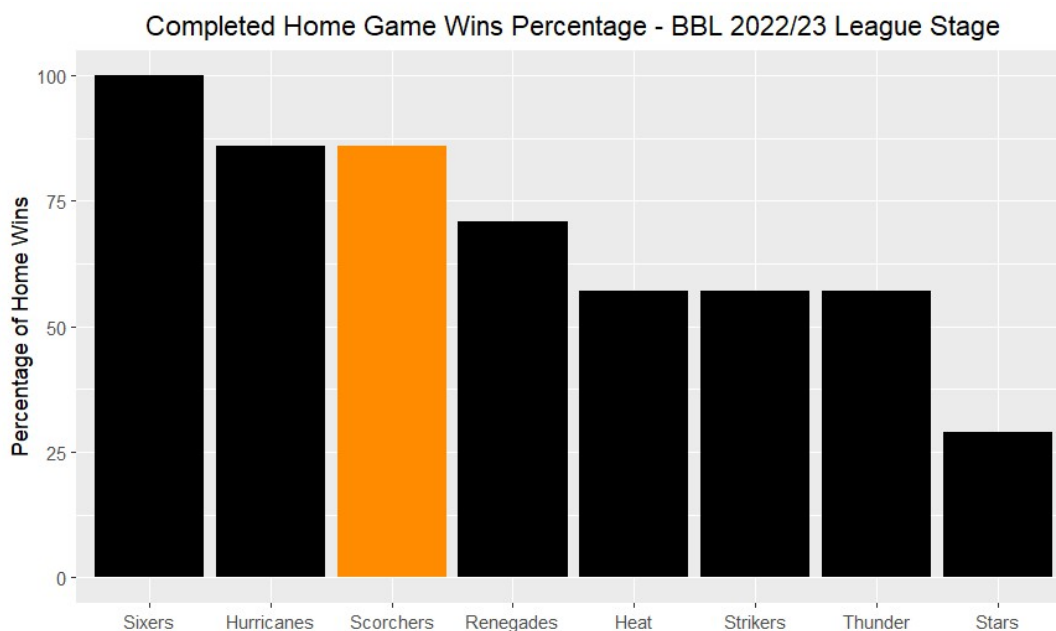# Wonders of the West - How Perth Scorchers won BBL 12

Perth Scorchers remain the most successful team in the Big Bash League, clinching their 5th trophy in the 2022/23 season. In an intense final that went down to the wire, Cooper Connolly and Nick Hobson played two crucial and entertaining cameos to take the Scorchers home against the resurgent Brisbane Heat. Throughout the tournament, the **Perth Scorchers and the Sydney Sixers were the two best teams in the league phase, winning 11 and 10 games** respectively, while other teams managed a maximum of 7 wins.

The factors behind Perth Scorchers' title winning run in the 2022/23 season can be understood better using statistical measures. T20 cricket has a plethora of key performance indicators (KPI), which help measure a team or a player's success. While reporting these KPIs, this report also aims at understanding what these KPIs indicate.
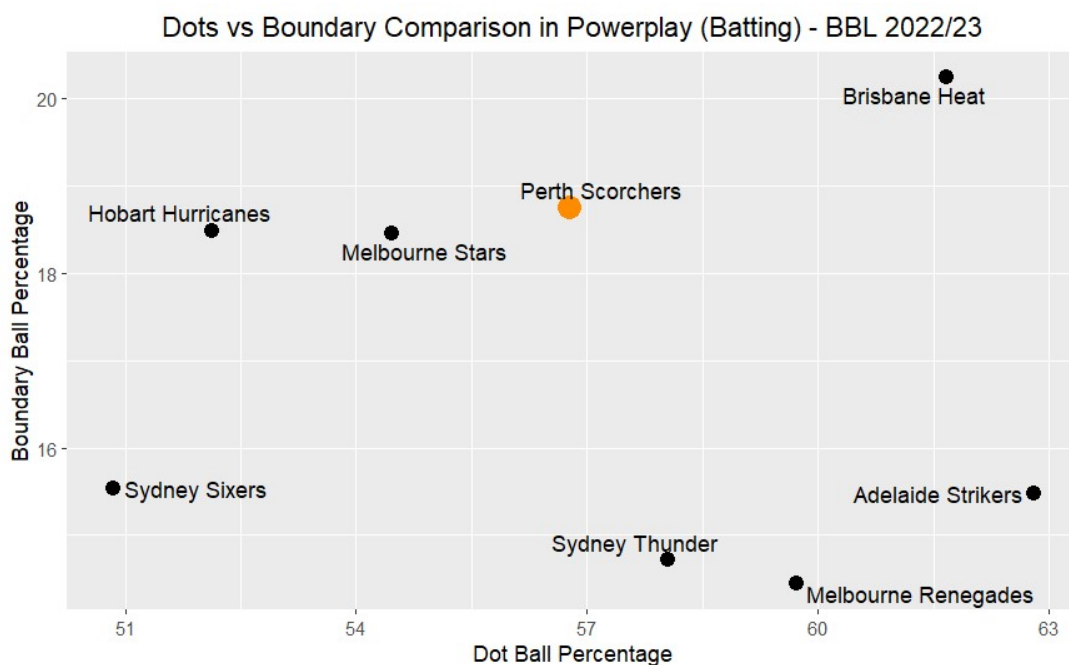
Fortress Optus

