PROCESS BOOK

1. Introduction

a. Overview and motivation

The National Basketball Association, commonly known as NBA, is widely considered as the preeminent men's professional basketball league in the world. It includes 30 teams: 15 in West United States, 14 in East United States and 1 in Canada. NBA is deemed to be the national governing body for basketball in the North America. The current league organization divides thirty teams into two conferences of three divisions with five teams each. Reflecting the population distribution of the United States and Canada as a whole, most teams are in the eastern half of the country, there are 5 teams in the Pacific, 5 in the Northwest, 5 in the Southwest, 5 in the Southeast, 5 in the Central and 5 in the Atlantic.

The Boston Celtics are an American professional basketball team based in Boston. The Celtics compete in the NBA as a member club of the league's Eastern Conference Atlantic Division. The team is founded in 1946 as one of eight NBA teams to survive the league's first decade, and their home games is the TD Garden. As a percentage of championships won, the Celtics is one of the most successful franchises to date in the major four traditional North American professional sports leagues.

We want to do a data visualization for Boston Celtics to help their fans understand their behavior for different opponents . We're going to create a data visualization to analyze the possible 7 teams in eastern conference by contrast with performance of Boston Celtics. By analyzing our data visualization, people will get a full understanding of this team advantages and drawbacks in different level including team, position and personal level.

b. Objectives

Our project mainly focus on giving a comprehensively analysis of Boston Celtics basketball team and its player in order to understand the advantages of this team and find out team player’s potential in different position. Since data analysis has become an irreplaceable status in estimating each player’s ability and decision making, the display of the data turns out to be important. For the people who are

interested in specific player, it will also show each team player's ability index and general performance in the whole season.

Our final goal is to provide Boston Celtics fans a comprehensive view about their potential playoff opponents data. And figure out the advantage and drawbacks to each opponents. Then fans could have their focus point when they watch playoffs and have a sense of what's going well or wrong with the team.

c. Data

The data is about performance of Celtic and its opponents in regular season which includes Blocks, Steals, Turnovers, Rebounds, Assists and Points. We collected 17 matches' data from the 7 potential playoff opponents include Cleveland Cavaliers, Indiana Pacers, Detroit Pistons, Toronto Raptors, Chicago Bulls, Atlanta Hawks, Washington Wizards. Beside this we have collect the "per 36 minutes performance'' for each player of those teams in this season.

With all the data we had, we break the data into three aspects which are average performance of the team, average performance of team player as well as the strategy each team uses to play a game.

Domin task:

With this visualization, users can have an overview understanding of the performance of Celtic including its advantages and disadvantages as well as strategies Celtic used. The strategies are mainly three types containing attack, guard and reducing turnovers. In addition, users can compare the performance of player in five position which contains PG(point guard), SG(shooting guard), SF(small forward), PF(power forward), C(center).

Analysis task:

1) Analysis of team performance according to six attributes.
2) Analysis of differenet positions performance according to six attributes.
3) Analysis of the efficiency of each players in the eight teams about performance per 36 minutes.

d. Users

The target user is the general public, fans of Boston Celtics , or simply those who concern about NBA. We wish this visualization tool could help those people get a deep understanding of the team performance and individual performance with different opponents.

e. Related work

The Boston Celtics are an American professional basketball team based in Boston, which are the most successful franchise to date in the major four traditional North American professional sports leagues. We found many data on the realgm.com (http://basketball.realgm.com/nba/stats) , and "Per 36 Minutes Performance" data

from (http://www.basketball-reference.com/teams/BOS/2017.html) which is enough for us and for everyone to analysis teams and players stats.

2. Process

a.Data collection.

Choosing basketball match, match information:

We select 7 teams in Eastern Conference which are potential playoff opponents with Boston Celtics in this season. Since Celtic is highly possible to enter the playoff this season, we want to analyze their data to figure out a strategy to help Boston Celtics to get in NBA final this year.

b. Team analysis

Problem: The whole team performance is crucial to analysis and to determine the strategy of next game in playoff. We at first considered that there should be a chart, like line chart, to show the data from the Boston Celtics. However, because we want to analysis what strategy Celtics should use when they meet particular team next game, the data from only Celtics is insufficient. Thus, we decided to use data of 7 teams from east coast. Since it would be more representative if we choose the top 8 teams, we choose the data from top 8 teams including Celtics and visualize the data in bar chart and stacked bar chart.

