Fantasy Football Rankings Analysis

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***Abstract*— This electronic document is a "live" template. The various components of your paper [title, text, heads, etc.] are already defined on the style sheet, as illustrated by the portions given in this document.**

I. INTRODUCTION

The objective of our project is to determine the relative value of fantasy football positions in order to declare a draft strategy for an individual as well as help their strategy throughout the season. Many people place more value to Quarterbacks when they draft, others place more value on having great running backs and wide receivers. Our analysis will gather data from the past decade of NFL seasons to truly determine the value of each fantasy position. Several of our members are currently in the middle of the fantasy football season and would love to discover new trends and strategies when prioritizing certain positions.

II. DATA

A. Retrieving the Data

We gathered data by web scraping from The Football Database website regarding the past 10 fantasy seasons. Looking at the points scored by each position over this era yields a trend in positional value that users can utilize in order to make knowledgeable plays throughout the season.

B. Data Constraints

We will assume a 12 team league with ppr scoring that consists of 2 QB, 2 RB, 2 WR, 1 TE, 2 Flex starter positions. With that being said, in this specific league on average each team will roster 2.5 QBs, 5 RBs, 6.5 WRs, and 2 TEs. Therefore, when multiplying this average by the total teams of the league, it will yield the next available replacement value. Therefore, the replacement values will be QB 31, RB 61, WR 79, and TE 25.

C. Data Analysis, Models, and Algorithms

For our data analysis, we decided to use a value above replacement algorithm to determine player value. Because there is a roster size cap for each fantasy football team, this makes fantasy points scarce. Each team can only hold 16 players at once, so the next best available player is what we refer to as our "replacement" value. We make the assumption that this is a competitive league where each fantasy team is doing what is best for their team. Thus, all of the best 192 players are taken. In other words, the best 30 QBs, the best 60 RBs, the best 78 WRs, and the best 24 TEs are on rosters. Therefore, to have success in the draft, they must maximize the points a player that they pick provides above the "replacement" points available in free agency. Using this logic, we determined the replacement points for each position to be the 31st highest scoring QB's points, 61st highest scoring RB's points, 79th highest scoring WR's points, and 25th highest scoring TE's points. We then subtracted each of the top 30 QB's points, top 60 RB's points, top 78 WR's points, and top 24 TE's points by their position's respective replacement points to determine that position rank's value above replacement. In other words, if the top scoring QB scored 300 more points in 2016 than the replacement QB (31st highest scoring QB), then the top QB points above replacement was 300 points. We then summed all of these points to get the total points above replacement for the season (across all positions). This was typically somewhere from 17,000 to 18,000 points. After this, we assumed (as is the case in many fantasy football auction draft formats) that each team is allotted 200 dollars (in game currency) to draft the team that they want. For a 12 team league this yields 2400 dollars of total money. We then divided this total money by the total points produced in order to create a dollar per point ratio for the year. Next, we multiplied each player's points above replacement by this dollar per point ratio to arrive at the final result, dollar value above replacement. Finally, we averaged each position rank value above replacement over the past 10 years (e.g. average all dollar value above replacement values of the 23rd RB over the past 10 years) to get a summary of the data and determine the most valuable position ranks overall.

III. TEAM RESPONSIBILITIES

Team Lead: Trent Florey

A. Gathering Data

This will be performed by Caitlin and Jake. They will use Yahoo Sports API to retrieve the necessary data needed to perform the analysis.

B. Performing Analysis

Once the data has been retrieved, Parker and Jacob will perform our specified analysis using our replacement value methodology.

IV. TIMELINE AND MILESTONES

A. Week 1

Determine objectives and show all team members the purpose of the project

B. Week 2

Gather data from sports API

C. Week 3

Convert data into values above replacement

D. Week 4

Perform calculations to determine dollar value of position rankings

E. Week 5

Convert these calculations to excel sheet to analyze trends

F. Week 6

Build charts of this data to visually represent the trends we found

G. Week 7

Present findings in human readable format (jupyter notebook) to show what has been learned.

V. RESULTS

Our results showed that over the past 10 years, the top ranked QBs were the most valuable players based on our league parameters. After this, the top ranked RBs were the next most valuable alternating with the next tier of QBs. The value of WRs followed with a much less steep drop in value, such that over time the WRs of the same rank as middle tier QBs and RBs were of equal value until they eventually became more valuable at the same rank.This has major implications for fantasy football draft strategy as it suggests that the first several picks should be the top ranked QBs. It has been conventional wisdom to pick a top RB for the first picks of the draft, but our findings seem to say that while top RBs are still quite valuable, top ranked QBs provide the most value to a team.

VI. ISSUES

The only issue we ran into was with the API. We wanted to use a Yahoo Fantasy Football API, but there were none with the information we needed for our analysis.

VII. FUTURE WORK

In the future, there are other algorithms we could create to find more patterns in fantasy football. Our next option would be to factor in previous points players have scored and see if there's a trend with certain players.