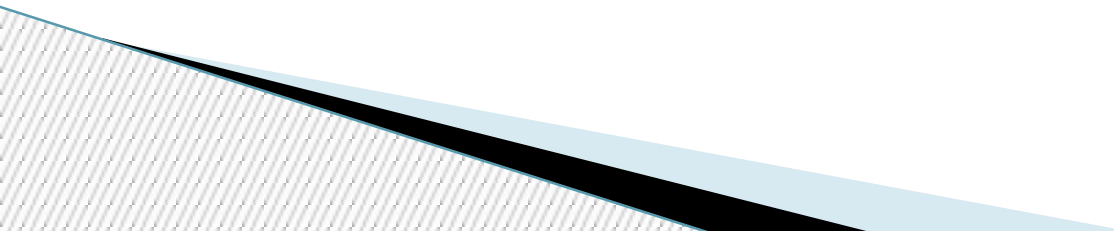


Who Wins in the MLB Playoffs?

Nicky Sullivan



Predicting the MLB Playoffs is Hard

- ▶ 2014 playoffs an excellent example
 - ▶ 0/15 baseball executives predicted either the Royals or the Giants would make the World Series
 - ▶ 8/70 ESPN experts picked either the Royals or the Giants to make the ALCS/NLCS
 - ▶ So is there a better way to predict who wins the World Series?
- 

Pythagorean Formula

- ▶ Remember Bill James

- ▶ Pythagorean Formula


- ▶ True winning percentage=

$$\frac{(\text{runs scored})^2}{(\text{runs scored})^2 + (\text{runs allowed})^2}$$

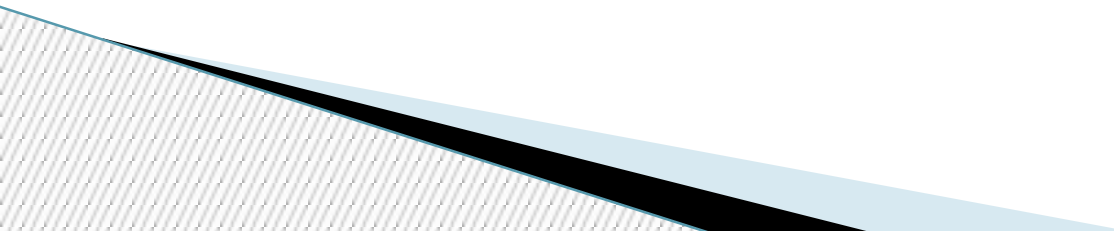
What does better?

- ▶ Bill James' Pythagorean Formula

vs.

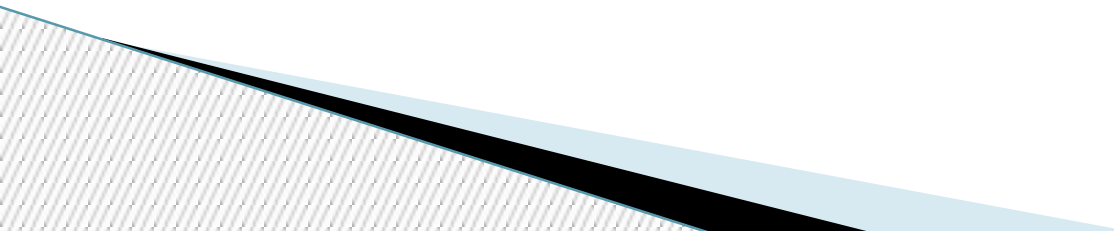
- ▶ Regular season winning percentage
 - ▶ Looked at DS, CS, and WS for 2004-2014 seasons
 - ▶ Comparisons have been done before, but only on a very basic level
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Methodology

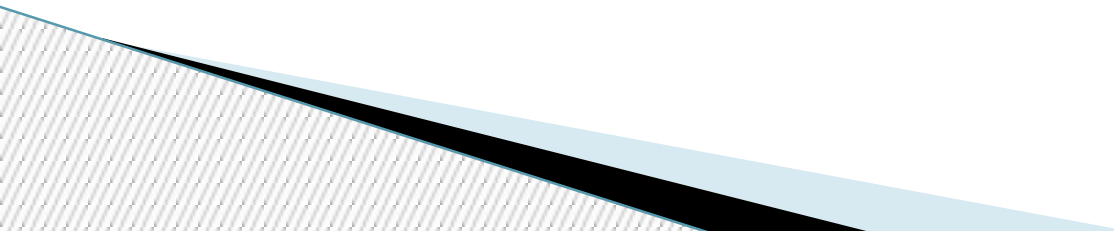
- ▶ Find winning percentage and calculate Pythagorean winning percentage for each team
 - ▶ For each matchup, use Bradley Terry model of combining probabilities to get the likelihood one team will beat the other
 - ▶ Add in a measure of home-field advantage
 - ▶ Use binomial to expand probabilities to cover the length of the series
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Results

