

An Analysis into Understanding the Double Dip in Football

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1. Introduction

Similar to many other sports, football is a game of possessions. More possessions leads to more scoring, and more scoring leads to a higher chance of winning. Stemming from this logic, how can teams ensure that they have the maximum amount of possessions per game? One answer to this question would be to generate more turnovers. A turnover automatically allows a team to gain possession while guaranteeing that the other team does not score on their previous drive. However, teams cannot control how many turnovers they force per game. Typically, turnovers come as a result of the other team making a mistake. In comes a new method that guarantees an extra possession per game: the Double Dip. The idea of the Double Dip is one in which if a team receives the ball after the half, they are “double dipping” possessions by being the last team to have the ball before the half. In doing so, they are guaranteed to gain two straight possessions which is not a normal occurrence in football.

The double dip is an adapted form of the highly utilized strategy in basketball called the 2-for-1. The 2-for-1 is a concept where near the end of a quarter with less than a minute left, a team will take a quick shot to ensure they will gain the last possession of the quarter because their opponent is obligated to take a shot before the 24-second shot clock expires. This idea can be transformed and implemented in football as well. The hypothetical idea is that if a team gets the ball with less than 10 minutes left, if they force a quick drive and then force their opponent to take a quick drive as well, they can get the final possession of the half. The double dip component then comes into play if they also get the ball first after the half.

As a result of these hypothetical beliefs around the Double Dip, one question arises. How does a team even get the double dip? In order to inspect this, two aspects need to be investigated. First is how can a team control their own drive to get the double dip? Second is how can a team try to force the opposing team to give them the double dip?

2. Methods

In the analysis, the data used is publicly obtained data from the Pro Football Focus repository of college football games. The data contains all college football (FBS and FCS) games from the 2021-2022 and 2022-2023 seasons. The primary variables being investigated are time left on the clock, initial field position, initial expected points, and end result. These variables are being explored for the three drives of interest for the double dip: Second to last drive of the second quarter, Final drive of the second quarter, and First drive of the third quarter. The end result variable is transformed from strings of words to numerical points. Punts, fumbles, end of half, interceptions, turnover on downs, and missed field goal are all turned into 0. Field goal are made in 3, touchdown is made 6, safety is made -2, and interception-TD and Fumble TD are made -6. From this, a new variable called “points” is created which is the sum of the drive result from any given drive. Time left on the clock is transformed from the format minutes:seconds to only seconds. Field position is transformed from the typical format of field position (Example: -20 for own 20 yard line and 20 for opposing 20 yard line) to yards remaining to the endzone.

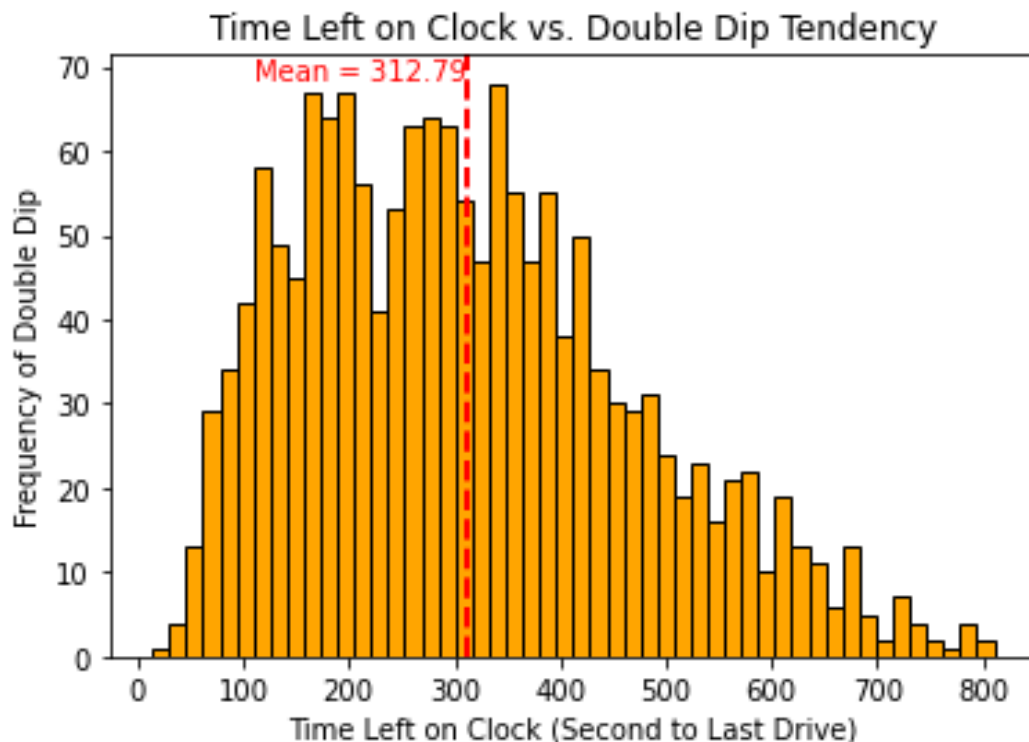
In filtering the data so that the dataset only had drives in which the double dip occurred, games were coupled by game id. For example, the second to last drive of the second quarter, the last drive of the second quarter, and first drive of the third quarter were all obtained for one team in one game. The opposing team had all of the same data collected. Those two teams were coupled together because they played against each other in that game. Drives that did not have a corresponding game id were discarded. In order to only get the games that contained a team that successfully executed the double dip, it was checked if the time of the final drive of the second quarter for one team was less than the other team and if the time of the first drive of the third quarter for that same team was greater than the other team. All games that fulfilled this requirement were labeled as part of the double dip dataset.

