

An Examination of Indicators of Postseason Success in Major League Baseball

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Abstract

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The Major League Postseason always seems to end in surprise. Teams expected to win the World Series often get eliminated early, while teams that seemingly sneak their way into the postseason make championship runs. This may be in part because the teams we tag as “the best” by regular season statistics are not actually the best choice to win it all. This report examines two possible statistics—win percentage versus top teams (**WPTT**) in the league and win percentage in September/October (**WPS**) of the regular season—and looks for any relation between those statistics and success in the postseason.

Most regular season statistics place equal weight on games against good teams and games against bad teams, as well as placing equal weight on games at the beginning of the season and games towards the end of the season. The potential flaws in these numbers are clear. Games versus good teams might be better indicators of postseason success, since teams in the postseason are necessarily better than most of the league. Teams look different in April than they do in September, because of injuries or trades, so the makeup of the team in September is more indicative of the team in the postseason.

Our data explores regular season and postseason data from 1970-2009, and our analysis shows that WPS is not a reliable indicator of postseason success, while WPTT can be used to point out potential champions among the teams that have made it to the postseason.

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Introduction

I've been a baseball fan all of my life. I've been playing since I was two, and watching for as long as I can remember. When I found out about the opportunity to conduct my own research, baseball seemed like a pretty good place to start. When I was 10 years old, the Boston Red Sox came back from a three game deficit in the ALCS to beat the Yankees (my favorite childhood team). Similarly, in 2011, the St. Louis Cardinals found themselves down to their final out several times, but each time they were able to come back for the win. Things like this had never been done before, and left commentators, players, and analysts alike wondering "how could anyone have seen this coming?" While I'm not claiming to be able to predict such shocking upsets and surprises, I am confident that a lot of things that happen in the MLB postseason aren't as surprising as they seem.

An MLB season for one team consists of 162 games. This gives us a relatively large sample size to use for examination, especially when compared to other sports (hockey and basketball play only 82 games, and football only has 16). The MLB is split into two sub-leagues, *The American League* and *The National League*. Each league is then divided further into three divisions: west, east, and central. The regular season winner of each division, determined by best record, claims a spot in the playoffs. In addition, each league allows two "wildcard" teams to play a one-game, all-or-nothing game against each other for a fourth spot in each league's four-team playoff bracket. Then there is the *Divisional Round*, where the four teams from each league pair off to play two best of five series per league. The winners of that round advance to the *Championship Series*, where each league has one best of seven series. The winners of that round are crowned *American League Champions* and *National League Champions*. They then square off in *The World Series*, where they play a best of seven series against one another.

Methodology

The best raw data that I could find for this project was from Retrosheet. I was able to get a massive CSV file for every season from 1970-2009. Each season had one observation for each game that was played. For each game there were features for everything from the umpires to weather condition. My focus was almost exclusively on the teams involved in the game, the date the game was played, and the outcome of the game. Each CSV was converted into a data frame, and pared down to contain only the features I needed.

From here, I calculated both the win-percentage for every team against teams that finished in the top-third of the league in that season, as well as the win percentage for each team in September/October. The reason for choosing the top-third of the league is that currently, ten teams officially make the playoffs, which is one third of the league. If the goal is to indicate postseason success, then looking for regular season success against playoff-caliber teams seems like the natural choice. Teams considered to be in the top-third of the league are the top ten teams by win percentage, this is, number of wins divided by the number of games played.

I then created a list of 39 elements (there was no World Series in 1994 so I omitted that season), each element a data frame for that season consisting of each team, their win-percentage against top teams, and an indicator, 0 or 1, for whether or not they won the World Series, as well as an indicator for playoff teams and non-playoff teams.

Results and Analysis

The first statistic I calculated was the win percentage of every team in September/October (WPS). A direct comparison of win-percentages of teams that won the World Series, and those that didn't, can be seen below in Figure 1. Teams which won the World Series had an average WPS of .495, while teams that did not win the World Series had an average WPS of .497.

