Report on T20 Toss data analysis for 2022 world cup

Introduction

All the data extracted from espncricinfo statsguru website

There are 7 venues where 2022 T20 world cup happened. I have collected historical data of each venue and visualized what are the most taken decisions after winning toss. And also performed time series analysis on each ground data.

Each ground data contains

Columns:

1. **Team 1**: The first team in the match
2. **Result**: The result of the match from Team 1's perspective (won/lost).
3. **Margin**: The margin of the win or loss
4. **Toss**: Toss result for Team 1 (won/lost).
5. **Bat**: Batting order of Team 1 (1st/2nd).
6. **Team2**: The second team in the match .
7. **Ground**: The ground where the match was played.
8. **Date**: The date of the match.
9. **Decision**: The decision made after winning the toss (Elected to bat/bowl).

Win analysis on 2022 T20 world cup data on each ground

Key observations from the analysis:

1. **Variation in Win Distribution**: Different grounds show varying patterns in terms of the advantage of batting first or bowling first. This could be influenced by factors such as pitch conditions, weather, or historical performance trends at these venues.
2. **Ground-Specific Strategies**: Teams might adopt different strategies depending on the ground, such as choosing to bat or bowl first after winning the toss.
3. **Importance of Toss**: The decision made after winning the toss (to bat or bowl first) can have a significant impact on the game's outcome, which is evident from the win distributions.
4. **Local Conditions**: The local conditions, such as pitch behavior and weather, might influence the outcome and should be considered while interpreting these results.

This analysis provides valuable insights into the tactical aspects of cricket, particularly in T20 matches, where the choice of batting or bowling first can be crucial. The charts can be used to inform strategies for future matches at these grounds.

1. **Geelong**
    - Total Matches: 6
    - Batting First Wins: 4 (67%)
    - Bowling First Wins: 2 (33%)
2. **Hobart**
    - Total Matches: 8
    - Batting First Wins: 4 (50%)
    - Bowling First Wins: 4 (50%)
3. **Sydney**
    - Total Matches: 7
    - Batting First Wins: 5 (71%)
    - Bowling First Wins: 2 (29%)
4. **Perth**
    - Total Matches: 5
    - Batting First Wins: 1 (20%)
    - Bowling First Wins: 4 (80%)
5. **Melbourne**
    - Total Matches: 3
    - Batting First Wins: 2 (67%)
    - Bowling First Wins: 1 (33%)
6. **Brisbane**
    - Total Matches: 4
    - Batting First Wins: 3 (75%)
    - Bowling First Wins: 1 (25%)
7. **Adelaide**
    - Total Matches: 7
    - Batting First Wins: 4 (57%)
    - Bowling First Wins: 3 (43%)

Key Insights:

- **Geelong, Melbourne, and Brisbane**: These grounds have shown a tendency for teams batting first to win more often.
- **Hobart**: This ground has an even distribution, with no clear advantage for batting or bowling first.
- **Sydney**: Teams batting first have a notable advantage here.
- **Perth**: It's more favorable for teams bowling first, with a significant 80% win rate.
- **Adelaide**: Slightly favors teams batting first, but the distribution is relatively balanced.

These patterns could be influenced by various factors such as pitch conditions, weather, or even the playing style of teams that frequently compete on these grounds. This analysis can be valuable for teams to strategize their game plan based on the ground they are playing a

Win analysis on historical data on each ground

1. **Adelaide**
    - Total Matches: 24
    - Elected to Bat and Won: 0
    - Elected to Bowl and Won: 12
    - Insights: Teams that elected to bowl after winning the toss won all the matches where the winning team made the decision.
2. **Brisbane**
    - Total Matches: 20
    - Elected to Bat and Won: 4
    - Elected to Bowl and Won: 6
    - Insights: A slight preference for teams winning after electing to bowl, but the distribution is relatively balanced.
3. **Geelong**
    - Total Matches: 14
    - Elected to Bat and Won: 2
    - Elected to Bowl and Won: 5
    - Insights: Teams electing to bowl first seem to have a better chance of winning.
4. **Hobart**
    - Total Matches: 22

- Elected to Bat and Won: 3
- Elected to Bowl and Won: 8
- Insights: A noticeable advantage for teams electing to bowl first.