Design evolution: We created very simple bar chart at first. However, it's pointless if we only show the points of every team. Thus, we created a stacked bar chart to show the sum of six attributes we chose so that we can easily know the trend of every team. And we also created a bar chart to show six attributes separately, which will make it more easier to know trend of every attribute of each team.

c. Position analysis

Problem: Usually, users desire to know the performance of each players and figure out their data in a match, however, they may find it difficult to compare performance of two players because player's responsibility may vary according to different position they take. Thus, it is less meaningful to compare players whose position are not the same.

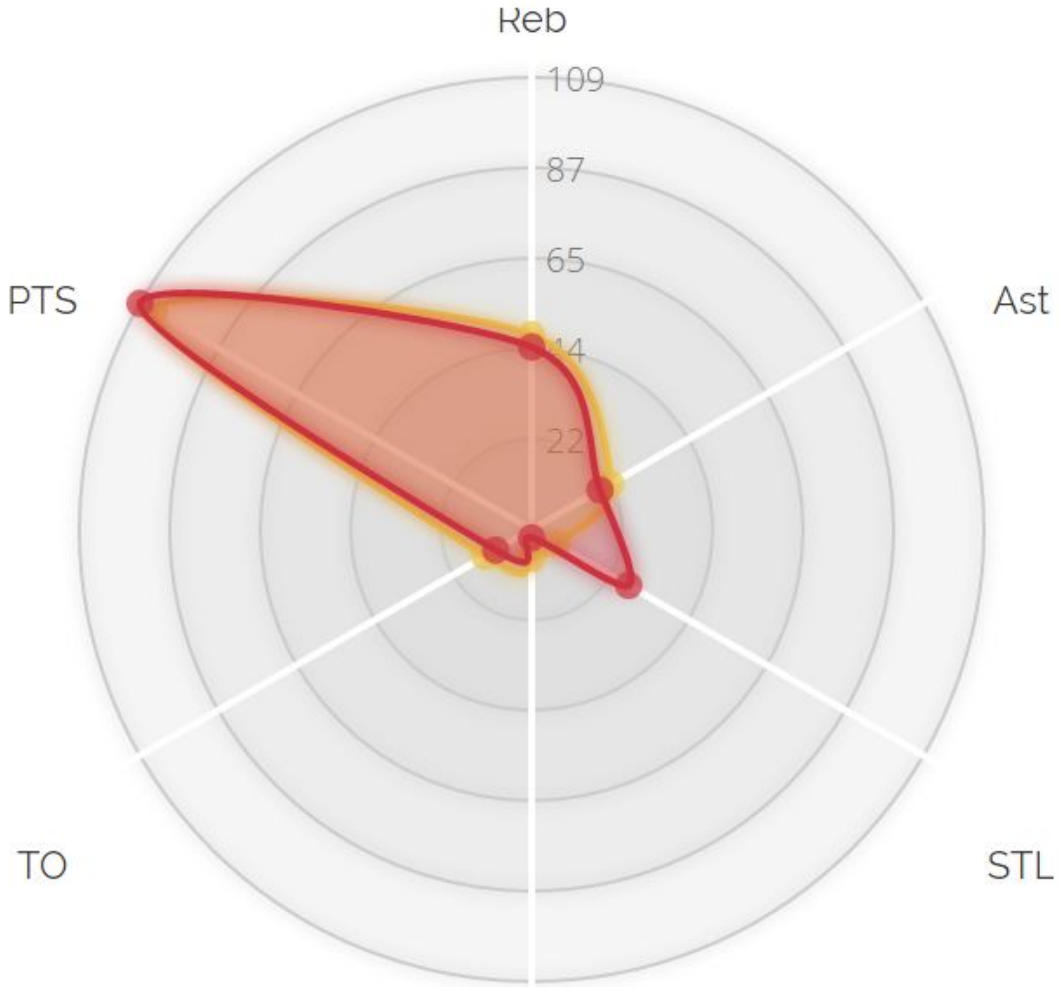
Design evolution: In one match, one position may be played by several players, thus we decide to figure out the average performance of each position in one match and users can compare each position's performance in one match. Since the player's performance include six attributes, we decide to take advantages of radar chart to display each position's performance.