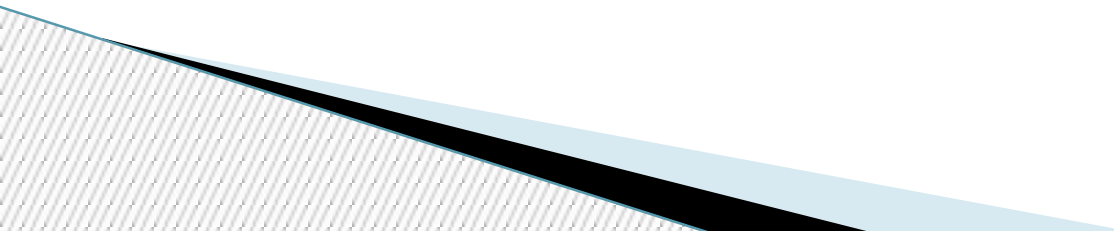
- ▶ Test 1: Predicting the World Series?
 - ▶ Win% predicted 2/11 World Series winners
 - ▶ Pyth% predicted 1/11 World Series winners

 - ▶ Win% predicted 5.5/22 WS teams
 - ▶ Pyth% predicted 9/22 WS teams
- 

Results

- ▶ Test 2: How often does the favorite win?
 - ▶ 41/77 favorites based off of Win% ended up winning the series (53%)
 - ▶ 44/77 favorites based off of Pyth% ended up winning the series (57%)
- 

Results

- ▶ Test 3: How the methods perform when they peg different teams as favorites?
 - ▶ Of the 13 instances where the methods predicted different teams would win, the team that Pyth% supported won 8 times (62%)
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Results

- ▶ Test 4: How the methods perform when they have large differences in expectations?
- ▶ Of the 15 times the methods projected series winning percentages differ by more than 10%, the team the Pyth% was more bullish on won 10 times (67%)

Results

- ▶ Test 5: How well do the projected series winning percentages match up with actual winning percentages?

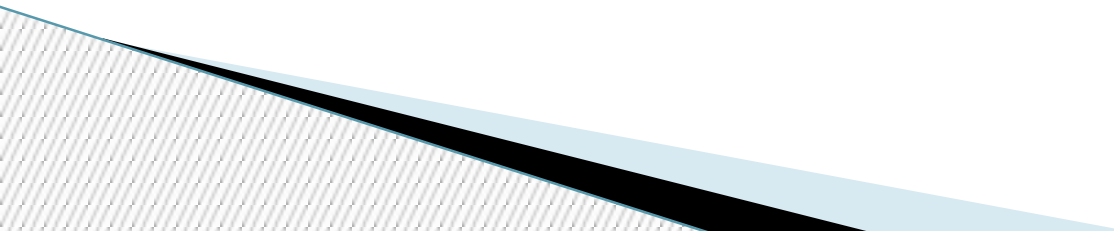
Proj. W%	Wins	Losses	Win %
<55%	8	7	53
55-57.5%	10	8	56
57.5-60%	10	9	53
>60%	14	11	56

Win%

Pyth%

Proj W%	Wins	Losses	Win%
<50%	8	10	44
50-57.5%	15	8	65
57.5-65%	8	11	42
>65%	11	6	65

Conclusions

- ▶ Oftentimes not enough data to yield any significant conclusions
 - ▶ But, most of the time, there is at least some evidence that points in the direction of the Pythagorean Formula being a better predictor of postseason success than pure winning percentage
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Conclusions

- ▶ A more exhaustive study looking back farther may be able to find that the Pythagorean Formula is significantly better than pure winning percentage
 - ▶ If you want to know who's going to win a playoff series, it looks like the Pythagorean Formula might be a better predictor, although more research is needed to be sure
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