Scholar Helps Make Major League Baseball Umpire Schedule a Hit

ScienceDaily (July 21, 2011) — Growing up in soccer-crazed Turkey, Hakan Yildiz knew so little about baseball, even the word "umpire" had no meaning to him.

Today, Yildiz, an assistant business professor at Michigan State University, is part of a team of researchers whose complex method for scheduling Major League Baseball umpires has proven so successful the league has used it five of the past six seasons.

The method -- by Yildiz, Michael Trick from Carnegie Mellon University and Tallys Yunes from the University of Miami -- will be highlighted in a forthcoming special issue of the research journal *Interfaces* focusing on sports analytics.

"Major League Baseball has benefited from this study," said Yildiz, a faculty member in MSU's Department of Supply Chain Management. "The umpire schedules are more balanced and have fewer violations of league-imposed travel rules and restrictions."

Yildiz started the research in the mid-2000s while working toward his doctoral degree under Trick at Carnegie Mellon. At the time, the schedule for MLB umpires was built on an Excel spreadsheet by a former umpire -- a "daunting task that took weeks of planning," Yildiz said.

MLB teams play 2,430 games (in two- to four-game series) during a six-month season, with each game officiated by a four-person crew. Scheduling these crews is difficult, Yildiz said, due to a host of constraints such as union-mandated vacations and league rules that regulate, for example, coast-to-coast travel and potential overexposure to individual teams (to help avoid this, each umpire crew should, among other things, travel to all 30 ballparks at least once during a season, according to MLB).

Yildiz and his fellow researchers set out to develop methods to create better schedules while accounting for the myriad constraints. To test their methods quickly, Yildiz and Trick identified the key issues for scheduling and disregarded idiosyncratic constraints such as an umpire's preferred vacation dates. This allowed them to test alternative methods using simulated data.

Trick and Yunes used that method to help create an actual schedule for MLB umpires.

In 2006, MLB decided to use the research team's schedule -- the first time the league had done so for an outside consultant. The league used another method in 2007 and then returned to the Yildiz/Trick/Yunes method for the 2008, 2009, 2010 and 2011 seasons.

One improvement stemming from the research team's method involves MLB's "18-day rule violation."

Essentially, a crew should not umpire the same team's series of games more than once every 18 days, but in 2005 this happened 16 times. Under the research team's schedule, this did not happen at all in 2008, 2009 or 2010.

Yildiz, who grew up in the small town of Duzce in northern Turkey, said he and his fellow researchers have developed better methods than the one described in the Interfaces paper. Yildiz and Trick have two more articles on the subject expected to be published soon.

Yildiz added that he's excited to do research dealing with sports, though he still hasn't become a baseball fan. In addition to soccer, he enjoys American football and hockey.

"For me, I like the fast-moving games," Yildiz said. "Baseball is a slow-moving game; it takes too long. I still can't seem to get my head around it."

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Journal Reference:

1. M. A. Trick, H. Yildiz, T. Yunes. **Scheduling Major League Baseball Umpires and the Traveling Umpire Problem**. *Interfaces*, 2011; DOI: [10.1287/inte.1100.0514](#)

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