.</li> </ul>   |
| <b>Data Access</b> | <ul style="list-style-type: none"> <li>Patient data is securely imported into Olio through a recurring flat file or ADT feed. All data is HIPAA compliant.</li> <li>Olio provides data insights with real-time data for clients to see how they can succeed in value-based care arrangements and care for patients across the continuum.</li> </ul>  |

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| <b>Tech Capabilities</b>       | <ul style="list-style-type: none"> <li>To protect our clients' data, we have partnered to build a HITRUST certified infrastructure that is both ISO 27001 certified, SOC 2 Type 2 audited, and have full HIPAA and GDPR/Privacy Shield compliance programs in place.</li> <li>Furthermore, we have developed internal controls, policies and procedures to protect our clients' data that is audited by an independent 3rd-party entity to ensure both a secure IT environment and regulatory compliance.</li> </ul>   |
| <b>Projects</b>                | <ul style="list-style-type: none"> <li>Olio has found traction within its customers, lowered total encounter spend in the PAC or scaled their post-acute engagement reach farther than they imagined. Since the pandemic, we have seen increased use of Olio by all measures including total number of users, sites, logins, and total patients impacted.</li> <li>Manage 198,000 lives, 2,243 Users/Clients of Olio</li> <li>Health and Economic Outcomes with Olio: <ul style="list-style-type: none"> <li>36% Decrease in Readmissions from SNFs</li> <li>20% Decrease in Length of Stay</li> <li>3X Number of Patients and/or facilities one care coordinator can cover</li> <li>&lt;3 Minutes – Median time acute providers respond to patient escalation from post-acute provide Olio</li> <li>&gt;10X ROI</li> </ul> </li> <li>Indiana University Health: A 16 hospital health system that encompasses an academic medical center, 3,700 physicians, 33,000 employees selected Olio in Q4 2019. IUH initially launched Olio in three hospitals to validate their hypothesis of Olio's potential economic and clinical impact. Per IUH, Olio was able to lower SNF length of stay by 12% and reduce readmissions by 26% on their Medicare Advantage and Medicare ACO lives that landed in skilled care.</li> <li>Further, IUH found that their SNF patients closely managed in Olio went home ~7 days sooner from a nursing home than those that didn't. When digging a bit deeper evaluating IUH patients that were in the appropriate site of care, at the right time, readmissions were reduced a remarkable 45% when supported by Olio.</li> <li>In March 2020, IUH scaled Olio to 16 hospitals, 230+ nursing homes, LTACHs, and acute rehab partners to support IUH vulnerable patient populations. With Olio, IUH has established one of the most innovative and responsive models supporting clinician and patients in post-acute care in the nation.</li> <li>Deaconess Health System: A nine hospital health system providing services to 26 counties in Indiana, Kentucky, and Illinois is a top three performing CMS Next Generation ACO that continues to take significant up and downside risk in value-based care arrangements. Deaconess selected Olio who created a digital post-acute network for Deaconess spanning 3,190 square miles across the tri-state area with our software. In the first quarter of being implemented, Olio was able to reduce SNF readmissions and time spent at the nursing home for their patients which saved Deaconess \$548k compared to the same quarter the prior year. Deaconess also uses Olio to complement their tele-health strategy by triggering visits of SNF patients via Olio to lower readmissions out of the PAC environment and drive revenue.</li> </ul> |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>Olio will continue to innovate their software to improve collaboration, communication, and data insights for their clients around high-risk patient populations. It will further bridge integrations that will bring value to clients and simplify the way complex patients are supported and managed.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>Olio has two Orr Fellows.</li> <li>Employees request to participate in training with approval by manager.</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>Not public, client specific.</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>Olio is a member of the National Association of ACOs and the Population Health Alliance.</li> <li>Olio has been featured in Becker's Hospital Review, Modern Healthcare, Fortune, Indianapolis Business Journal, Inside Indiana Business, Skilled Nursing News, Healthcare Weekly, MobiHealthNews, along with others.</li> </ul>  |

| Onebridge  |  |
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| 6500 Technology Center Drive, Suite 300, Indy, IN 46278<br><a href="https://www.Onebridge.tech">https://www.Onebridge.tech</a><br>Contact: Jennifer Haughs @ <a href="mailto:jhaughs@onebridge.tech">jhaughs@onebridge.tech</a><br>Twitter: @onebridgetech |  |
|  | <b>For-profit</b>  |
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| <b>Role(s)</b>   | <ul style="list-style-type: none"> <li>Onebridge is a BI, Data Analytics, and Enterprise Application Development consulting firm. We've served some of the largest healthcare, life-sciences, manufacturing, financial services, and government entities in the U.S. for over 17 years. Entirely employee owned and operated, Onebridge has been a top "Best Places to Work" in Indianapolis for seven years in a row.</li> </ul>  |
| <b>Mission</b>   | <ul style="list-style-type: none"> <li>Onebridge is a team of passionate employee-owners who improve outcomes for the people we serve through data and technology, making them heroes throughout their organization.</li> </ul>  |
| <b>History</b>   | <ul style="list-style-type: none"> <li>2005 – Launched as SmartIT</li> <li>2015-2020 – Best Place to Work in Indy</li> <li>2018 – Rebranded as Onebridge, moved focus to Data Analytics and Enterprise App Dev</li> <li>2020 – Became a 100% Employee Owned organization (ESOP)</li> <li>2021 – #1 Best Place to Work in Indy for Large Employers</li> </ul>   |
| <b>Org</b>   | <ul style="list-style-type: none"> <li>A workforce of 300+ comprised of employees and consultants; 40% focused on BI and Data Analytics, 40% focused on Enterprise Application, and 20% on functional and operations.</li> <li>Headquartered in Indianapolis, serve clients locally and nationally.</li> <li>Leadership:               <ul style="list-style-type: none"> <li>Paul Rothwell: Chief Executive Officer</li> <li>Scott Morgan: Chief Operations Officer</li> <li>Christina Nash: Chief People Officer</li> <li>Kymerly Findley: VP of Talent Acquisition</li> </ul> </li> </ul> |
| <b>Board</b>   | <ul style="list-style-type: none"> <li>A full ESOP with Karen Cooper, Paul Rothwell, Mike Sweeney, Andrew Davis, and Scott Morgan as Board Members</li> </ul>  |
| <b>Finance</b>   | <ul style="list-style-type: none"> <li>\$40+ million in annual revenue</li> <li>20% YOY growth for consulting services</li> </ul>  |
| <b>Data Source</b>   | <ul style="list-style-type: none"> <li>Bring your own data</li> </ul>  |
| <b>Data Access</b>   | <ul style="list-style-type: none"> <li>Bring your own data</li> </ul>  |
| <b>Tech Capabilities</b>   | <ul style="list-style-type: none"> <li>Full-Service Data Analytics and BI covering Data Management, Data Warehousing, Dashboards, and Visualizations</li> <li>Enterprise Application Development with Microsoft Azure, AWS, and Google Cloud platforms.</li> <li>Partnerships with               <ul style="list-style-type: none"> <li>Alteryx</li> <li>Microsoft for Power BI, Power Platform, and Power Apps</li> <li>Profisee</li> <li>Tableau</li> </ul> </li> <li>Snowflake – Most certified Snowflake consultants in Indiana</li> <li>Wherescape</li> </ul>                           |

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| <b>Projects</b>                | <ul style="list-style-type: none"> <li>• Large scale Snowflake implementations</li> <li>• Large scale data governance projects</li> <li>• Datawarehouse and Data Engineering projects</li> <li>• Data Visualization projects (Tableau, PowerBi, Looker)</li> <li>• Large scale custom application development projects (.Net, Java, Python, R)</li> <li>• Case studies available at: <a href="https://www.onebridge.tech/resources/case-studies">https://www.onebridge.tech/resources/case-studies</a></li> </ul>  |
| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• To help organizations leverage their data as an asset by enabling them to Trust their data, Serve up their data, and Analyze their data.</li> </ul>   |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Onebridge participates in Talent Development initiatives at all levels. We have established a grass-roots Hoosier Based Internship Program Experience for students enrolled in related programs throughout Indiana with our third cohort graduating in the summer of 2020. We are an Orr Fellowship Host Company. We have three established career tracks based on career goals and preferences, and deploy individual training around those paths, we offer Community Practice Days with the opportunity to immerse in new tools and technology, and we have a branded Onebridge Toll Pass Program where employees can request funds for professional training, continued education, certifications, or passion projects.</li> </ul> |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• We have the appropriate legal agreements in place with our clients. Generally speaking, those agreements do NOT permit us to share information with entities/organizations who are not a party to the agreement.</li> </ul>   |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Ongoing Webinars, Whitepapers, and Resources at <a href="https://www.onebridge.tech/resources/all">https://www.onebridge.tech/resources/all</a></li> <li>• Training and Workshops for Tableau, Snowflake, and Power BI. These are open to anyone, and you can sign up to be notified of upcoming events here: <a href="https://www.onebridge.tech/resources/all#Newsletter">https://www.onebridge.tech/resources/all#Newsletter</a></li> </ul>  |

