

The Art of T20: Visualizing the 2024 World Cup with Tableau

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ABSTRACT

This paper presents a detailed analysis of the ICC Men's T20 World Cup 2024, leveraging a comprehensive dataset encompassing 55 matches. The dataset includes match details such as dates, venues, stages, team performances, toss outcomes, innings scores, player achievements, and officiating information. Advanced data visualization techniques using Tableau were employed to identify key patterns and performance trends. The study highlights the pivotal role of first-innings scores, the strategic importance of toss decisions, and the influence of venue-specific conditions on match outcomes. India emerged as the tournament's most dominant team, achieving the highest scores and the greatest number of wins. Through the use of visual analytics, critical insights were drawn for team management, analysts, and cricket enthusiasts, emphasizing the growing role of data-driven strategies in modern T20 cricket. The findings offer a foundation for predictive modeling, performance optimization, and strategic planning in future tournaments.

INTRODUCTION

LITERATURE SURVEY

Vaze et al, Cricket requires a field, players, coaches, support teams, skills, and teamwork. Analyzing T20 cricket involves studying player performance, individual skills, and team strategies to predict match outcomes. This study explores the factors influencing success and forecasts the potential winner of the 2022 T20 World Cup in Australia [1].

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Kapadia, Kumash, et al, The Indian Premier League (IPL), the most successful cricket tournament in India, has immensely grown in popularity. Unlike similar tournaments like Major League Baseball and the UEFA Champions League, their models cannot be replicated due to the dynamic pricing nature of player auctions. The research intends to generate a predictive model that predicts the auction price of a player using key quantitative variables.[2]

Malhotra, Gaurav,et al,Cricket is one the most watched sport now-adays. Winning in cricket depends on various factors like home ground advantage, performances in the past matches, experience of the players, performance at the specific venue, performance against the specific team and the current form of the team and the player. [3]

Mahajan, Mr Suyash, et at, With the increasing number of matches day by day, it has become difficult to manage or extract useful information from the available data of all the matches. The paper presents a data visualization and prediction tool in which an open-source, distributed, and non-relational database, HBase is utilized to keep the data related to IPL (Indian Premier League) cricket matches and players. This data is then used for visualizing the past performance of players' performance. Additionally, the data is used to predict the outcome of a match through various machine learning approaches. The proposed tool can prove beneficial for the team managements in the player auctions for selecting the right team.[4]

Singh, Shubhra, and Parmeet Kaur.at,el, Indian Premiere League or IPL is a very popular form of cricket in India. With the growing interest in the game of cricket, IPL is becoming increasingly popular among the young and old alike. With so many teams participating in IPL, new and young players are getting an opportunity to showcase their talent, play alongside international players and are duly compensated for their talent. With so many regional teams, various players and a vast array of matches, the franchise owners and the fans are very keen and enthusiastic about the winner of these matches. This paper aims to build a Classification Model to predict the outcome of an IPL match using the history data of IPL matches from 2008–2020 and the initial few matches of IPL 2021.[5]

Paul, Poulomi, Pratyay Ranjan Datta, and Ashutosh Kar, at,el, Sports analytics arrived in the mainstream media through the novel and film Moneyball. However, its origins date back to operations researchers following World War II. Often considered a subdiscipline of statistics, sports analytics draws from statistics but also includes concepts from data science, communication, and marketing. As a passionate fan of sports, I have pursued statistics in my undergraduate and graduate education with the dream of working in sports for my career[6]

Havstad, Joshua Shanheng, at, el, Cricket is a game where we need field, player, coach,support team, skills and team work. Where we can analyse, The overall perspective behind Cricket (T20) analytics is using Machine Learning (ML), Support Vector Machines (SVM), Time Series

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Analysis (TSA) and scope of cricket in over the world. Historically there are empirical decisions and the uses of analytics has been using intensely. From the datasets we access features such as performance of the players, individual skills and team work done by players. The strategy behind T20 analysis elaborates the contribution towards success rate of predicting the various possibilities and team strategies to end up with great win in that particular match against particular team. Here we are with future prediction which team has abilities to win this 2022 T20 world cup which is going to held in Australia. [7]

Jayal, Ambikesh, et al, As the analysis of big datasets in sports performance becomes a more entrenched part of the sporting landscape, so the value of sport scientists and analysts with formal training in data analytics grows. *Sports Analytics: Analysis, Visualisation and Decision Making in Sports Performance* provides the most authoritative and comprehensive guide to the use of analytics in sport and its application in sports performance, coaching, talent identification and sports medicine available.[8]

Chazan-Pantzalis, Victor,at el, Sports Analytics is not a new idea, but the way it is implemented nowadays have brought a revolution in the way teams, players, coaches, general managers but also reporters, betting agents and simple fans look at statistics and at sports. Machine Learning is also dominating business and even society with its technological innovation during the past years. Various applications with machine learning algorithms on core have offered implementations that make the world go round. [9]

Mahajan, Mr Suyash, et al, Cricket match outcomes depend on various factors, including team composition, player performance, and venue conditions. This study employs a supervised learning approach to predict Indian Premier League (IPL) match results by modeling team strength through individual player statistics. Machine learning techniques enhance prediction accuracy before and during matches.[10]

Material & Methods Used :

About Tableau.