3. Analysis

3.1. Second to Last Drive Time

In order to understand the time aspect of how to get the double dip, two major aspects need to be studied. The first is how much time is left on the clock when a team gets the ball for their first play of their second to last drive. The second is how much time they should use on that second to last drive to ensure they get the ball again.

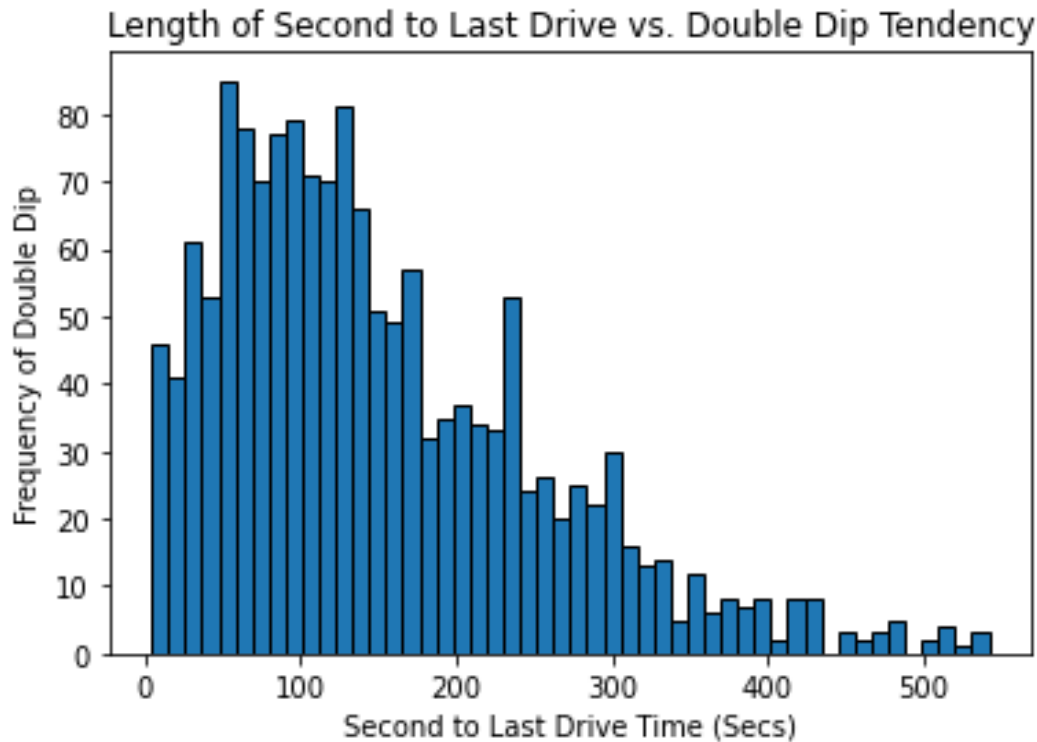
3.1.1. Time Left on Clock



This histogram displays the distribution of how much time left on the clock when a team got the ball for the second to last drive of the half and the frequency that they ended up successfully engaging in the double dip. The histogram shows a bulk of the data between around 150 seconds (2:30) left in the quarter to 400 seconds (6:40) left in the quarter. The mean of the distribution sits at the 312.79 second mark (5:12). The dropoff in frequency beyond 400 seconds can be attributed to there potentially being too much time and the majority of drives that start with 400+ seconds left are oftentimes the third to last drive not the second to last drive. There is a sharp increase in frequency right before the 150 second mark which indicates that below 150 seconds, there is too little time left and when getting the ball with that much time left, it will be the final drive of the half.

