1. **Title: IPL Infographics: Data Analytics & Data Visualization**

2. **Project Statement:**

The Indian Premier League (IPL) is a popular Twenty20 cricket tournament held annually in India. This project aims to perform exploratory data analysis and create data visualizations on an IPL dataset.

Outcomes:

- Gain insights into various aspects of the IPL, such as player performance, team trends, and venue analysis.
- Identify patterns and relationships within the data through visualizations.
- Create informative infographics that effectively communicate these insights to a wider audience.

3. **Modules to be Implemented:**

1. Data Collection
2. Data Exploration and Preprocessing
3. Model Building
4. Model Evaluation & Presentation

4. **Week-wise Module Implementation and High-Level Requirements with Outputs Screenshots**

Milestone 1: Weeks 1 & 2

Week 1 (DC1, DC2, DC3):

- Understand the project goals and data analysis techniques.
- Identify relevant IPL data sources (e.g., official websites, sports analytics platforms).
- Acquire data from multiple sources, ensuring data quality and consistency.
- Clean and prepare the data by merging datasets, handling missing values, and formatting data types.

Deliverables:

- Approved master dataset.

Week 2 (DEP1, DEP2):

- Conduct exploratory data analysis to understand the overall statistics of the tournament and individual variables.

- Perform univariate analysis to examine the distribution and characteristics of each variable.
- Generate visualizations like histograms, box plots, and scatter plots to explore relationships between variables.

Deliverables:

- A detailed report on the variables used in the dataset.

Week 3 (DEP3, DEP4, DEP5, DEP6):

- Address data type inconsistencies by converting variables to appropriate formats (e.g., numerical, categorical).
- Analyze missing value patterns and employ suitable techniques like imputation or deletion to handle missing data.
- Identify outliers using methods like z-scores or interquartile range (IQR) and determine appropriate treatment strategies.
- Investigate trends, seasonality, and randomness components within the data. Perform time series decomposition if applicable.

Deliverables:

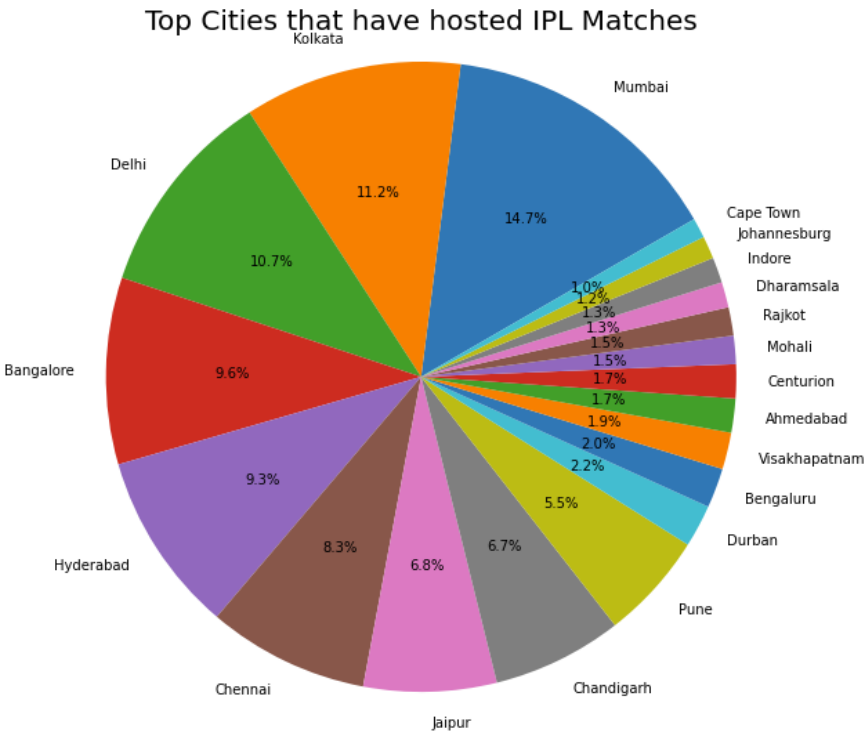
- Analysis of the venues for the tournament, potentially including visualizations like bar charts or maps.

