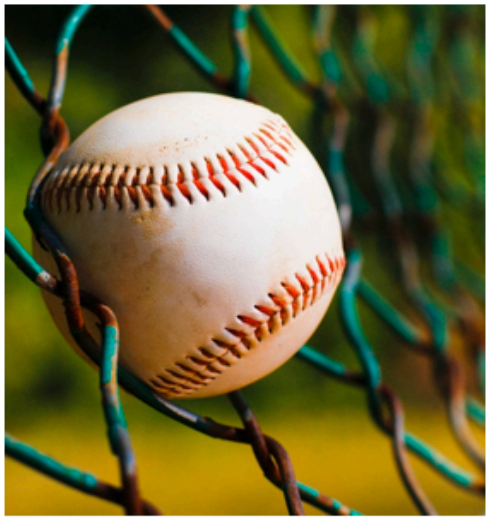
School's Management Science Research Resolves Major League Baseball's Umpire Scheduling Challenges

July 31, 2011



Scheduling umpire crews in Major League Baseball (MLB) can be a daunting task. However, Tallys Yunes, assistant professor of management science at the School of Business and his collaborators have created a novel solution. The team developed an efficient method to generate high-quality schedules for the MLB.

The study, titled "Scheduling Major League Baseball Umpires and the Traveling Umpire Problem," was published online ahead of print by the journal *Interfaces*, a popular outlet for practitioners in the field of Operations Research.

The computational method was developed in 2006 by a team of scholars including Yunes, Michael Trick form Carnegie Mellon University and Hakan Yildiz from Michigan State University. The MLB has used the new method in five of the past six seasons. This technique is more effective at respecting the MLB-imposed travel rules and restrictions, explains Yunes.

"We not only reduced the time necessary to create the schedule, we also improved the overall quality of the schedule, in the sense that it better satisfies both the MLB and umpire union rules," Yunes says.

The MLB season lasts six months. During that time, 30 teams play a total of 2,430 games in 27 different cities. The umpires in the league are part of a four-member group called a crew and each umpire handles about 142 games during the season.

Adhering to the myriad of regulations from the league can be difficult. To solve the problem, the team created a mathematical model called the "Traveling Umpire Problem," where given that an umpire crew should not be assigned to a team too often in short succession, and that an umpire crew should be assigned to each team at some time during the season; the task was to minimize the time and distance traveled by the umpires.

The model proved successful in generating a high-quality schedule in a short amount of time. Prior to the new computerized method, the schedule was created manually on an Excel spreadsheet by a former umpire. The process would take weeks. Now, it takes just a few days to generate a good schedule.

"If you are the person trying to come up with the answer to this problem, you are limited in the number of solutions that you see," Yunes says. "By using a mathematical model that gets solved by a computer, we have opened up the universe of possible solutions."