3.1.2 Length of Drive

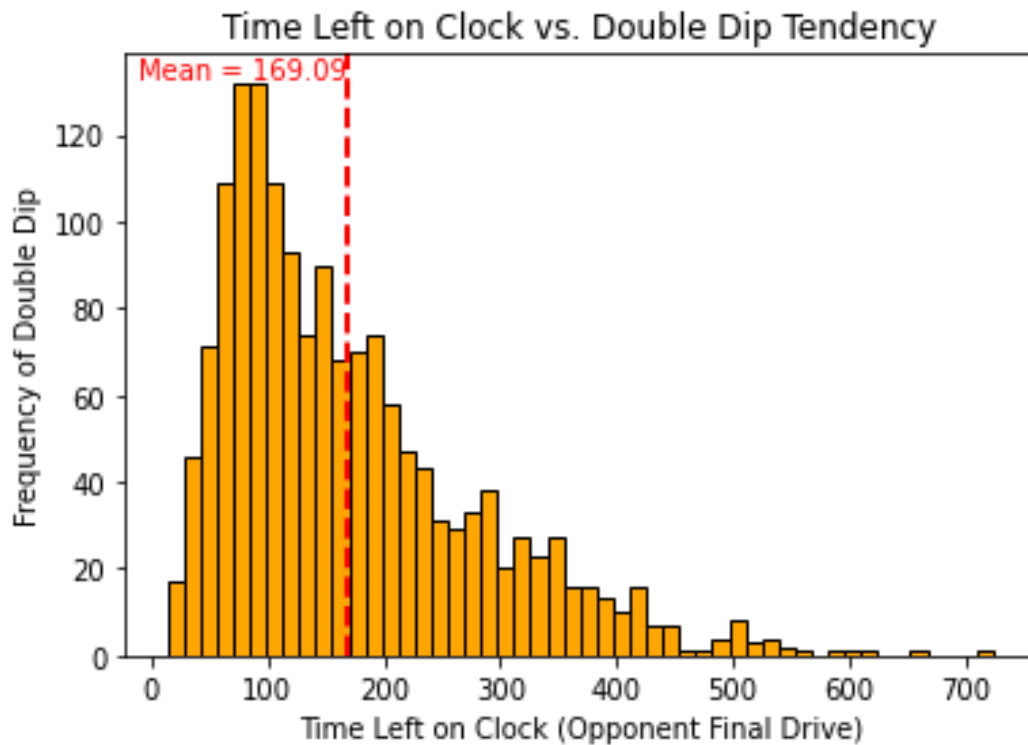
| Second to Last Drive Time (Sec) Summary Table | | | | | | |
|---|--------|-----|------|-------|-------|-----|
| Mean | Std | Min | 25% | 50% | 75% | Max |
| 150.83 | 103.65 | 4.0 | 72.0 | 127.0 | 213.0 | 542 |



The other factor of the second to last drive of a team in the second quarter is controlling how long their drive is. This is a part of the game that they can actually manipulate with play calling and time management. Both the histogram and that summary statistic table show that the distribution is centered around the 127 second mark (2:07). In addition, the average length of drive for this second to last drive is around 150 seconds (2:30). This indicates that on average, teams that successfully get the double dip will have a drive in between 2-3 minutes. Subtracting this from the average time of receiving the ball (312 seconds), the opposing team should receive the ball for their last drive with about 132 (2:12) to 192 (3:12) seconds left on the clock. The skew towards the right indicates that the longer the second to last drive for a team in the second quarter, the less likely they are to successfully get the double dip.

