Mathematica

Progress Together

Mathematica's
2024 IMPACT REPORT

At Mathematica, we are proud to generate evidence-based solutions to optimize programs and policies for effectiveness, efficiency, and impact. In the past year, we partnered with public, private, and philanthropic organizations to help them achieve their goals more effectively, and, by bringing together our analytical expertise and new technologies, we helped our clients use data to improve their operations, lower costs, and spot new opportunities to support public well-being. We collaborated with our clients to meet their **needs**, develop **solutions**, and achieve **results** that led to better data, better programs, and better outcomes.

Better Data

More effective and accountable operations begin with better data. Our work collecting, refining, and combining data has empowered our partners to draw the insights that improve their programs and policies.

Strengthening data collection to promote the well-being of Native families

The Need: In February 2024, the Administration for Children and Families (ACF) issued a proposed rule regarding changes to the Adoption and Foster Care Analysis and Reporting System (AFCARS) regulations that require Title IV-E agencies to collect and report data to ACF on Native children and families in child welfare systems related to the Indian Child Welfare Act of 1978 (ICWA). In the proposed rule, ACF requested input related to the use and utility of new data elements under consideration for collection. By collecting additional data related to Native children, ACF sought to build a "foundation for improved policy development, targeted technical assistance, and focused resource" that could support efforts to "mitigate disproportionality for American Indian and Alaska Native children and families, support pathways to timely permanency for these children, and help maintain the integrity of tribal communities."

The Solution: Drawing on our decades of experience with federal, state, local, and Tribal Title IV-E agencies and their partner organizations to provide data-driven training and technical assistance, Mathematica provided recommendations around strengthening data collection about Native children involved in state child welfare systems to better understand the experiences of and improve outcomes for Native families. Among our recommendations, Mathematica called for prioritizing data elements that provide the most value in better understanding the experiences of Native children and families, including available ICWA foster care and pre-adoptive placement preferences and adoption placement preferences under ICWA, and data related to active efforts to prevent the separation of Native families.

The Impact: In December 2024, ACF released a rule finalizing revisions to the proposed AFCARS regulations. Several of our recommendations were reflected in the final rule, including the inclusion of ICWA placement and active efforts data. The final rule also reflected Mathematica's recommendation to add data on ICWA transfer requests for better insight into ICWA-related case outcomes. These data elements will be useful in examining disproportionality for Native children and families in child welfare systems and identifying the mechanisms that most often contribute to the separation of Native families. They will also equip technical assistance providers with better insight on how to support state and local child welfare agencies to strengthen their ICWA implementation and promote well-being for Native families involved in those systems.

Equipping state leaders in Connecticut with the data they need to develop strategies to contain rising healthcare costs

The Need: In Connecticut, healthcare costs are rising quickly, undermining state leaders' goal to make healthcare affordable and available to all residents. A lack of publicly available data in user-friendly formats have hampered state officials, private health payers, consumers, providers, and others in understanding why these costs are rising and what can be done to reverse the trend.

The Solution: We developed online interactive dashboards for Connecticut's Office of Health Strategy (OHS) that are publicly available and enable users to explore overall healthcare use and spending trends, commercially insured hospital use and spending, and prescription drug use and spending.

The Impact: OHS is also using the dashboards to enhance its annual reporting on how well the state is performing at controlling rising healthcare costs. In particular, the dashboards shed light on the role that hospital and retail pharmacy costs play in driving up overall healthcare costs in the state, and they allow the state to conduct deeper analysis of certain prescription drug prices, such as GLP-1, a common medication used to treat type 2 diabetes. Data from the office's reporting will inform the policy recommendations it is scheduled to submit to the state's General Assembly in fall 2025 to address ongoing healthcare growth that state residents, governments, and businesses face. "Connecticut's OHS advances data-driven healthcare policy solutions," said Connecticut OHS's Wendy Fuchs. "Our colleagues at Mathematica share our commitment to data and methodological transparency. With their help, we have significantly expanded access to data on cost, spending, and utilization patterns for consumers, providers, advocates, payers, pharmaceutical companies, and elected officials."