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| <b>Resultant</b>   |                   |
| 111 Monument Circle, Suite 202, Indianapolis, IN 46204<br>Resultant.com<br>Twitter: @resultantlife | <b>For-profit</b> |

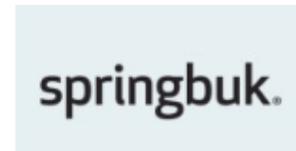


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| <b>Role(s)</b>     | <ul style="list-style-type: none"> <li>Resultant is a modern consulting firm with a radically different approach to solving problems. Through outcomes driven by data and analytics, technology, and digital transformation, we serve as a true partner by solving problems with our clients, rather than for them. Resultant's data and analytics team includes data scientists, engineers, architects, developers, business intelligence experts, and consultants to help clients use data to inform better decision-making. The team brings business and academic experience and expertise to clients within local, state, and federal agencies, as well as mid-sized and large private sector organizations and not-for-profits.</li> </ul>  |
| <b>Mission</b>     | <ul style="list-style-type: none"> <li>Resultant's mission is to help our clients, coworkers, and communities thrive.</li> </ul>   |
| <b>History</b>     | <ul style="list-style-type: none"> <li>Founded in 2008 as an IT advisory firm to support to small businesses and government agencies in maximizing technology and executing successful implementations, Resultant quickly expanded and began serving as trusted partners across a broad range of technology, data analytics, and management consulting services. Utilizing Design Thinking methodology and beginning problem solving by deeply understanding the challenge from the point of view of the people involved, Resultant has worked with clients to develop and implement solutions that are meaningful, transformative, and forward thinking. Headquartered in Indianapolis, IN, Resultant serves clients in over 40 states from offices in Indiana, Michigan, Colorado, and Ohio.</li> <li>2021 Achievements: Completed acquisition of Tempus Nova, a Google Cloud consultancy based in Denver, Recipient of 100 Best Places to Work in IT Award, Nominated by Mira Awards as Exceptional Employer of the Year</li> </ul> |
| <b>Org</b>         | <ul style="list-style-type: none"> <li>350+ employees – 55% of employees focus on Data, Development, and Technology services; 30% on strategic and delivery digital transformation services</li> <li>Leadership: Mark Caswell, CEO; John Roach, President; Michael Schwarz, VP of Digital Services; Mike Vance, VP of Private Sector and Managed Services</li> </ul>   |
| <b>Board</b>       | <ul style="list-style-type: none"> <li>Advisory board including national and local business leaders</li> </ul>   |
| <b>Finance</b>     | <ul style="list-style-type: none"> <li>Private equity-backed</li> </ul>  |
| <b>Data Source</b> | <ul style="list-style-type: none"> <li>While we do not generate our own publicly available datasets, we have developed deep expertise in a broad range of data domains, including, but not limited to the following: Clinical / electronic health record data; prescriber data; claims data; social determinants of health (SDOH); open data and data anonymization; public datasets, such as data from the CDC, Census, etc.; and a variety of state datasets: incarceration, workforce, education, health, unemployment, licensing, motor vehicles, and transportation</li> </ul>  |
| <b>Data Access</b> | <ul style="list-style-type: none"> <li>We have developed the award-winning CoRE (collaborative research environment) Platform, a secure virtual environment whereby users can access industry-leading data transformation/visualization tools to conduct research on sensitive PII and PHI.</li> <li>We have supported numerous clients to launch and sustain open data initiatives.</li> <li>We assisted Indiana in launching the state's open data portal, <a href="https://hub.mph.in.gov/">https://hub.mph.in.gov/</a>, and anonymized data for secure internal and external partners for research purposes.</li> <li>We have expertise integrating data within and across organizations using our clients' technology stack or cloud-based solutions within our own tenets.</li> </ul>  |

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| <p><b>Tech Capabilities</b></p> | <p>Related to data analytics, development, and technology, Resultant’s capabilities include:</p> <ul style="list-style-type: none"> <li>• Strategic and technical data services from data strategy and assessment through advanced data science such as machine learning and AI</li> <li>• Data synthetization, augmentation, de-identification, aggregation, and hashing to support distribution for research purposes</li> <li>• Patient matching and harmonization including a proprietary probabilistic record linkage methodology</li> <li>• Data integration, transformation, migration, and remediation (e.g., de-duplication, data cleansing, data quality remediation, etc.)</li> <li>• Unstructured and semi-structured data analysis using advanced NLP and text contextualization techniques</li> <li>• Cloud architecture and development expertise across Microsoft Azure (Gold Partner), Amazon AWS (Select Partner), and Google GCP (Premier Partner)</li> <li>• Advanced data modeling capabilities in relational, NoSQL and Graph database technologies</li> <li>• Data visualization and business intelligence capabilities using package solutions or custom web-application development</li> <li>• Data governance and master data management services</li> <li>• Strategic and technical development services from application strategy, design, and planning through software engineering and development (e.g., JavaScript, Python, R)</li> <li>• DevSecOps infused SDLC that leverages industry-leading CI/CD, code scanning, and automated testing tools</li> <li>• Tailored agile project delivery methodology aligned with the Scaled Agile Framework (SAFe) and SAFe certified scrum masters</li> <li>• Due diligence and integration of tech and data systems for mergers and acquisitions.</li> </ul>  |
| <p><b>Projects</b></p>          | <p>Related to healthcare data, notable projects include:</p> <ul style="list-style-type: none"> <li>• With the Indiana Management Performance Hub, Resultant has provided data services to address the opioid epidemic, infant mortality, road safety, education and workforce, government transparency, and the COVID-19 response as well as developed the Indiana Data Hub and the deidentified Medicaid datasets initially released.</li> <li>• Working with a major healthcare provider system, Resultant identified appropriate and accessible clinical and SDOH datasets to support risk identification and prediction, categorize risk types and build predictive models to determine patient risk as it relates to chronic health conditions such as CHF and infant mortality, and define a repeatable approach for leveraging internal and external datasets to better understand patient risk.</li> <li>• Data and tech assessment for a large healthcare system driving toward the outcome of highest efficiency and cost effectiveness operating system through design, optimization, and analytics of the operational system, incorporating CDC.</li> <li>• Working with a state government, Resultant was tasked with using cross-agency data to develop understandings around infant mortality. The team probabilistically combined data from 27 health non-health data sources and used advanced machine learning and artificial intelligence techniques to better understand the underlying causes of infant mortality so that proactive intervention could be planned.</li> <li>• Resultant developed the award-winning CoRE Platform, a secure virtual environment whereby users can access industry leading data transformation/visualization tools to conduct research. Users have access to conduct research on their own datasets as well as those that have been provided.</li> <li>• To inform grant funding, Resultant examined birth-to-five programs’ data collection practices through technical and process-oriented lenses; producing a data roadmap outlining how to strategically implement a lasting integrated early childhood integrated data system.</li> <li>• Supported re-engineering of data request processes and deployment of solutions that help to identify available datasets, streamline the execution of data-sharing agreements, and facilitate complex approval and dataset generation workflows.</li> </ul> |

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| <b>Future Focus</b>            | <ul style="list-style-type: none"> <li>• Expanding the use of NLP capabilities to extract and contextualize free text in electronic health records and case management systems</li> <li>• Analyzing health system and workforce resiliency in the wake of COVID-19</li> <li>• Applying our repeatable process for integrating clinical and SDOH datasets to predict patient risk to additional chronic health conditions</li> <li>• Facilitating secure, cloud-based data discovery, access, research, and collaboration across healthcare systems using the CoRE platform</li> <li>• Expanding our analytics support in the battle against the opioid crisis</li> <li>• Consolidation of healthcare orgs through M&amp;A due diligence and integration services</li> </ul> |
| <b>Talent Development</b>      | <ul style="list-style-type: none"> <li>• Resultant's team includes experienced professionals with advanced degrees from some of the nation's most prestigious institutions. Resultant supports the ongoing development of our team with individual and team training of technical and leadership skills. Further, the team drives community talent building through participation in organizations such as iWiT, PyIndy, TechPoint, Women Who Code, Indianapolis Tableau User Group, and Nextech.</li> </ul>  |
| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"> <li>• Resultant has experience facilitating data sharing agreements across public and private partnerships and building proven solutions that bring together disparate datasets for meaningful analysis.</li> </ul>  |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"> <li>• Resultant experts present at industry events across the country around and publish whitepapers and case studies detailing client solutions and methodology.</li> </ul>   |

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| <b>Springbuk</b>   |                   |
| 525 S Meridian St #1b, Indianapolis, IN 46225<br>www.springbuk.com<br>Contact: info@springbuk.com<br>Twitter: @SpringbukHealth | <b>For-profit</b> |