Tableau is an advanced data visualization software for converting raw data into actionable insights using interactive dashboards, charts, and reports. It finds extensive applications in business intelligence (BI), data analysis, and decision-making because it can process large volumes of data and offer real-time data analysis capabilities. Thanks to its drag-and-drop interface, users can create sophisticated visualizations without needing

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advanced coding skills. Tableau also connects easily with numerous data sources, such as Excel, SQL databases, and cloud-based systems. Its sophisticated capabilities, including geospatial analysis, predictive analytics, and AI-powered insights, make it a go-to for organizations seeking to improve data-driven decision-making.

Features

Our platform provides an easy-to-use drag-and-drop interface, which simplifies creating beautiful visualizations with no coding required. It provides multi-data source support, including Excel, SQL, and cloud databases, for easy integration of data. With interactive dashboards, users can analyze in real time and get better insights immediately. With mapping and geospatial analysis, there is even more accuracy in location-based insights, further improving decision-making. Also, our system offers automated refreshing and sharing of data, maintaining reports as up-to-date and readily available as needed for collaborative purposes.

Overview Of Dataset

The data comprises 55 rows, indicating games played during the ICC Men's T20 World Cup, and 32 columns, representing multiple facets of a game. 24 columns consist of categorical values, including players, teams, umpires, and venues, and 8 columns have numeric values, which include winning margins, wickets, and scores. Key attributes of the dataset are match information, which encompasses match number, date, stadium, city, and stage. The dataset also captures teams and officials, with details of the competing teams, umpires, and referees. The toss information contains the winning team in the toss and their choice. The match outcome captures the result, winner, winning margin, and if the match was finished normally or through a super over. Furthermore, the data gives information about scores and performance, for example, first and second innings scores, fall of wickets, top run scorer with the top score, best bowler with bowling statistics, and the Player of the Match. A super over indicator is also included in order to recognize matches that went beyond normal play.

Stakeholders Benefit From This Dataset

This dataset can prove extremely useful to many users participating in the global phenomenon of cricket. Data scientists and cricket analysts can leverage it to conduct sophisticated match trend analysis, including studying the effect of toss decisions on the outcome of a match, assessing team and player performance against fine-grained match statistics, and even create predictive models that predict the outcomes of future matches. Sports writers and commentators can use the data to provide richer pre-match and

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post-match analysis with penetrating trends, winning trends, and player statistics to enrich the storytelling during cricket coverage.

Coaches and team management can also use this dataset to gain critical insights into winning tactics, such as the viability of batting first or fielding first, and assist in performance analysis of the players for rational team selection. It also helps optimize game strategies on the basis of past match conditions. Franchisee owners and selectors in T20 leagues can employ the data to make better choices at the time of player auctions—recognizing consistent performers, break-out performers, and performance analysis of players under various conditions. It may also assist in player replacement within a tournament, on the basis of present form or injury replacement.

Furthermore, the dataset can apply to sports betting and fantasy cricket to assist bettors and fantasy players in making data-informed predictions on match results, player performances, and events during a game. Lastly, cricket enthusiasts and fans can analyze different performance patterns of their favorite teams and players. The dataset enables fans to know how different grounds, match settings, and strategic moves shape the end result, which makes their cricket viewing experience informative and interesting.

Visualizations:

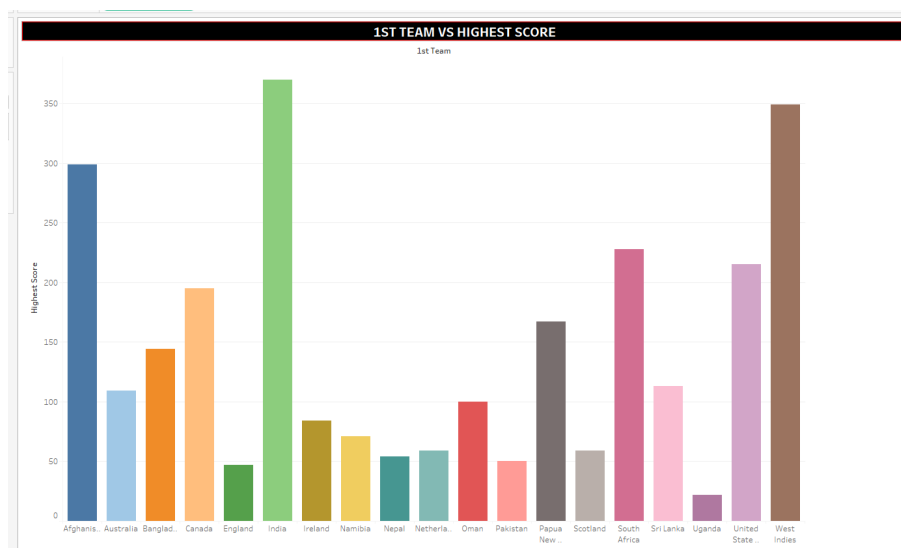


Fig 1: 1st Team vs Highest score

The bar chart illustrates the highest scores when cricket teams bat first. The top score is attained by India, followed by West Indies. Afghanistan, South Africa, and the U.S. also scored more than 200, but scores by England, Namibia, and Uganda were less than that.

