**Title**: Influence of Physical Attributes on NBA Player Performance

**Link**: <https://a1an1uo.github.io/DS4200-Final-Project.github.io/>

***Interactive Visualization #1***:

The world map visualizes the distributions of average height and weight of NBA players by country. It contains two distinct color maps overlapping each other. The first one is the distribution of the average height of NBA players by country, and the second one is weight. The depth of color in each color map represents how tall and heavy the average height and weight of NBA players in each country are.

***Static Visualization #1***:

This part displays the distribution of height and weight among NBA players. It converts height and weight values from strings to numbers for processing after loading and parsing the data. Each plot shows the frequency of players in different bins defined by height and weight. The visualizations include axes labeled with units, mean lines representing both the NBA average and the average US male for height and weight, and a legend that differentiates these averages. To make the histograms more interpretable and useful for analyzing the size distribution of players in the NBA, text labels at the top of each bar indicate the number of players in that bin. Using colored boxes and labels, a legend is added to distinguish the average player height from the average height of U.S. male adults.

***Static Visualization #2***:

The purpose of these visualizations is to explore the relationships and trends of player physical attributes over time. The first plot visualizes the player height/weight correlation for each season. This correlation series is then displayed as a line graph with the seasons on the x-axis and the correlation coefficient on the y-axis. The plot features a blue line gridded to make reading easier and appropriately labeled axes. The second plot focuses on average NBA player height and weight trends across seasons. For visual differentiation, height is represented by blue markers and weight by red markers. Legends are strategically placed to avoid overlapping, and the plot includes gridlines and rotated season labels to improve clarity.

***Static Visualization #3***:

The heatmap visualizes a correlation matrix focusing on NBA player attributes and performance metrics, using a color gradient from red to blue to signify the strength and polarity of correlations. The clear, symmetrical design highlights significant positive correlations, like player height and weight (0.82), and moderate ones, such as player height and rebounds, while also identifying negative correlations, notably between height and assists. This choice of color coding and layout briefly communicates complex statistical relationships, allowing for immediate visual interpretation that aligns with the narrative of player attributes impacting game performance, which is crucial for strategic decisions in team management.

***Static Visualization #4***:

The paired box plot visualization captures the evolution of NBA players’ shooting efficiency across different height ranges, comparing the eras before and after 2012. The design clearly identifies players into discrete height intervals to represent different positions on the court, facilitating comparative analysis of true shooting percentages, which is a metric accounting for all forms of scoring attempts. An apparent upward shift in median and interquartile ranges post-2012 across all height categories signals an enhancement in shooting proficiency league-wide. This visual evidence suggests a strategic shift within the sport, with an increased focus on skill development and shooting accuracy that transcends physical attributes. Such data-driven insights are invaluable for coaching strategies and training methods, reflecting the progressive evolution of basketball and the elevated importance of shooting precision in the modern era.

***Interactive Visualization #2***:

The physical attributes and performance metrics for each season visualize four different correlations. The first is height and assists; the second is height and rebounds; the third is weight and assists; and the fourth is weight and rebounds. The y-axis of the visualization is the correlation coefficient, and the x-axis is the season. Different lines have different colors. This graph analyzes relationships between each specific physical attribute and each specific performance in each season.