

Data Visualization – ISM 6419

Final Project Report

Indian Cricket Analysis (IPL, Ranji, Asia cup)



MUMA College of Business

Supervised by
Prof. Dr. Johannes Reichgelt

Presented by
Pavan Gopi Boppana
U99855563

Introduction:

Cricket, a sport embraced by enthusiasts globally, showcases a range of formats, from enduring test matches to the high-energy Twenty20 games. In India, where cricket holds deep cultural significance, tournaments such as the Ranji Trophy serve as a platform for nurturing talent across diverse states, highlighting a wide array of skills. The Indian Premier League (IPL) has redefined cricket, captivating worldwide audiences with its fusion of sports and entertainment within an exhilarating league framework. The Asia Cup, renowned for sparking fervent contests among major Asian cricketing nations, fosters both regional rivalries and a sense of camaraderie. Using Tableau, these prestigious tournaments can be visually portrayed, unveiling player statistics, match dynamics, and the captivating narrative that characterizes cricket's journey through these iconic competitions.

The project aim is to analyze the data of the match outcomes of IPL by various factors that includes. The head-on-head analysis of each team in IPL. Analysis of team. Analysis of how IPL effected the Indian team with the international and Ranji.

The research questions for my project are:

1.How do venues affect each team, the prediction of outcome before the matches and which is very helpful for fantasy players and sports analysts.

For this I am going to analyze the following:

- i. Number of matches played by each team.
- ii. Head-on-head matches played by each team and its outcome.
- iii. Popularity of venues across the India and each team performance of the venues.
- iv. Each team performance across the venue with the opponent team

2. How the Toss effect the outcomes of the match. For this I am going to visualize the following:

- i. Toss Decision taken by each team across the season/year.
- ii. Each team's decision after the toss across each other team.
- iii. What is the most probable decision taken by all the team after the toss.
- iv. Team wins and losses across all the seasons.

3. I want to check the players stats across the season of the IPL. The main reason behind is who are the consistent players that are performing and top scorers and player of the matches award winner each season. The players distribution of each country across the world who are playing in IPL. So that players those are in the team have more chance of win rate and helps fantasy players to predict outcome.

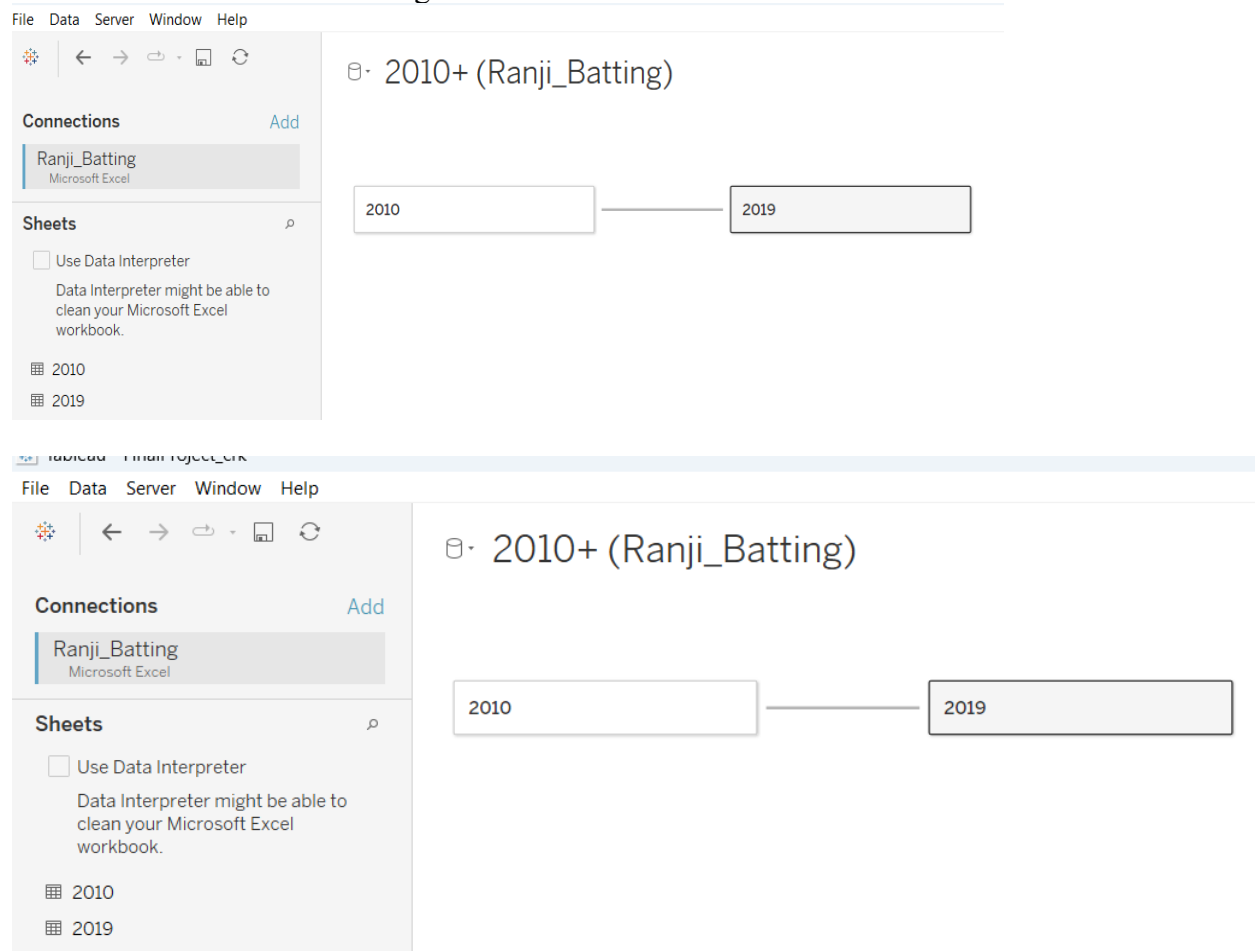
4. How IPL affected the Ranji players of India before and after IPL.

5. How Asia cup is affected before and after IPL.

Data sources:

- + <https://www.kaggle.com/datasets/sidharthkriplani/ipl-auction-data-from-20132022> - IPL data
- + <https://data.world/mkhuzaima/ipl-data-till-2017> - Ranji data
- + <https://data.world/dkmohnaty/cricket-world-cup-winners/workspace/file?filename=Asia+Cup+Winners.xlsx> - Asia cup data

I have linked the datasets among the three :



Initially, I've gathered data from various separate sources, each residing in different sheets. Extracting relevant information from each sheet, I've meticulously cleaned and organized the necessary data, consolidating everything into a single file. This amalgamation aims to simplify the process of connecting disparate sources. Specifically, in the context of the IPL table data, I've diligently cleaned and arranged the pertinent information needed for this project.

For the first research question,

I have analyzed each team played matches along each season and each team head on head like which has upper hand on other team and among all the seasons using a filter for year for each season and the outcome is shown in the visualization it shows the how many matches win by each team. For that I have divided all the teams into two columns in data giving all names as team 1 and team 2 for each column. Also, I have visualized popular venues across the India and match outcomes of each team the particular stadium and is there any relation of popularity of venue and outcome of match.