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TOP RUN SCORE BY HIGHEST SCORE

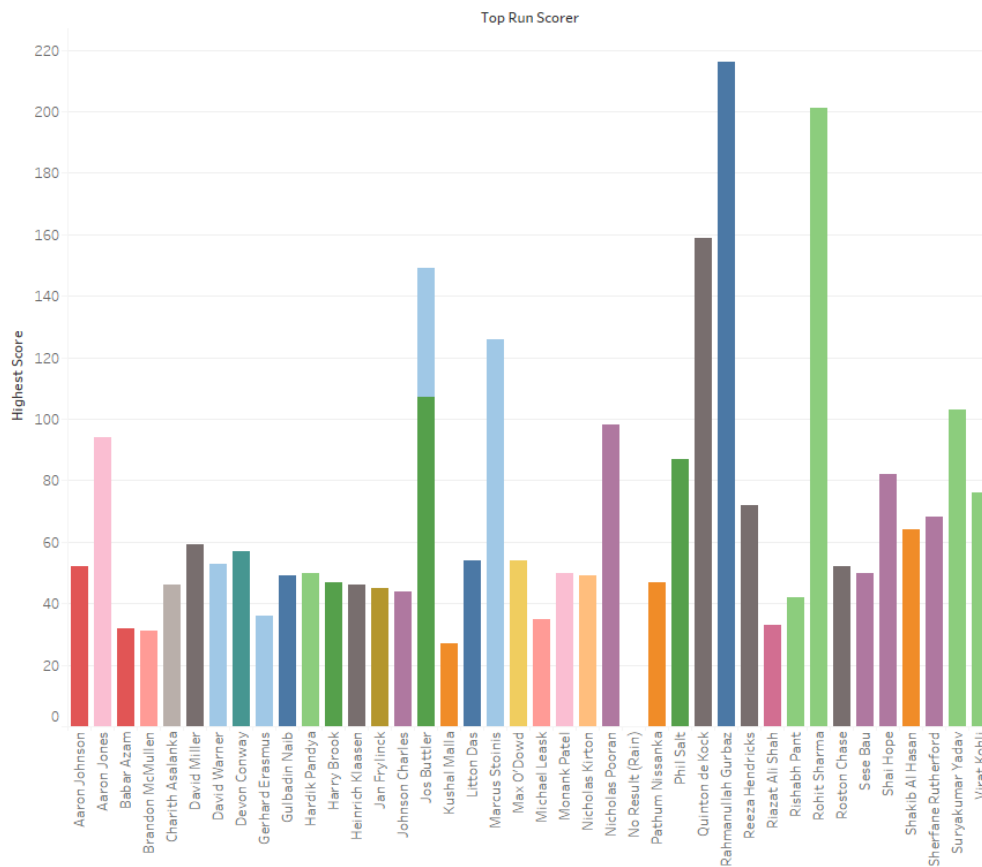


Fig 2 : "TOP RUN SCORE BY HIGHEST SCORE."

Each bar represents an individual player's highest score, categorized under their names, with scores ranging up to 220.

The chart uses varied colors for each bar, making it easy to differentiate top run scorers and visually compare performance.