Surfacing data to inform a statewide strategy that reduces the involvement of child protective services in the lives of Arizona families

The Need: When caseworkers at a state child welfare agency receive a report about possible child abuse or neglect, they face a high-stakes decision about whether and how to intervene. Staff at the Arizona Department of Child Safety (DCS) wanted to use state administrative data to deepen their understanding of when a child welfare report merits an investigation and when it might be more appropriate for the family to receive community supports. Ultimately, state leaders wanted to develop a data-informed strategy to reduce the involvement of child protection in residents' lives.

The Solution: We modeled how different agency responses to child welfare reports would likely affect children and families. To enhance the DCS's interpretations of the model's findings and inform community members about the project's research objectives, we met with a data analytics advisory council and a community advisory council to discuss the model and its methods.

The Impact: A spokesperson for the DCS said the study "has guided DCS to focus on prevention and treatment programs for families experiencing domestic violence or intimate partner violence and with substance-exposed newborns." She added that the study, "allowed [DCS] to witness the benefit of engaging with people with lived experience and communities most impacted by the child protective system in evaluation design and post-publication review. We developed relationships of trust through listening sessions and dialogue about the results."

Strengthening state and local public health agencies' ability to respond to threats by modernizing their data reporting

The Need: Public health agencies rely on clinical data to prevent illnesses and address other health risks. When public health data are incomplete or get shared too slowly, communities get sicker and the healthcare system can become overburdened, leading to higher healthcare costs. The Pew Charitable Trusts wanted to understand the current landscape of state and local laws that govern how public health data get shared and how policymakers and health practitioners could take steps to modernize public health data reporting to better prevent, monitor, and contain emerging health threats.

The Solution: We contributed to Pew's first-of-its-kind analysis across all 50 states and the District of Columbia, which included interviews with 266 public health officials in most states and an examination of each jurisdiction's public health statutes and regulations.

The Impact: The analysis highlighted where automated electronic public health reporting is already common and where information is still being transmitted manually via fax or phone. Pew used findings from the report to identify and engage three states for administrative rule updates on data reporting and, in one state, a legislative change. "Our successful partnership with Mathematica produced foundational research that serves as a critical piece of our multi-year state policy initiatives, as well as providing the foundation of a nationally disseminated report that highlights opportunities for states to improve their public health data reporting policies and practices," said Margaret Arnesen, a senior officer for the Public Health Data Improvement project at The Pew Charitable Trusts.

Better Programs

Across sectors, organizations are on a journey of continuous improvement with their programs, always looking for ways to do more with less. We supported our partners as they tested and refined strategies to improve the lives of residents in their communities.

Informing legislation to reauthorize the Workforce Innovation and Opportunity Act

The Need: To inform bipartisan efforts around reauthorization of the Workforce Innovation and Opportunity Act (WIOA), the Senate Health, Education, Labor and Pensions (HELP) Committee sought to build shared knowledge of WIOA programs, the effectiveness of programs and their areas for improvement, and opportunities for meaningful improvement to the nation's workforce system.

The Solution: At the committee's request, which cited Mathematica's extensive evaluation of WIOA implementation, Mathematica participated in a bipartisan briefing for committee staff and the offices of junior committee members. During the briefing, we provided insights from our research, answered questions from staff, and helped lay the foundation for reauthorizing legislation.

The Impact: The Senate's WIOA reauthorization legislation incorporated information Mathematica provided to the Senate HELP Committee during the briefing. Specifically, Mathematica's input impacted legislative language related to in-school youth and out-of-school youth percentages, apprenticeship efforts, one-stop operator roles and responsibilities, and employer performance measures. The legislation also reflected comments Mathematica made related to challenges with WIOA reauthorization requirements.