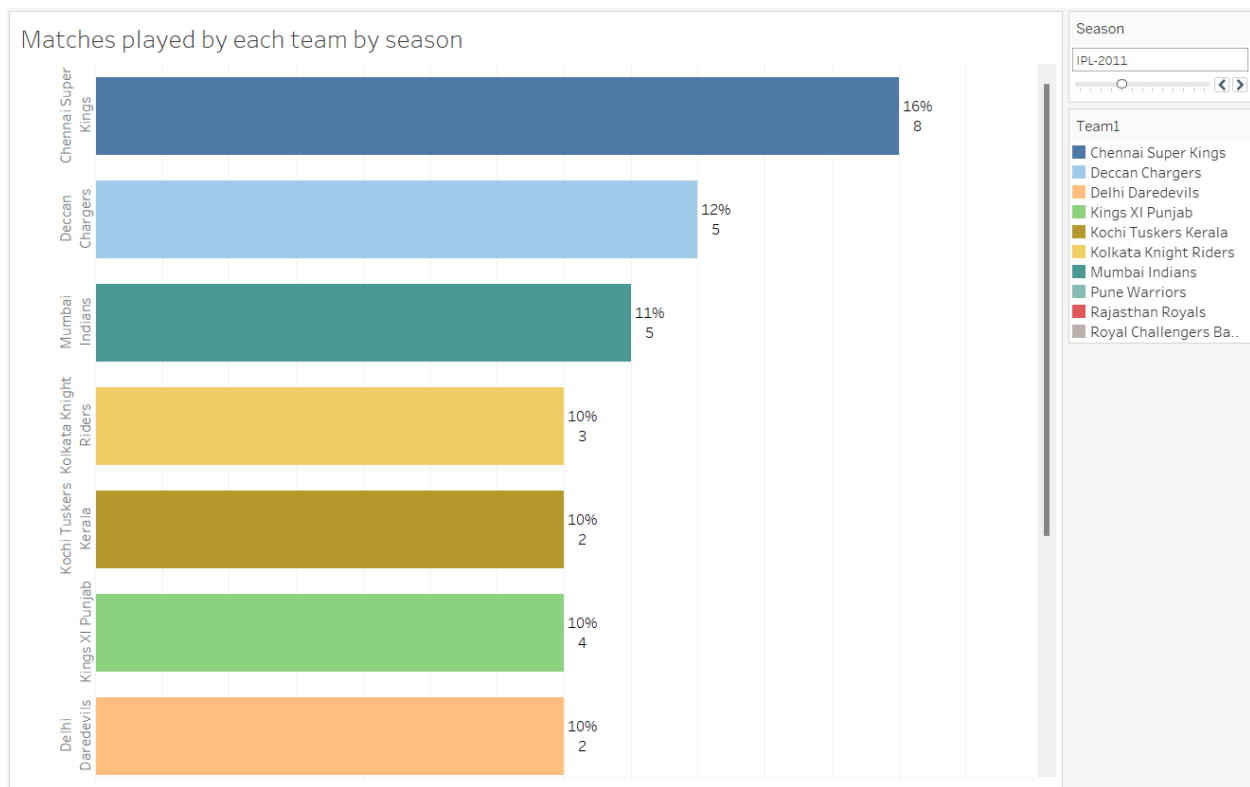


Fig: Matches played by each team across the seasons

Popularity of Venues

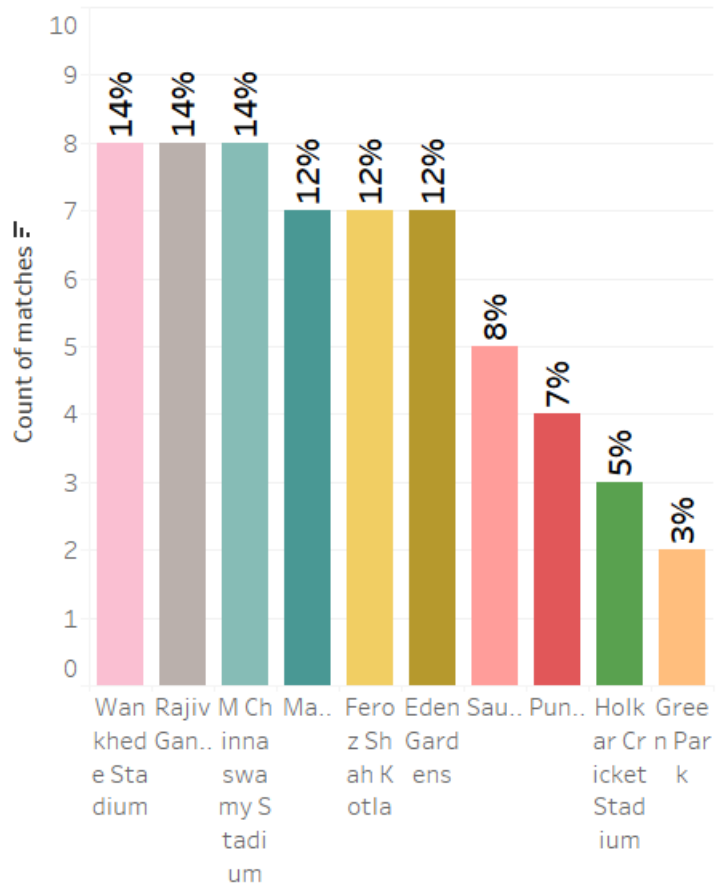


Fig: Popularity of the venues

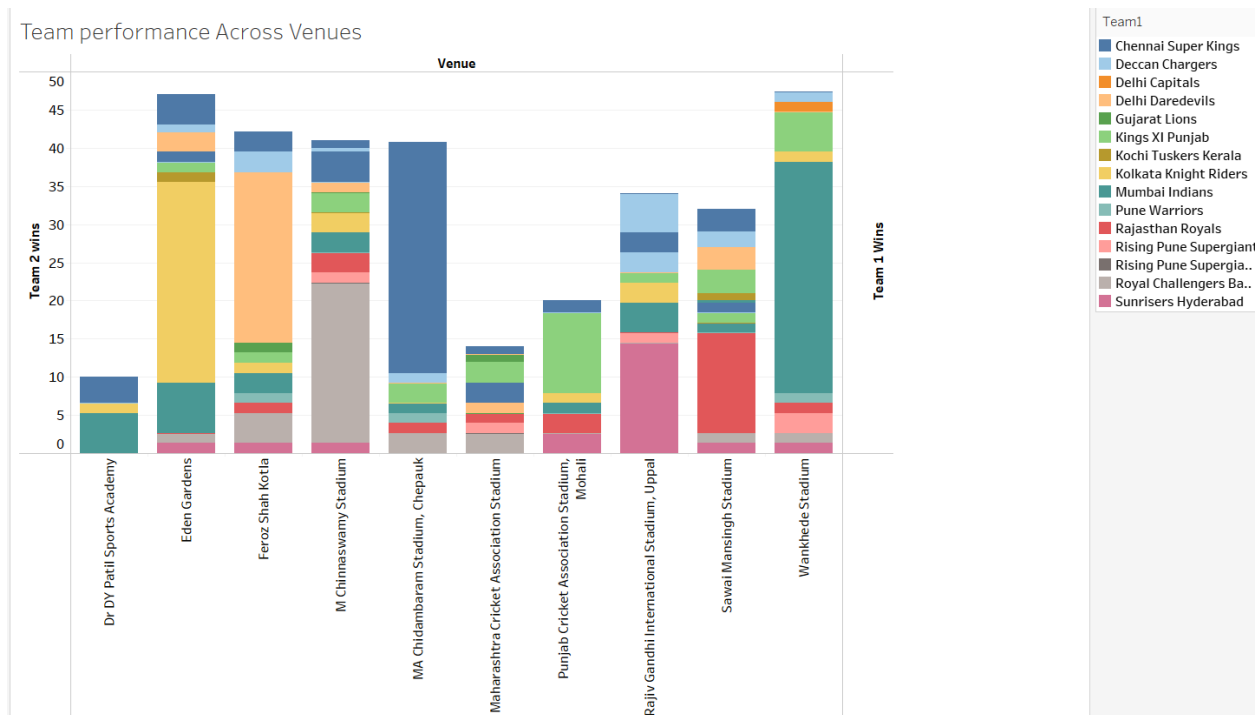


Fig: Team performances across the venues.

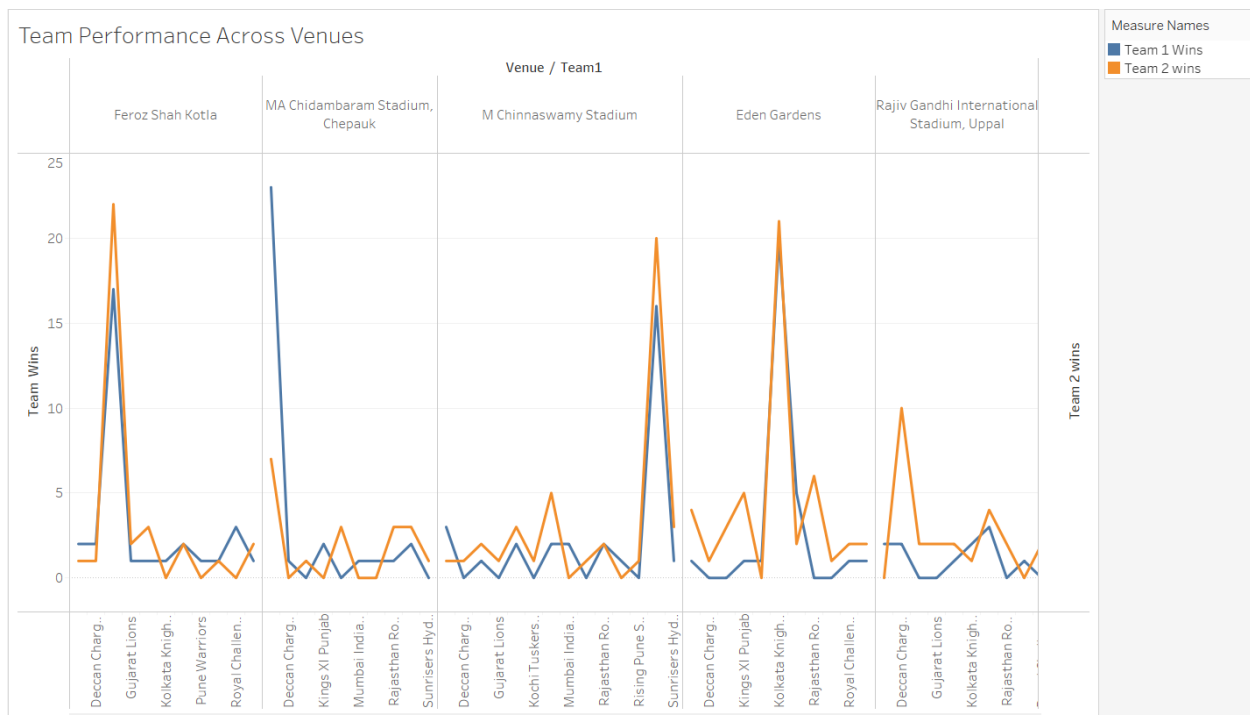


Fig: Each team win/loss across the venue with the opponent teams.

From the above visualizations, we can forecast match outcomes by filtering years and teams. This allows us to anticipate results based on the number of wins and losses incurred by each team

against their opponents. Furthermore, examining the match outcomes in specific venues offers valuable insights. Observing a team's success rate in a particular venue compared to other teams implies the influence of venue and popularity in predicting match results. So, we can conclude that venue affects the match outcome.

For the second research question. How does the Toss affect the Outcomes of the match? I have analyzed the data of each team's decision whether to bat first or field first. Across all the seasons by keeping filter for the years and visualized.

