

Basic Info

- **Project Title:** BeatingTheOdds
- **Team Members:**
 - Archie Menon, u0928536@utah.edu, u0928536
 - Mark Patterson, u1207184@utah.edu, u1207184
 - Tyler Gaul, u1195904@utah.edu, u1195904
- **Repository Link:** <https://github.com/Wilferd/BeatingTheOdds>

Background and Motivation

There's a saying when it comes to gambling that "the house always wins." The motivation for our project is knowing how often Vegas predictions are right for the outcomes of NBA games. We are interested in sports betting and want to display the results for the NBA and compare actual outcomes to predicted outcomes. For every NBA game, there are countless statistics that oddsmakers come up with such as money lines, spreads, favorites, expected payouts, etc. Our goal is to distill this information into helpful visualizations that show how teams perform vs how they are expected to perform.

Project Objectives

Question we are trying to answer:

- How often does Vegas correctly predict the outcomes of NBA regular season games?
- In a head to head matchup between 2 teams, how does one team perform against another team historically according to the odds and the actual outcomes?
- Over time, how do the odds change for a specific team?
- How do the different betting establishments compare to each other for a particular game?

We would like to learn how to distill the game information and odds information into an easily consumable format. There's a lot of data since there are 30 teams and 82 games in a season, and each game has a lot of betting information.

Data

Source: <https://www.kaggle.com/datasets/erichqiu/nba-odds-and-scores>

- The source we used is kaggle.com. We found a data set containing NBA odds and scores from the 2012-2013 season to the 2018-2019 season. This data includes the results of each game in the season, the predicted spreads from multiple betting websites, and the best spread choice.

Data Processing

- We do not expect to do substantial data cleanup. We plan to derive information that answers how often is Vegas right, which teams come out on top in their head to head matchups, and which teams act as predicted according to the spread. Also, we plan to derive the average odds of each game. We plan to import the csv of the data and then turn that csv into a JSON file. From there, we pull the data we need from that JSON file.

Visualization Design

We decided to go with the five design sheet methodology when creating our final design for our project.

We initially started with a simple bar graph that you could click the team logos in the top to filter by a specific team's games but we thought that this was lacking enough interactions.

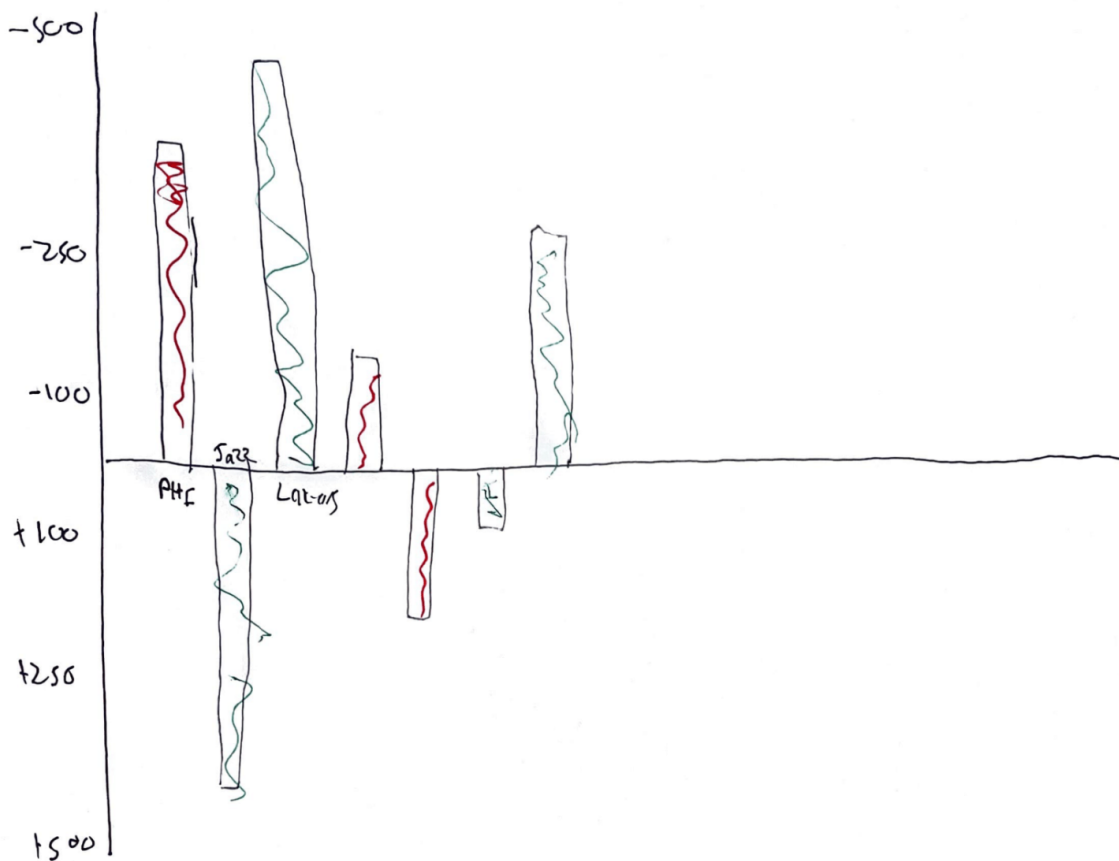
The next design we decided to go with a line graph that showed each game and the money line for those games. The circles for each data point would be a team logo with a colored circle around it representing if the Vegas prediction was correct for that specific game. It also incorporates the feature of choosing a team logo in the top to filter by.