Week 4 (DEP4, DEP5):

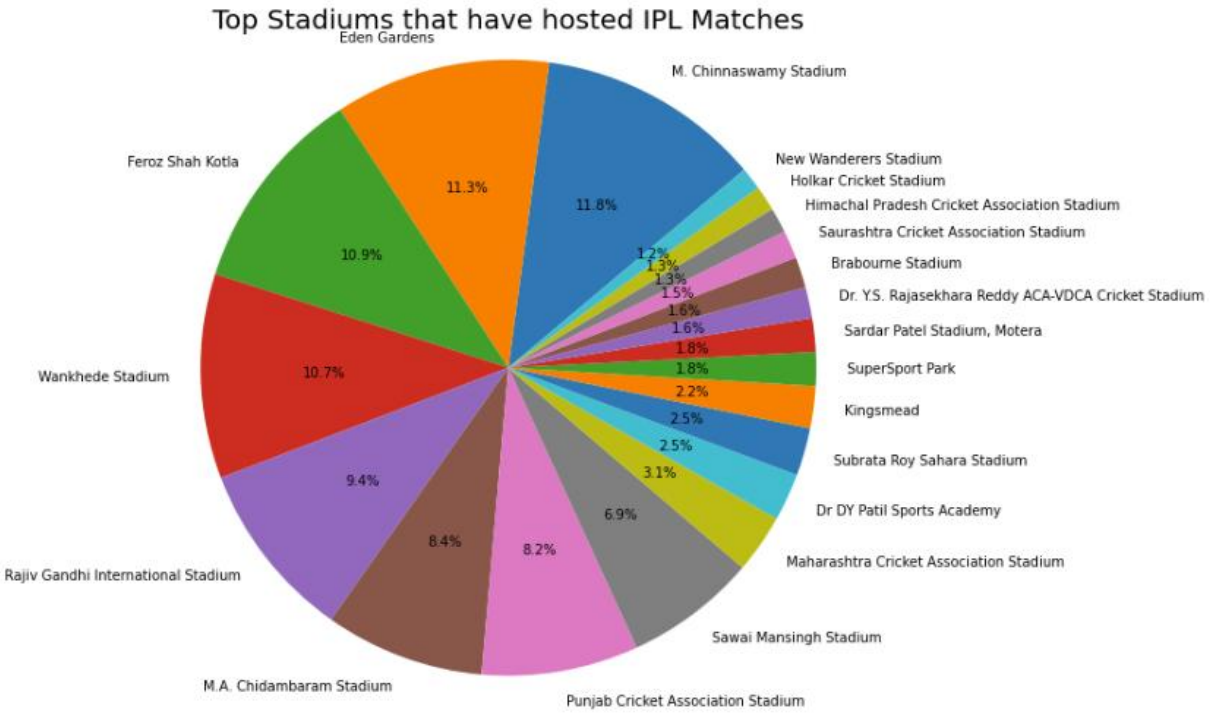
- Employ various techniques like mean/median imputation, forward fill, or interpolation to address missing values based on data characteristics.
- Implement different outlier detection methods and document observations on data quality and potential impacts.
- Create visualizations showcasing the top cities and venues with the most IPL matches played.

Deliverables:

- A list of the Top 20 Cities where the most number of matches have been played.



- A list of the Top 20 venues where the most number of IPL matches have been played.