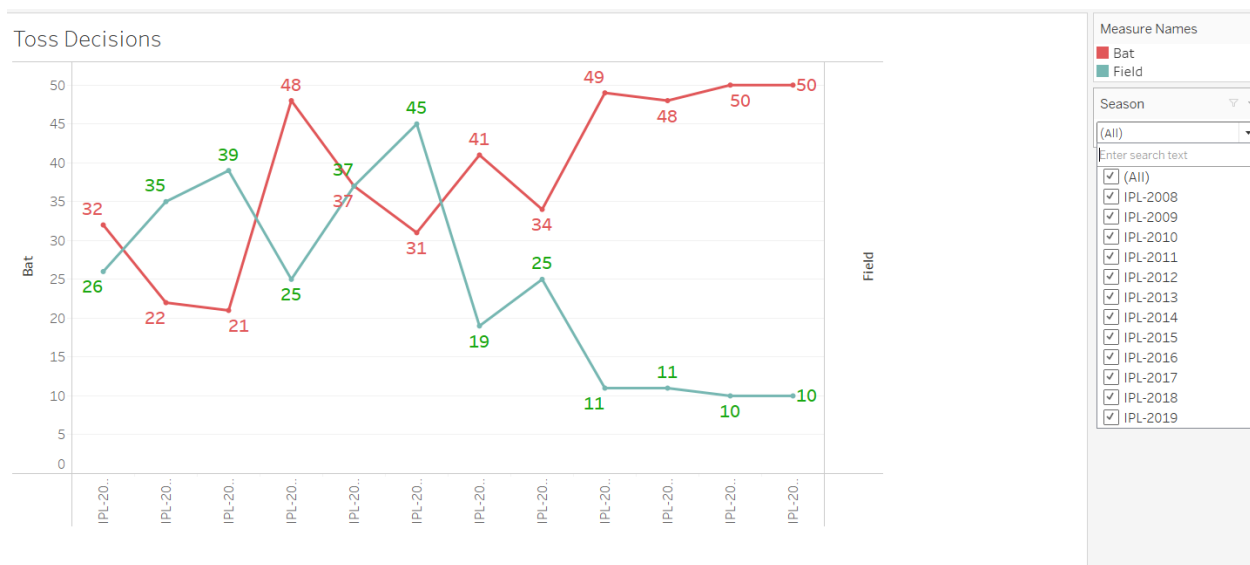
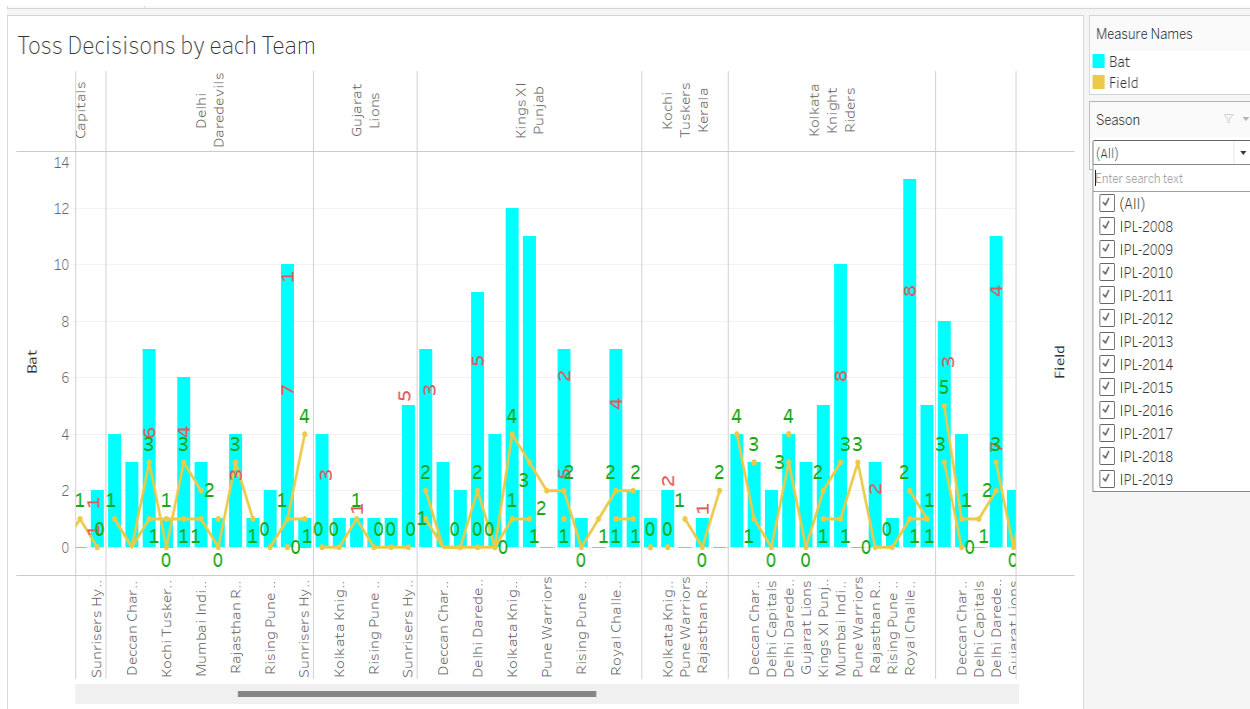


Fig: Toss Decisions taken by each team across the seasons.



Toss Decisions Taken by each team and the result of the match by opponent team.

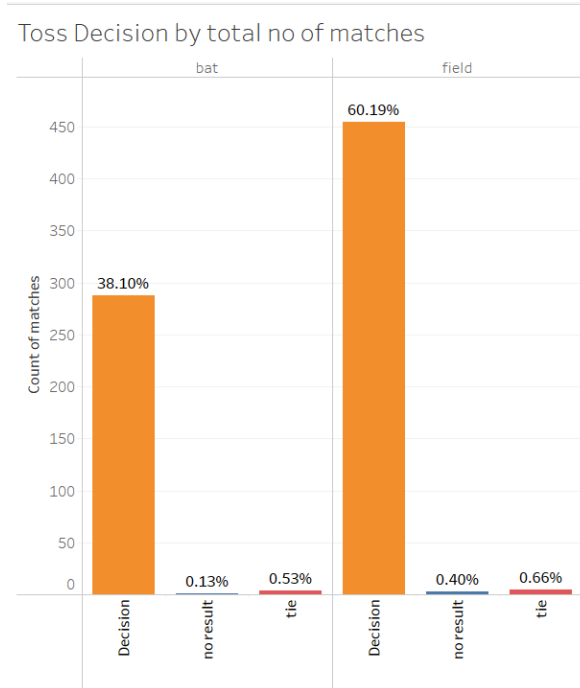


Fig: Most times taken decision after toss.

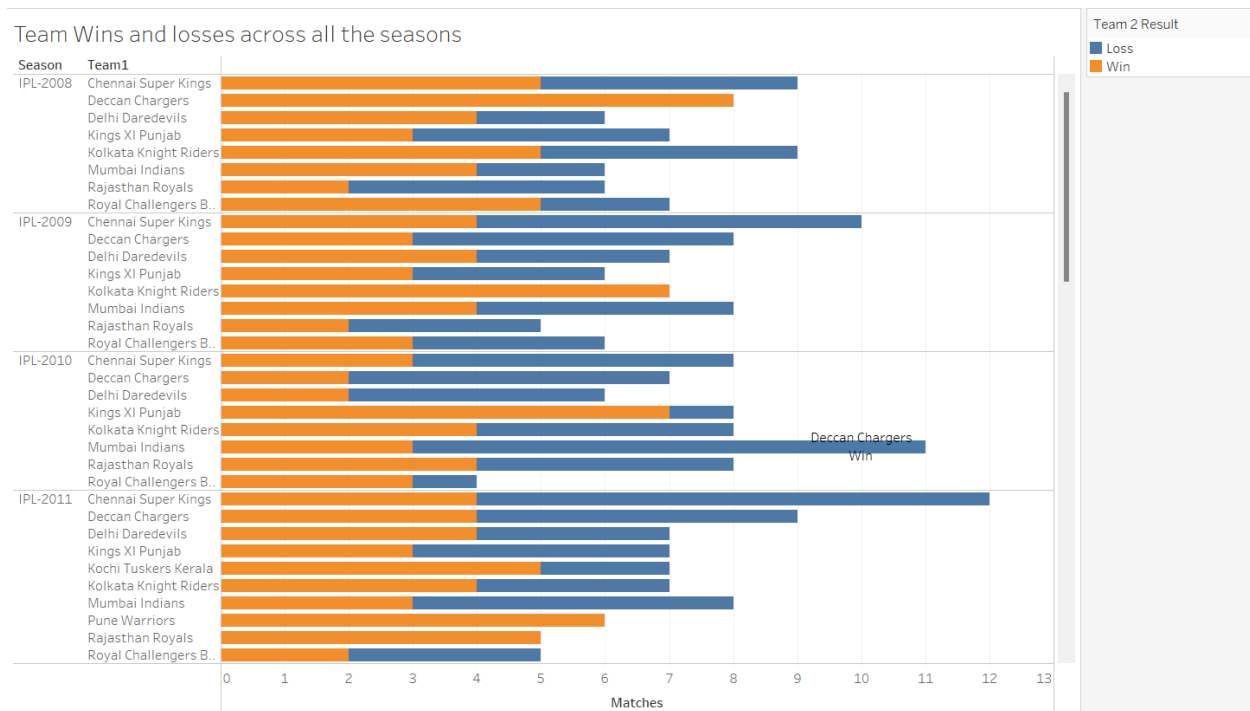


Fig: Wins and losses of each team after across the seasons.