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| <b>Role(s)</b>            | <ul style="list-style-type: none"> <li>Provide employers with population health analytics and intelligence that reduces cost and improves health of their population</li> <li>Work with employers, insurance brokers/advisors, onsite clinics, wellness vendors, disease management companies, insurance carriers, TPAs etc.</li> <li>Springbuk is a Health Intelligence platform that delivers intelligent actionable strategies, backed by data, empowering employers and consultants to make smarter health management decisions.</li> </ul> |
| <b>Mission</b>            | <ul style="list-style-type: none"> <li>Vision – to prevent disease with data</li> </ul>   |
| <b>History</b>            | <ul style="list-style-type: none"> <li>Formation of Healthiest Employers LLC and Healthiest Employers Program</li> </ul>  |
| <b>Org</b>                | <ul style="list-style-type: none"> <li>110 employees - 50% of the organization are focused on sales, marketing, and customer service. 40% of the organization are focused on product development, technology development, data science, and subject matter experts. 10% of the organization are focused on general and administrative activities.</li> </ul>  |
| <b>Board</b>              | <ul style="list-style-type: none"> <li>Rod Reasen, Springbuk (Chairman)</li> <li>Phil Daniels, Springbuk</li> <li>Randy Scott, Healthquest Capital</li> <li>Kurt Sheline, Echo Health Ventures</li> <li>Brian Hopcraft, Lewis &amp; Clark Ventures</li> <li>Kristi Savacool, Independent Director</li> </ul>  |
| <b>Finance</b>            | <ul style="list-style-type: none"> <li>Raised \$45M in capital from institutional, angel, and individual investors</li> </ul>   |
| <b>Data Source</b>        | <ul style="list-style-type: none"> <li>Employer health benefits and clinical data</li> <li>Data given from insurance carriers, TPAs, wellness vendors, disease management companies, ancillary benefits, vision, dental, etc.</li> </ul>  |
| <b>Data Access</b>        | <ul style="list-style-type: none"> <li>Springbuk’s data pipeline and health intelligence engine support the receipt, normalization, quality, and enrichment of all data</li> </ul>  |
| <b>Tech Capabilities</b>  | <ul style="list-style-type: none"> <li>Solutions empower customers to look retrospectively and ahead to predict future healthcare risk.</li> <li>Springbuk provides curated content through the easy to navigate user interface, allowing a novice to feel like a data scientist.</li> <li>Springbuk provides professional specialized services called Health Strategy Services (HSS) to assist customers with understanding their data and how to take action, as well as creating reports</li> </ul>  |
| <b>Projects</b>           | <ul style="list-style-type: none"> <li>Being a B2B SaaS platform, we evaluate and entertain projects on a case by case basis. These projects are typically performed with organizations looking to better understand population health patterns and trends in our vast data landscape</li> <li>Additionally, we provide a lot of thought leadership in the industry around population health, analytics, and intelligence. Currently, we are pouring a great deal into COVID thought leadership, outreach, and tools for our clients</li> </ul> |
| <b>Future Focus</b>       | <ul style="list-style-type: none"> <li>Continue to support employers on their health benefits journey and connect new data sources together that provide new insights</li> </ul>  |
| <b>Talent Development</b> | N/A   |

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| <b>Data Sharing Agreements</b> | <ul style="list-style-type: none"><li>• We have data use agreement, master services agreements, business associate agreements, and all the other legal and privacy agreements required with all the entities in our ecosystem (our data partners, and our customers)</li></ul> |
| <b>Programs/ Publications</b>  | <ul style="list-style-type: none"><li>• White papers, case studies, webinars</li></ul>   |

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| <b>Ascension St. Vincent</b>  |   |  |
| 250 W. 96th St, Indianapolis, IN 46260<br>Healthcare.ascension.org<br>Contact: TBD<br>Twitter: @StVincentIN |   |   |
|   |   | <b>Nonprofit Health System</b>  |
| <b>Health System Mission and Organization</b>   | <ul style="list-style-type: none"> <li>Ascension is a faith-based healthcare organization dedicated to transformation through innovation across the continuum of care. As one of the leading non-profit and Catholic health systems in the U.S., Ascension is committed to delivering compassionate, personalized care to all, with special attention to persons living in poverty and those most vulnerable. In FY2019, Ascension provided \$2 billion in care of persons living in poverty and other community benefit programs. Ascension includes more than 150,000 associates and 40,000 aligned providers.</li> <li>Mission Statement: Rooted in the loving ministry of Jesus as healer, we commit ourselves to serving all persons with special attention to those who are poor and vulnerable. Our Catholic health ministry is dedicated to spiritually centered, holistic care, which sustains and improves the health of individuals and communities. We are advocates for a compassionate and just society through our actions and our words.</li> </ul> |   |
| <b>Data/Analytics Organization Structure</b>  | <ul style="list-style-type: none"> <li>Ascension Data Science Institute (ADSI, national analytics) and Ascension Data Delivery and Governance (ADDG) created in 2019.             <ul style="list-style-type: none"> <li>Leadership: Karthik Raja MS, Chief Data Science Officer and Gagan Singh, Chief Data Officer</li> <li>System-wide data science, data governance, and data management teams providing resources to support acute-care, ambulatory, telehealth, and claims data and analytics with expertise in ETL, data science, business intelligence, statistics, data architecture, and actuarial services</li> </ul> </li> <li>Indiana has additional local analytics resources and data teams that leverage national data sources while responding to custom state-level reporting and analytics needs.</li> </ul>   |   |
| <b>Data/Analytics Roles and Responsibilities</b>  | <ul style="list-style-type: none"> <li>National analytics available from ADSI include enterprise analytic products, supporting our insight into quality, safety, health economic, clinical effectiveness, operations, financial, actuarial, and managed care analytics.</li> <li>ADSI Vision: To support Ascension in achieving its Quadruple Aim, this uniquely skilled, high-performing team will develop analyses, models and applications and aid in the strategic decision making process.</li> <li>Ascension's analytics team provides data integration and analytic insight designed to address clinical, economic, and operational inquiries supporting Ascension's acute-care, ambulatory, telehealth, and insurance divisions. Data plays a critical foundational role in the transformation of care delivery, quality and financial outcomes as well as research endeavors. Advanced analytics and data science enable us to provide a competitive advantage.</li> </ul>   |   |
| <b>EMR and Key Data Systems</b>   | <ul style="list-style-type: none"> <li>EMR – Athena (outpatient, installed in 2013), Allscripts (inpatient, installed in 2014)</li> <li>Tableau – Primary BI tool</li> <li>Enterprise Data Warehouse – Google Bigquery</li> </ul>   |   |
| <b>Data Access</b>  | <ul style="list-style-type: none"> <li>Founding Member and contributor to Indiana Health Information Exchange (IHIE)</li> <li>CommonWell Health Alliance</li> </ul>   |   |
| <b>In-house Tech Capabilities/ Analytics Partners</b>   | <ul style="list-style-type: none"> <li>Key Analytic Partnerships             <ul style="list-style-type: none"> <li>Optum Performance Analytics</li> <li>Google Cloud Platform</li> </ul> </li> </ul>   |   |
| <b>Key Ongoing Projects/ Initiatives</b>  | <ul style="list-style-type: none"> <li>Improving clinical process reliability to deliver higher value patient care</li> <li>Reducing admissions among COPD/asthma patients</li> <li>Improving HbA1c control among our diabetic patients, with an emphasis on reducing the disparity in diabetes management for minority populations</li> </ul>  |   |

