

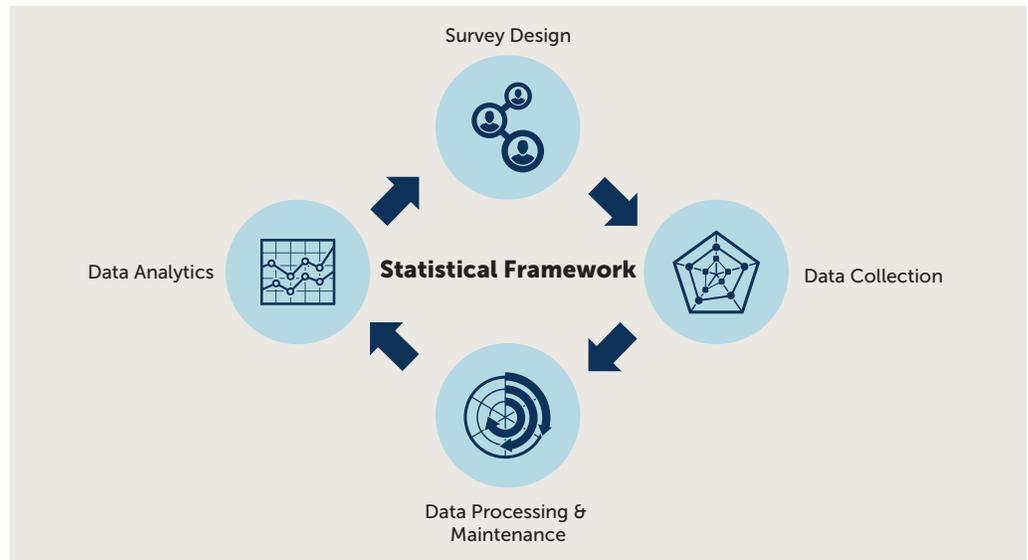
About US

Data Science and Statistics at Mathematica: Pairing Established Techniques with New Capabilities

Our statisticians' work underpins critical stages in the research process in order to meet the demands of an evolving policy research environment.

Data Science and Statistics at Mathematica includes over 50 statisticians, data scientists, and expert programmers, whose diverse capabilities enhance the company's research in all of the areas in its portfolio: disability policy, education, health services, early childhood, international issues, family support, employment, and nutrition.

Mathematica's mission is to improve public well-being by bringing the highest standards of quality, objectivity, and excellence to bear on the provision of information collection and analysis to our clients. As such, our research teams are carefully selected to include experts who are uniquely qualified to carry out each step of a research project from start to finish. Mathematica's statisticians are crucial members of these teams, bringing expertise to all aspects of design and analytic techniques. Their established roles in complex sample designs, experimental and observational study designs, data collection and processing, and statistical inference have been augmented by expanded, modern capabilities in data analytics, advanced statistical computing, Bayesian modeling, data mining, and machine learning.



STATISTICIANS AS PART OF THE RESEARCH TEAM

As Mathematica's range of offerings grows to include newer research methodologies, such as data analytics and rapid-cycle evaluation, so too have the services and resources offered by our Data Science and Statistics group. Through seamless integration with the rest of the research team, Mathematica's statisticians implement high-level, high-quality methodologies, providing a strong statistical framework for every research project.

STATISTICAL METHODOLOGY AND DATA ANALYTICS

In this era of fiscal tightening, government agencies at all levels are rising to the challenge of managing large, intricate programs and meeting new standards in accountability. The management and analysis of administrative data are becoming increasingly important ways to address these challenges. Mathematica's statisticians have taken the initiative to support decision makers by supplying them with objective and actionable research results based on data analytics.

Building on our longstanding leadership in the collection, processing, maintenance, and analysis of primary, secondary, and administrative data, our data analytics capabilities help public agencies develop measures to manage performance, assess quality, and use data with confidence for program monitoring and decision making. In this capacity, we offer expertise in advanced statistical methodologies, including data mining, predictive modeling, real-time performance monitoring, text analytics, data integration and warehousing, program integrity analysis, data validation, data visualization, and program-related technical assistance and decision support.

OUR STATISTICIANS AT WORK

For the Robert Wood Johnson Foundation, Mathematica teamed with Stanford University researchers to conduct a rigorous impact evaluation of the Playworks program and its effect on school climate, learning, behavior, and physical activity. As part of the research team, our statisticians randomly assigned schools to treatment and control conditions, randomly selected classrooms and students for the study, analyzed the data with impact models developed through the use of R and SAS statistical software, and co-authored numerous articles for peer-reviewed journals. As findings from this study generated considerable media attention, our statisticians remained a critical component of the research team and an invaluable resource for journalists.

For the Agency for Healthcare Research and Quality, we conduct methodological research to improve measures of hospital quality based on administrative inpatient claims data. These measures are used extensively in hospital public reporting and payment programs, such as those administered by the Centers for Medicare & Medicaid Services. Our findings have helped to inform decision makers about the appropriate use of these measures in high-stakes programs. Using statistical methods, including Bayesian models, and our knowledge of hospital programs administered by federal and state agencies, we identified threats to the validity of the measures and recommended solutions to AHRQ for improving the measures and encouraging future lines of research in measure development.

GROWING ALONGSIDE A CHANGING RESEARCH LANDSCAPE

As the research needs of our clients evolve in the context of greater administrative data availability, so does the need for rigor and objectivity. Deeply integrated into all steps of the research process, our statisticians approach each new project with first-rate statistical design and analytic tools. Mathematica has more than 40 years of experience in statistical and evaluation design, in the analysis of public policy and programs, and in assessing what changes to these policies and programs may mean for the nation. This expansive understanding of the policy landscape ensures that we ask the right questions and take the best approach to addressing our clients' complex needs.

For more information, contact:

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