5. **Melbourne**
    - Total Matches: 36
    - Elected to Bat and Won: 4
    - Elected to Bowl and Won: 14
    - Insights: A significant advantage for teams electing to bowl first.
6. **Perth**
    - Total Matches: 14
    - Elected to Bat and Won: 1
    - Elected to Bowl and Won: 6
    - Insights: Teams that chose to bowl first after winning the toss had a notably higher win rate.
7. **Sydney**
    - Total Matches: 32
    - Elected to Bat and Won: 6
    - Elected to Bowl and Won: 10
    - Insights: Teams electing to bowl first have a higher win rate, but the gap is not as pronounced as in some other grounds.

Overall Insights:

- In most grounds, there is a trend where teams electing to bowl first after winning the toss have a higher win rate.
- This trend could be influenced by factors like pitch conditions, weather, or the nature of the ground favoring the bowling side.
- The data suggests that teams might need to consider the local conditions and historical performance when making a decision after winning the toss.

TIME SERIES ANALYSIS

Why time series analysis on toss data

1. **Understanding Trends and Patterns**: Time series analysis helps in identifying trends and patterns in decision-making over time. For cricket, this could mean understanding how the choices of batting or bowling first after winning the toss have evolved, which might be influenced by changes in the sport, the conditions of specific grounds, or the strategies of the teams playing.
2. **Impact of External Factors**: It allows for the examination of how external factors like changes in pitch conditions, weather patterns, or rules of the game have influenced decisions. For instance, a new rule favoring bowlers might lead to more teams choosing to bowl first.
3. **Strategic Insights**: Teams and coaches can use this analysis for strategic planning. By understanding historical trends, they can make more informed decisions based on what has been successful in the past under similar conditions.
4. **Predictive Analysis**: Time series analysis can be used to predict future trends. This can be particularly useful for planning and preparation, both from a team's perspective (e.g., how to prepare for a match at a specific venue) and for organizers and broadcasters.
5. **Comparative Analysis Across Grounds**: By analyzing time series data for different grounds, one can compare how strategies vary from one location to another. This can be crucial for teams to understand how ground conditions and local factors influence match outcomes.
6. **Adaptation to Changing Conditions**: Cricket, like many sports, is dynamic, with teams continuously adapting to each other’s strategies, evolving player skills, and changing conditions. Time series analysis provides a way to track and understand these adaptations over time.

The analysis of cricket match data from various cities in Australia has yielded insightful trends in decision-making over the years. Let's delve into the findings for each city:

Perth

- In Perth, the most frequent decision has shifted from batting to bowling in recent years. Specifically, "Elected to bowl" became the prevalent choice in 2019 and 2022, indicating a possible strategic shift or adaptation to local playing conditions.

Adelaide

- The Adelaide data shows a more varied trend. Initially, teams predominantly chose to bat (2011, 2014). However, there's been a notable shift towards bowling in recent years (2016, 2017, 2019, 2022). This could reflect changes in pitch conditions or evolving strategies in the game.

Brisbane

- In Brisbane, the preference for batting was strong in the earlier years (2006, 2009, 2013), with a notable change in strategy to bowling in 2018 and 2022, interspersed with a preference for batting in 2019.

Geelong

- The data for Geelong, although limited, shows a consistent preference for bowling in both 2017 and 2022. This consistent choice might be influenced by local pitch conditions or successful outcomes from previous matches.

Melbourne

- Melbourne's data exhibits a significant evolution in decision-making. Initially, the preference was strongly for batting (2008-2012, 2014), but there's been a clear shift towards bowling from 2013 onwards, peaking in the later years (2016-2022). This could be due to changes in the pitch or a strategic response to the outcomes of matches in earlier years.

Hobart

- In Hobart, there's a mix of preferences. While batting was the choice in 2010 and 2014, bowling became more prevalent in recent years (2018, 2022), suggesting a shift in strategy or adaptation to the local conditions.

Sydney

- Sydney's trend is similar to Melbourne's, with an initial preference for batting (2007, 2009, 2010, 2016) that gradually shifted towards bowling in the later years (2018, 2020, 2022). This change could be attributed to various factors, including pitch behavior, weather conditions, or strategic adaptations by the teams.