| <b>Community Health Network</b>  |  |
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| 1400 N. Ritter Ave #351, Indianapolis, IN 46219<br>ecommunity.com<br>Contact: Patrick McGill @ PMcGill@ecomunity.com<br>Twitter: @CHNw |  |
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| <b>Nonprofit Health System</b>   |  |
| <b>Health System Mission and Organization</b>  | <ul style="list-style-type: none"> <li>Community Health Network was created 60 years ago as a non-profit health system and has grown to more than 200 sites of care and affiliates throughout Central Indiana, Community's full continuum of care integrates hundreds of physicians, specialty and acute care hospitals, surgery centers, home care services, MedChecks, behavioral health and employer health services.</li> <li>Mission Statement: Deeply committed to enhancing the health and well-being of the communities we serve.</li> </ul>   |
| <b>Data/Analytics Organization Structure</b>   | <ul style="list-style-type: none"> <li>Department of Network Analytics created in 2018</li> <li>Network Analytics is a 50-person team, with centralized functional areas including: Data Architecture, Business Intelligence Analytics, Data Science, PX, Training and Technical Project Management, with a team of deployed analysts dedicated to specific business units.</li> <li>Leadership:               <ul style="list-style-type: none"> <li>Patrick McGill, MD, Chief Analytics Officer</li> <li>Amy Heleine, Vice President of Network Analytics</li> </ul> </li> </ul>   |
| <b>Data/Analytics Roles and Responsibilities</b>   | <ul style="list-style-type: none"> <li>The Network Analytics Center of Excellence is responsible for all network data and analytic functions, excluding financial analytics. CTO also oversees all Information Technology (CIO reporting), Informatics and Business Process Management activities.</li> <li>Analytics Vision: The CHNw workforce has efficient access to mature data and analytics capabilities which leads to key network outcomes and the promise of Exceptional Care, Simply Delivered</li> <li>Network Analytics provides full-service analytic solutions designed to address clinical, operational, and business needs. Responsible for data governance, master data management, architecture of cloud-based data services and analytics platform, advanced statistical services that include predictive analytics and machine learning, dashboard visualization development and storytelling, survey methodology and data literacy education.</li> </ul> |
| <b>EMR and Key Data Systems</b>  | <ul style="list-style-type: none"> <li>EMR – Epic Enterprise, Installed In 2012</li> <li>Enterprise Data Warehouse and BI – Health Catalyst, Installed In 2015</li> <li>Financial Data Reporting – EPSi, Installed in 2018</li> <li>Azure Data and Analytics platform</li> <li>Statistical Analysis Tools- SAS, SPSS, R</li> <li>Data Visualization- PowerBI</li> <li>Surveying &amp; PX platform- Qualtrics</li> </ul>  |
| <b>Data Access</b>   | <ul style="list-style-type: none"> <li>Founding Member and contributor to Indiana Health Information Exchange (IHIE)</li> <li>Epic Cosmos contributor. Epic's data sharing platform; deidentified benchmarking data accessible to Epic customers</li> <li>Health Catalyst Touchstone contributor. Health Catalyst data sharing platform, deidentified benchmarking data accessible to Health Catalyst customers with CMS claims data</li> </ul>  |

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| <b>In-house Tech Capabilities/ Analytics Partners</b> | <ul style="list-style-type: none"> <li>• Key Analytic Partnerships <ul style="list-style-type: none"> <li>• Epic</li> <li>• Health Catalyst</li> <li>• Qualtrics</li> <li>• Microsoft &amp; Azure</li> <li>• Innovative Healthcare Collaborative of Indiana, Inc (IHCI)</li> <li>• TechPoint</li> <li>• Ascend</li> <li>• Academic partnerships- Butler University, Ball State- CICS, IU- Luddy, Marion University</li> </ul> </li> </ul>   |
| <b>Key Ongoing Projects/ Initiatives</b>              | <ul style="list-style-type: none"> <li>• Improving clinical outcomes and processes</li> <li>• Data and analytic driven business strategy planning</li> <li>• Employer health benefits and clinical data</li> <li>• Data given from insurance carriers, TPAs, wellness vendors, disease management companies, ancillary benefits, vision, dental, etc.</li> <li>• Aunt Bertha-SDOH</li> <li>• Self-Service Analytics solutions</li> <li>• Diversity, Equity, and Inclusion improving Health Equity outcomes</li> <li>• Patient Experience, Customer Journey analytics</li> </ul> |

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| <b>Eskenazi Health</b>  |  |
| 720 Eskenazi Ave., Indianapolis, IN 46202<br>eskenazihealth.edu<br>Contact: Jennifer Weatherspoon @<br>jennifer.weatherspoon@eskenazihealth.edu | <b>Safety Net<br/>Academic<br/>Health Center</b> |



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| <b>Health System Mission and Organization</b>         | <ul style="list-style-type: none"> <li>• Eskenazi Health is one of the largest essential health care systems in the country.</li> <li>• Mission Statement: The mission of Eskenazi Health is to: Advocate, Care, Teach and Serve with special emphasis on the vulnerable populations of Marion County.</li> <li>• Vision: Eskenazi Health will continuously strive to enhance our ability to meet the needs of the underserved and all people of Marion County, will be sound economically and lead innovatively in clinical care, research, education and service excellence.</li> </ul>   |
| <b>Data/Analytics Organization Structure</b>          | <ul style="list-style-type: none"> <li>• Analytics team of 12, covering business intelligence and clinical reporting</li> <li>• Leadership: <ul style="list-style-type: none"> <li>• Christopher Callahan, MD, Chief Research &amp; Innovation Officer</li> <li>• Jennifer Weatherspoon, MSN, RN, Director of Quality, Analytics &amp; Informatics</li> <li>• Jessica Majors, Manager of Analytics</li> </ul> </li> </ul>   |
| <b>Data/Analytics Roles and Responsibilities</b>      | <ul style="list-style-type: none"> <li>• The analytics team is responsible for the extraction, aggregation, and quality assurance of data from multiple sources in support of performing analytics reporting, operational reporting, and quantitative analysis of data. The team is responsible for supporting and continually improving the effective utilization of accurate decision support data.</li> <li>• Analytics looks to identify and implement new approaches and methods to facilitate self-service analytics, the advancement of our analytics maturity and support of operations for clinical and financial departments.</li> <li>• Analytics focuses on the execution of analytical and/or research activities to provide the health system the information and tools for strategic decision making, health care utilization and costs, affordability opportunities, reimbursements projects, population health, clinical outcomes, provider patterns, trends and forecasting.</li> </ul> |
| <b>EMR and Key Data Systems</b>                       | <ul style="list-style-type: none"> <li>• EMR – Epic Enterprise, Installed October 2016</li> <li>• SAP HANA, Installed January 2020</li> </ul>   |
| <b>Data Access</b>                                    | <ul style="list-style-type: none"> <li>• Founding Member and contributor to Indiana Health Information Exchange (IHIE)</li> <li>• Epic Cosmos project underway (go-live Jan 2021). Epic's data sharing platform; deidentified benchmarking data accessible to Epic customers</li> </ul>   |
| <b>In-house Tech Capabilities/ Analytics Partners</b> | <ul style="list-style-type: none"> <li>• Key Analytic Partnerships <ul style="list-style-type: none"> <li>• Epic</li> <li>• SAP Consortium (convening early 2021)</li> </ul> </li> </ul>  |
| <b>Key Ongoing Projects/ Initiatives</b>              | <ul style="list-style-type: none"> <li>• SAP HANA In-memory Data Management System implementation</li> <li>• SAP collaboration with Parkland- mentoring program</li> <li>• SAP HANA data modeling training</li> </ul>   |

# CROSS-ORGANIZATION INITIATIVES



## Diabetes Data-Linkage Pilot

Contact: drobertson@indianabiosciences.org

IBRI has a focus in diabetes and factors related to its risk and progression. This project is linking clinical data with Social Determinants of Health (SDoH), which are critical to identify key risk factors and interventions

INDIANA  
BIOSCIENCES  
RESEARCH  
INSTITUTE

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| <b>Overview</b>                     | <ul style="list-style-type: none"><li>• This project will set the framework for securely linking data from clinical sources (Indiana Health Information Exchange - IHIE, IU Health - IUH, and Regenstrief Institute) with state sources (Management Performance Hub - MPH) for future non-profit, commercial, and public health efforts. The specific project outcomes are:<ul style="list-style-type: none"><li>• Prove that we can cross-link clinical and SDoH (education/workforce) data securely</li><li>• Understand data coverage between IHIE/IUH that are critical for diabetes risk factors</li><li>• Create specific low-risk SDoH categories from real-world MPH data related to household income and education that correlate with risk of poor health outcomes and validate against standard measures</li><li>• Leverage this cross-link between clinical and SDoH data to further support the statewide diabetes strategy led by Indiana State Dept. of Health (ISDH). This project will enable a broader understanding of SDoH factors driving diabetes in Indiana</li><li>• Plan future efforts to make these SDoH measures available to other projects. Additionally, plan future efforts of additional SDoH measures from other state data sources managed by MPH</li></ul></li></ul> |
| <b>Lead Org</b>                     | <ul style="list-style-type: none"><li>• Indiana Biosciences Research Institute (IBRI)</li></ul>  |
| <b>Participating Orgs and Roles</b> | <ul style="list-style-type: none"><li>• Indiana Health Information Exchange (IHIE): Clinical data access expertise from the Indiana Network of Patient Care (INPC)</li><li>• Indiana University Health: Potential data access and expertise around the IUH enterprise data warehouse</li><li>• Management Performance Hub (MPH): Access of social determinants data from Education and Workforce database enabled by Dept of Education (DOE), Commission for Higher Education (CHE), and Dept. of Workforce Development (DWD). Additionally, usage of enhanced research environment (ERE) for linkage and analysis</li><li>• Regenstrief Institute: Data access (as needed) and expertise around the Indiana Network of Patient Care (INPC) and linkage to MPH data</li></ul>  |
| <b>History/<br/>Funding</b>         | <ul style="list-style-type: none"><li>• Initial work linking SDoH with clinical data done by Regenstrief and MPH around opioids in 2019</li><li>• Project conceptualized early 2020 and approved by INPC Management Committee in May 2020</li><li>• Currently self-funded by the participating organizations</li></ul>   |