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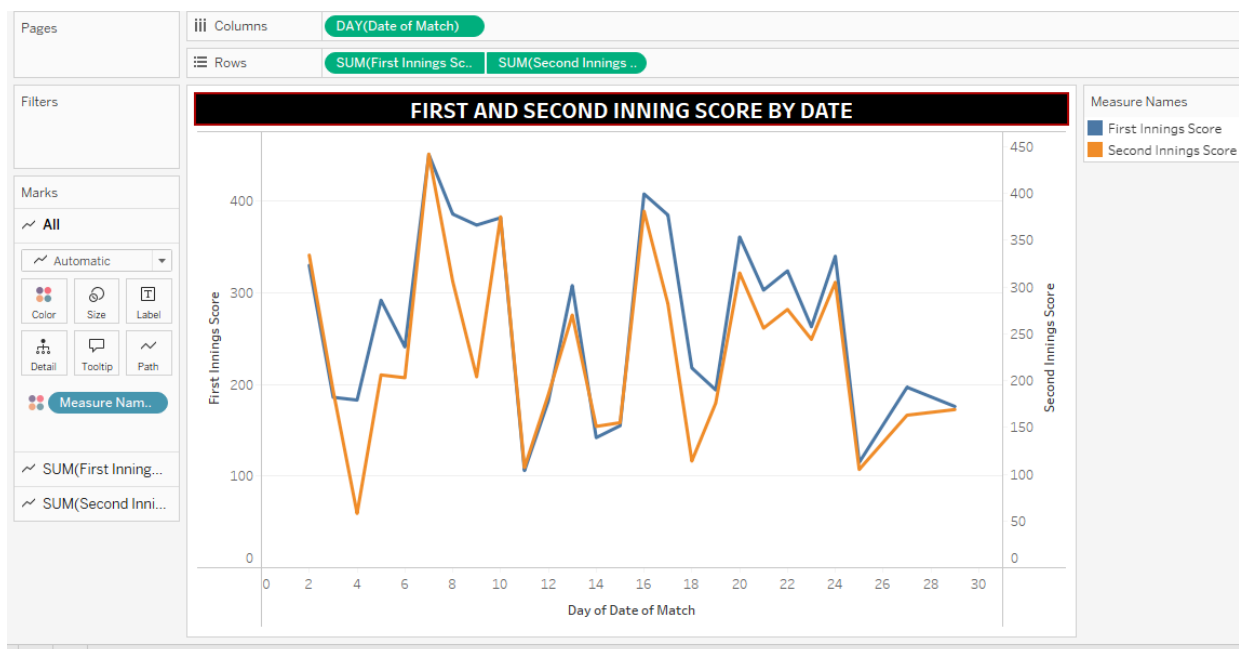


Fig 3: Comparison of First and Second Inning Scores Over Match Days

This image is a dual-axis line chart created in Tableau showing **First and Second Inning Scores by Date**. The x-axis represents the day of the match, while the two y-axes show the first and second inning scores respectively. The chart compares performance trends across innings for each day, highlighting score variations over time

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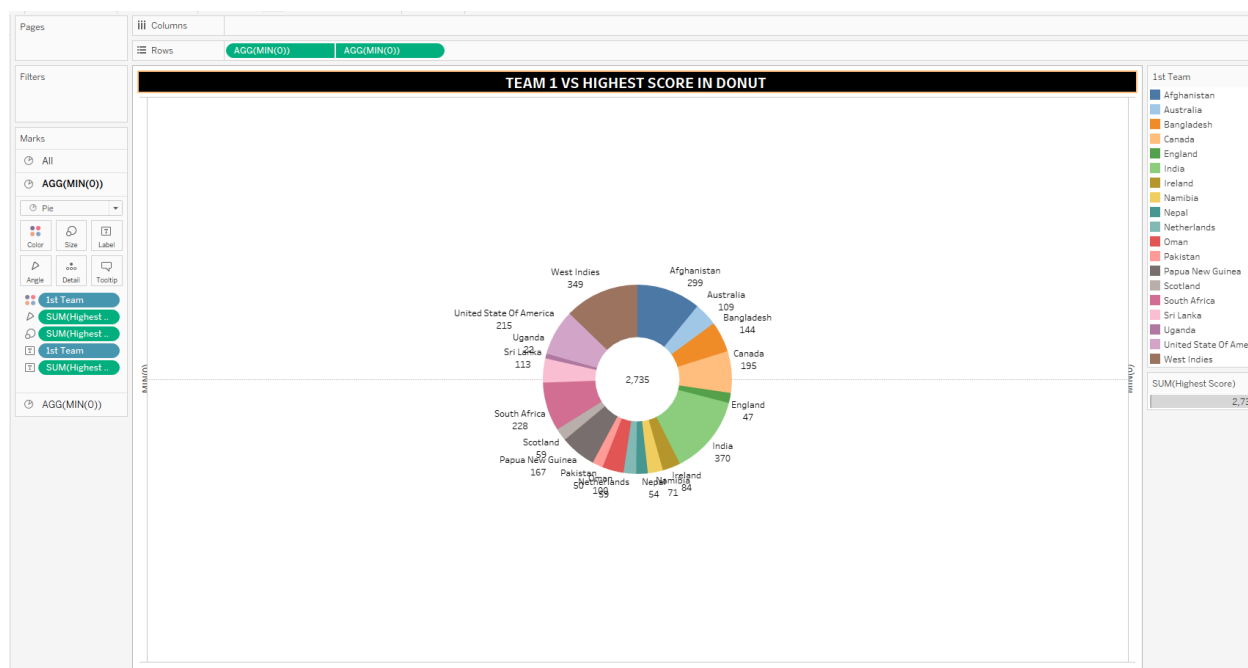


Fig 4: "TEAM 1 VS HIGHEST SCORE IN DONUT"

Each slice represents a cricket team's highest score against Team 1, with values labeled around the donut. The chart uses vibrant colors to distinguish between teams, and the center shows the total sum of all highest scores (2,176).