Helping North Carolina use data to improve the way it supports adults with serious mental health conditions move from institutions to home and community-based settings

The Need: In North Carolina, adults with serious mental disabilities had limited access to services and supports within their communities. This often led to people being unnecessarily diverted to institutions rather than receiving community-integrated support. For example, in 2017, most adults with a severe disability who needed long-term services were placed in an institution, such as an adult care home or a state hospital; only 38 percent received supports in their own community. Improving the quality of access to community services required bringing together multiple data sources into a user-friendly format so that state staff could help people more effectively. Because of our deep analytical expertise and knowledge of Medicaid long-term care services, North Carolina partnered with Mathematica to help provide better access to supports for these individuals.

The Solution: We worked with staff at the North Carolina Department of Health and Human Services to gather and interpret data to better understand the impacts of the state's program, use data to identify opportunities for improving the program, address data quality issues in the program, and broadly enhance data-driven decision making in the state.

The Impact: Because of our work, state agency staff are better able to assess and improve their ongoing efforts to help people with a serious mental disability live, work, and participate in their communities. In 2024, the state had increased to 93 percent of people with severe mental disabilities needing long-term supports receiving those supports in their community rather than in an institution. In recognition of the steps North Carolina has taken, the U.S. Department of Justice determined in late 2024 that the state had met its obligations around quality assurance and performance improvement, listed as one of six key pillars in its 2012 Olmstead Settlement Agreement.

Helping families receiving public assistance by promoting early childhood learning and development activities in the home

The Need: Nearly 1.5 million children in the United States live in households that receive public benefits through the Temporary Assistance for Needy Families (TANF) program. About a third of the children in TANF households are under 5 years old. TANF agencies have long wrestled with how best to fulfill the statutory purposes of the program through services to adults and children. A no-cost intervention could help address this gap by encouraging parents to engage in simple everyday activities with their children known to foster healthy early childhood learning and development and by contributing positively toward families' ability to care for children in their own homes (the first purpose of TANF).

The Impact: We partnered with the Bezos Family Foundation and county human services agencies in Colorado and North Carolina to adopt Vroom, a free online science-based program available on mobile phones, to reach families with young children through social workers and coaches. Many TANF participants are motivated to make things better for their children but may struggle to engage in the program. By tapping into an area of high importance to parents (their children), Vroom could support stronger engagement and progress with the program.

The Result: County agencies introduced parents and caregivers who newly enrolled in the TANF program to science-based Vroom Tips that facilitate positive parent–child interactions and foster healthy learning, growth, and development in young children. In Colorado, this led to more than one-third of parents taking the initiative to explore Vroom on their own. We also found promising evidence that the simple act of introducing Vroom to parents likely leads to a modest increase in program engagement.

Improving the trade ecosystem in Africa

The Need: TradeMark Africa (TMA), an Aid-for-Trade nongovernmental organization with operations in 14 countries across Africa, seeks to improve business competitiveness across the continent. By developing technology solutions for government agencies (such as revenue authorities) that engage with micro, small, and medium enterprises, TMA aims to reduce trade transaction costs and improve the overall trade ecosystem. The organization wanted to understand the impact of its Information and Communication Technology for Trade (ICT4T) portfolio on reducing the time and cost to trade for these enterprises and in enhancing the overall efficiency, transparency, and governance of the East African trade system.

The Solution: Through phone surveys, in-depth interviews, and focus groups, our subsidiary, EDI Global, conducted an independent evaluation of TMA's ICT4T portfolio across East Africa, gathering primary data in Kenya, Tanzania, Uganda, and Rwanda. That evaluation found an average reduction of about 49 percent in trade costs, from about $27 to $14 per system application per business. The same evaluation found that businesses, on average, increased their number of monthly trade transactions by 29 percent while the average value of transactions increased by 15 percent ($133). TMA's ICT4T portfolio also reduced the average time to complete a trade-related activity by about 68 percent, from 97 hours to 31 hours.

