Target Audience:

The target audience are new fans of football who are looking to integrate themselves into the footballing community. In terms of the age groups, the primary target audience are young adults or teenagers, but the app will also be applicable to other age groups.

For teenagers, they want a gateway into the sport that provides them with easy access key information that can be interpreted even for a beginner. The app will make the statistics easy to interpret through the use of well-designed graphs and dashboard.

For young adults, they are most likely getting into the game to interact with people in social places, such as bars. The app will allow them to keep up with long time or hardcore fans during a discussion or conversation through the useful statistics and graphs.

Since the target audience are new fans of football, they could be quite disconnected with technology, hence the app aims to be easy to use. The logical flow of the app will allow people of any age to fully utilize and understand the app.

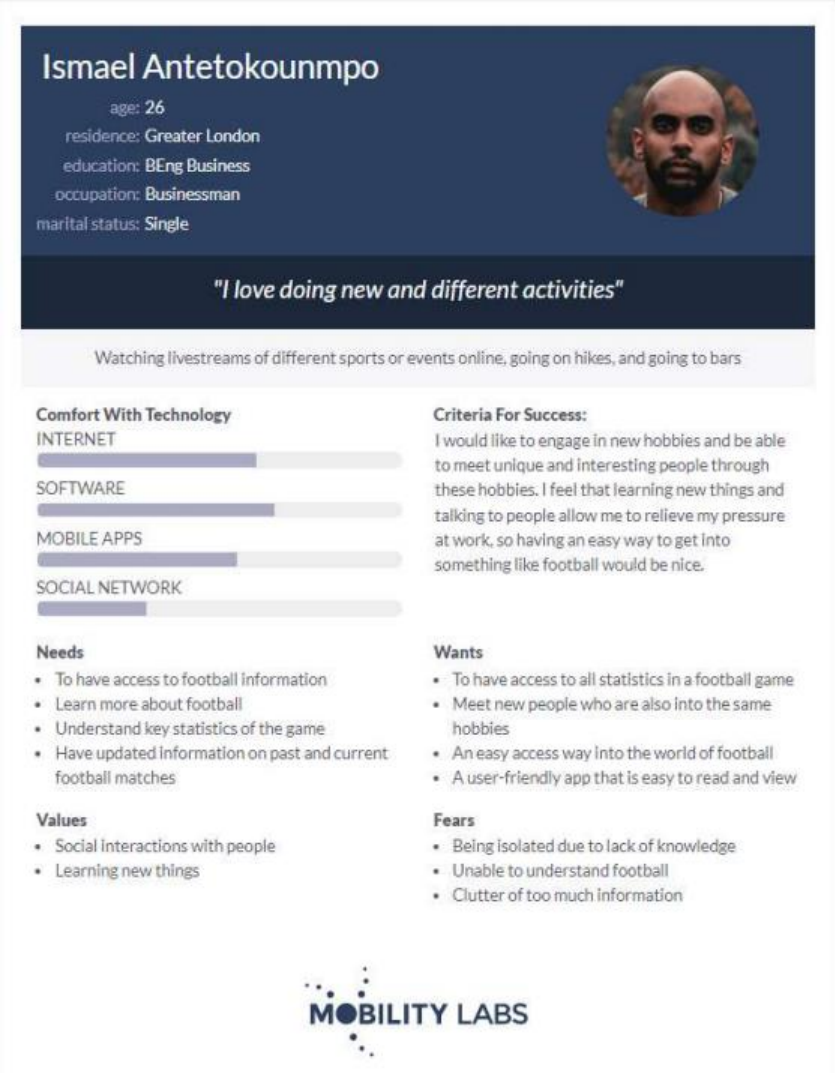

Figure 1: The entire dashboard

Questions:

1. How many statistics should be displayed without cluttering?
2. How can I make my app as user-friendly as possible?
3. Is there any other information that needs to be shown other than the data?

The dashboard has an over theme using the colour blue and this is contrasted with the colour orange as they are complimenting colours using colour theory [1]. The top header shows the audience what page they are on by clearly stating it is the visualization dashboard and provides an eye-catching aesthetic. The titles are clear and concise not to clutter the more important information displayed on the dashboard.

The denser information including Figure 2, is at the top of the dashboard as this follows the natural reading tendencies of the audience [2]. The drop-down menus are to add interactivity for the audience, this allows them to access far more areas of the data set that is available to them in an organized fashion, improving user-friendliness. The target audience are newer fans who know little about the sport, hence the card in conjunction with the graph will provide an easy visualization of data for the audience. The card is able to highlight key points to note, while the graph captivates the audience and allows them to interact with it to see details.