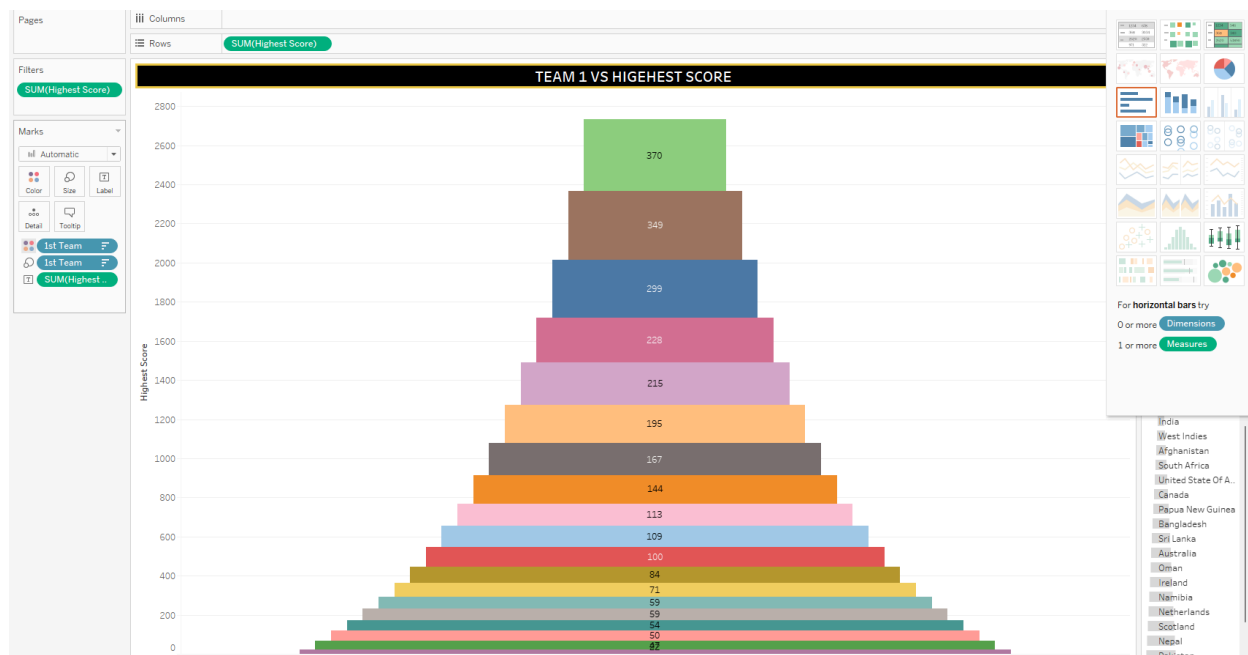


Fig 5: "TEAM 1 VS HIGHEST SCORE"

The chart ranks teams by their highest first-innings scores. India leads (370), followed by West Indies (348), while Uganda, Italy, and Bermuda score below 100

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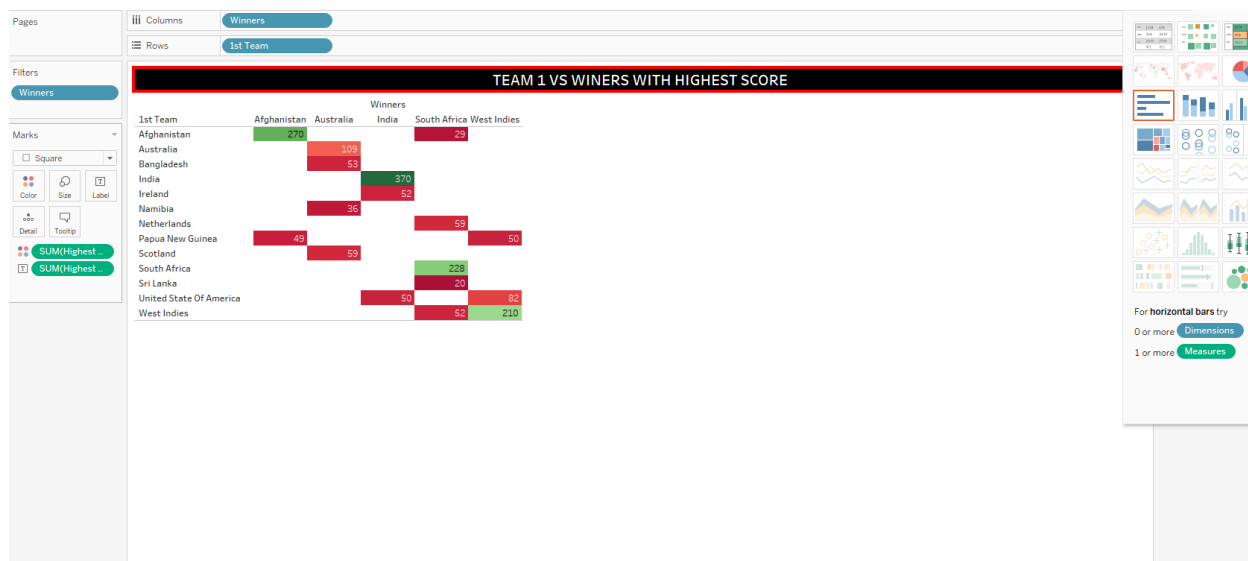


Fig 6: TEAM 1 VS WINNERS WITH HIGHEST SCORE.