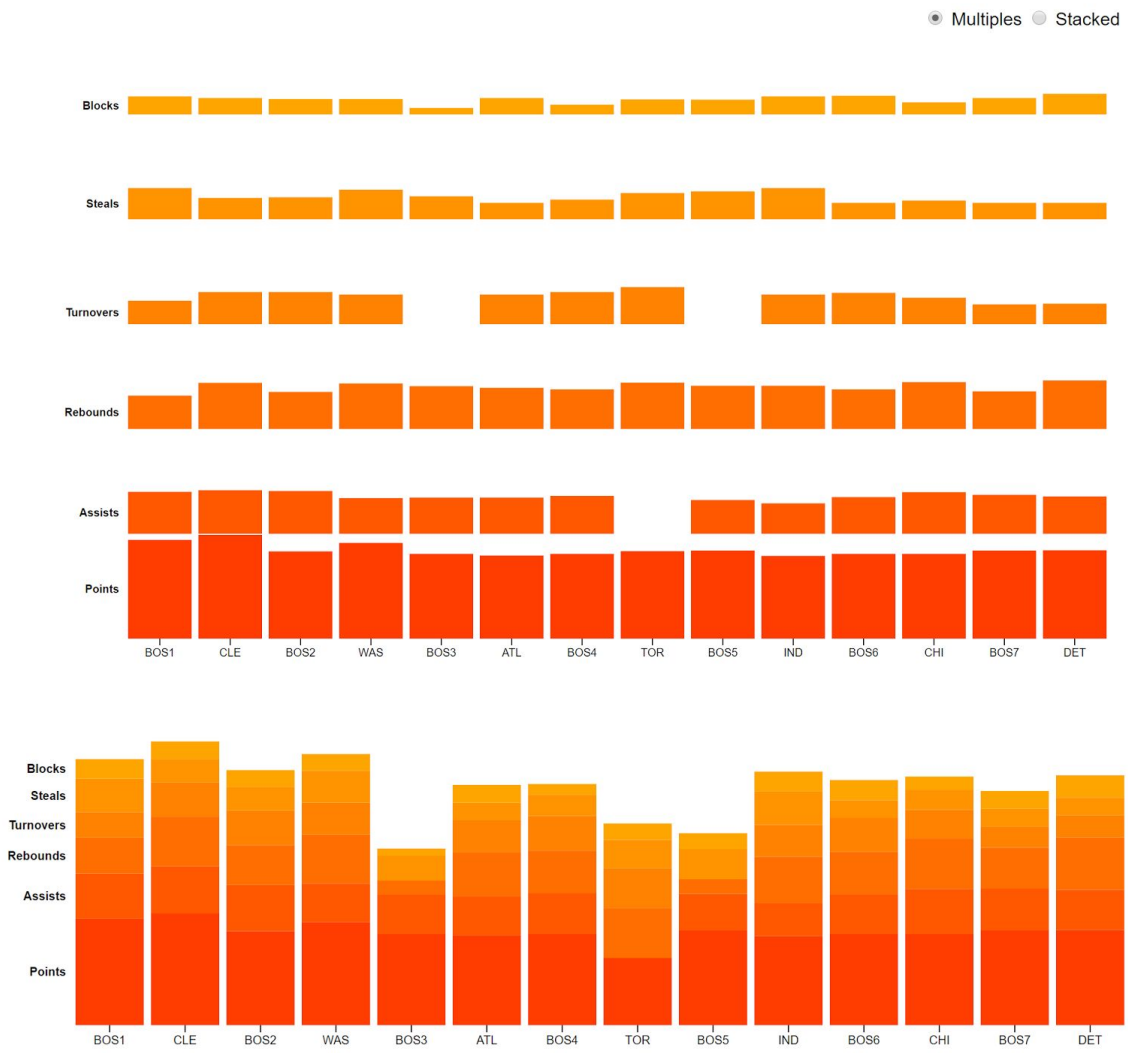
d. Player analysis

Problem: Usually, users would like to know who behave better in the regular season and desire to know overall performance of each player. To be more specific, users would like to see players who gain the highest score or behave better in defense. However, we have 150 players in 17 matches, it is difficult to compare they by using bar chart or radar chart since graphics may appear overlaps.

Design evolution: The behaviour of every player may vary significantly, so we design a line chart to record their performance in different teams. We analyze the player's performance by calculating the player's value per 36 minutes. That is, we study every player's attributes by dividing their playing time and multiply 36. It represents how the player is played with most efficiency in one single match.

3. Visual design





4. Analysis
5. Conclusion