

NJIT prof names baseball winners

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"We've long had a problem convincing US youngsters to embrace mathematics in school," says Bukiet. "Studying how math applies to baseball demonstrates not only that math can be fun, but how it is really a part of things people care about." Credit: NJIT

With pitchers and catchers having recently reported to spring training, once again Bruce Bukiet, an associate professor at NJIT, has applied mathematical analysis to compute the number of games that Major League Baseball teams should win in 2010. The Philadelphia Phillies, St. Louis Cardinals and Los Angeles Dodgers should all repeat as winners in their divisions, while the Atlanta Braves will take the wild card slot in the National League (NL), says Bukiet.

In the American League (AL), the New York Yankees should blow away the competition, winning in the East, while the Minnesota Twins repeat

as winners of the Central Division. The AL West is too close to call with all four teams within 5 wins and the Texas Rangers, Oakland A's and Los Angeles Angels expected to win 82, 81 and 80 games respectively. The Tampa Bay Rays and Boston Red Sox will have a close contest for the AL wild card slot.

Bukiet, an associate professor of mathematical sciences and associate dean of the College of Science and Liberal Arts at NJIT, bases his predictions on a mathematical model he developed in 2000. For this season, he incorporated a more realistic runner advancement model into the algorithm.

"I publish these numbers to promote the power and relevance of math," he says. "We've long had a problem convincing US youngsters to embrace mathematics in school. Studying how math applies to baseball demonstrates not only that math can be fun, but how it is really a part of things people care about."

The contest for primacy in the NL East should be tight with the Phillies (90 wins) defeating the Braves by just two games (88 wins). In the West, the Los Angeles Dodgers (88 wins) should finish 3 games above the Arizona Diamondbacks. In the Central Division, the St. Louis Cardinals appear poised to achieve the best record in the NL with 91 wins, 5 more than the second-place Chicago Cubs.

The Yankees should dominate the AL with players capable of winning 103 games, defeating the Tampa Bay Rays by 10 and the Boston Red Sox by 11. Tampa Bay or Boston should end up as the wild card team. In the Central Division, the Minnesota Twins (92 wins) should repeat as division winners but rather than needing to win a one- game playoff as they did in 2009, this year they should handily defeat the Chicago White Sox by 7 games. Instead of the Angels winning the AL West as they did by 10 games last year, in 2010 we should get ready for a tight race

among very average teams. The Texas Rangers should win 82 games, just one above .500, while the Oakland A's win 81 and the Los Angeles Angels win 80. The Seattle Mariners should come in last in that division just 5 games out.

While Bukiet's favorite team, the New York Mets, should come in third in the NL East, Bukiet notes that the 82 wins he expects is a solid improvement over the 70 they won in their injury-plagued 2009 season. "At least in 2009, the Mets put their fans out of their misery early on, rather than in the season's last weekend as they did in 2007 and 2008," he says.

The Pittsburgh Pirates should repeat as the worst NL team with 66 wins, while the Cleveland Indians should win 67 for the most futile effort in the AL.

His expected wins for the AL are as follows:

- AL East: Yankees - 103; Rays - 93; Red Sox - 92; Orioles - 71; Blue Jays - 70.
- AL Central: Twins - 92; White Sox - 85; Tigers - 74; Royals - 72; Indians - 67.
- AL West: Rangers - 82; A's - 81; Angels - 80; Mariners - 77.

For the NL, he projects as follows.

- NL East: Phillies - 90; Braves - 88; Mets - 82; Marlins - 76; Nationals - 72;
- NL Central: Cards - 91; Cubs - 86; Brewers - 78; Reds - 74; Astros - 73; Pirates - 66.
- NL West: Dodgers - 88; Diamondbacks - 85; Rockies - 84; Giants - 80; Padres - 77.

"These results are merely a guide as to how teams ought to perform. There are many unknowns, especially trades, injuries and how rookies

will perform," said Bukiet. He will post an updated prediction toward the end of spring training, when there is a better idea of which specific players should be playing regularly on each team. Check his website: http://m.njit.edu/~bukiet/baseball/2010_season_predictions.htm

Operations Research published Bukiet's mathematical model on which his predictions are based. His model computes the probability of a team winning a game against another team with given hitters, bench, starting pitcher, relievers and home field advantage. Bukiet has appeared on CNN Headline News, the Jerusalem Post and Fox Radio's Roger Hedgecock Show, KOGO, San Diego and others.

Bukiet, an avid Mets fan, has used this mathematical model to determine whether it is worthwhile to wager on games during the baseball season. His picks are posted (for academic purposes only) on his website (www.egrandslam.com). These picks have produced positive results overall, and for six of the nine years he has posted them.

Bukiet's main areas of research have involved mathematical modeling of physical phenomena, including detonation waves, healing of wounds, and dynamics of human balance. He has also applied mathematical modeling to sports and gambling, in particular for understanding baseball and cricket. He is currently working on National Science Foundation projects to train math and science teachers for high-need schools and to bring computational research projects into Newark High Schools. Bukiet won the 2008 Mathematical Association of American-NJ Section Distinguished Teaching Award and received an NJIT Excellence in Teaching Award in 2006. Bukiet received his PhD in mathematics from the Courant Institute of Mathematical Sciences, New York University. Bukiet said that high school students Kevin Fritz, of Hillsborough, and Jack Rabner of Caldwell, provided invaluable assistance producing the results.

Provided by New Jersey Institute of Technology

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