Upon understanding the visualizations above, it's evident that a majority of teams, approximately 60%, have opted to field first in the total matches. This inclination suggests that teams chasing tend to secure more wins than those batting first. However, a keen analysis, considering specific seasons through filters, reveals that in certain periods, teams choosing to bat have secured more victories. For instance, the consistent choice of Kings XI Punjab to bat first resulted in a substantial number of wins. This demonstrates that while the initial toss plays a role, numerous significant factors impact match outcomes. Notably, venues and other external elements contribute significantly, indicating that the match result is influenced by more than just the toss outcome.

For the third research question,

I conducted an analysis to determine the percentage of players involved in the IPL, identifying the key contributors within teams worldwide. This included assessing the leading run scorers and the most frequent recipients of the 'Man of the Match' title across all seasons. Additionally, I compared whether the best performers in matches also held positions among the top run scorers of all time.

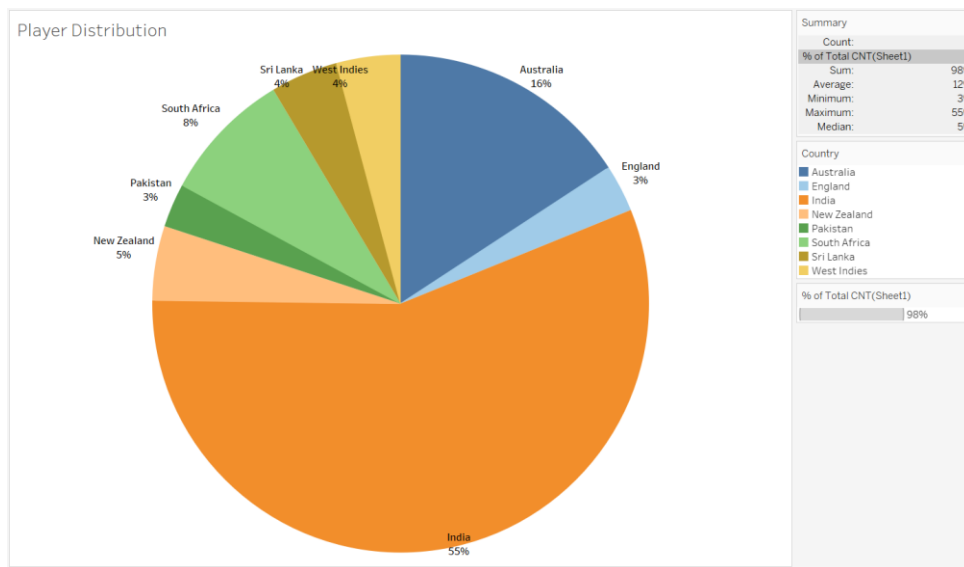


Fig: Pie chart Player Distribution across the world

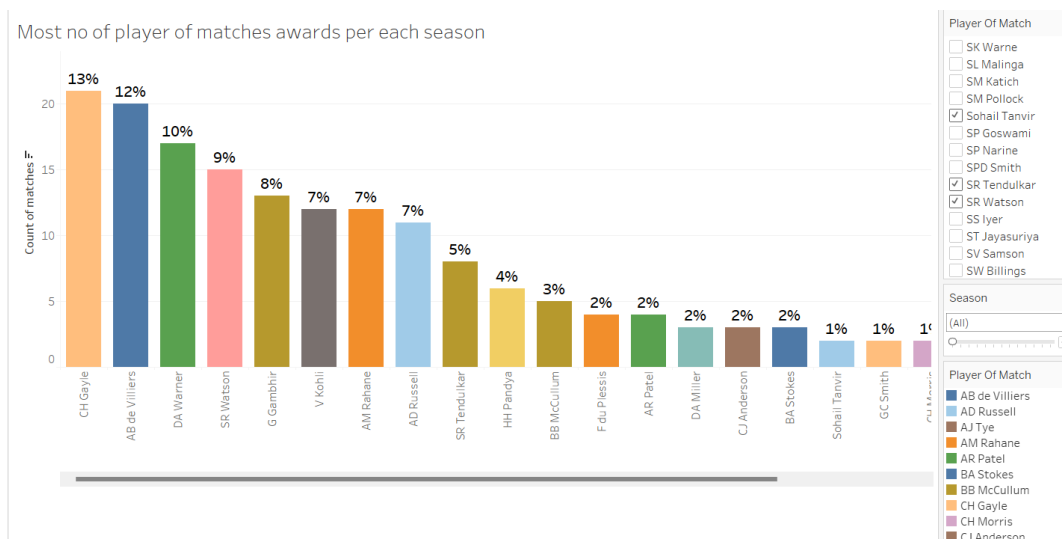
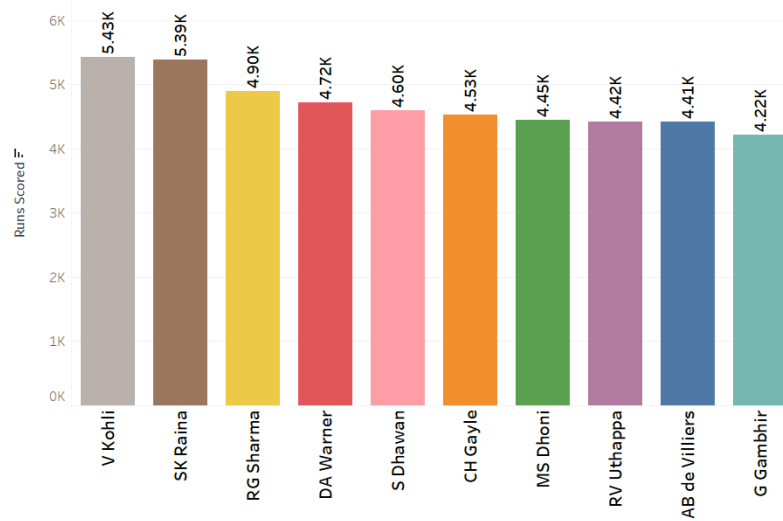


Fig: Bar chart showing percentage of man of matches by each season.

Top 10 Run Scorers



- Player Name
- ☐ (All)
 - ☐ A Ashish Reddy
 - ☐ A Chandila
 - ☐ A Chopra
 - ☐ A Choudhary
 - ☐ A Dananjaya
 - ☐ A Flintoff
 - ☐ A Hales
 - ☐ A Joseph
 - ☐ A Kumble
 - ☐ A Mishra
 - ☐ A Mithun
 - ☐ A Mukund
 - ☐ A Nehra
 - ☐ A Nel
 - ☐ A Roy
 - ☐ A Singh
 - ☐ A Symonds
 - ☐ A Turner
 - ☐ A Uniyal
 - ☐ A Zampa
 - ☐ AA Bilakhia
 - ☐ AA Chavan
 - ☐ AA Jhunjhunwala
 - ☐ AA Kazi
 - ☐ AA Noffke
 - ☐ AB Agarkar
 - ☐ AB Barath
 - ☒ AB de Villiers
 - ☐ AB Dinda
 - ☐ AB McDonald

Fig: Bar chart showing most runs scored by each player.