The Impact: TMA now has credible evidence on its contributions to reducing the time and cost of trade for micro, small, and medium enterprises in the region. We also provided the organization with practical evidence-based recommendations on how to enhance its future programming, particularly by addressing gaps in portfolio monitoring, and data sharing. "The evaluation offered clear, evidence-based insights that have directly influenced TMA's strategic thinking, validating aspects of our existing approach to our digital trade programming while also identifying critical areas for improvement," said Jane Nyawira, a manager at TMA. "Following the evaluation's recommendations, we are strengthening private sector capacity in digital trade as part of our broader effort to build the evidence base linking trade facilitation to poverty reduction outcomes."

Better Outcomes

As decision makers weigh whether to maintain, change, or end programs and policies, they want to know whether their investments are leading to better outcomes. When the data showed that programs have led to measurable impacts, we provided our partners with the information they needed to sustain funding for effective approaches.

Validating a cost-effective approach for reducing heart attacks and strokes

The Need: Cardiovascular disease is a leading cause of death and disability in the United States. In 2017, the Centers for Medicare & Medicaid Services (CMS) launched the Million Hearts Cardiovascular Disease Risk Reduction Model to reduce heart attacks and strokes among Medicare beneficiaries. The model paid providers for assessing their Medicare patients' risk of having a heart attack and stroke over 10 years and then made additional payments to organizations that successfully reduced risk for their high-risk patients. To inform the agency's policies around physician reimbursement for improving patients' health, CMS needed to know whether the model was successful at addressing the prevalence of cardiovascular disease while reducing Medicare spending associated with the disease.

The Solution: With our partners at RAND and the University of Colorado, we helped CMS assess (1) whether and how the model reduced first-time heart attacks and strokes and (2) whether the model reduced Medicare spending on hospitalizations and post-acute care for cardiovascular events enough to fully offset model payments.

The Impact: Together, we found that the approach reduced the incidence of first-time heart attacks and strokes for high- and medium-risk Medicare beneficiaries by 3 to 4 percent and reduced the death rate by more than 4 percent—all without measurably increasing care costs. Last year, CMS cited the findings when the agency announced a new rule in the Medicare Physician Fee Schedule that the agency said would "incorporate these lessons learned and increase access to these lifesaving interventions."

The new rule creates a financial incentive for more physicians to use atherosclerotic cardiovascular disease risk assessment and risk management services with their Medicare patients. The rule change could mean a major expansion in the number of patients benefiting from these services—from the 285,000 who participated in the trial to the roughly 15 million eligible beneficiaries nationally—because it applies to physicians across the country, not just those whose organizations participated in the Million Hearts model.

Boosting the recruitment and retention of child care and early education workers in Washington, DC

The Need: Across the country, child care and early education (CCEE) facilities face persistent challenges to recruiting and retaining qualified educators. Low compensation is a major barrier: CCEE is among the lowest-paying industries in the United States, and its educators earn far less than K–12 teachers with similar roles and qualifications. As a result, many CCEE educators leave their jobs to work in K–12 schools or transition to other sectors offering better pay and benefits. High turnover and staffing shortages limit access to care for families with young children and may disrupt the continuity and lower the quality of the services they receive.

The Solution: In Washington, DC, the City Council established the Early Childhood Educator Pay Equity Fund to improve compensation and benefits for CCEE educators. Launched in 2022, the fund provides wage supplements and access to no- or low-cost health insurance for educators across the district. The Bezos Family Foundation, Klingenstein Philanthropies, and DC Action partnered with Mathematica to study the impacts and cost effectiveness of this pioneering program.