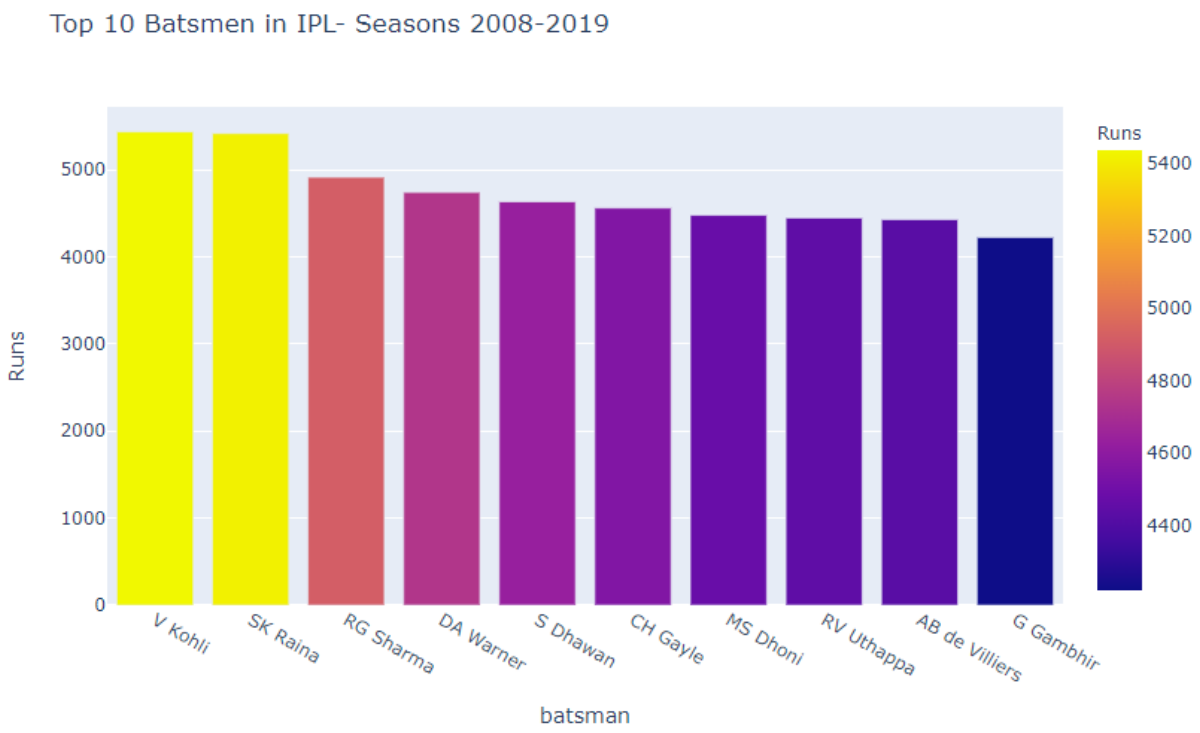


Week 5 (MB1, MB2):

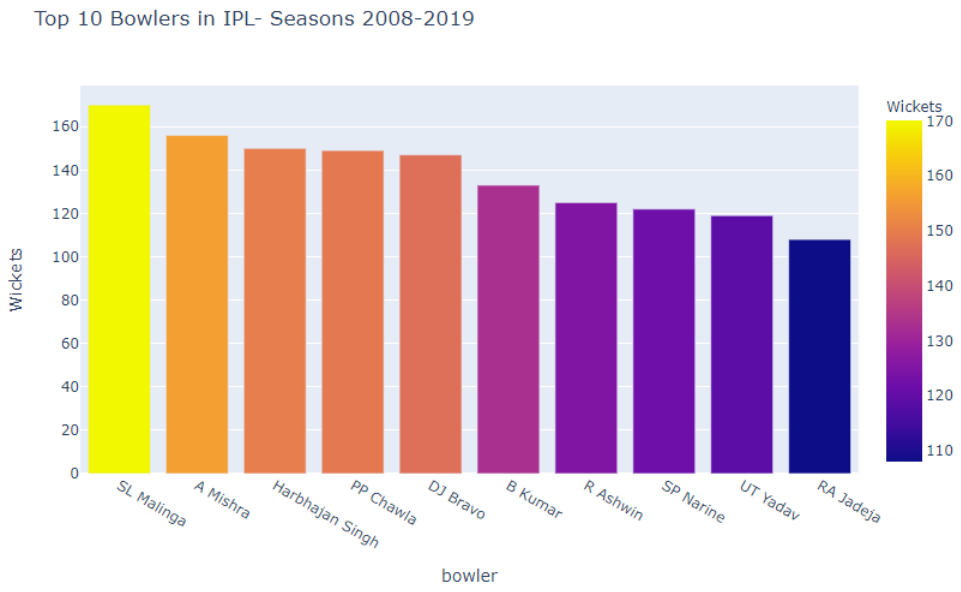
- This week focuses on time series forecasting, relevant if the project aims to predict future trends.
    - Identify suitable time series models (e.g., ARIMA, SARIMA) based on data characteristics.
    - Split the data into training, testing, and validation sets for model evaluation.
    - Build multiple models on the training data, potentially addressing class imbalance if present.