Overall Observations

- A common trend across most cities is the shift from batting to bowling in recent years. This could reflect a broader strategic shift in cricket, possibly influenced by evolving pitch conditions, advancements in bowling techniques, or analyses of match outcomes influencing team strategies.
- The variation in decisions across different years and cities underscores the dynamic nature of cricket strategy, which is likely influenced by a multitude of factors including team composition, opponent's strengths, and local playing conditions.

Based on the decisions made how many successful decision made across the years

Adelaide

- **2011-2019**: No successful decisions, with a 0% success ratio.
- **2022**: Some improvement with a 14.29% success ratio.

Brisbane

- **2006, 2013**: High success with 100% ratio.
- **2009, 2018, 2019**: No success, 0% ratio.
- **2022**: Moderate success with a 40% ratio.

Geelong

- **2017**: Full success with a 100% ratio.
- **2022**: A drop in success, achieving a 33.33% ratio.

Hobart

- **2010, 2014, 2018**: Excellent performance with a 100% success ratio.
- **2022**: Significant decline to a 12.50% ratio.

Melbourne

- **2009, 2010, 2011, 2017, 2018, 2019**: High success with 100% ratio.
- **2008, 2012, 2013, 2014, 2016**: No successful decisions, 0% ratio.
- **2022**: Good performance with a 66.67% ratio.

Perth

- **2019**: Perfect success with a 100% ratio.
- **2022**: A decrease in success, recording a 50% ratio.

Sydney

- **2007, 2009**: Full success with 100% ratio.
- **2010, 2016**: No success, 0% ratio.
- **2018, 2020, 2022**: Moderate success with a 50% ratio.

General Observations

- The success ratio of decisions varies significantly across different grounds and years.
- Certain years like 2010, 2014, and 2018 witnessed consistent high success ratios across multiple grounds.
- Some grounds like Adelaide and Brisbane show fluctuating success ratios, indicating changing conditions or strategies over the years.
- It's interesting to note the high success ratios in certain years, suggesting favorable conditions or effective decision-making.

DATA DETAILS

Data preparing and cleaning

1. I have removed all the abandoned and no result matches as those matches cannot produce a result weather it is win or loose
2. Removed margin coloumn as we focused on toss decision prediction we are not concerned about how much margin the teams won

3. Removed B/r coloumn as well as we are not interested in analysing how many Balls remaining are remaining after the matches.
4. Arranged the date format to mm-dd-yyyy format.
5. For world cup data I have removed the alternate rows because every alternate row is a same row with 2nd team in the previous match.

These are the links for the data.

Adilade

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=131;template=results;type=team;view=results

Brisbane

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=209;template=results;type=team;view=results

Melbourne

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=61;template=results;type=team;view=results

Hobart

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=905;template=results;type=team;view=results

Geelong

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=564;template=results;type=team;view=results

Perth

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=3404;template=results;type=team;view=results

Sydney

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;ground=132;template=results;type=team;view=results

Worldcup T20 data

https://stats.espncricinfo.com/ci/engine/stats/index.html?class=3;host=2;spanmax1=13+Nov+2022;spanmin1=16+Oct+2022;spanval1=span;template=results;type=team;view=results

CONCLUSION

Based on the detailed analysis of T20 World Cup 2022 toss data and historical data across various grounds in Australia, one key conclusion is that the decision made after winning the toss (to bat or bowl first) has a significant impact on the game's outcome. The analysis reveals notable variations in the success of these decisions across different venues and over time, influenced by factors such as local pitch conditions, weather, and strategic adaptations by the teams.

Ground-specific trends indicate that certain venues like Perth and Sydney have evolved to favor teams that choose to bowl first, while others like Melbourne initially favored batting but shifted towards bowling in recent years. This highlights the importance of teams considering local conditions and historical performance when making a decision after winning the toss.

Additionally, the time series analysis underscores the dynamic nature of cricket strategy, reflecting shifts in preferences from batting to bowling in recent years. This shift could be attributed to evolving pitch conditions, advancements in bowling techniques, or analyses of past match outcomes influencing team strategies.

Overall, the data suggests a growing trend where choosing to bowl first after winning the toss has become more favorable in many grounds, pointing towards a broader strategic shift in the approach to T20 cricket. This insight is crucial for teams in strategizing and planning for matches, especially in high-stake tournaments like the World Cup.

REFERENCES

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