Historically, Perth has been a successful side at home, **winning 66% of home games** before this season. Their success at home is one of the reasons behind their consistency through the years. This season, Perth Scorchers were only behind Sydney Sixers in the percentage of home games won, winning 6 out of their 7 league games. With home-ground hosting rights in the playoffs, Perth seized the advantage, winning both their home games, the Qualifier and the finals, to clinch the title.
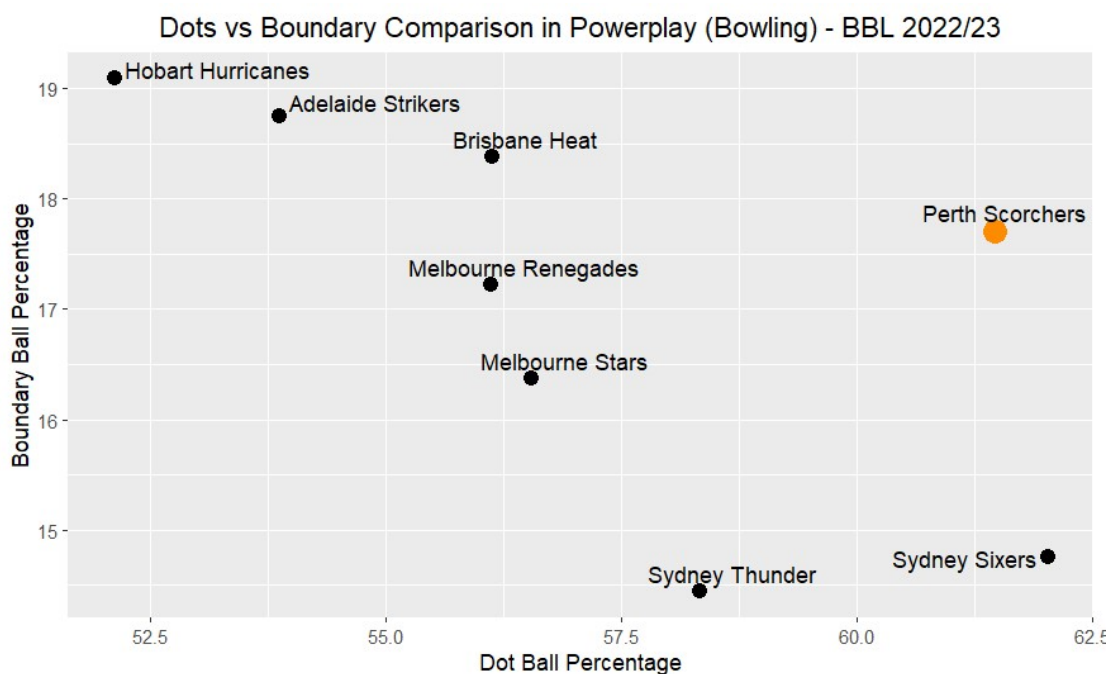
Accelerate or build base? Why not both?