Deliverables :

- Player Level Analysis reports including:
    - Top 10 Scoring Batsman in the Tournament



    - Top 10 highest scorers in a match of IPL
    - Top 10 Bowlers with the highest number of wickets.

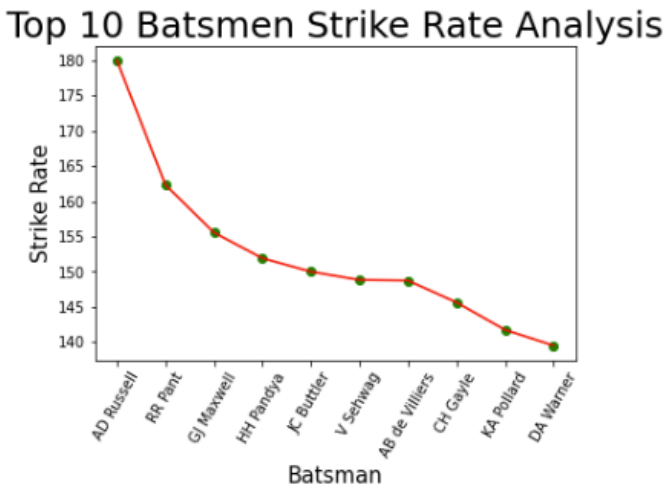


Week 6 (MB3, MB4):

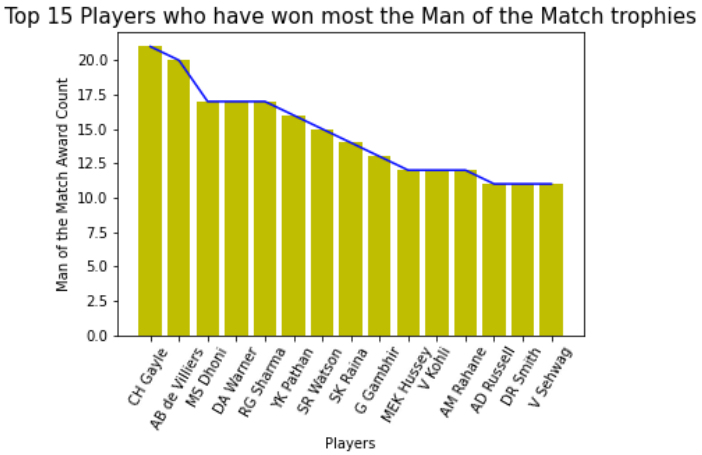
- This week focuses on finalizing the model selection and hyper parameter tuning.
  - Compare model performance using metrics like mean squared error (MSE) or R-squared to select the best model.
  - Select the best performing model based on validation set performance metrics.
  - Fine-tune the hyper parameters of the chosen model to optimize its accuracy and generalization capabilities.
  - If time series forecasting is not pursued, dedicate this week to further data exploration and analysis to identify interesting insights for visualization.

