**Premier League Player Statistics**

**Visualization: Project Proposal**

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**Project Title**: Interactive Visualization of Premier League Player Performance

**Dataset Information (What)**

Since I am a fan of soccer and I know more about soccer than American football, I decided to work on a dataset based on the English Premier League. The data set contains players' statistics (571 players) across multiple teams. I got the dataset from [Kaggle](https://www.kaggle.com/datasets/rishikeshkanabar/premier-league-player-statistics-updated-daily).

**Key Attributes**

**Player Information**

* Name (String)
* Club (String)
* Position (String)
* Nationality (String)
* Jersey Number (Ordinal)

**Player Demographics**

* Age (Float)

**Game Participation**

* Appearances (Integer)
* Wins (Integer)
* Losses (Integer)

**Offensive Statistics**

* Goals (Integer)
* Goals per match (Float)
* Shots (Float)
* Shots on target (Float)
* Assists (Integer)
* Passes (Integer)

**Defensive Statistics**

* Tackles (Float)
* Tackle success %
* Interceptions (Float)
* Clearances (Float)
* Duels won (Float)

**Goalkeeper Statistics**

* Clean sheets (Float)
* Goals conceded (Float)
* Saves (Float)
* Penalties saved (Float)

**Disciplinary Information**

* Yellow cards (Integer)
* Red cards (Integer)
* Fouls (Integer)

**Tasks/Questions (Why)**

1. How do players' performances vary across different positions?

. Understand how different statistics (e.g., shooting accuracy, tackles, and passing) differ among forwards, midfielders, defenders, and goalkeepers.

1. How does age influence a player's performance across different positions?

- Explore whether players in certain positions peak at different ages (e.g., goalkeepers vs. strikers).

3. Compare teams' performances in terms of their player statistics?

- Analyze how different clubs perform regarding aggregate player statistics and tactical preferences.

4. Who are the top 3 players based on their respective positions?

- Identify the most effective players using metrics like goals per appearance, tackle success rate, and saves per match.

**Initial Visualization Ideas (How)**

For this project, I will create straightforward charts which will be interactive, and they will address all four key questions.

1. **Position Performance Comparison**

Grouped bar charts

**Description**: Compare average statistics across different player positions (forward, midfielder, defender, goalkeeper)

**Addresses** how do players' performances vary across different positions. (Dropdown menu to select different statistics (goals, assists, tackles, etc.), Hover over bars to see exact values).

**2. Age vs. Performance Visualization**

Line chart

**Description**: Show how performance metrics change with age for different positions.

**Addresses** how age influences a player's performance across different positions. (Select performance metric from dropdown (goals, assists, tackles, etc.), Toggle through the different positions)

**3. Team Comparison Dashboard**

Horizontal bar charts with sorting capability based on the statistics. **Description**: Compare teams based on their players' statistics.

**Addresses** how do teams compare in terms of their player. (Select statistics to compare (goals, assists, tackles, etc.), Sort teams by selected statistics).

1. **Top Performers Highlight**

Simple cards with player names

**Description**: Display the top 3 players in each position based on key performance indicators.

**Addresses** who are the top 3 players based on their respective positions. (Select position from dropdown (forward, midfielder, defender, goalkeeper), Hover for detailed player statistics)

I will be using most of the visualization tools like Tableau, D3.js, etc. to implement the charts for the project. I still don’t know which one is best for which step. I will also be using basic HTML/CSS for the layout, and JavaScript for interactivity.