Map-Performance of players

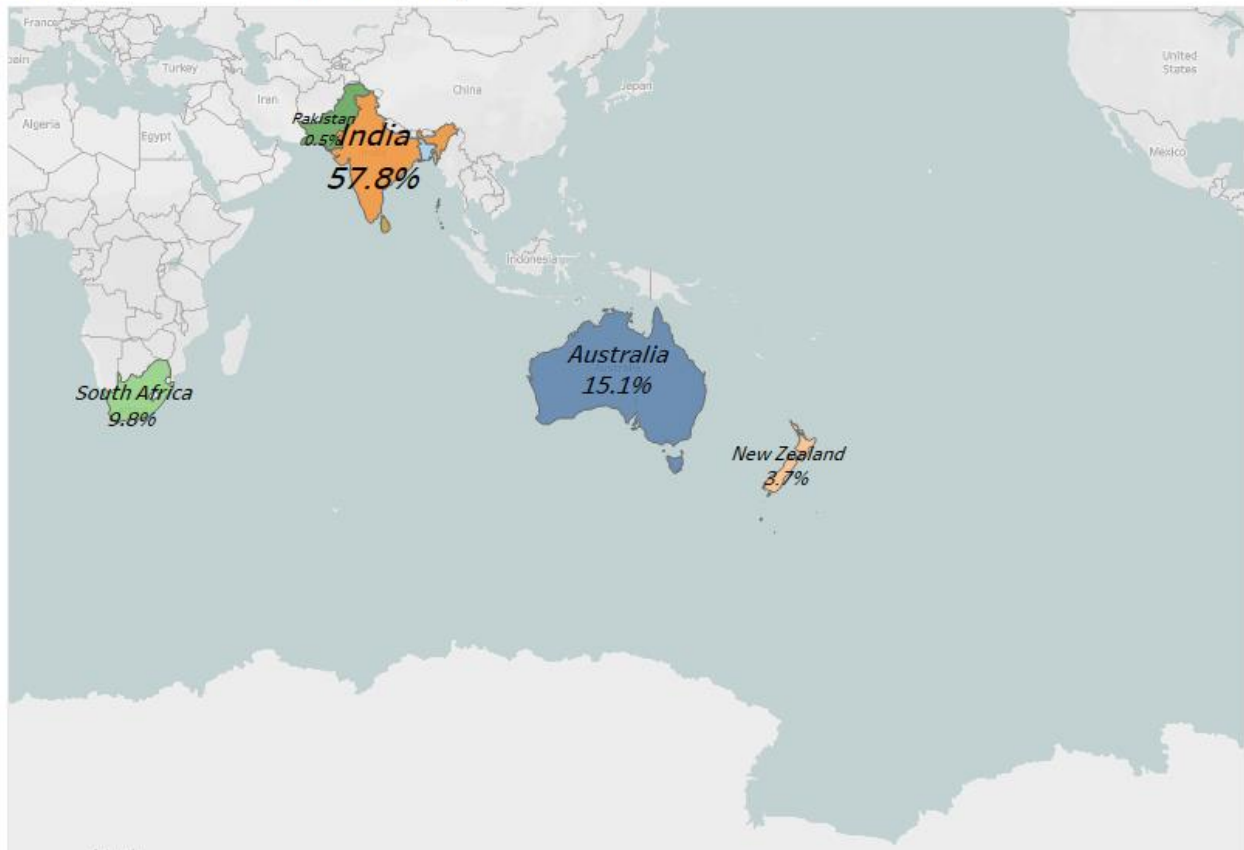
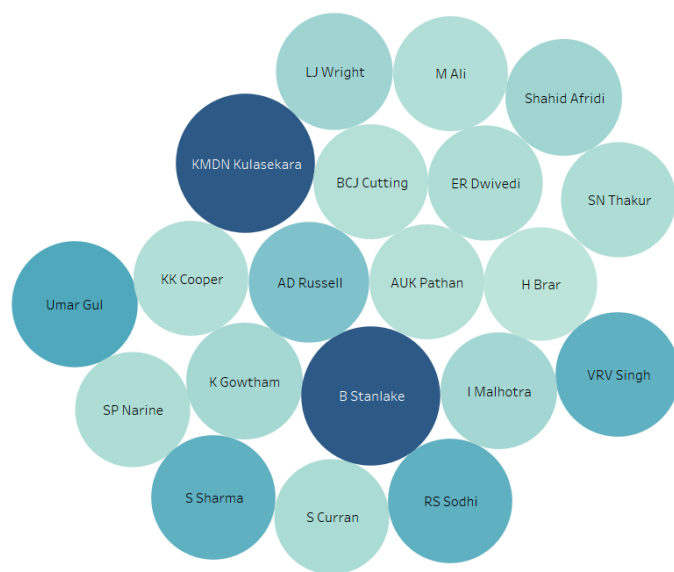


Fig: Map view of the players who participated in IPL

Best Strike Rate of Each Player



Player Name
<input type="checkbox"/> (All)
<input checked="" type="checkbox"/> A Ashish Reddy
<input checked="" type="checkbox"/> A Chandila
<input checked="" type="checkbox"/> A Chopra
<input checked="" type="checkbox"/> A Choudhary
<input checked="" type="checkbox"/> A Dananjaya
<input checked="" type="checkbox"/> A Flintoff
<input checked="" type="checkbox"/> A Hales
<input type="checkbox"/> A Joseph
<input type="checkbox"/> A Kumble
<input checked="" type="checkbox"/> A Mishra
<input checked="" type="checkbox"/> A Mithun
<input checked="" type="checkbox"/> A Mukund
<input checked="" type="checkbox"/> A Nehra
<input checked="" type="checkbox"/> A Nel
<input checked="" type="checkbox"/> A Roy
<input checked="" type="checkbox"/> A Singh
<input checked="" type="checkbox"/> A Symonds
<input checked="" type="checkbox"/> A Turner
<input checked="" type="checkbox"/> A Uniyal
<input checked="" type="checkbox"/> A Zampa
<input checked="" type="checkbox"/> AA Bilakhia
<input checked="" type="checkbox"/> AA Chavan
<input checked="" type="checkbox"/> AA Jhunjhunwala
<input checked="" type="checkbox"/> AA Kazi
<input checked="" type="checkbox"/> AA Noffke
<input checked="" type="checkbox"/> AB Agarkar
<input checked="" type="checkbox"/> AB De Villiers
Limit
Top 20 by SUM([Strike Rate])
SUM(Strike Rate)

Fig: Best strike rate of players compared to all seasons,.

The visualizations above reveal the influential players in the game, indicating their potential to sway the outcome of a match. Also, I have analyzed who is having the best strike rate among the players and also compared with the top performers and top run scorers surprisingly most of the players are not present in it. While the presence of certain players can somewhat predict a team's success, it's evident that higher performance significantly contributes to winning. This insight aids fantasy players in making predictions. Moreover, the data underscores that Indians constitute a significant proportion, nearly 55%, of players in the IPL, showcasing their prominence in the league.