T20 teams maximize the powerplay's fielding restrictions by trying to score the maximum amount of runs possible during this phase of the innings. But there are so many factors associated that might hinder scoring. One of the factors is that the ball is new, and the bowlers might be able to find some swing in the air, which might reduce the scoring. The batters are still new to the crease, and asking them to score quickly early in the innings might lead to early wickets, which is always trouble to the batting side.

Thus, it is vital to find the right balance between scoring runs and building a solid base. In an ideal scenario, teams would like a high boundary ball percentage and a low dot ball percentage while batting in the powerplay.

Dots vs Boundary Comparison in Powerplay (Batting) - BBL 2022/23

Looking at the graph, a team would essentially want to be on the left-hand top quadrant of the graph where the dot ball percentage is lower and the boundary percentage is higher. Perth Scorchers are in this part of the graph, with a boundary ball percentage of nearly 19% and a dot ball percentage close to 57%. This combination of scoring and building base helped Perth become a stronger team in the powerplay.

On to the bowling side of things, with the same metrics, a team would be one of the best if the dot ball percentage is higher and the boundary ball percentage is lower. In this graph, teams would want to be on the bottom-right quadrant. Although Perth has a higher boundary ball percentage while bowling, they are slightly better than most teams, especially on the dot ball percentage (close to 61%), only behind Sydney Sixers. The table also shows that Perth Scorchers, on an average, are conceding lesser runs and picking more wickets when compared to the rest of the league.
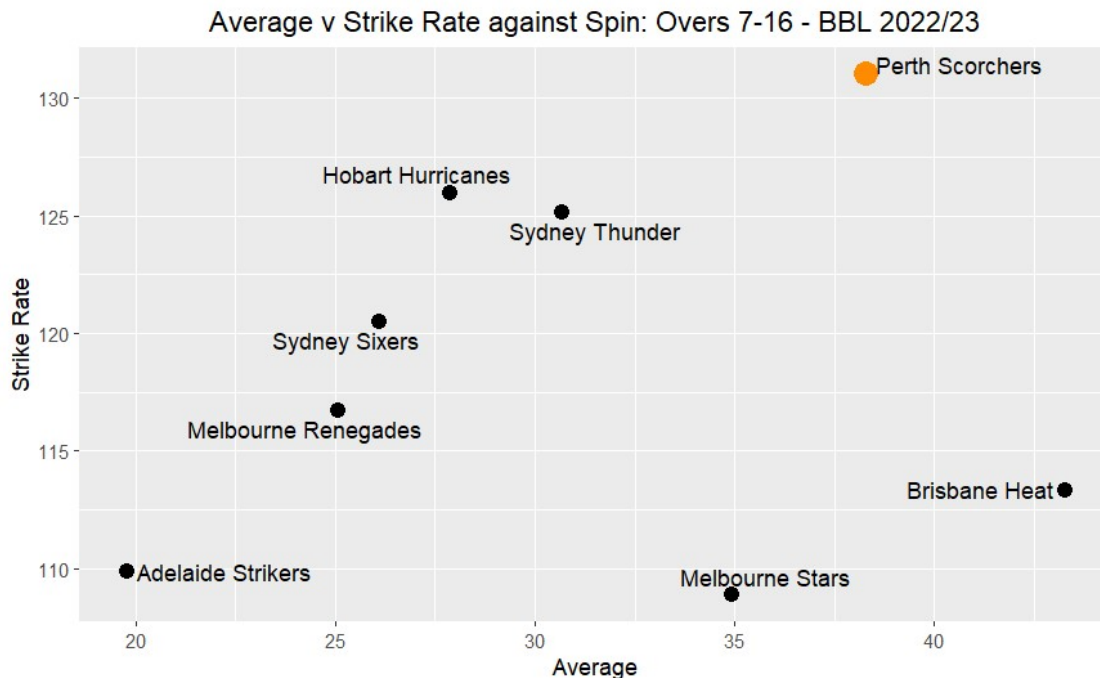
Dots vs Boundary Comparison in Powerplay (Bowling) - BBL 2022/23

Bowling	Average Powerplay Runs	Average Powerplay Wickets
Perth Scorchers	28.1	1.5
Rest of the League	30.2	1.25

Middle overs spin conundrum

Over the years, the spinner in T20 cricket has become more vital to a side than any other bowling role. Be it off spin, or leg spin, be it left-arm or right-arm, the advent of analytics has led to teams exploring favourable matchups against batters and gain success. Conventionally, a spinner primarily operates in the middle overs of a T20 games, i.e., from the 7th over to the 16th over. **In the 2022/23 season of BBL, approximately 65% of spinner overs were bowled in the 'middle-overs' part of the game**. Hence, playing spin effectively is an important requirement of middle overs batters.