The second graph and card are less dense in data and shows the audience a trend rather than league wide information. The card compliments the graph by showing key points that the line graph does not clearly display, this includes information like averages, the form of the team, and the difference between current and best season.

Apart from the data visualization, the dashboard also includes a comment box and a ratings slider, both of which are to allow the audience to leave their thoughts on the dashboard, these allow for

improvements in the future and improve user-friendliness of the dashboard. These improve intractability and engagement on the dashboard, encouraging the audience to get involved.

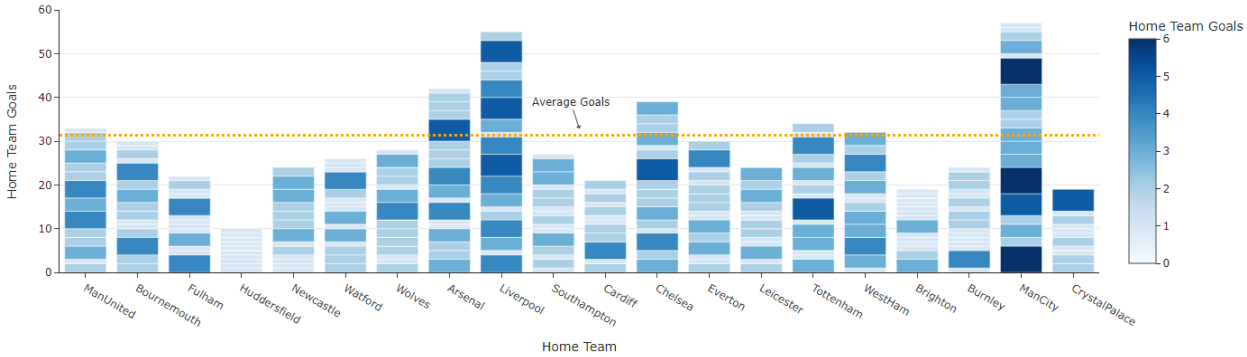

Figure 2: Graph of home goals of every team in a given season

The graph above shows the information of the number of home goals scored for each team in the 2018 to 2019 season, the latest set of data. The x-axis includes the names of all the teams as this graph is league wide and not just focusing on one team, the axis label shows that the teams listed are the home team during the games. The y-axis includes a numeric scale, the axis label displays that the numeric scale shows the number of goals scored by the home team. The bars are coloured in through a gradient shown on the right side. The gradient shows the number of home goals scored using different shades of blue with darker showing a more dominant performance and lighter showing a weaker performance. The bars show the total number of home goals scored in the season, but in conjunction with the gradient also shows the frequency of high and low scoring games. The graph also features a line displaying the average goals scored within that season represented by the orange dotted line. To choose the given season, a drop-down menu containing all the seasons 14/15 through to 18/19 can be accessed (Figure 1).

Questions:

1. What were the home performances for a team in a particular season?
2. How does a certain team's performance compare to other teams?
3. What are the frequencies of goals scored?
4. What statistics are key for determining the form of a football club?

Target audience:

The data displayed should be of great value to the target audience and the target audience should ask the questions above. Since newer fans will have great interest with the sport, it is likely they will ask the questions above and want answers to them. Without any allegiance to a team, their interests will first be focused on the league as a whole.

Reasons for visual aspects:

The main information that a bar chart attempts to convey is the quantities represented by the length of the bar, hence a bar chart was chosen for displaying the quantities of home goals scored, answering the questions. To create a good bar chart, anything that impedes its ability to show that is undesired [3]. The white background of the graph accentuates each bar with proper contrast improving clarity, and does

not appeal to the audience by removing noise, improving the signal to noise ratio [4]. If a coloured background was chosen it would draw the eyes of the audience and distract them from the information displayed on the chart. The bars were chosen to be blue making the visual fascinating as to draw the eyes of the audience, improving engagement, and provide proper contrast to the background [4]. The target line (average goal line) is applicable as all teams aim to score the most goals [5], the purpose of the line is to separate the teams into the ones performing above and below average. The dotted line helps separate it from the bars and orange was the chosen for the colour harmony it possess with blue, since they are complimentary to one another (opposite on the colour wheel) [1]. The grid lines were kept as they indicate important milestones for teams and overall provide important information. Most importantly the graph is self sufficient and does not require external explanation [6].

