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The Value of Running Backs

The running back is a position on the offensive unit of a football team. They are positioned in the backfield behind the quarterback and the offensive line. The primary role of the running back is to carry the football and advance it towards the opponents end zone. Running backs maye also be used as receivers in the passing game or as blocker to protect the quarterback. The goal of our project was to measure the value of the running back with respect to team winning and success.

The first method used to assess running back value was consistency. To quantify if they were consistent we created a usage metric which can be computed as follows: (Total Rushing Yards + Total Receiving Yards) / (Team Total Yards). If their percentage is high it indicates that their usage is high and vice versa. We chose eight out of ten of the running backs and plotted their usage over time. It is clear from the visualization we created that none of the running backs were able to maintain their consistency. Many factors influenced their consistency but the most important and common was injury.

For the second method, we looked at Super Bowl champions and their running back usage. The league average for all the years measured is 13%. In 2019, when the Chiefs won the Super Bowl, their starting RB Darrel Williams had a usage rate of 4.92%. In 2020, when the Buccaneers won the Super Bowl, their starting RB Leonard Fournette had a usage rate of 9.88%. Interestingly, 2020 was Fournette's lowest usage rate, yet, that was the year they won the Super Bowl. In 2021, when the Rams won the super bowl, their starting RB Darell Henderson had a usage rate of 12.6%. All the recent Super Bowl winners have had starting RBs with a usage rate lower than the league average.

The third method used to assess running backs was YPC. This is a metric that we calculated by dividing the total yards of each player by their total rushing attempts. We created two visualizations showing that plenty of running backs have backups with the same YPC as them. Additionally, the players with the highest YPC are not the ones that are typically considered to be the "stars", but rather, they are on teams that use a rotation of running backs.

The fourth and final method entailed us establishing the top 10 teams with the most rushing yards from 2019-2021. We then proceeded to filter each team for their running backs with most rushing yards and highest yards per carry. We ensured that each running back played for that respective team from 2019-2021. We then calculated each team's winning percentage with and without their "star" running back. For the most part, our findings were quite consistent. Most of the teams had a relatively similar winning percentage with and without the running back, with two extreme outliers: the Packers and the Patriots. Finally, we took the mean of the percentages and created a comprehensive statistic. For the 10 teams, the winning percentage with their star running back was 56%, while the winning percentage without their star running back was 61%. While a smaller sample size, they had a higher winning percentage with their backup running backs.

In retrospect, we assessed the consistency, YPC, super bowl champions, and winning percentage with and without star running backs and concluded that teams should not sign running backs to big deals. Our visualizations demonstrate the points that running backs are not consistent, their YPC is rarely better than their backups, superbowl winners had a starting running back with a lower usage rate than league average, and the winning percentage is essentially the same without the star running back. Therefore, we believe that teams should focus on investing in other positions as RBs are replaceable.