Basic metrics like average and strike rate are used to understand how a team plays spin effectively. A team would be the best if it had higher average and higher strike rate against spin. In a scatter plot of average and strike rate, the best teams would lie in the top right quadrant.

Perth Scorchers are the only team who lie in this part of the graph, while Sydney Thunder and Hobart Hurricanes are slightly far behind. This shows Perth's effectiveness in batting against spin and dominating an important and a challenging portion of the game.
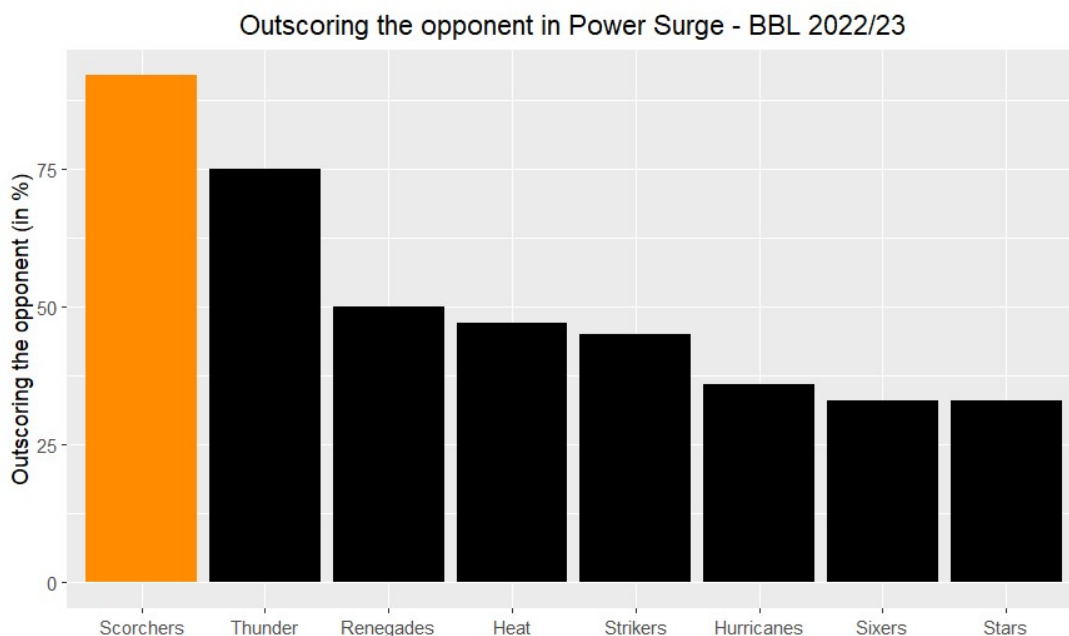
Average v Strike Rate against Spin: Overs 7-16 - BBL 2022/23

Chances of a win 'surge'?

The addition of 'power surge' into the BBL has added another dimension to the middle overs phase of the game. The decision on when to take the power surge has been tactically challenging. With teams preserving their best bowlers' overs for the power surge, this phase might eventually 'make or break' the game for both teams.

As a curiosity, analysing the power surge showed that during the 2022/23 BBL season, there were 53 instances of both teams taking the power surge during the game. Out of these 53 instances, teams outscoring the opponent in the power surge won the game 34 times. This translates to approximately a 64%-win rate, when a team scores more runs than the opponent in the power surge. This statistic is not due to chance and will be proved so in the notes section of this report (A chi-square test is performed on the data). Hence, outscoring the opponent in the power surge could be something teams should look to achieve.