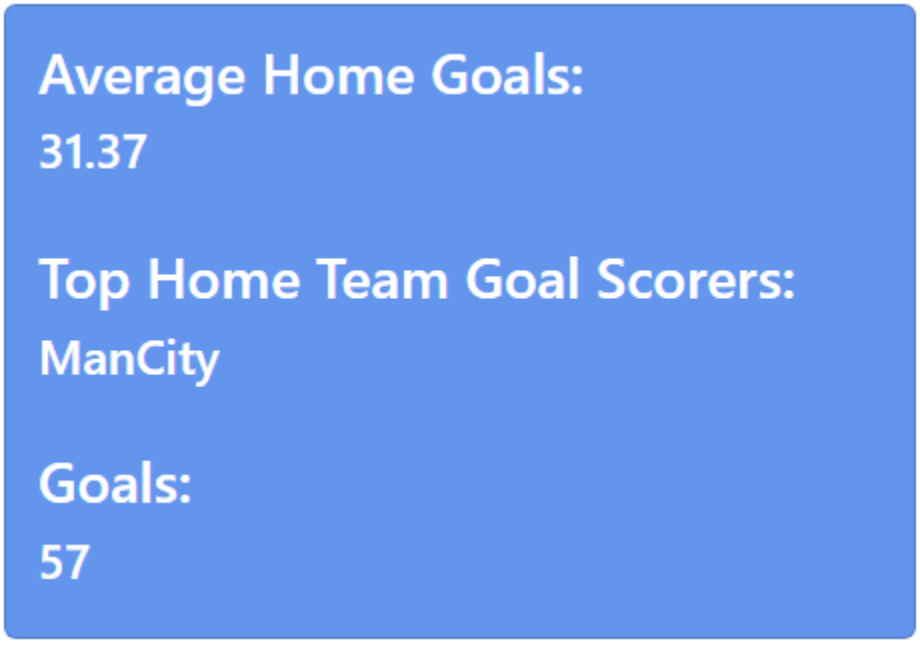

Figure 3: Card complimenting the bar graph

The card above shows the exact value of average home goals, the top home team goal scorers in the league, and the number of goals the top scorers scored during the season. The average home goals is done through taking the average of home goals of every team and averaging it. The top home team goal scorers and goals were taken by finding the maximum value of home goals scored by a team and displaying its index and value. These pieces of information described by the card are key pieces of information relating to the data. Only these three key values were chosen from the variety of key values is to reduce the noise and clutter. The simplistic design of the card is not to overwhelm the audience, but to provide them with information that they would be most interested in. The headers attempt to be as direct as possible and provide information in a logical flow. The blue colour matches the theme of the dashboard as a whole and its complimenting graph in Figure 2.

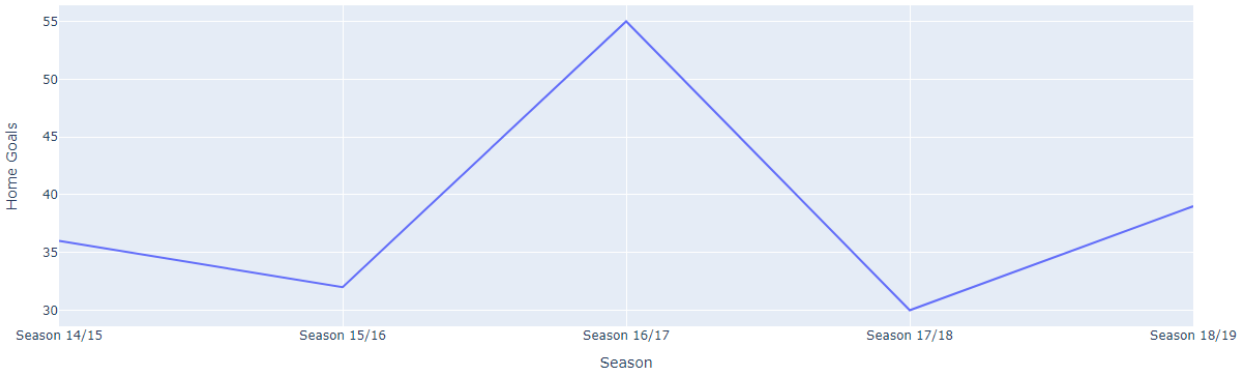

Figure 4: Graph of home goals in each season of Chelsea

The graph above depicts the number of home goals scored in each season for Chelsea. The x-axis shows each season that data was extracted from, the axis label clearly shows the season with both the start and ending year of the season. The y-axis is a numeric scale showing the number of home goals scored in each season. The background is a light blue colour with white grid lines showing the intervals of 5 goals. The line shows the growth and deficit between each season and is coloured blue. To choose which team, a dropdown menu located above the card (Figure 1) can be accessed.

