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Post / Jerry Cleveland

Fred Glover, left, and Jay April, both of OptTek in Boulder, gather Tuesday at the operations research annual meeting at the Adam's Mark Hotel in Denver. Operations research is described as the discipline of applying advanced analytical methods to help make better decisions.

Their goal: A better life for us

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They may not have been the most popular kids in school, but operations researchers help make your life run more smoothly.

And they're having fun doing it.

Just consider some of the titles at this week's "Science of Better" conference - the annual meeting of the Institute for Operations Research and the Management Sciences - that's being attended by 3,000 math whizzes in downtown Denver:

Modeling One-Day Cricket Batting Orders

Airlines as Baseball Players

Why Multiply Impute When You Can Sufficiently Perturb?

Convince Me Your Complex Analysis Is Correct

What Is Burstiness?

"It's kind of neat stuff that lies under the surface ... that affect a lot of things we do," said Jay April, chief development officer at Boulder-based optimization software firm OptTek Systems Inc.

Operations researchers call their profession the science of better because they use data and mathematical formulas to cut wait times at emergency rooms and forecast business better based on the weather.

They're the people who help you get your parcel shipments on time and make sure store shelves remain stocked. They keep amusement park lines moving and connecting flights connecting. They want to find out how to reduce e-mail spam - and cut health care costs.

In short, they're aiming to change the world. And they just may have an edge on you in fantasy baseball.

At the four-day Denver event, which ends today, hundreds of researchers in small sessions present their findings by introducing the problems they want to address and showing their solutions using long, complicated equations that stretch across a PowerPoint screen.

Meanwhile, the 10,000-member association is leading a campaign to market the profession.

Tom Cook, the association's former president, said the more complex the problem, the more likely operations research can help.

Among the local companies that use operations research is Jeppesen Sanderson Inc., which distributes flight manuals and uses operations research to improve on-time delivery of its aviation charts to customers. In addition to private and public sector work, many in the field conduct research and teach at universities.

"If you enjoyed solving word problems (in school), operations research might be the way to go," Cook said.

Skylab Gupta, a graduate student at Auburn University who was named after the space station that fell to the Earth on the day he was born in 1979, said he plans to work in operations research because of his love of math and the opportunity to apply it in real-world situations.

"You have (mathematical) theoretical stuff - lots of cool stuff - and you also have lots of applications," Gupta said.

The end goal is simply "making things better."

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"Better" case studies

Two health care issues examined by operations researchers attending this week's "Science of Better" conference in Denver:

Jonathan Caulkins, a Carnegie Mellon University professor, showed how a cocaine addiction treatment may seem attractive to pharmaceutical companies, doctors and parents, but that its costs to society to pay for the drug could outweigh the benefits. He found the drug in some cases may go to those who would not benefit most from it, and millions of dollars could be wasted.

Linda Green, a professor at Columbia University's Graduate School of Business, examined how to shorten hospital emergency room waits. Demand for ER care is increasing while the number of ERs is decreasing. In a hospital study, she learned some ER managers were "basically staffing by intuition." She found ERs are busiest early in the week and certain periods of the day and recommended shifting some work hours to weekdays and altering shifts during the day. That led to a reduction in wait times and a drop in the number of patients who leave without being seen.