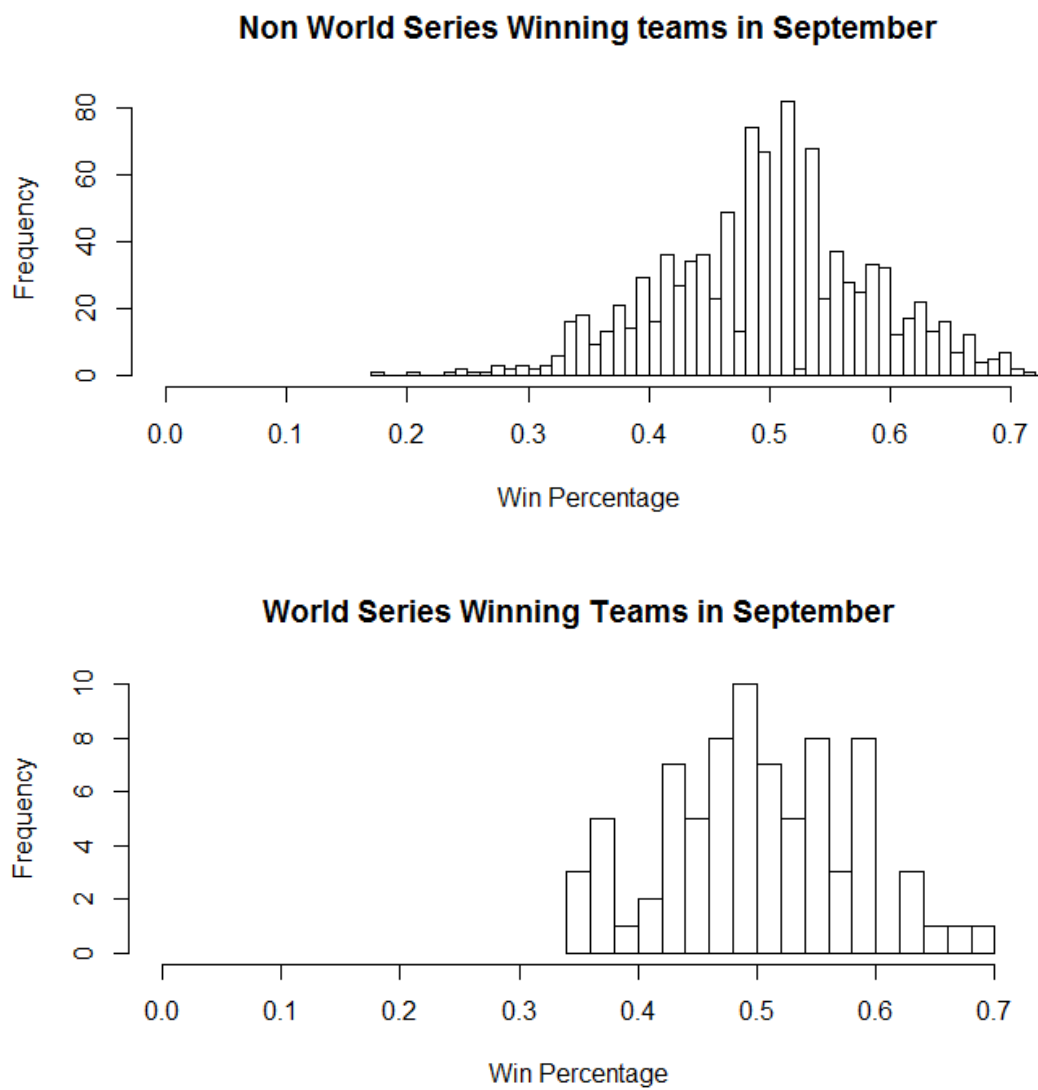


Figure 1

Next I calculated the win percentage for each team in the league against the teams that finished in the top third of the league (WPTT). Another direct comparison can be seen in Figure 2. Teams that won the World Series had, on average, a WPTT of .617, while teams that did not win the World Series had an average WPTT of .459.