It compares the winning teams and their highest scores against various opponents (Team 1) using colored blocks—darker shades indicating higher scores. Values are displayed within each block, making it easy to identify the top-performing teams in each matchup

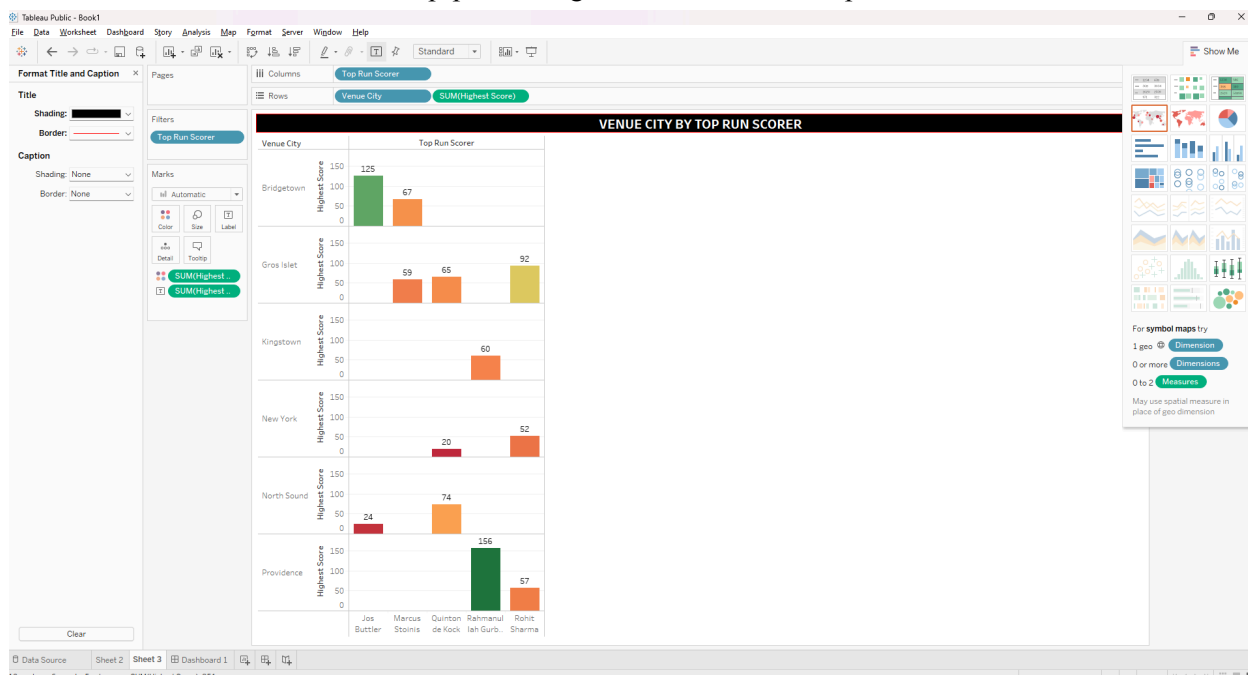


Fig 7: VENUE CITY BY TOP RUN SCORER.

It compares the highest individual scores achieved at different venue cities, grouped by city names on the y-axis. Bars are color-coded by player names, with values displayed to highlight top performances at each location.