For my 4th Research Question,

I've conducted a comprehensive analysis to determine whether Ranji players have been influenced by the IPL. To investigate this, I compared the decade-wise statistical data of Ranji players before the inception of the IPL (pre-2010) with their performance during the initial years of the IPL in 2010-11 and the concluding years of the decade, 2019-2020.

Note: The Ranji Trophy, a state-level cricket tournament played across India, witnessed a surge in exposure to international players post the IPL's introduction, leading to increased participation of Ranji players in this league.

My analysis specifically focuses on the batting and bowling statistics of these players in the Ranji matches over the years.

Ranji Players performance of Batting 2010-11 vs 2019-2020

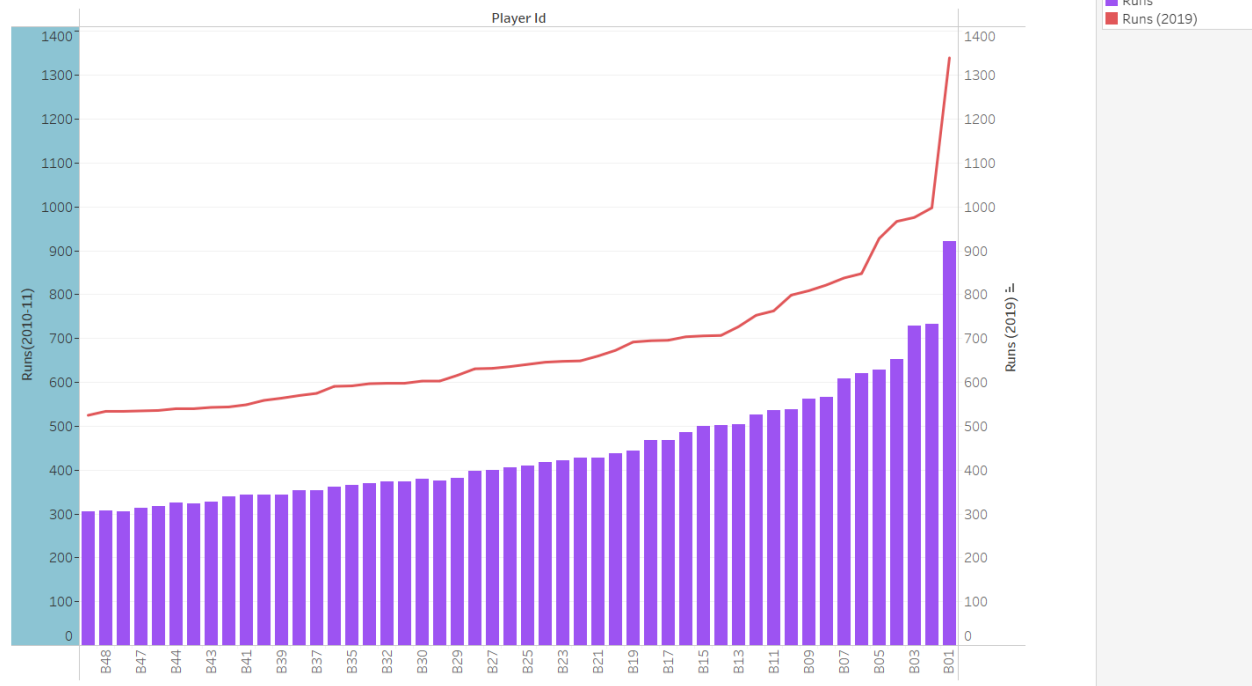


Fig: showing the correlation of runs scored(batsmens) by players in Ranji Trophy in 2010-11 vs 2019-20 seasons.

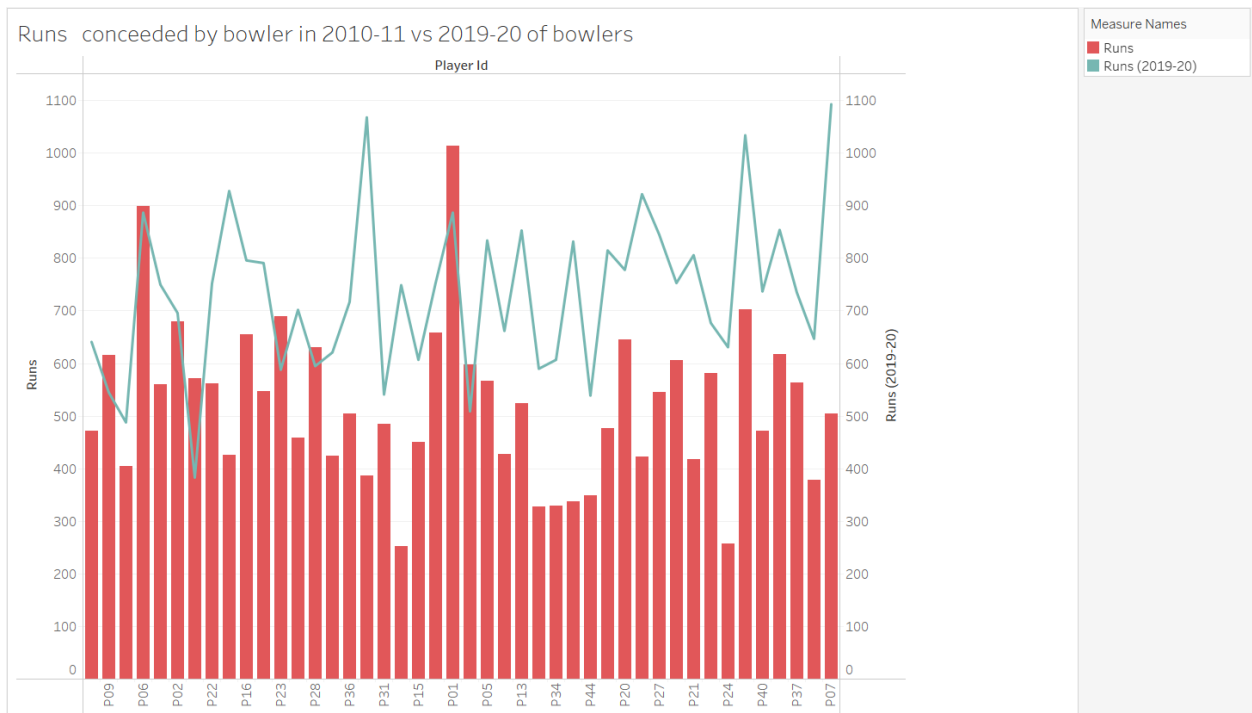


Fig: showing the correlation of runs conceded(bowlers) by players in Ranji Trophy in 2010-11 vs 2019-20 seasons.

The visual representations of batting and bowling statistics for Ranji players reveal a notable surge in run-scoring between the 2010-11 and 2019-20 seasons. However, the bowling analysis indicates a relatively consistent economy rate, with a moderate increase of approximately 0.5 runs per over from the previous decade to the present (i.e., from 3.5 to 4.0) resulting we can see that there is significant increasing of conceding runs by bowlers in the tournament. This suggests that while there's been a substantial influence on batting, particularly attributed to the IPL, the impact on bowling seems comparatively less pronounced among Ranji players.

For my 5th research question,

The impact of the Indian Premier League (IPL) on India's performance in the Asia Cup intrigued me. I conducted an analysis spanning from 1985 to 2020, examining Asia Cup victories over the years and specifically delving into India's wins and losses in the tournament.