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| <p><b>Data Leveraged (primary and secondary)</b></p> | <ul style="list-style-type: none"> <li>Clinical data related to diabetes patient electronic health records (EHRs) from the Indiana Network for Patient Care (INPC) and the Indiana University Health enterprise data warehouse (EDW)</li> <li>Data from the “Indiana’s Workforce” and “Complete High Ed Enrollment/Degree Records” (categories within MPH’s data dictionary) to define socio-economics factors/categories and correlate them with clinical health data outcomes</li> <li>Please see following data schematic for additional details of data being leveraged and linked:</li> </ul> <div style="text-align: center;"> <p><i>Data (schematic)</i></p> <p><b>Clinical Data</b></p> <table border="1"> <tr><td>ID</td><td>De-identified C_ID (PK)</td></tr> <tr><td>Demographics</td><td>age, gender, race</td></tr> <tr><td>Vitals</td><td>height, weight, BMI, blood pressure, temperature</td></tr> <tr><td>Diagnoses</td><td>ICD-10 of all diagnoses in the inclusion period</td></tr> </table> <p><b>Inclusion Criteria</b></p> <ul style="list-style-type: none"> <li>Juvenile or Adult (16+)</li> <li>T1D or T2D Diagnosis</li> <li>Timeframe: 2018-2019 (2 year)</li> </ul> <p><b>Crosswalk Table</b></p> <table border="1"> <tr><td>ID1</td><td>De-identified M_ID (PK)</td></tr> <tr><td>ID2</td><td>De-identified M_ID (PK)</td></tr> </table> <p><b>MPH Data</b></p> <table border="1"> <tr><td>ID</td><td>De-identified M_ID (PK)</td></tr> <tr><td>Demographics</td><td>age, gender, race</td></tr> <tr><td>Education</td><td>Degrees and years</td></tr> <tr><td>Workforce</td><td>Job-type, salary range</td></tr> </table> </div> | ID | De-identified C_ID (PK) | Demographics | age, gender, race | Vitals | height, weight, BMI, blood pressure, temperature | Diagnoses | ICD-10 of all diagnoses in the inclusion period | ID1 | De-identified M_ID (PK) | ID2 | De-identified M_ID (PK) | ID | De-identified M_ID (PK) | Demographics | age, gender, race | Education | Degrees and years | Workforce | Job-type, salary range |
| ID   | De-identified C_ID (PK)  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| Demographics   | age, gender, race  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| Vitals   | height, weight, BMI, blood pressure, temperature   |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| Diagnoses  | ICD-10 of all diagnoses in the inclusion period  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| ID1  | De-identified M_ID (PK)  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| ID2  | De-identified M_ID (PK)  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| ID   | De-identified M_ID (PK)  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| Demographics   | age, gender, race  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| Education  | Degrees and years  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| Workforce  | Job-type, salary range   |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| <p><b>Community Impact</b></p>                       | <ul style="list-style-type: none"> <li>This project will set the framework for securely linking data from clinical sources with state sources (MPH) for future non-profit, commercial, and public health efforts</li> <li>This will enable to both assess and monitor factors that are critical to improving the health of Indiana citizens and optimizing policies, interventions, and improvements in an individual's environment for improved health outcomes</li> </ul>  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| <p><b>Future Focus Areas</b></p>                     | <ul style="list-style-type: none"> <li>Identify additional organizations that need this data to support their research or community-based efforts to improve health outcomes</li> <li>Locate additional funding to productionize these capabilities to support additional resource efforts</li> </ul>  |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |
| <p><b>Resources</b></p>                              | <ul style="list-style-type: none"> <li>Please contact Dan Robertson at drobertson@indianabiosciences.org to learn more and/or understand how your organization can follow these processes to support your efforts</li> </ul>   |    |                         |              |                   |        |  |           |   |     |                         |     |                         |    |                         |              |                   |           |                   |           |                        |

## Diabetes Impact Project, Indianapolis Neighborhoods (DIP-IN)

Contact: [dipin@iupui.edu](mailto:dipin@iupui.edu)

DIP-IN is an initiative designed to build resources and connections within communities of Indianapolis with the goal of preventing diabetes, or better managing it, so that people can live long and healthy lives. DIP-IN believes that where you live shouldn't determine how long you live.



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| <b>Overview</b>                               | <ul style="list-style-type: none"> <li>The Goals of DIP-IN are to: <ul style="list-style-type: none"> <li>reduce complications and improve quality of life of people living with diabetes</li> <li>increase awareness of risk factors for diabetes and encourage people at high risk to be screened so they can take action</li> <li>foster an environment (physical and social) that supports greater health and well-being for all residents</li> <li>increase community capacity to lead DIP-IN initiatives through a focus on civic engagement and community leadership</li> </ul> </li> <li>DIP-IN is currently focused on three Indianapolis areas with high prevalence of diabetes: Near Northwest community, Near West community, and Northeast community.</li> </ul>   |
| <b>Lead Org</b>                               | <ul style="list-style-type: none"> <li><b>IU Richard M. Fairbanks School of Public Health</b> at IUPUI</li> </ul>   |
| <b>Participating Orgs and Roles</b>           | <ul style="list-style-type: none"> <li><b>Eskenazi Health:</b> Manages clinic-based DIP-IN Community Health Workers (CHWs); provides EMR data for evaluation</li> <li><b>Marion County Public Health Department (MCPHD):</b> Provides community liaison support and contributes to data analysis and evaluation</li> <li><b>Local Initiatives Support Corporation (LISC):</b> Oversees contractual relationships with community-based organizational homes of neighborhood CHWs</li> <li><b>The Polis Center at IUPUI:</b> Created and maintains the DIP-IN Community Data Dashboards; contributes to evaluation</li> <li><b>Regenstrief Data Services:</b> Provides clinical data for evaluation from the Indiana Network for Patient Care (INPC)</li> <li><b>Christamore House, Flanner House, and United Northeast Community Development Corporation</b> - Organizational homes for neighborhood CHWs</li> </ul> |
| <b>History/ Funding</b>                       | <ul style="list-style-type: none"> <li>Initiated in May 2018 with five-year support from the Eli Lilly and Company, Lilly Global Health Partnership (LGHP)</li> <li>Received expanded funding and support in September 2021, extending the project to a total of eight years</li> <li>This project is the first US-based program for the LGHP</li> <li>Eskenazi Health contributes support for three community health workers</li> </ul>  |
| <b>Data Leveraged (primary and secondary)</b> | <ul style="list-style-type: none"> <li>Primary data were collected via a baseline DIP-IN Community Survey in 2019. This will be repeated before the project ends in 2022.</li> <li>Secondary data leveraged for evaluation of the project are electronic medical record data secured from Eskenazi Health as well as the Indiana Network for Patient Care (INPC)</li> <li>Secondary data compiled by The Polis Center regarding each community's social context are utilized in the project dashboard and as contextual variables in evaluation</li> </ul>  |

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| <b>Community Impact</b>   | <ul style="list-style-type: none"> <li>• This project is a unique multi-sector partnership that aims to reduce the high burden of diabetes in three communities of Indianapolis with an integrated approach that brings clinical care, social resources, and resident voices to bear. Each DIP-IN community has a team of Community Health Workers (CHWs), two who are Eskenazi clinic-based and one that is housed within a local neighborhood organization. CHWs focus on connecting individuals to medical and social resources as well as providing social support while also working to positively change the neighborhood environment to promote healthier living.</li> <li>• This program is built upon the principle that community residents are those best able to decide what initiatives are most likely to be effective in their community. For the prevention component of this project, a team of local residents along with CHWs and organizational representatives guide decision-making about evidence-based resources or programs to fund and implement through the project.</li> </ul> |
| <b>Future Focus Areas</b> | <ul style="list-style-type: none"> <li>• Each DIP-IN community has chosen a focus area based on data collected by the team where the overall aim is to implement systems, policy, and environmental changes for better community health. Over the next several years each community will expand upon evidence-based practices to address the following topic areas: food access and knowledge on healthy eating (Northeast), stress (Near West), physical activity and access (Near Northwest).</li> </ul>   |
| <b>Resources</b>          | <ul style="list-style-type: none"> <li>• Diabetes.iupui.edu</li> <li>• DIP-IN Community Dashboards: <a href="http://savi.org/apps/dipin">savi.org/apps/dipin</a></li> </ul>  |

## The Indiana CTSI Monon Collaborative Homeless Transitions-of-Care Pilot

Contact: [ejhardwi@iu.edu](mailto:ejhardwi@iu.edu)

The Homeless Transitions-of-Care Pilot represents the first project from the SDoH Workgroup.