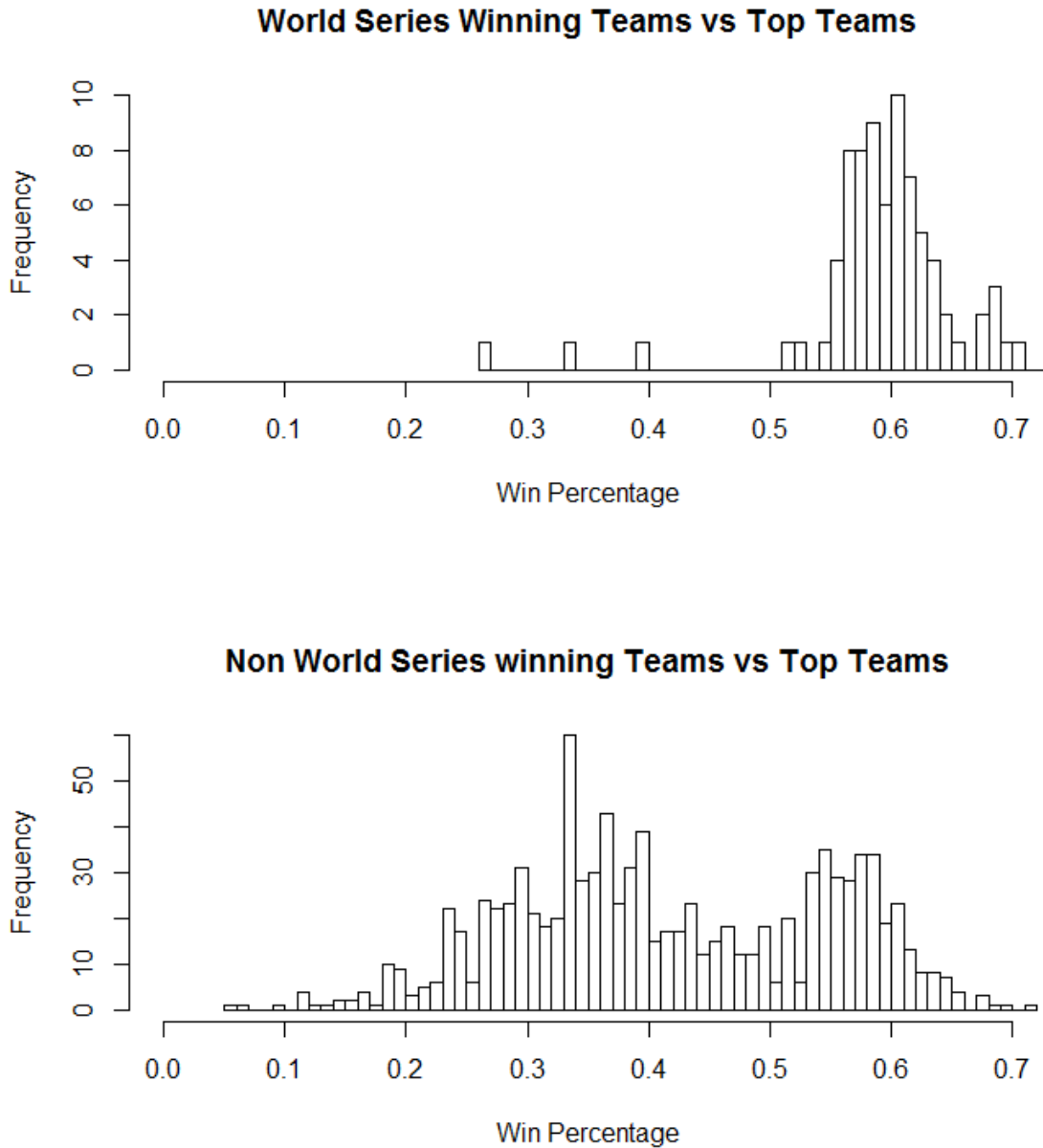


Figure 2

Discussion and Interpretation

The results are not too difficult to interpret. Teams that win the World Series perform about the same towards the end of the regular season as teams that do not go on to win the World Series. This result, to me, is more than a bit surprising. Having followed every World Series this century, it always seems to me that the team entering the postseason with a “hot hand” seems to be the team that goes on to win it all. This seems especially true since my coming to Berkeley, where the nearby Giants have won two Championships since my arrival. The two Giants teams to win the World Series were known for their late-season surges that carried over into postseason success. While those teams were not included in my data set, it still seems surprising to me that there is no correlation between success towards the end of the regular season and success in the postseason.

While winning in September offers no indication of postseason success, winning against the top teams in the league is quite the opposite. A simple test of correlation between the win-percentages of teams against top teams and the indicator, 0 or 1, of whether or not a team won the World Series reveals some significance, with a correlation-coefficient of .3487.

Since we are only interested in postseason success, we should consider these statistics (overall win-percentage and WPTT) in conjunction with the probability of these teams making the playoffs. Simply guessing the “best” team would be biased since *the team that wins the most games in the regular season is guaranteed a spot in the playoffs*. We will say that teams with a WPTT $> .575$ meet “the WPTT criterion.” From a Bayesian point of view, the prior probability of a team with the most regular season wins going on to win the World Series is much higher than teams that meet the WPTT criterion, since teams with a WPTT over .575 have to make the playoffs, *and* go on to win the World Series. The probability of winning the World Series as the “best” team, given that team is in the playoffs, is the same