Perth Scorchers have been dominant in the power surge, outscoring their opponents on 11 out of 12 instances (instances here mean both teams taking the power surge). This improves their chance of victory, according to the statistic mentioned above. Another special mention about the dominance in chases by Perth is that on 4 instances, they never had to take the power surge, as they completed the run chase without the need for the surge.

Cumulatively, Perth Scorchers have been the best scoring team in the power surge. The table below shows that Perth Scorchers have maximized their scoring opportunities in the surge by having the highest boundary ball percentage and the lowest dot ball percentage compared against the rest of the league.
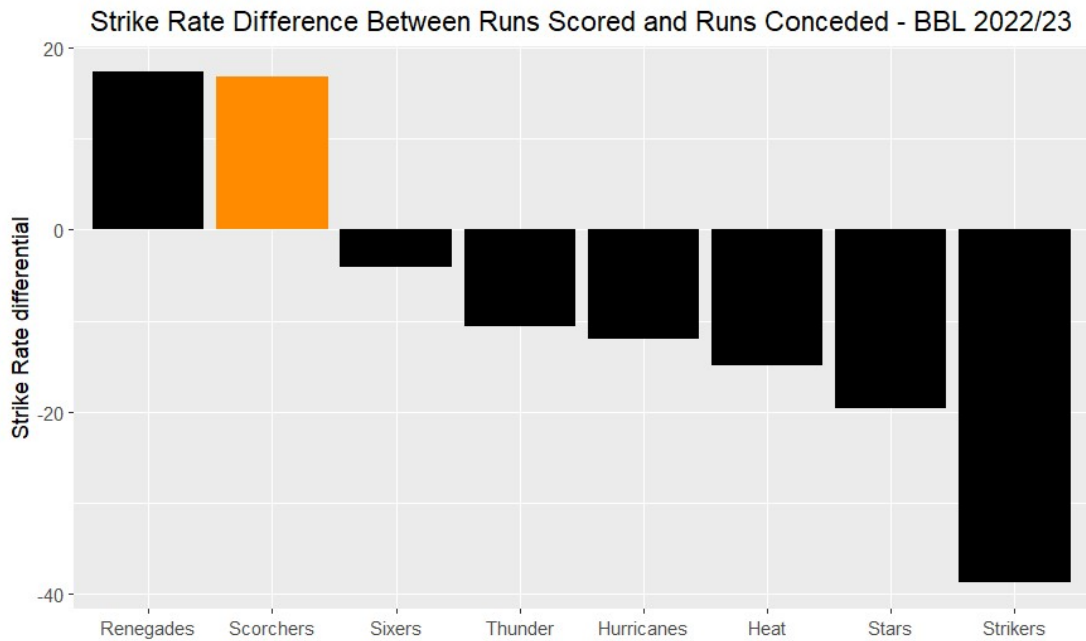
Outscoring the opponent in Power Surge - BBL 2022/23

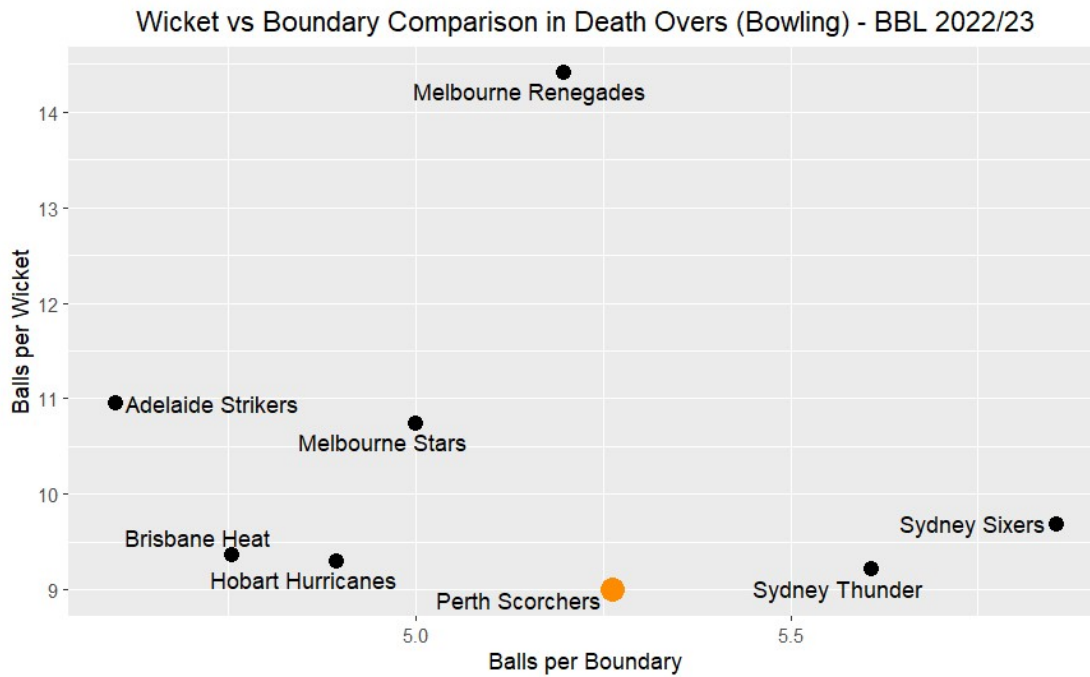| Surge Batting	Dot Ball Percentage (in %)	Boundary Ball Percentage (in %)
Perth Scorchers	18.7	34.5
Rest of the league	31.7	23.7