Deliverables :

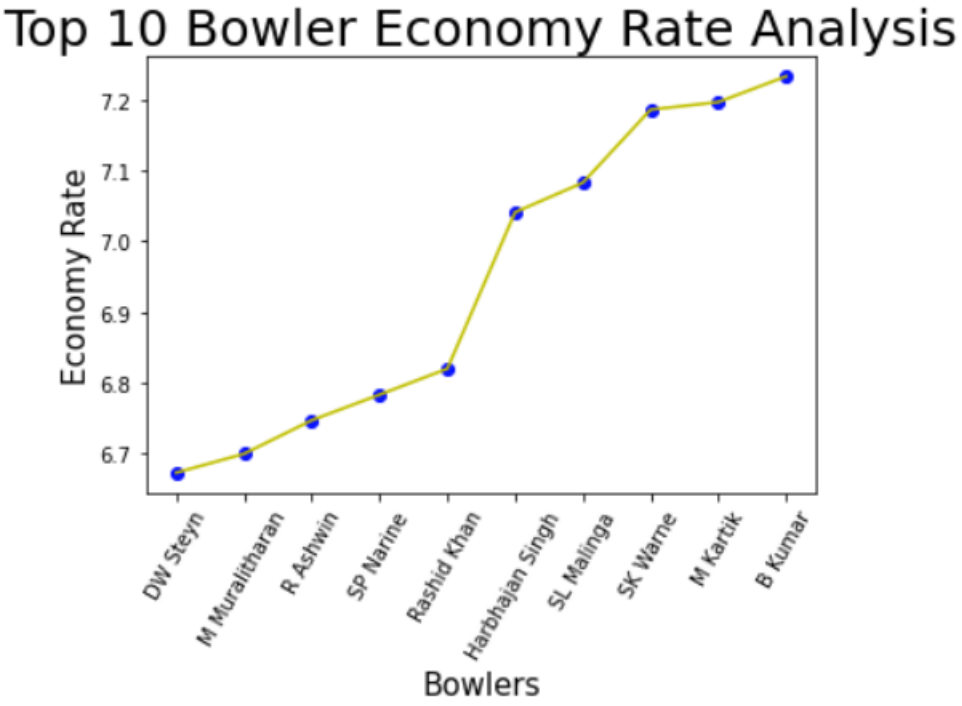
- Player Level Analysis reports including:
  - Strike Rate calculation for batsmen with a minimum target run threshold.



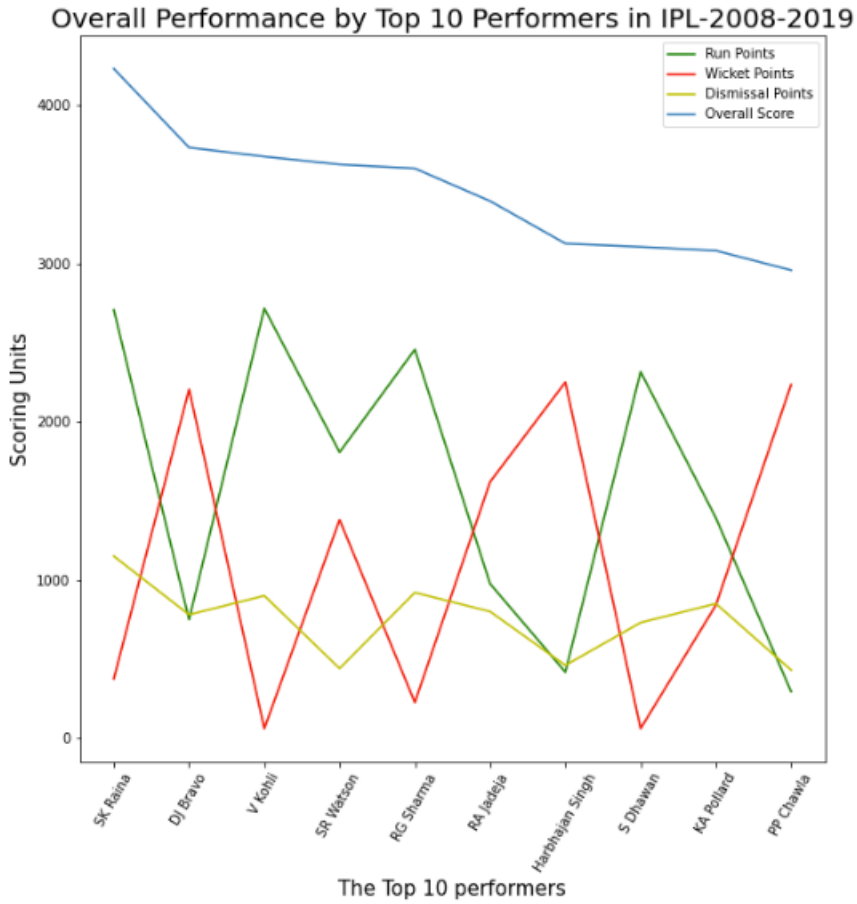
- List of players with the highest number of 'Man of the Match' awards.



