ABOUT BMSA

Established in 1984, the Board on Mathematical Sciences and Analytics (BMSA) leads activities in the mathematical sciences at the National Academies. BMSA advances knowledge in the field by organizing workshops, webcasts, roundtables, and in-depth studies that explore key issues and applications within the mathematical sciences. BMSA members represent a wide range of mathematical sciences—including core mathematics, applied mathematics, statistics, operations research, scientific computing, machine learning, and risk analysis. Find out about upcoming BMSA events and learn more about our work by signing up for our mailing list at nas.edu/bmsa.

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ABOUT THE NATIONAL ACADEMIES

The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide expert advice on some of the most pressing challenges facing the nation and the world. Our work helps shape sound policies, inform public opinion, and advance the pursuit of science, engineering, and medicine. The National Academies do not receive direct appropriations from the federal government, although many of our activities are mandated and funded by Congress and federal agencies. Our work extends well beyond fulfilling federal government requests, however. Foundations, state governments, the private sector, and philanthropy from individuals enable us to address critical issues on behalf of the nation.
BMSA facilitates independent, objective, and knowledgeable advice from members of the National Academies; other leaders of the science, engineering, and medical communities; and distinguished associates from the academic, private, and public sectors.

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<th>ACTIVITY</th>
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<td>In-Depth/Consensus Studies</td>
<td>Provide a means to resolve complex questions by enlisting the foremost experts in a given area to gather information and provide consensus recommendations</td>
<td>6-36 months, depending on scope</td>
<td>Peer reviewed reports containing conclusions, findings, and recommendations</td>
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<td>Workshops</td>
<td>Provide a means for sponsors and participants to gather information, share ideas, and discuss issues</td>
<td>4-12 months</td>
<td>Publication summarizing the proceedings of the workshop; webcast and video recording (optional)</td>
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<td>Roundtables, Forums, Colloquia, and Meetings of Experts</td>
<td>Provide a means for representatives of government, industry, and academia to gather periodically to discuss specific topics</td>
<td>Varies, depending on the number of meetings requested</td>
<td>No formal written products are produced; webcast and video recording (optional)</td>
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MAKING AN IMPACT

The mathematical sciences play a vital role in science, engineering, medicine, industry, and national security. At the request of the National Science Foundation, BMSA organized a committee of experts to assess the field of mathematical sciences in the United States and make recommendations to help prepare for future cross-disciplinary challenges. The resulting report, *The Mathematical Sciences in 2025*, sparked leaders in education and government to increase training for pre-service teachers, revise educational standards, create new curriculum for STEM programs, make better informed hiring decisions, and support the interdisciplinary work needed for the field to flourish. Download the report at [nap.edu/15269](http://nap.edu/15269).
Frontiers in Massive Data Analysis explores the new tools, skills, and approaches that are necessary for analyzing large amounts of data and identifies promising future research directions. Download the report at nap.edu/18374.

Mathematical Sciences Research Challenges for the Next-Generation Electric Grid summarizes a workshop where participants identified critical research areas in mathematical and computational sciences needed to operate the next-generation grid, which will include a much wider variety of electricity generating sources. Download the proceedings at nap.edu/21808.

Fueling Innovation and Discovery: The Mathematical Sciences in the 21st Century describes how research in the mathematical sciences has played a role in health care, national security, information technology, and other critical industries. Download the report at nap.edu/13373.

Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions offers a technical framework and implementation plan for the integration of data analysis in support of defense personnel decisions. Download the report at nap.edu/23670.
The National Academies of
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The nation turns to the National Academies of Sciences, Engineering, and Medicine for independent, objective advice on issues that affect people's lives worldwide.

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