as that team winning the World Series because they will always be in the playoffs. However, since 1970, 62% of playoff teams have met the WPTT criterion. If having a $WPTT < .575$ were a non-factor, we would expect a similar 62% of World Series winners to meet the criterion. But those teams account for 77% of the World Series titles in that span. This means that before knowing who the playoff teams are, there is a 47% chance that the World Series winner meets the WPTT criterion *if* they make the playoffs. But given that they have made the playoffs, the probability that the World Series winner meets the WPTT criterion jumps to 77%. So teams with a $WPTT > .575$ are *significantly more likely* to win the World Series than the teams that finish with the most regular season wins *if they make it to the postseason*. For this reason, we conclude that whether or not a team that meets the WPTT criterion should be considered when looking to choose a World Series champion from the field of playoff teams.

Conclusion

We can't ignore the significance of the WPTT criterion. While I wouldn't use this threshold alone to make my pick for World Series champion, I would take it into consideration. This is because the 77% calculated above is the probability *that the World Series winner meets the WPTT criterion*, but says nothing about *any specific team*. A number of models exist for predicting the baseball postseason. The Elo ranking, for example, is an up and coming popular model that takes into account a number of factors such as game conditions, opponents, umpires, etc. Adding the WPTT criterion to these models, could very well improve their accuracy.

While it is interesting how meeting a certain threshold for WPTT seems to increase a team's likelihood of winning the World Series, I think the more shocking conclusion from this project is that having a high WPS (winning percentage in September) is not correlated with winning the World Series. What this really seems to say is that recent past performance is not a very reliable indicator of near-future performance. This could have broad ramifications. With the advent of daily fantasy sports, online sports betting, and the general popularity of sports gambling, one has to look further than simply who's "hot" and who's "not" in order to come out ahead. This information could also help prepare players, coaches, and executives for the postseason, serving as a reminder to teams with a high WPS, ending the season on a good note, that the postseason is a whole different animal.

Citation

- Retrosheet
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- Baseball Reference
 - Baseball-reference.com
- Baseball Prospectus
 - Baseballprospectus.com
- Wikipedia
 - Wikipedia.org