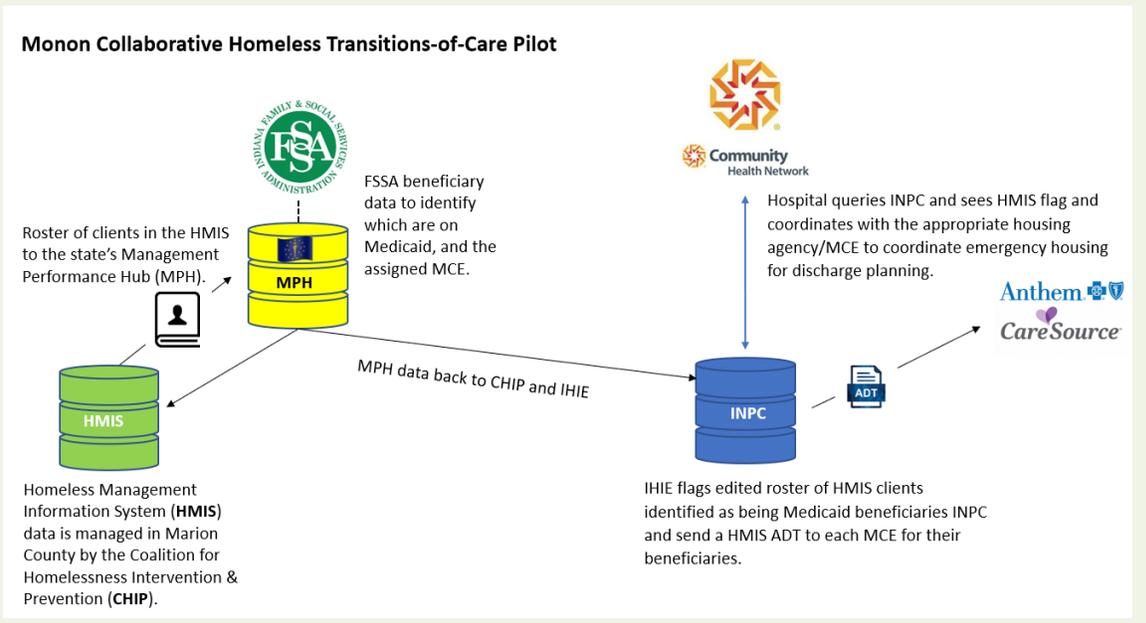
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| <p><b>Overview</b></p>                     | <p>The Indiana Clinical &amp; Translational Sciences Institute (CTSI) Monon Collaborative’s Social Determinants of Health (SDoH) Collaboration Network is a community-based working group focused on advancing coordination and collaboration of social services and resources to achieve better economic, educational, and health outcomes for vulnerable populations.</p> <p>These series of “pilots will develop and test multi-sector data sharing interventions to address specific social needs use cases to support vulnerable and at-risk populations in communities across Indiana. Each use case will create or operationalize technical solutions to provide and share data across multi-sector, collaborating partners that improve organizational workflows, reduce the cost of care and coverage, and achieve measurable health equity and outcomes for individuals in need.</p> <p>Working with homeless and housing services agencies (CHIP), healthcare providers (CHN), data and technology (IHIE), Medicaid managed care organizations (Anthem, CareSource), and state agency partners (FSSA, MPH), the program seeks to improve coordination of services for homeless/housing-insecure individuals through timely and efficient access to collaborative, comprehensive care.</p> <p>The goals of the Pilot include:</p> <ul style="list-style-type: none"> <li>• Data tools to quickly and easily enable social service agencies and community-based organizations to utilize critical client information (Medicaid coverage, managed care provider) to facilitate access to resources and collaboratively coordinated care planning.</li> <li>• Provide healthcare providers with data collected from social services and community-based organizations to quickly and easily identify what affiliation a patient may already have with social or human services provider in the community, to more efficiently coordinate collaborative care planning (e.g., knowing a homeless patient is already connected to an emergency housing program in the community with whom they can coordinate, expedites an ER’s ability to develop safe and effective discharge planning).</li> <li>• Developing new and responsive models for Data Governance that consider the various privacy and security considerations of each of the multi-sector partner’s domains (HIPAA, FERPA, other federal and state policies), as well as the expectation of safeguarding the confidentiality and privacy of the individual patient/client’s information.</li> </ul> |
| <p><b>Lead Org</b></p>                     | <p>Indiana CTSI Monon Collaborative</p>   |
| <p><b>Participating Orgs and Roles</b></p> | <p><b>Indiana CTSI:</b> Convening organization providing leadership and logistics, assessment, data and scientific research expertise to develop and implement solutions for helping Indiana become a healthier state.</p> <p><b>Indiana Health Information Exchange (IHIE):</b> Clinical data access expertise from the Indiana Network of Patient Care (INPC)</p> <p><b>Coalition for Homelessness Prevention and Intervention (CHIP):</b> Manages and coordinates the data for the Homeless Management Information System (HMIS) for network of homeless and housing organization in support of an effective system of homelessness prevention and intervention in the greater Indianapolis area.</p> <p><b>Community Health Network:</b> Health system provider partner organization with more than 200 sites of care and affiliates throughout Central Indiana.</p> <p><b>Anthem:</b> Medicaid managed care entity (MCE) partner organization</p> <p><b>CareSource:</b> Medicaid managed care entity (MCE) partner organization</p> <p><b>Family &amp; Social Service Administration (FSSA):</b> Providing updated Medicaid beneficiary coverage data.</p> <p><b>Management Performance Hub (MPH):</b> Coordinating agency for state data delivery.</p>  |

**History/  
Funding**

- The Indiana CTSI Monon Collaborative was established in 2018 to connect a wide variety of community organizations to address health inequities cross the state. The Monon Collaborative applies data and scientific expertise to develop and implement solutions for helping Indiana become a healthier state. The Indiana CTSI is supported by the National Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award (UL1TR002529). The Indiana CTSI provides funding opportunities to support community-university partnerships through various mechanisms. Additional information about our funding opportunities can be found on our website: <https://indianactsi.org/researchers/services-tools/translational-research-development/all-ctsi-funding/>.
- The issues that have been identified and articulated as the focus of these projects by the participating partner organizations represent real-world use cases that increase program costs and result in poor individual outcomes. From a value-based-care perspective, improving collaborative and coordinated data-sharing and workflow is expected to improve system efficiencies, reduce state and organizational costs, and improve patient/client outcomes. While the workgroup will seek grant funding to support this work, sustainability is being insured by each partnering organization participating by providing in-kind support as an investment to permanently operationalize workflows and data-sharing relationship upon pilot success.

**Data Leveraged (primary and secondary)**

- The Homeless Management Information System (HMIS) data is managed in Marion County by the Coalition for Homelessness Intervention & Prevention (CHIP).
- CHIP will provide the roster of clients in the HMIS to the state’s Management Performance Hub (MPH).
- With the approval of FSSA, MPH will review the HMIS roster of clients and identify which are on Medicaid, and the assigned MCE.
- MPH will send back to CHIP and IHIE the edited roster of only the clients identified as being Medicaid beneficiaries, and their assigned MCE.
- IHIE will use the edited roster of only the clients identified as being Medicaid beneficiaries, and which is their assigned MCE to 1) match to the patient record, and 2) send a “HMIS status-only” HL7 admit, discharge, transfer (ADT) document notification to each MCE, but only for their beneficiaries.
- Hospital partner organizations will be able to query the IHIE INPC for patient data and see the displayed HMIS flag indicating that this patient is already in the HMIS, and they can coordinate with the appropriate housing agency to coordinate emergency housing for discharge planning.



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| <p><b>Community Impact</b></p>   | <p>Through our multi-sector partnerships (with government, healthcare, community-based organizations, academic translational and implementation science research partners, etc.) we are developing a health and social services provider ecosystem, where we can facilitate secured data aggregation and curated access tools to bring the benefits of the last decade's well-funded health IT innovations to the critically under-resourced, siloed, and fragmented social services delivery system, populated by governmental and non-governmental agencies and poorly-connect CBO and nonprofit organizations. Our collaborative solutions provide secure access to a specified and limited data set queried to answer those immediately critical questions that will enable social service providers to route and coordinate client care across multiple provider organizations across collaborating sectors.</p>  |
| <p><b>Future Focus Areas</b></p> | <p>The Monon Collaborative SDoH Workgroup hopes to pursue digital transformation through additional innovative pilots that will address other multi-sector data-sharing needs across these increasingly intersecting sectors (e.g. healthcare, housing, food security, offender re-entry, community-based chronic disease management), by developing data workflows and technology solutions to enable secure delivery of critical data at the point-of-service, for both healthcare and social service organizations.</p>   |
| <p><b>Resources</b></p>          | <ul style="list-style-type: none"> <li>• More information Indiana CTSI Monon Collaborative: <a href="https://indianactsi.org/community/monon-collaborative/">https://indianactsi.org/community/monon-collaborative/</a></li> <li>• Indiana Health Information Exchange (IHIE): <a href="https://www.ihie.org/">https://www.ihie.org/</a></li> <li>• Coalition for Homelessness Prevention and Intervention (CHIP): <a href="https://www.chipindy.org/">https://www.chipindy.org/</a></li> <li>• Community Health Network: <a href="https://www.ecommunity.com/">https://www.ecommunity.com/</a></li> <li>• Indiana Medicaid managed care entities (MCE): Anthem, CareSource: <a href="https://www.in.gov/medicaid/members/170.htm">https://www.in.gov/medicaid/members/170.htm</a></li> <li>• Family &amp; Social Service Administration (FSSA): <a href="https://www.in.gov/fssa/">https://www.in.gov/fssa/</a></li> <li>• Management Performance Hub (MPH): <a href="https://www.in.gov/mph/">https://www.in.gov/mph/</a></li> </ul> |