Killing at the death?

Closing out an innings with both bat and ball can ultimately decide the outcome of a T20 game. In this phase of the game, batters value their wicket less and try to score the maximum runs. But, losing wickets at this stage of the innings allows a new batter to enter the crease, pushing back the batting team, as the new batter might take time to get set at the crease. Hence, it is a trade-off between scoring quickly and ensuring the team does not lose too many wickets.

It is also crucial for a team to restrict the scoring rate of the opponent and maximize their scoring during the death overs. This can be measured using the Strike Rate differential statistic, obtained by subtracting the runs conceded strike rate by runs scored strike rate. Ideally, the best teams will have a higher positive net strike rate differential, showing that they score quicker than their opponents at the death.

Perth Scorchers and Melbourne Renegades are the only two teams to be in the positive for the 2022/23 season, with Perth having a net strike rate differential of nearly 17 runs per 100 balls. This translates to Perth scores 17 more runs per 100 balls than they concede.

Strike Rate Difference Between Runs Scored and Runs Conceded - BBL 2022/23

Bowling wise, a team would be one of the best teams in the league if they had a higher balls per boundary and lower balls per wicket. They would be in the bottom right quadrant of the graph where balls per boundary is higher and balls per wicket is lower. Among the 3 teams in this quadrant, Perth Scorchers have the least number of balls per wicket at the death.

Wicket vs Boundary Comparison in Death Overs (Bowling) - BBL 2022/23

Amongst all these key performance indicators, the Perth Scorchers have been the best team or one among the top 3 teams in the league, leading these metrics. Along with these team metrics, Perth Scorchers stood out with league-leading individual performances. Aaron Hardie led the league in runs scored, while Andrew Tye finished 3rd in the highest wicket takers list.

With all the pieces of a title-winning jigsaw puzzle in place, Perth Scorchers completed a dominating title win with a scintillating performance in the final.

Notes and References

Data for the above analysis was obtained from reliable cricket data sources like 'Cricsheet.com', 'Cricmetric.com', 'Bigbashboard.com', and ESPNCricinfo.

Data from Cricsheet was imported onto RStudio with help of a package on R called 'cricketdata'. All graphs have been generated using RStudio.

Data for the power surge phase of the game was manually collected from 'Cricbuzz' in the format shown below:

match_no	innings	batting_team	bowling_team	runs	balls	wickets	starting over	fours	sixes	dots	surge_win	batting_team_win

To measure the association between power surge outscoring and winning the game, a chi-square test was conducted with a contingency table.

The table for power surge and team win is given below:

Power Surge⬇ Team win ➡	Yes	No
Yes	34	19
No	19	34

The null and alternative hypothesis for the chi-square test is:

H_0: There is no association between Power surge outscoring and team winning

H_1: There is an association between Power surge outscoring and team winning

After conducting the chi-square test on RStudio, we were able to obtain the p-value to be less than 0.05 (significance level). Hence, we can say that power surge outscoring is associated with team winning.