- Economy rate calculation for bowlers exceeding a specific ball limit.



- Best all-rounder performance considering batting, bowling, and fielding factors.

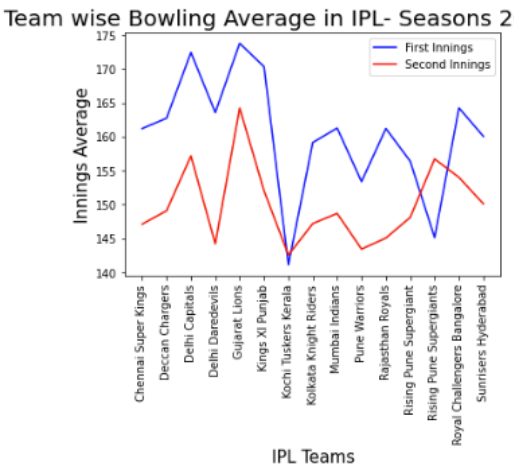


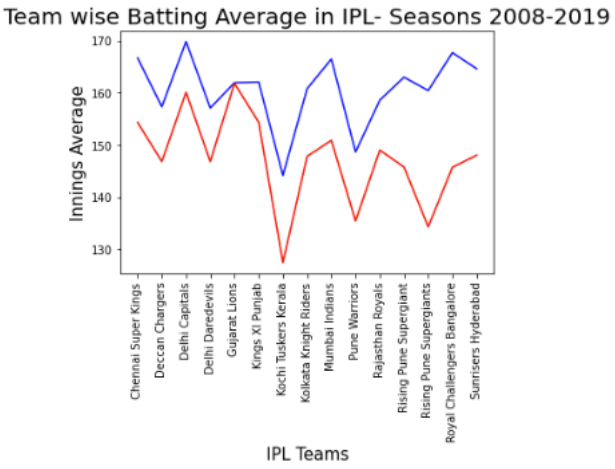
Week 7 (MEP1, MEP2, MEP3):

- Finalize the chosen model (if applicable) and ensure its robustness.
- Calculate performance metrics on the validation data to assess the model's generalizability.
- If model performance is unsatisfactory, consider revisiting previous steps or exploring alternative approaches.
- Prepare a presentation or project document summarizing the data analysis process, key findings, and visualizations.

