PROJECT-4

Project Title: Cricket Match Analysis: RCB vs DC

Objective: The project aims to analyze a cricket match between Royal Challengers Bangalore (RCB) and Delhi Capitals (DC) using data from innings deliveries. Various aspects of the game are explored, including batting performance, bowling effectiveness, partnership analysis, phase-wise scoring rates, dismissal types, and pivotal moments. The analysis provides insights into team strategies, player performances, and key moments that influenced the match outcome.

Data Source: The data used for analysis is sourced from a CSV file (innings_deliveries.csv) containing detailed information on each delivery bowled during the match. It includes columns such as team names, overs, batters, bowlers, runs scored, extras, player dismissals, and fielders involved.

Key Steps and Insights:

1. **Data Loading and Overview:**
    - Loaded the dataset into a Pandas data frame to understand its structure and initial statistics.
    - Examined basic information such as data types, non-null counts, and summary statistics for numerical columns.

2. **Run Distribution Across Overs:**
    - Visualized the run distribution per over for both RCB and DC to observe scoring trends throughout the innings.
    - Identified phases of aggressive scoring and strategic slowdowns based on over-wise run totals.

3. **Top Scorers and Batting Analysis:**
    - Calculated total runs scored by each batter and identified top scorers from both teams.
    - Visualized the contribution of top scorers through a bar plot, highlighting individual batting performances.

4. **Bowling Performance Analysis:**
    - Analyzed bowling statistics including runs conceded, wickets taken, and economy rates for each bowler.
    - Presented insights into effective bowling performances using combined bar and line plots.

5. **Dismissal Types:**
    - Investigated types of dismissals (e.g., caught, bowled, run out) to understand how wickets fell during the match.
    - Visualized dismissal distribution using a pie chart to highlight predominant modes of player dismissals.

6. **Partnerships Analysis:**
    - Calculated productive batting partnerships based on runs scored and balls faced by each pair of batters.
    - Identified significant partnerships using a bar plot, emphasizing key stands that impacted the match.

7. **Phase-wise Performance:**
    - Classified match phases (Powerplay, Middle, Death overs) to analyze team performance in different stages.
    - Visualized phase analysis to understand scoring rates and wicket loss trends during critical game segments.

8. **Strike Rate Analysis:**
    - Calculated strike rates for all batters to identify players who scored quickly.
    - Explored how strike rates varied across different game phases for top performers using a bar chart.

9. **Cumulative Run Rate and Wicket Analysis:**
    - Plotted cumulative run rates for both teams throughout their innings, marking key wicket events.
    - Analyzed momentum shifts and strategic impact of wickets on the scoring rate.

10. **Run Rate Analysis Per Over:**
    - Calculated run rates for each over bowled by RCB and DC, highlighting periods of scoring acceleration or deceleration.
    - Visualized run rate patterns and identified overs with significant wicket-taking moments.

Conclusion: The comprehensive analysis of the cricket match between RCB and DC provides valuable insights into the dynamics of T20 cricket. It highlights strategic decisions, individual performances, and pivotal moments that influenced the match outcome. The project demonstrates the use of Python, Pandas, and visualization libraries like Matplotlib and Seaborn to perform detailed sports analytics, offering actionable insights for teams and fans alike