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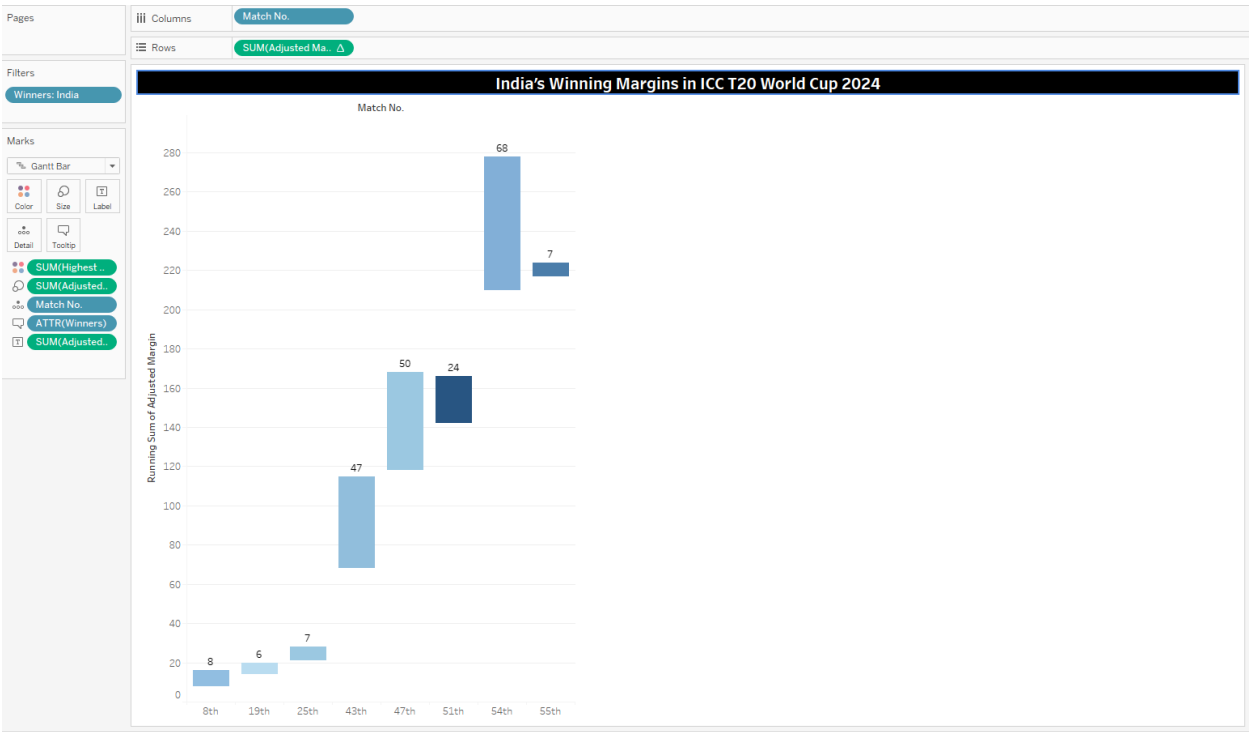


Fig 8 : India's Winning Margins in ICC T20 World Cup 2024

This Tableau Gantt visualization showcases **India's winning margins in the ICC T20 World Cup 2024** across different matches. Each bar represents the **adjusted margin of victory** (either by runs or wickets) for a specific match number. The chart offers a clear comparison of match-wise dominance, highlighting the **largest win in Match 5** with a margin of **68**.

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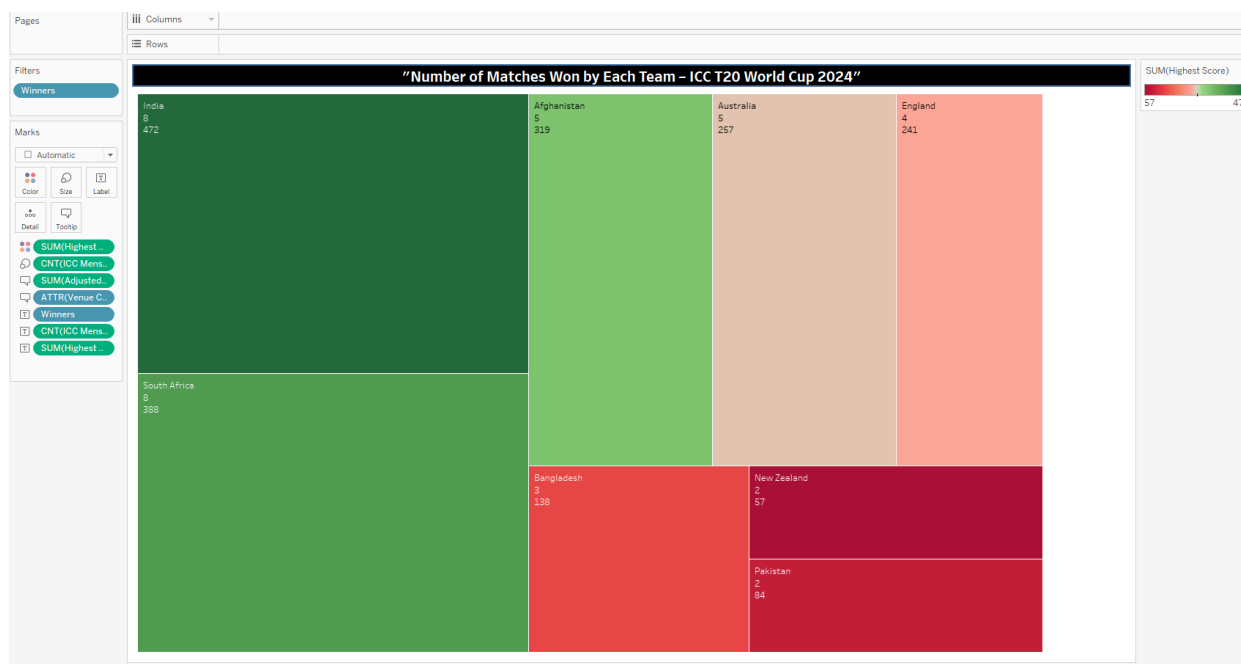


Fig 9: ICC T20 World Cup 2024.

This tree map visualization shows the number of matches won by each team during the ICC T20 World Cup 2024.

