William Welsh
4.19.23
ARTG 5430

Visualizing NBA Lineup Performance in the 2022-2023 Regular Season

Introduction

For this final project, I chose to explore NBA team ratings from the regular season of 2022-2023. Although there is a lot of data about the NBA available in many sources of the internet, much of it is presented in table or spreadsheet form, and the visualizations that exist tend to be relatively plain, generally bar graphs or scatter plots. While these types of visualizations can convey important information, I chose to use this data to create something more unique, at least under the team page option. My goal is to allow users to compare data quickly and effectively in a visual form, rather than filtering and sorting tables based on the required information.

Methods

This project employed a number of different visualization and interface techniques, depending on the purpose of the page. For the home page, I chose to utilize a relatively normal but interactive scatterplot, as it provided a clear way to compare each team and lineup by offensive and defensive rating. However, this page's main purpose are its links to the pages for each team, where the visualization techniques are more complicated.

For the team pages, I created a force simulation, where the nodes are each five persoon lineup that the selected team has played this season. The nodes are scaled in size by minutes played and in color by net rating, with red representing a poorer rating and blue a more positive one. Each page also has a caption box, which provides information in writing about the selected team or lineup, and a chart on the bottom axis which shows the offensive and defensive ratings as points on a line graph. By clicking on a node, those not selected move to the side and are recolored to a lighter gray, and the caption and graph provide information on the selected lineup. There is also a menu that allows you to select combinations of players, with lineups featuring all selected players in color on the right and the ones not meeting this criteria in gray on the left. Up to five players are able to be selected, based on the maximum lineup size. This page contains the most information, and is customized for each team.

Finally, I created a narrative to explain how team ratings work to those who aren't as familiar. To do this, I used SVGator to design a model NBA court, then created animated arcs to indicate shot attempts. Shots that go in are green arcs, while those that miss are in red. I also created a modified scoreboard to track the simulated results. The first simulation includes one scripted shot for each team, with an explanation in writing detailing how the rating changes over the course of the possessions. The second is user controlled in terms of speed and number of possessions, although the simulated shot frequency and success rate

is based on this season's league average. The hope is that this simulation provides more insight into how the ratings look after more playing time.

Discussion & Future Work

My hope is that this project provides a clear way to learn about team ratings and how they can be used to evaluate success in the NBA. Moving forward, I would hope to make visualizations in a similar vein for other statistics. While there is a wealth of sports related data available online, I think that there is a space for more unique and customizable visualizations in the analytics field. This could make understanding this data even more accessible to others moving forward.