Our third design was a chord diagram with a circle with a team logo representing each team. Once selecting a team logo it will display all of their wins with a green line and all of their losses with a red line and each line will go to the respective team.

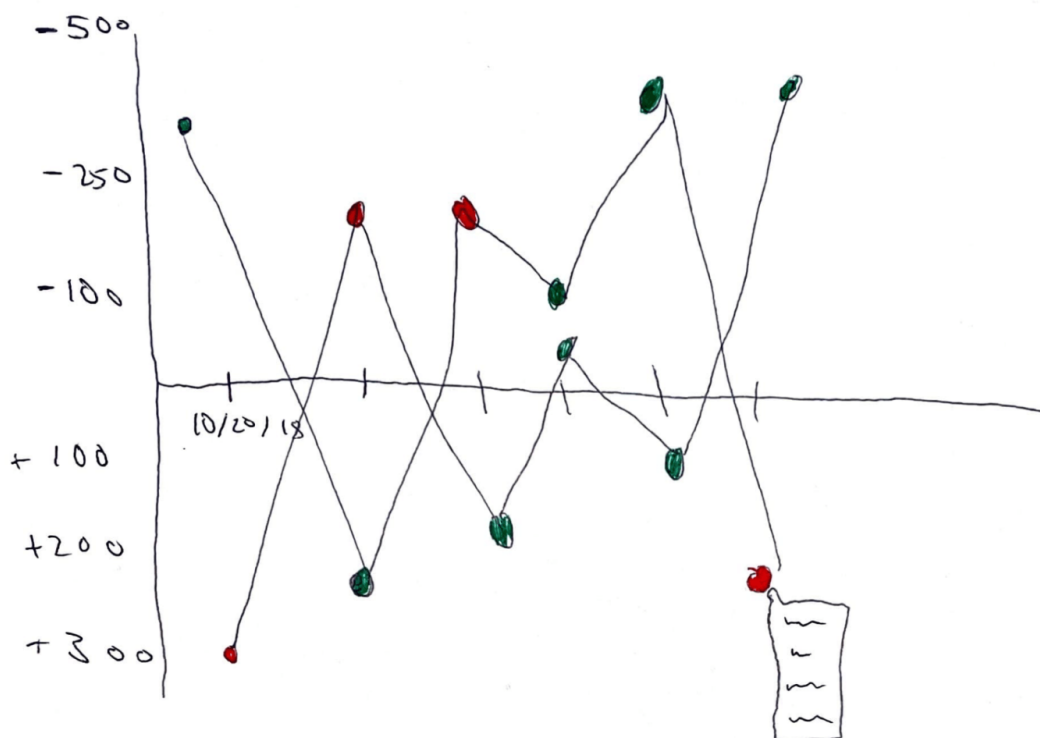
The fourth design is the prototype for what would be displayed when a data point for design two is clicked on. We think that this is a good way to display all of the data for a specific game between two teams and show all of the different predictions for various different sites.