## Indiana Data Partnership (IDP)

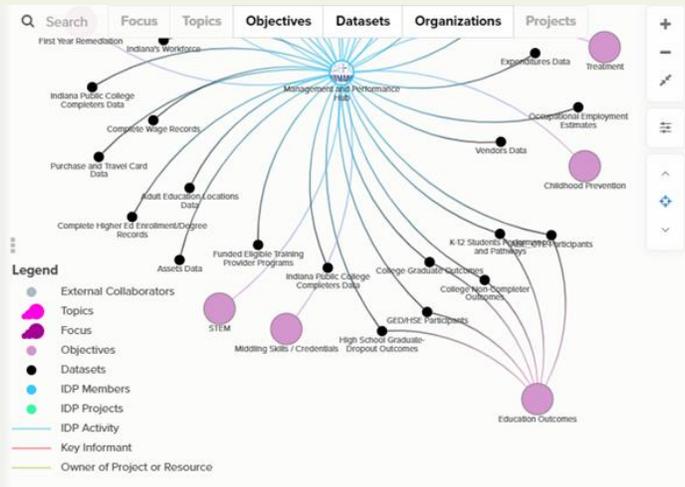
Engage through: [IN.gov/IDP](http://IN.gov/IDP)

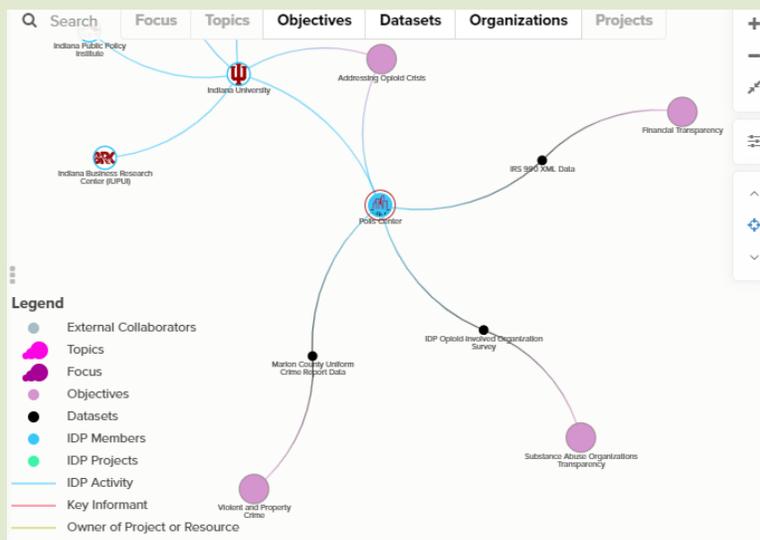
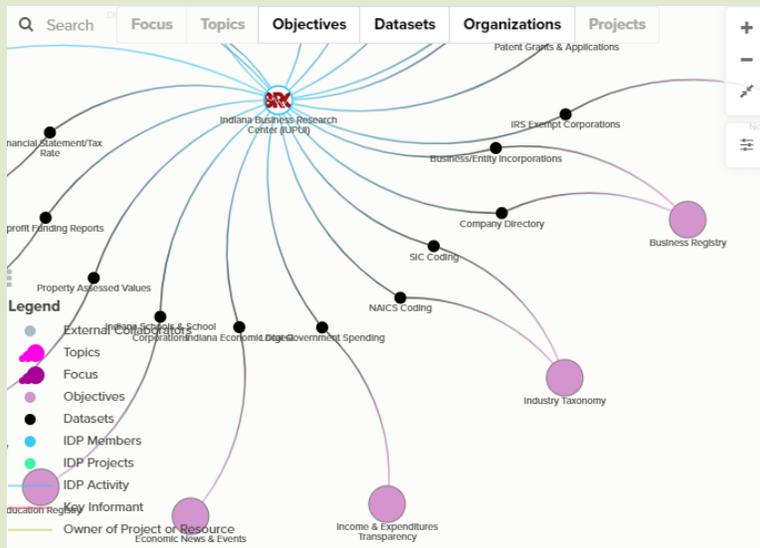
Goal to empower collaboration among government, non-profit and private sector entities to drive positive change in key challenges impacting Hoosiers



**INDIANA  
DATA  
PARTNERSHIP**

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| <p><b>Overview</b></p>                               | <ul style="list-style-type: none"> <li>IDP is an enhancement to the State of Indiana's Management Performance Hub (MPH), which provides data analytics solutions tailored to address management and policy questions enabling improved outcomes for Hoosiers. Formed in partnership with Indiana University (IU), this enhancement expands MPH's mission by creating a secure, replicable, and sustainable framework that helps organizations successfully partner to maximize holistic solutions and minimize duplication of efforts through sharing and viewing common data. Another benefit is the creation of better visualizations of organizations' service networks.</li> <li>Current focus areas include the opioid epidemic, improving education and workforce development, and diabetes research. The partnership serves these vital community needs by developing an integrated, scalable and collaborative decision-driving framework designed to increase the availability and utility of existing data among participating partners.</li> </ul> |
| <p><b>Lead Org</b></p>                               | <ul style="list-style-type: none"> <li>State of Indiana's Management Performance Hub (MPH)</li> </ul>   |
| <p><b>Participating Orgs and Roles</b></p>           | <ul style="list-style-type: none"> <li>Initially established with three major data centers within Indiana University             <ul style="list-style-type: none"> <li>IBRC - Indiana Business Research Center</li> <li>Polis Center</li> <li>PPI - Public Policy Institute</li> </ul> </li> <li>Notre Dame – All research organizations</li> <li>Currently expanding to include Purdue Center for Regional Development</li> </ul>   |
| <p><b>History/<br/>Funding</b></p>                   | <ul style="list-style-type: none"> <li>Two-year initiative began in January 2017 with generous support from Lilly Endowment Inc.</li> <li>Extended for seven months in December 2019. Initial phase of the partnership to concluded in August 2020; however, key relationships and projects initiated by this partnership continue</li> <li>~\$3M from LEI shared between MPH and the three IU centers</li> </ul>   |
| <p><b>Data Leveraged (primary and secondary)</b></p> | <ul style="list-style-type: none"> <li>State opioid, education, and workforce related data</li> <li>Polis Center - SAVI database</li> <li>IBRC - Gateway, Census</li> <li>The following images are examples of the cluster maps depicting datasets available by organization. Contact IDP to become involved and obtain access</li> </ul>   |





**Community Impact**

- Enhanced ability to link organizational data across various data sets (IBRC/Polis)
- Enhanced ability to link individuals across various data sets (MPH)
- External entities can share PII to MPH. MPH can link to those individuals to state data and share information back in an aggregate fashion, while ensuring security privacy are held to the fullest. This is primarily used for program evaluation (e.g., are workforce programs truly improving wages)
- Enhanced Research Environment available to improve analysis of more sensitive data sets in a secure environment
- IDP Portal (Teams and Ecosystem Map) available to improve awareness of data community partners and create a forum for communication

**Future Focus Areas**

- Continued growth of the partnership leveraging assets that are available at the participating organizations
- Opioid related projects were successful based on state data assets being leveraged along with SAVI data through the Polis Center
- Education/Workforce projects were successful based on leveraging state longitudinal record between K-12, higher ed, and workforce along with key census and community related assets from IBRC
- Future initiatives will look to leverage the strengths of the partners, and utilize the IDP platform to highlight/promote key projects

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|                  | <ul style="list-style-type: none"><li>• Diabetes focused research leveraging the multiple stakeholder dataset to include state data</li></ul>  |
| <b>Resources</b> | <ul style="list-style-type: none"><li>• IDP Portal is an online platform for IDP Partners where they can discover projects and datasets of interest and connect with organizations who are willing to collaborate on projects by sharing data</li><li>• Website (IN.gov/IDP) highlights initial cluster mapping projects that were created through this initiative</li></ul> |