Each rectangle's size and color intensity represent the number of matches won — with India leading at 7 wins, followed by teams like Afghanistan and Australia.

The visual provides a quick comparative insight into team performances, with darker greens indicating more wins and reds indicating fewer.

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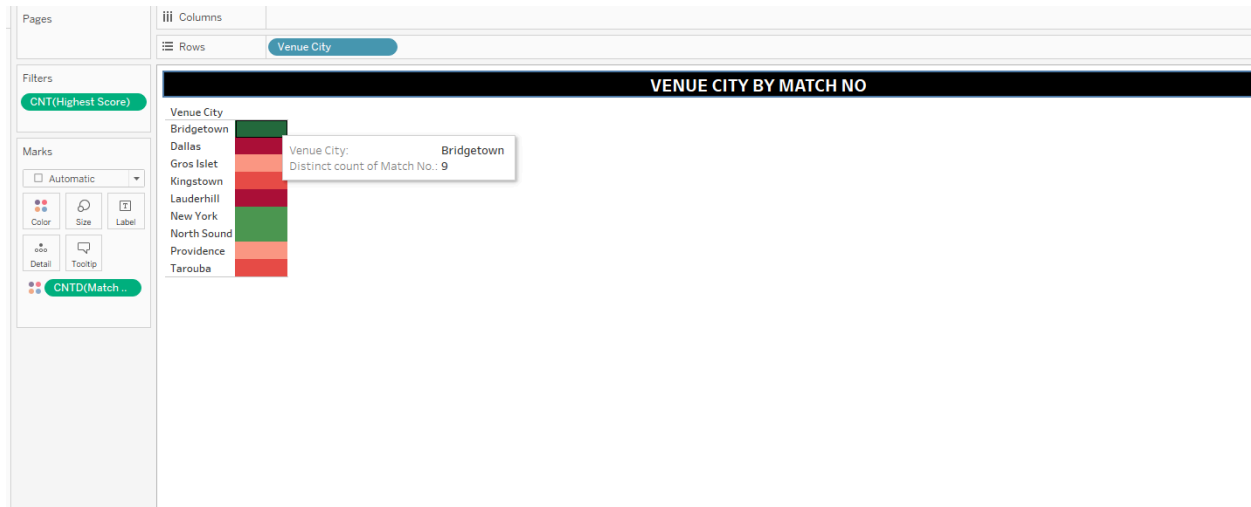


Fig: 10 Venue-Wise Match Distribution in ICC T20 World Cup 2024

The "Venue City by Match No" graph illustrates the number of matches hosted in each city during the ICC T20 World Cup 2024. The heatmap uses color intensity to represent the match count, with darker shades indicating more matches played. This visualization helps identify major venues like Bridgetown that hosted the most matches in the tournament.

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Results & Discussions:

The ICC Men's T20 World Cup 2024 analysis yielded significant insights into team performances, player contributions, and strategic match trends. India emerged as the most dominant team, recording the highest first-innings score of 370 runs and securing the most wins with seven victories, as reflected in the tree map visualization. Other teams like West Indies, Afghanistan, and Australia also showcased strong performances, while Uganda, Italy, and Bermuda consistently struggled, with first-innings scores falling below 100 runs. In terms of individual brilliance, several players surpassed the 200-run mark, with Indian players particularly excelling across various venues, as observed in the city-wise breakdown of top performances. The comparative study of first and second innings scores across different match days revealed significant variations, suggesting the crucial influence of pitch conditions and pressure management on team outcomes. Toss decisions played a substantial role, with teams choosing to bat first and setting high scores often maintaining a clear advantage throughout the match. India's consistent dominance was further highlighted by their winning margins, including the largest margin of 68 runs recorded in Match 5. Moreover, the venue-specific analysis indicated that ground conditions and climatic factors had a notable impact on both batting and bowling performances. Overall, the analysis emphasizes that preparation, strategic decision-making, adaptability to playing conditions, and wise toss strategies were critical determinants of success in the ICC T20 World Cup 2024.

Conclusion

The comprehensive analysis of the ICC Men's T20 World Cup 2024 provides deep insights into the evolving dynamics of T20 cricket. India emerged as the standout team, displaying consistent excellence through dominant batting performances, strategic toss decisions, and significant winning margins. The data revealed that setting a strong first-innings total was often pivotal in securing match victories, emphasizing the importance of early momentum. Venue-specific analysis further demonstrated that adaptability to different pitch and climate conditions played a critical role in player and team success. Visualization through Tableau enhanced the interpretation of complex datasets, offering valuable perspectives on team strengths, player achievements, and match trends. This study reinforces the increasing relevance of data-driven decision-making in modern cricket, benefiting not only analysts and coaches but also franchise owners, selectors, and cricket enthusiasts. Looking ahead, integrating machine learning techniques and predictive modeling could further refine performance forecasting and strategic planning, contributing meaningfully to the future of cricket analytics.

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