The Impact: Mathematica's two-year impact study found that the fund increased the labor supply of CCEE educators by about 7 percent in its first two years, creating nearly 1,500 additional child care slots in the district. A separate benefit-cost analysis found that the value of the program's social benefits exceeded its costs, yielding a one-year return on investment of 23 percent. Last year, when the DC Council restored $70 million to the fund in the fiscal year 2025 budget, Mathematica's findings were cited by the DC Council as justification for continued investment in the program. Two-year impact findings were also cited in support of bipartisan federal legislation introduced by Senators Tim Kaine (D-VA) and Katie Britt (R-AL) calling for a competitive grant program for states and localities interested in adopting or expanding educator pay supplement programs. "Early educators play an essential role in children's learning and development, and the Bezos Family Foundation wants to ensure they have the compensation, training, and positive working conditions they need to do their best work long-term," said Cameron Clark, a senior program officer at the Bezos Family Foundation. "Mathematica's high-quality research provided timely and actionable evidence about the impacts and cost-effectiveness of DC's first-of-its-kind approach to improving early childhood educator compensation. This evidence base is important to inform policy decisions."

Photo by Rich Clement

Supporting CMS's efforts to reimburse hospitals for better care, better value

The Need: For more than a decade, CMS has implemented programs that use financial penalties and rewards to improve the quality of healthcare provided by hospitals. Together, these programs advance the agency's objective of making payments for care based on value, not volume. They are also designed to save money in the Medicare program, which is important as overall healthcare costs continue to grow. Those savings help keep the Medicare Hospital Insurance Trust Fund solvent, allowing CMS to fully pay for inpatient hospital services, hospice care, and other benefits.

The Solution: As part of a contract with the Center for Clinical Standards and Quality at CMS, we assist in the implementation of three value-based purchasing programs: the Hospital Value-Based Purchasing (HVBP) Program, the Hospital-Acquired Condition Reduction Program (HACRP), and the Hospital Readmission Reduction Program (HRRP). Our work for the contract includes data analytics, improving the design of the programs over time, educating providers and the public about the programs, and calculating the appropriate Medicare payments based on hospitals' performance on quality measures.

The Impact: With our support, the HRRP and HACRP have saved Medicare, on average, more than $500 million per fiscal year. The HVBP Program has redistributed approximately $1.7 billion per fiscal year to hospitals for improving the quality, efficiency, patient experience, and safety of care they provide.

Reducing the cost of joint replacement surgeries while maintaining quality of care

The Need: About 1 million joint replacement surgeries take place every year in the United States, and the number has increased substantially in the past few decades. These are the most common type of procedure for Medicare beneficiaries, as older patients often have conditions that require hip, knee, and ankle replacement surgeries. In 2016, the Center for Medicare and Medicaid Innovation at CMS launched a payment model that sought to reduce spending on joint replacement surgeries while improving or maintaining the quality of care provided. The model incentivized providers to reduce unnecessary rehospitalizations, avoid complications, and optimize healthcare use during and after surgery to stay below a spending target.

The Solution: We helped the Innovation Center at CMS implement the model by setting target prices for episodes of care and monitoring the performance of participating hospitals with respect to spending, patient outcomes, and beneficiaries' access to care. We also supported the center in determining whether hospitals had earned additional payments based on cost and quality measures, or whether they were required to repay Medicare based on failing to meet performance benchmarks.

The Impact: Over six years, the Comprehensive Care for Joint Replacement Model reduced Medicare fee-for-service spending by about $294 million and, after accounting for payouts to hospitals, saved the overall Medicare program $31 million. An independent evaluation found that in the recent (sixth) performance year, episode payments to hospitals participating in the model were $1,012 lower, on average, than episode payments to control hospitals. The same evaluation found that the model maintained the quality of care provided to Medicare beneficiaries, even as it reduced costs.

A Bright Future

We're grateful for the opportunity to work with public, private, and philanthropic partners in the United States and abroad that share our commitment to improving public well-being through impactful and cost-effective solutions. In the years ahead, we're ready to deepen our shared impact by leveraging new technology, harnessing data analytics, and spotting emerging opportunities. That's the progress that we can make, together.

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