3.2. Opponent Final Drive Time

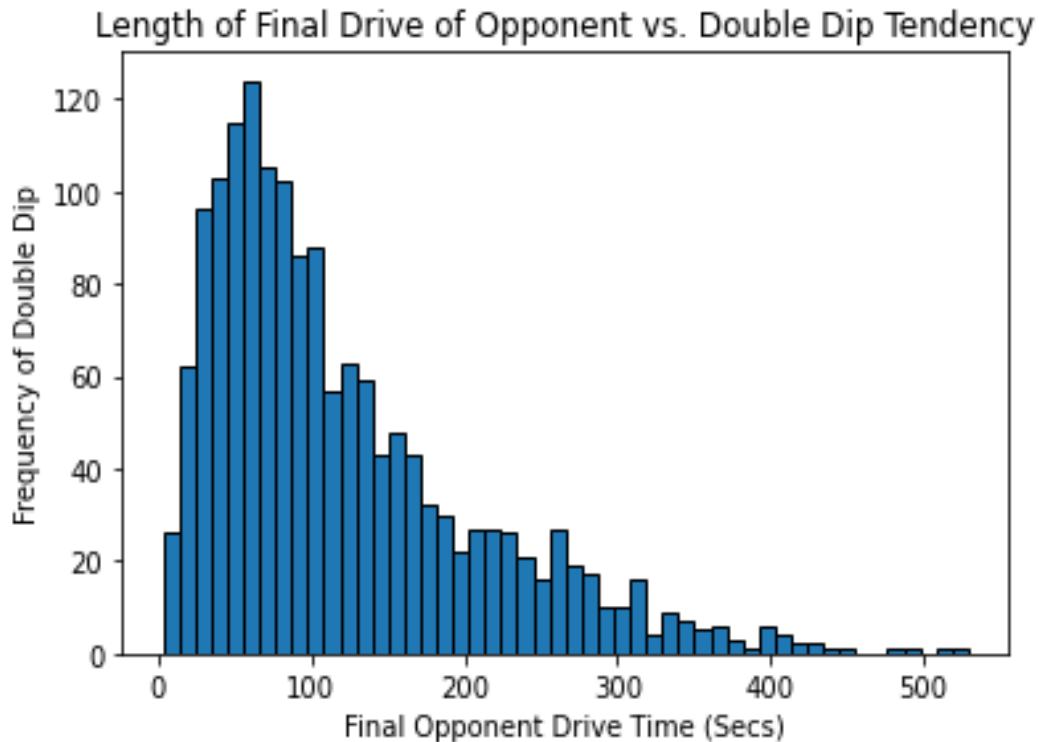
3.2.1 Time Left on Clock



This histogram shows the distribution time of first play of the final drive of the opponent during the second quarter. The distribution is centered around the 100 second (1:40) mark and the mean is at 169.09 seconds (2:49). The mean time marking is consistent with what the previous section says the opposing team should have left on the clock (between 2:12 and 3:12). This histogram demonstrates a skew towards the higher side of the distribution indicating that the later the opposing team gets the ball, the more likely it is that the double dip will occur for the team attempting to get it. A potential reason that the frequency of the double dip is so high on the low end of the histogram is that when teams typically receive the ball around that time stamp, they will throw the ball to gain quick yardage. This has potential for incompletions and the stoppage of the clock. As a result the other team receives the ball and the double dip is successfully implemented.

3.2.2 Length of Drive

| Opponent Final Drive Time (Sec) Summary Table | | | | | | |
|---|-------|-----|------|------|-------|-------|
| Mean | Std | Min | 25% | 50% | 75% | Max |
| 119.66 | 88.08 | 3.0 | 55.0 | 94.0 | 161.0 | 529.0 |



After investigating how much time the opposing team should have before starting their final drive, it should be looked at how much time they should be able to chew off to ensure the double dip. The data indicate that the median amount of time for this is 94 seconds (1:34) and the mean amount of time is 119.66 (1:59). These times are much lower than the data for the second to last drive times. With a skew to the right, it can be assumed that the more time the opposing team gets for their final drive, the less likely the double dip is to occur. If the mean time is subtracted from the initial time getting the ball (169 - 119), the team that is trying to get the double dip should get the ball with 50 seconds left.

4. Conclusion

The initial question that was investigated was: what is the optimal way to ensure a team gets the double dip? This question was answered in two parts. The first was what a team can control being their second to last possession of the second quarter. The second was what a team can try to force, which is the opposing team's final possession of the second quarter. Each of these components were split into two subfunctions: Time of receiving the ball and Length of their drive. Results indicate that receiving the ball for the second to last drive of the second quarter at around the 5 minute mark should allow a team to successfully implement the double dip. From there, the team should take 2-3 minutes on their drive. A 2-3 minute drive is relatively short for a drive especially if they want to drive the field and score. This means that play calling needs to use the 2 minute drill situation. In this situation, if a drive is shorter than 2-3 minutes and the drive fails to score, this is better than a longer drive because the double dip will not be achieved. In looking at the opposing team's time situation, the results demonstrate that if they receive the ball with 169 seconds (2:49) or more on the clock, the possibility of getting the double dip is in good standing. Forcing the opposing team to take a very quick drive of around two minutes or less makes it most possible to get the double dip. Coaches need to call plays that have probability of getting their defense off the field quickly. However, these plays may be high risk.

Methods in successfully achieving the double dip from a time perspective have been studied. Next, the efficacy of the double dip needs to be investigated. Factors that can be looked at are actual scoring benefits of the double dip and how field position affects it.