Questions:

1. How has the performance of a team changed each season?
2. How do they compare now to before?
3. Are they currently performing well?
4. How much data in the past is needed to determine the form?

Target Audience:

The target audience is able to receive a more comprehensive view on one team with this graph. Apart from evaluating a team with their performance in a single season, it is important to evaluate with historical data to track improvements or deterioration of a team's performance. This graph is essential to fully encapsulate understanding the performance of a team.

Reasoning for visual aspects:

The main information a line chart conveys is used to display quantitative values in the domain of time [7], which is the reason a line chart is chosen for displaying information varying by seasons. The question can be answered very easily through the gradient of the lines, which provide a very good visual indicator of the performance of a team with a glance, the essence of data visualization, which is another reason this format was chosen for this set of information. Multiple inputs were considered for the graph, however it is important for a line graph to be simplistic and too many lines would provide too much noise, impairing the signal to noise ratio [4]. The color blue is chosen for the graph as it matches the theme of the entire page and its complimenting graph in Figure 2, whilst improving engagement.

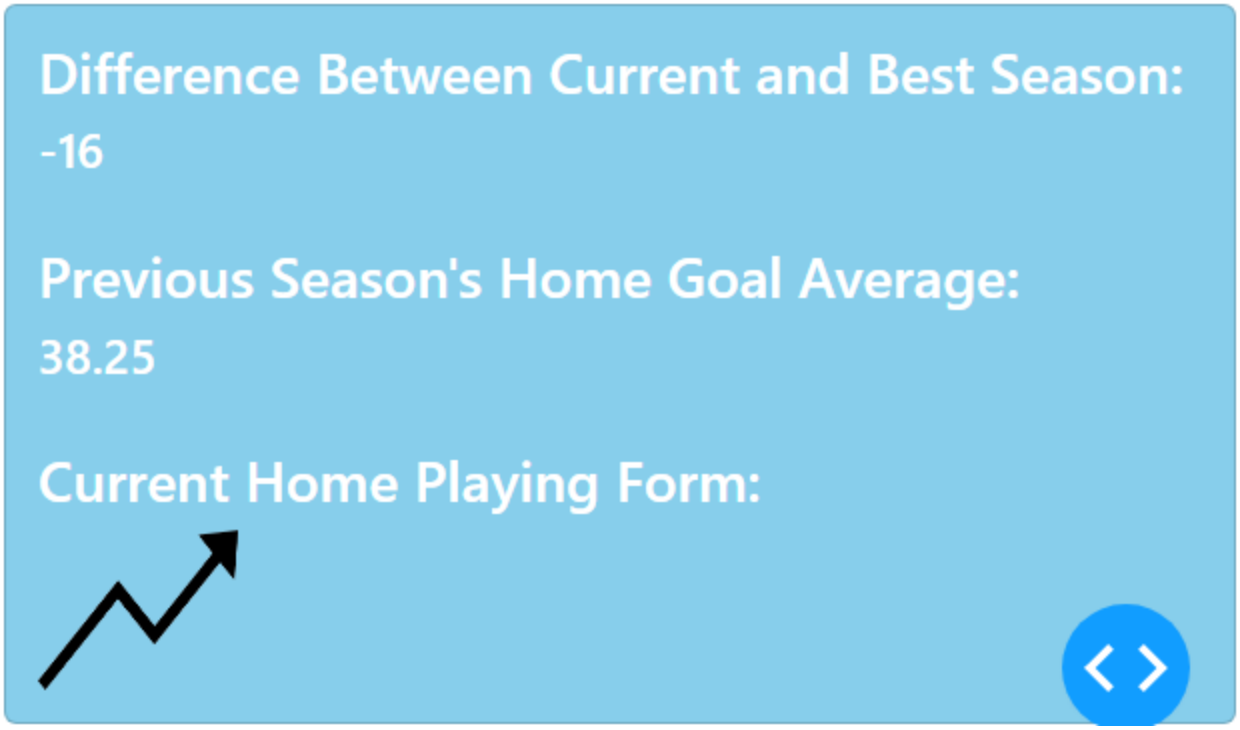

Figure 5: Card complimenting the line graph