## Indiana Pandemic Information Collaborative (IPIC)

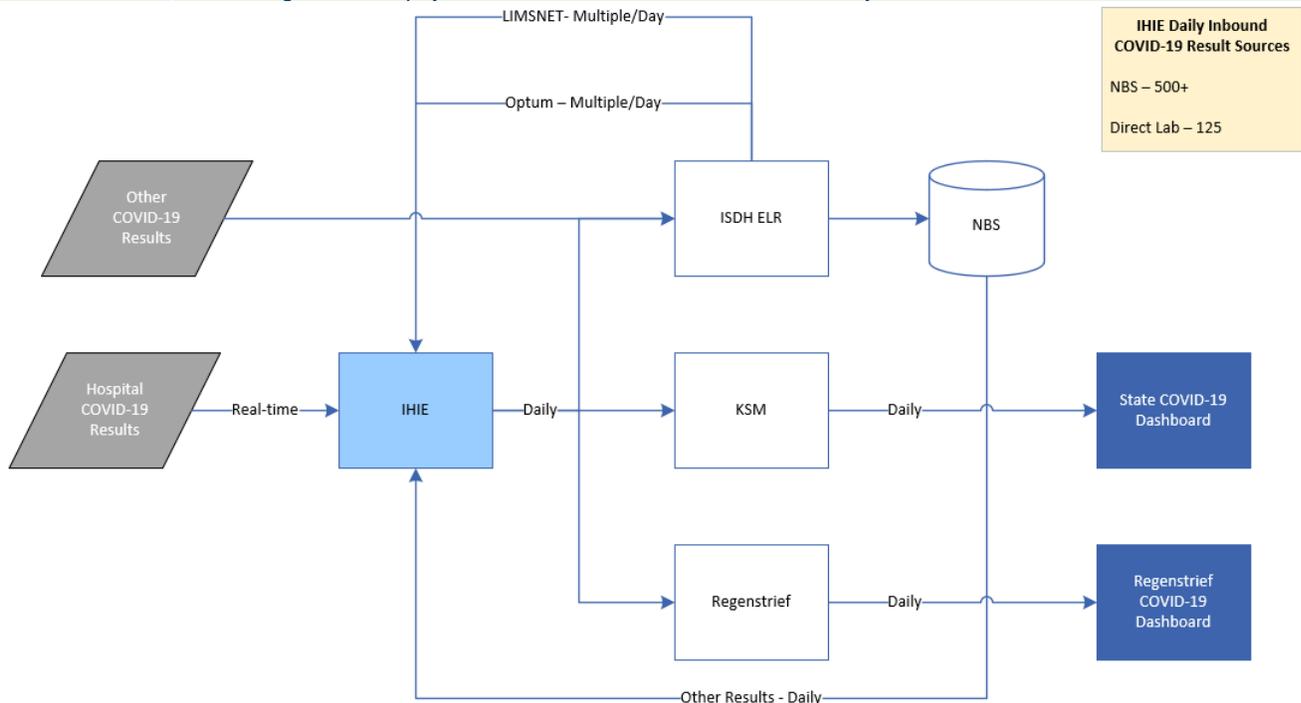
Engage through: [www.pandemiccollaborative.org/](http://www.pandemiccollaborative.org/)

Members of IPIC are committed to working together to share data, information, and knowledge and coordinate our efforts to make the necessary data available to attack COVID-19 and keep Indiana healthy and safe



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| <b>Overview</b>                               | <ul style="list-style-type: none"> <li>• Combating the COVID-19 pandemic requires all of us to work together to protect our families, communities, and the residents of our state.</li> <li>• From the start of this pandemic, Indiana's professionals across government, health systems, university, biosciences industry, and non-profit sectors have been working to address the crisis.</li> <li>• Recognizing that we must respond quickly and coordinate our efforts for greater impact, we formed IPIC to maximize the impact of our collective efforts and ensure the health of our community.</li> </ul>   |
| <b>Lead Org</b>                               | <ul style="list-style-type: none"> <li>• Regenstrief Institute – Peter Embi (Regenstrief/IU School of Medicine)</li> </ul>  |
| <b>Participating Orgs and Roles</b>           | <ul style="list-style-type: none"> <li>• Seven primary workstreams: three are focused on technical roles, and four are focused on engagement</li> <li>• Data Modeling (e.g., predictive models around COVID). Led by Brian Dixon (Regenstrief/Fairbanks School of Public Health) and Patrick McGill (Community Health)</li> <li>• Data Visualization (e.g., COVID dashboards). Led by Shaun Grannis (Regenstrief/IUSM) and Tony Pastorino (IU Health)</li> <li>• Data Interchange (e.g., data movement and exchange). Led by John Kansky (IHIE) and John Roach (KSM Consulting)</li> <li>• State Government. Led by Connor Norwood (FSSA) and Josh Martin (MPH)</li> <li>• BioSciences. Led by Darshan Shah (BioCrossroads)</li> <li>• Health Systems. Led by Matt Browning (Indiana Hospital Association)</li> <li>• Community-facing organizations. Led by Sarah Wiehe (Indiana CTSI/IUSM) and Jackie Dowd (Lilly Endowment)</li> </ul> |
| <b>History/ Funding</b>                       | <ul style="list-style-type: none"> <li>• Initiated in March 2020 to create a collective data presence across Indiana to attack COVID-19</li> <li>• This collaborative is a coalition of the willing and interested. Formal entity and funding do not exist.</li> </ul>  |
| <b>Data Leveraged (primary and secondary)</b> | <ul style="list-style-type: none"> <li>• Data is provided, shared, and consumed by numerous parties including ISDH, FSSA, MPH, IHIE, Regenstrief, KSM Consulting, IHA, Fairbanks School of Public Health, and numerous hospital systems and testing sites.</li> <li>• The full breadth of this data sharing cannot be captured in brief; however, key data sharing occurs via the partner organizations, enabled by this initiative.</li> <li>• Key examples of the data leveraged include those that power state-wide COVID-19 dashboards and are enabled by collaborative data flows such as those depicted in the figure on the following page.</li> </ul>   |
| <b>Community Impact</b>                       | <ul style="list-style-type: none"> <li>• Data, Information, and Knowledge: While there is critical work to be done across many domains, impacting the COVID-19 pandemic requires access, sharing, and expert analysis of up-to-date data, information, and knowledge. We strive to enable the best data-driven decisions by our governmental, healthcare, industry, academic, and non-profit communities as we all work to beat this pandemic.</li> <li>• More Effective Together: Our IPIC groups bring together the best and the brightest minds across Indiana to coordinate activities related to data-driven decisions and actions. Our teams bring their unique perspectives and expertise to bear to overcome barriers, apply state-of-the-art expertise, and ensure that the best information is put in the hands of decisions makers each day.</li> </ul>  |

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| <b>Future Focus Areas</b>                                  | <ul style="list-style-type: none"> <li>• IPIC is a virtual organization that brings together organizations to combat COVID. The future of IPIC will be dependent on the direction the membership chooses and has not yet been determined. However, it is anticipated that this group’s activities will evolve to remain of value such that it will likely survive the pandemic and serve as a useful convener for data-related activities for future health-needs across Indiana.</li> <li>• Numerous opportunities exist for IPIC to potentially take on a larger role, such as developing standards for data sharing for public health challenges, becoming a central body for new collaborations/spinouts, etc.</li> <li>• If you are interested in joining and helping set the direction, please contact IPIC at <a href="https://www.pandemiccollaborative.org/contact.html">https://www.pandemiccollaborative.org/contact.html</a></li> </ul>   |
| <b>Resources</b>   | <ul style="list-style-type: none"> <li>• <a href="http://www.pandemiccollaborative.org">www.pandemiccollaborative.org</a></li> </ul>  |
| <b>IHIE-ISDH COVID-19 Lab Results Dataflow<sup>1</sup></b> | <ul style="list-style-type: none"> <li>• Hospitals having existing IHIE integrations feed COVID-19 results in real-time through IHIE.</li> <li>• IHIE sends these results daily to the ISDH ELR, KSM, and the Regenstrief Institute. <ul style="list-style-type: none"> <li>• Resultant and Regenstrief use this information to update both the State and Regenstrief COVID-19 dashboards on a daily basis.</li> </ul> </li> <li>• The ISDH also receives a direct feed of COVID-19 results from other facilities and state institutions.</li> <li>• ISDH forwards these results through their NBS system, which sends processed results back to IHIE on a daily basis. <ul style="list-style-type: none"> <li>• ISDH also sends LIMSNET and Optum processed COVID-19 results to IHIE from non-IHIE reporting facilities multiple times per day.</li> <li>• LIMSNET is an application used by ISDH to store processed lab results performed by ISDH and their partner labs (IUH/MACL/Quantigen/Lilly).</li> </ul> </li> <li>• IHIE receives these results to provide a more complete picture on the current statewide COVID-19 testing status for physicians and other clinical users in IHIE systems.</li> </ul> |



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<sup>1</sup> Only includes IHIE specific data flows, not all data flows in Indiana for COVID-19. Information as of August 2020

<sup>2</sup> ISDH COVID-19 site: [coronavirus.in.gov/2393.htm](https://coronavirus.in.gov/2393.htm). Regenstrief COVID-19 site: [regenstrief.org/covid-dashboard/](https://regenstrief.org/covid-dashboard/)