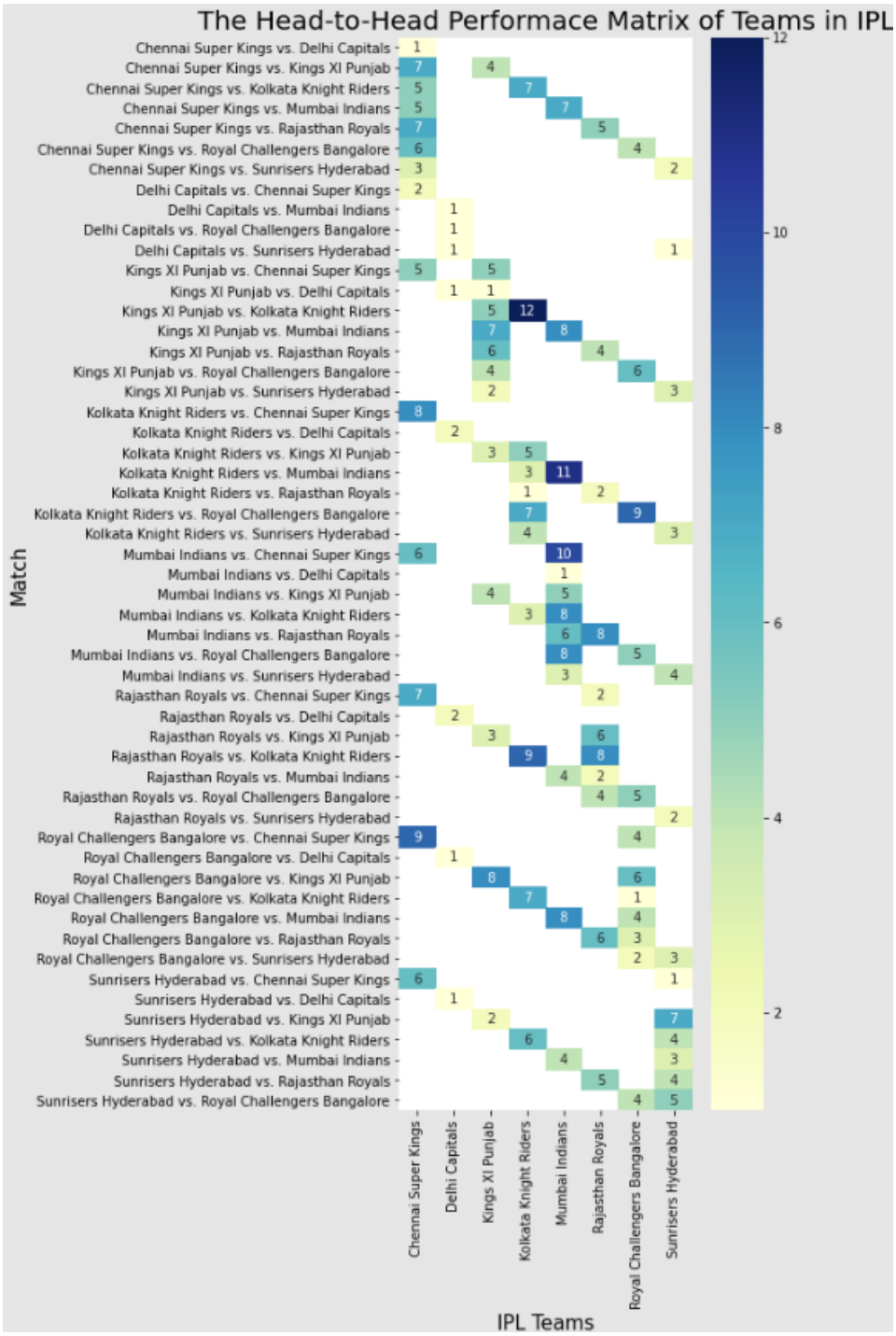
Deliverables:

- Team-wise Analysis reports including:
  - Innings-wise batting and bowling averages for each team.





- Win/loss analysis by runs or wickets for each team.
- Head-to-head match analysis between IPL teams.