The card shows the key information such as goal difference between the current and best season, the previous season's home goal average, and the current playing form. The difference between current and best season is evaluated through finding the goal difference between the season where the team scores the most amount of goals and their current season goals scored. In the event where the current season is the best season in terms of home goals scored, the number displayed will not be zero but a sentence saying this is their best season yet (Figure 6). The previous season's home goal average is evaluated by averaging the number of goals in the seasons excluding the current one. Current home playing form is evaluated by checking the number of home goals scored in the current season to the previous season's home goal average. In the event that the performance this season is lower than the average the arrow will be an image pointing down, otherwise it will be an arrow pointing up. This card is especially crucial as it does not only show key information, but also an evaluation of the team's performance this season, illustrating it with an arrow. The reason an arrow is chosen rather than words or the like is due to the pursuit of simplicity. Simplicity is a core part of data visualization and dashboard design, more importantly, this follows the logical flow of a reader's natural reading tendency. The reader's natural reading tendency dictates that more detail should be in the top corner at the start and decrease moving to the bottom corner. Since this card is located at the bottom corner, the simplicity is very prevalent [2].

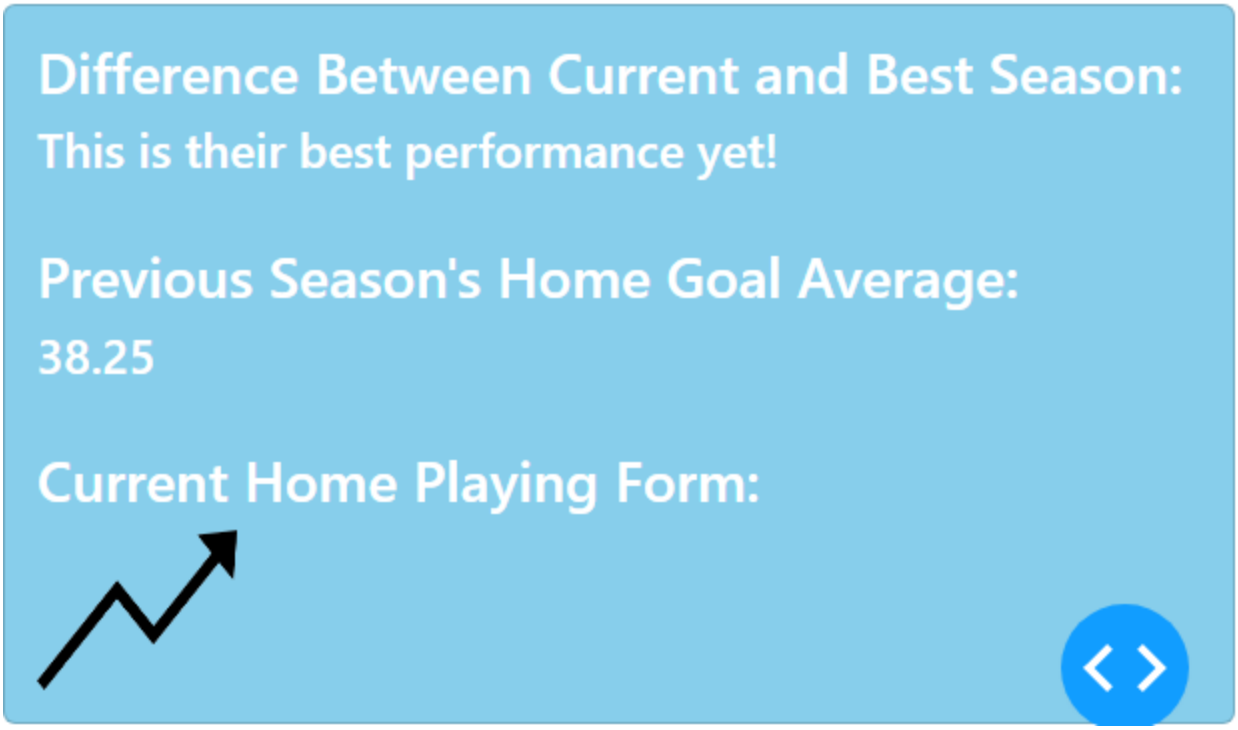

Figure 6: Best performance case for line graph

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