Our final design is a combination of design two, three, and four. The main interaction is the line chart and there is a dropdown that can change the data set from the money line or the point spread. This is also reflected when you click on one of the data points and the small bar graph to the right will have the respective axes. The bottom chord diagram is the same as design three.

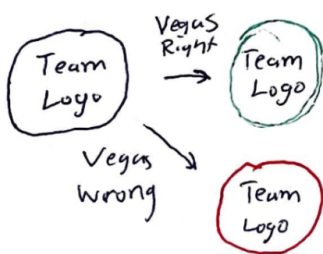
Team logos ○ ○ ○ ○ ○ ○ ○ ○ ○

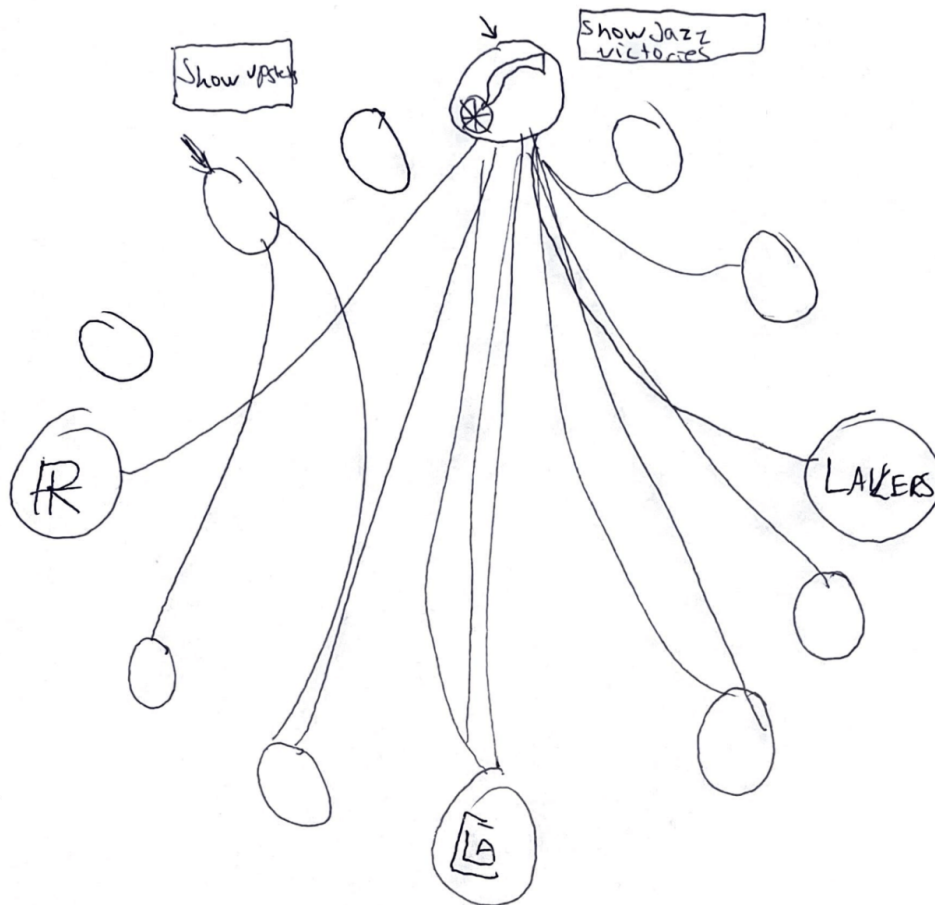


Lakers



Example Point





⇒ CLICK ON DATA POINT

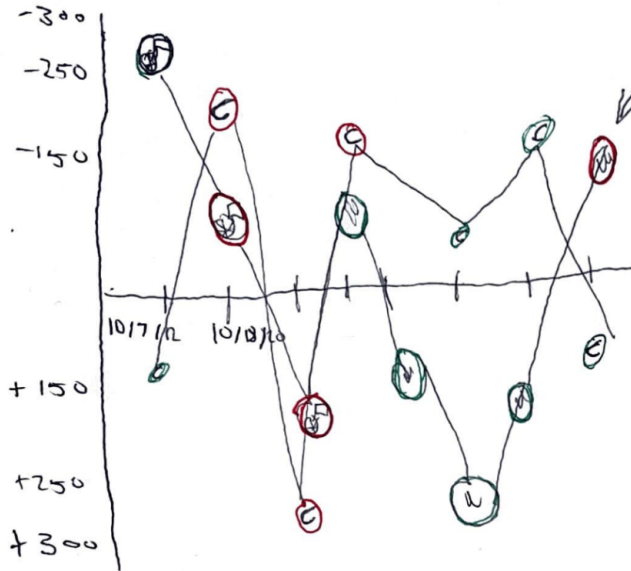
— = Betting Site 1
— = Betting Site 2

SINGLE GAME ODDS



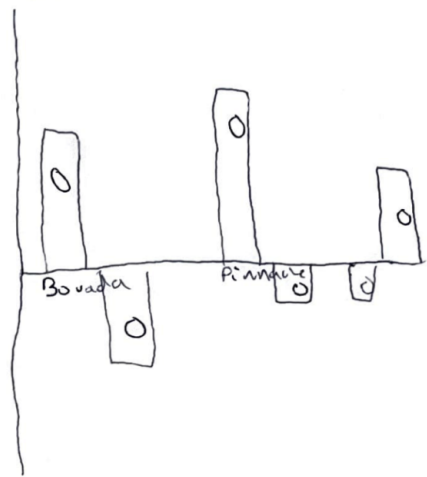
(Lack)


(C)

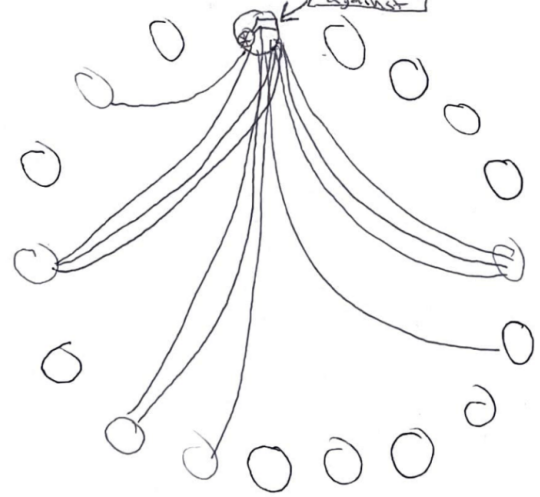


click on game updates bar chart

Per Game Odds



Beat the odds against



Must-Have Features

- **The Team Odds Over Time Line Chart**
 - The ability to swap between money line bets and point spread bets [1]
 - Filter graph based on team (by clicking team logo in the top) [2]
 - Ability to click on data point and update Bar Graph [3]
 - Coloring of data points based on whether Vegas correctly predicted the spread/money line. [4]
 - Tooltip over a data point that has extra information about the game [5]
 - Team logo as the circle for each data point [6]
- **Specific Game Betting Website Bar Graph**
 - Includes the team logo inside of the rectangle for each bar [7]