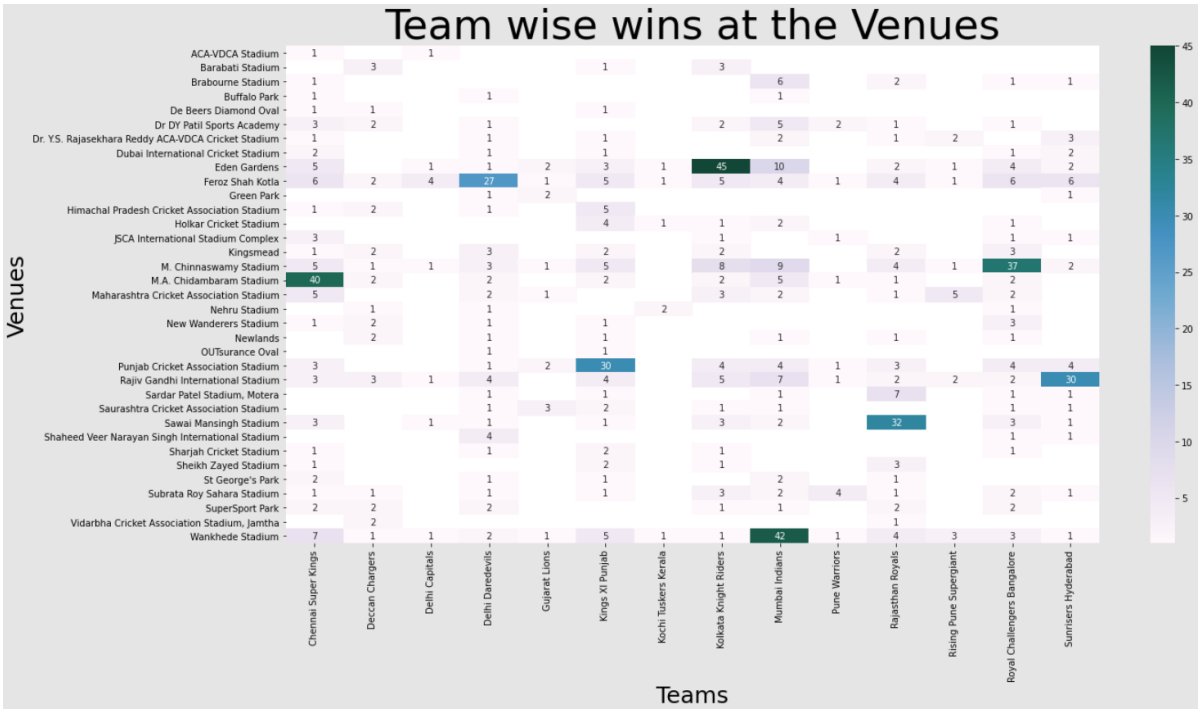
Week 8 (MEP4, MEP5):

- Conduct final testing to ensure the project's functionality and presentation clarity.
- Optimize and modularize code for better readability and maintainability.

- Document the project comprehensively, including code comments, explanations, and user guides.
- Develop a remediation plan outlining potential issues and mitigation strategies for future use.

Deliverables:

- Team-wise Analysis reports including:
  - Team winning performance at different venues.



  - Venue-wise best performers.
  - Heatmap of toss decisions taken by venue and their impact on win/loss.

- Project Documentation including:
  - Final presentation or report.
  - Final code with documentation.
  - Remediation plan.

5. **Evaluation Criteria:**

Milestone 1 Evaluation (Week 2):

- **Focus:** Data Collection (DC)
- **Deliverables:**
    - Completion of data acquisition from chosen sources.
    - Creation of a master dataset for analysis.
    - Univariate analysis report identifying relevant independent variables.

Milestone 2 Evaluation (Week 4):

- **Focus:** Data Exploration and Preprocessing (DEP)
- **Deliverables:**
    - Documentation of data cleaning and preprocessing techniques applied.
    - Report outlining chosen methods for handling missing values and outliers.

Milestone 3 Evaluation (Week 6) - Optional

- **Focus:** Model Building (MB)
- **Deliverables:**
    - Performance metrics reports for all models built during time series forecasting.

Milestone 4 Evaluation (Week 8):

- **Focus:** Model Evaluation & Presentation (MEP)
- **Deliverables:**
    - Finalized and approved model (if applicable).
    - Final project documentation or presentation summarizing the entire process, key findings, and visualizations.
    - Final code with proper documentation (if applicable).
    - Remediation plan outlining potential issues and mitigation strategies.
    - Submission of Action Tracking (AT) report (if applicable).
    - Code review completion in the designated Github repository.