MATHEMATICA
Policy Research

About US

Data Management

Mathematica Policy Research offers a full range of data management services to ensure the transformative power of data works to improve federal, state, and local programs and provide solutions to today's most pressing questions. Backed by more than 20 years of experience in providing information and operations management solutions, we make it possible for our clients to meet their strategic goals, while minimizing risk and remaining on schedule and within budget.

Mathematica supports all aspects of data management to help policymakers and program staff in complex environments improve the quality of their data. This support empowers them to better manage their programs and improve performance and accountability.

OUR SERVICES

System testing. We test systems that support critical agency processes to ensure they perform according to specification. Mathematica's automated test cases ensure that system logic is free of bugs. Our testers independently replicate system logic based on detailed functional specifications to ensure that software performs as designed. Mathematica's testing methodologies have been proven across a wide range of technologies, including legacy transactional systems, web-based case management systems, business intelligence solutions, performance management dashboards rich with data visualizations, and enterprise-level service-oriented applications.

Specification development. We design reporting systems, analytic systems, and performance dashboards that are critical to monitoring and sustaining program performance. We document these designs using detailed specifications that address business rules, data quality routines, data models, and precise reporting outcomes and measures. Developers translate our detailed specifications into software code more effectively than can be done with traditional requirements documentation.

IV&V and business process analyses. We perform independent verification and validation (IV&V) reviews of systems for federal, state, and local clients. Our innovative approach to IV&V combines the subject matter expertise of our staff with advanced testing tools, IV&V methods, and program management processes. IV&V methods include a detailed mapping of each client's system; reviewing extant validation regulations, manuals, and validation files; conducting independent data element validation with original data sources; and providing training and technical assistance to agency staff. Our certified project management professionals are skilled at developing dynamic management and organizational solutions. We help create work plans and schedules, design and document procedures and processes, and provide expert advice in project management using the Project Management Body of Knowledge. We also provide comprehensive professional business process analyses that complement our IV&V services. These analyses improve clients' current business processes by detecting gaps in the application of business rules. We identify areas to improve to meet state and federal requirements and performance standards.

AREAS OF EXPERTISE

- Disability
- Early childhood
- Education
- Employment
- Family support
- Health
  - Medicare
  - Medicaid and CHIP
  - Health insurance exchanges
  - Quality measurement
  - Electronic health records
- Nutrition

System development. We design software solutions to support clients' performance management, data quality, and operational reporting needs. Mathematica provides hosting services that comply with the National Institute of Standards and Technology's moderate-impact security requirements. We also develop client-hosted solutions. Our integrated case and performance management systems enable clients to track participant-level information while monitoring agency performance. Mathematica's data quality assessment tools help ensure that information collected is accurate, complete, and timely and can form the basis for high quality data analytics. Using leading-edge business intelligence software, we produce interactive operational reporting solutions and management dashboards. We employ best-of-breed data visualization principles so our reports and dashboards present an intuitive and accurate summary of underlying data.

SUBJECT MATTER EXPERTISE

Mathematica successfully combines broad subject matter expertise with rigorous methodologies to understand and address clients' needs. Next, we provide a few examples of the work we have done in data management across our different areas of expertise.

Employment and training. We help federal and state employment and training agencies make use of their operations data by ensuring it is of high quality, standardized across programs, and complies with government requirements. Mathematica staff led efforts by the U.S. Department of Labor, Employment and Training Administration to define data elements, performance measures, and reporting requirements for the Workforce Investment Act (WIA), Trade Adjustment Assistance program, Wagner-Peyser/Labor Exchange, and National Farmworker Jobs Program as well as for Unemployment Insurance (UI) benefits and contributions. We have worked with more than 20 states to determine the extent to which their UI systems meet federal standards and help address any identified issues. Our experience provides us with unique insights into the data, performance, and reporting requirements of the Workforce Investment and Opportunity Act regulations.

Social support. Mathematica has designed and overseen the development of web-based data collection systems to provide both case- and performance-management services across a range of teen pregnancy prevention programs for the U.S. Department of Health and Human Services, Administration for Children & Families. We have built performance dashboards that enable federal staff and grantees to visually assess their program performance and inform continuous quality improvement initiatives.

Medicaid. We have been at the forefront of designing federal Medicaid and Children's Health Insurance Program (CHIP) systems to modernize legacy data environments and comply with health reform provisions. Mathematica also enabled the Center for Medicaid and CHIP Services to use the Transformed-Medicaid Statistical Information System and other data sources to make evidence-based decisions, helping the agency to be a more sophisticated purchaser of high quality health services, provide better care for patients, and promote healthier populations.

Health insurance exchanges. We understand the processes, systems, data, and public policy behind the Centers for Medicare & Medicaid Services' health insurance marketplace and apply that knowledge to a variety of service offerings. Mathematica develops complex, structured eligibility and enrollment test cases and works with marketplace vendors and external stakeholders to provide independent testing. We design performance metrics and dashboard content, and provide data profiling, data and report testing, and statistical analysis and modeling of marketplace data to support operational decision making and policy analysis.

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