 - Each bar is colored based on the respective betting site [8]
 - Updates based on clicking a data point on the line chart [9]
- **Head to Head Odds Chords Diagram**
 - Clicking on a team lets you choose the different criteria for the lines that will be drawn [10]
 - Ability to draw lines for wins, beating the odds, and losses [11]
 - If you click on multiple teams it will show just the head to head matchups for the select teams [12]

Optional Features

- **The Team Odds Over Time Line Chart**
 - Hovering over a line puts it into focus and defocuses other lines [13]
 - Clicking on a line will expand similar to HW 5 adding all of the extra lines for the different betting website [14]
- **Specific Game Betting Website Bar Graph**
 - Clicking on one of the logos on the bar graph will change the main line chart to display just that teams games [15]
 - Ability to sort by ascending or descending odds [16]
- **Head to Head Odds Chords Diagram**
 - If only one team is selected then unselected the chord diagram spins to center on the next selection [17]

Project Schedule

Feature	Due Date	Responsible Party
1	Week 11	Mark
2	Week 11	Archie
3	Week 11	Tyler
4	Week 12	Tyler
5	Week 12	Mark
6	Week 12	Archie
7	Week 13	Mark
8	Week 13	Archie
9	Week 13	Tyler
10	Week 13	Tyler
11	Week 14	Mark
12	Week 14	Mark
13	Week 14	Archie
14	Week 14	Tyler
15	Week 15	Tyler
16	Week 15	Mark
17	Week 15	Archie

Note: Bolded dates are the week of project due dates