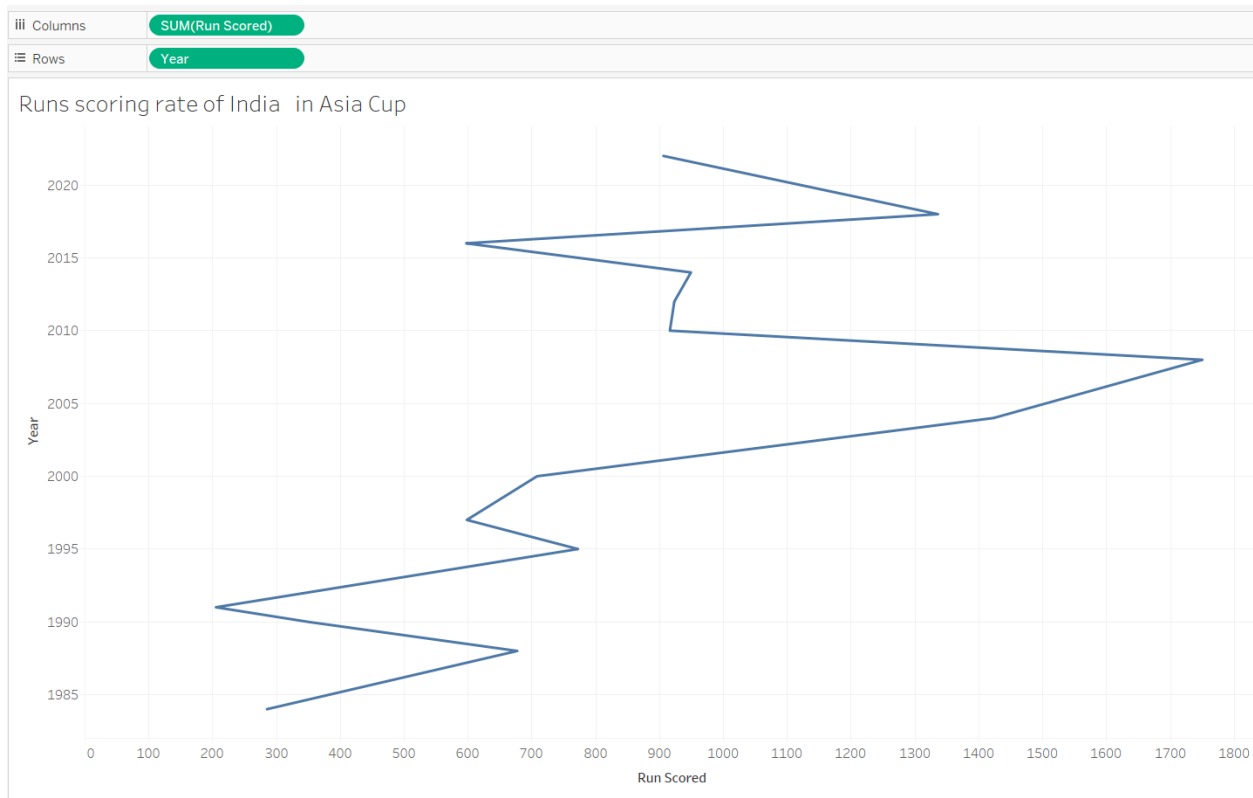


Fig: Line graph showing Runs scored per each year in the Asia cup by team India.

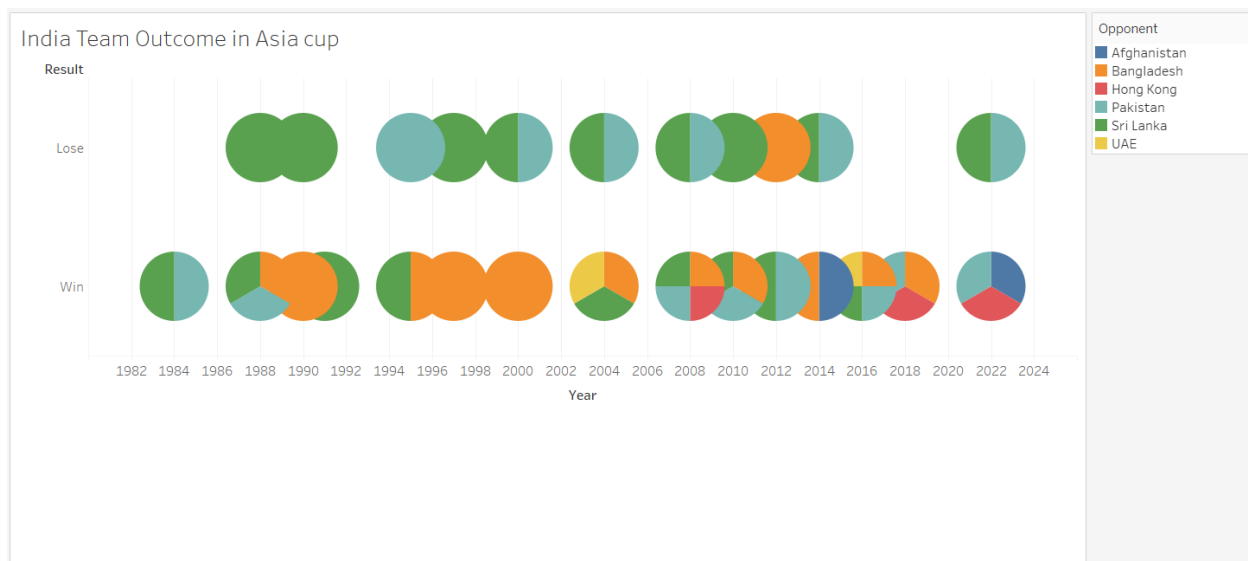


Fig: Displaying total no of losses and wins of team India in Asia cup.

The visualizations above reveal a noticeable trend runs scored prior to the IPL, i.e., before 2008, surpass those scored during and after the IPL years. There's a considerable drop in runs scored following the inception of the IPL during Team India's participation in the Asia Cup.

Interestingly, despite the significant decrease in runs scored by Team India, the win outcomes for matches are higher compared to the pre-IPL years. Notably, during the 2014-2018 period, there isn't a single loss. This suggests that the exposure of Indian players to overseas players in the IPL has had a substantial impact.

Conclusion:

Based on the comprehensive analysis presented above, it is evident that the Indian Premier League (IPL) has had a profound impact on Indian cricket. The exposure gained by Indian players through the IPL, allowing them to compete alongside international-level players, has led to a substantial improvement in their skills and on-field game analysis. While various factors were considered in an attempt to predict outcomes, a definitive causal link to determine the outcomes was not found.

In addition, the following research questions identified.

- Individual player performances of IPL vs T-20 international, odi-international, test-international.
 - Men's cricket vs women's cricket analysis in stats and the income pulling by it.
 - What are other countries has grown the cricket by means of IPL.
- While doing this project, numerous factors prompted further analysis and raised intriguing questions. However, due to the project's constraints, extensive analysis was limited. I plan

to extend this project in the future, allowing for a more comprehensive exploration that will unravel many more insights.