



# Making Room for Patients



Image: Robert Kaufmann, FEMA Photo Library.

We've seen that the availability of hospital beds is important during a pandemic, and it's important during normal times as well. Whether it's for emergency medical help or for a scheduled procedure (for example, chemotherapy), access to hospital space, staff, and equipment can be a matter of life and death. Mathematics helps medical center staff manage their resources more efficiently so that they are available when needed. An optimization technique called integer programming is used along with tools from statistics, probability, and machine

learning to create better schedules for operating rooms, treatment centers, and the people who staff them. All are very busy, but mathematicians—working with the doctors and nurses who know what their patients needs—have used data and computer simulations to create more efficient schedules so that more patients can use these vital services.

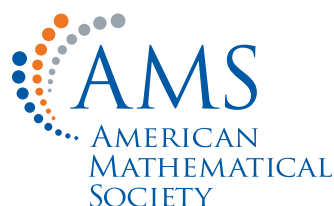
Math is also helping researchers work to eliminate health care inequities. The higher COVID-19 mortality rates for Black, Indigenous, and Latino Americans compared to white Americans are just one example of disparities in both access to health care and patient outcomes for racial minorities, for people with less money or education, and for those for whom English is not their first language. Mathematicians are analyzing data to identify such disparities and creating mathematical models that will output recommendations for improvements—just what the patients ordered.

**For More Information:** “Implementing Analytics Projects in a Hospital: Successes, Failures, and Opportunities,” David Scheinker and Margaret L. Brandeau, *Informs Journal on Applied Analytics*, Vol 50, Issue 3 (May–June 2020), pp. 153–211. <https://pubsonline.informs.org/doi/10.1287/inte.2020.1036>

Listen Up!



MM/155



The **Mathematical Moments** program promotes appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture.

[www.ams.org/mathmoments](http://www.ams.org/mathmoments)