

NFL TOUCHDOWNS!

MSDS 7330 – 404

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INTRODUCTION

ABSTRACT

This study investigates how the average and variance of yards gained impacts a given team's ability to get touchdowns in the NFL. The theory is that teams with high average yards gained, but with low variance, would get more touchdowns than those with higher average yards gained, but higher variance. In other words, consistency is more important than big plays.

THE DATA

The data are the 2015 play-by-play records available at Kaggle. The uncompressed, raw file is 14.7 MB and is comprised of 46,129 rows describing every NFL play run over the 2015 season, by 32 teams. There are 65 columns that include multiple values, including text description of the play / penalty, names of players, touchdown boolean flags, down markers, timestamps, game ids, and yardages.

THE TOOLS

For this analysis, we used MongoDB for data mining and basic statistics, and R for data visualization and Markdown. We originally had planned on using MySQL on Bluemix, but abandoned it in favor of Mongo after some serious issues whilst loading the data.

COMPUTER/PROGRAM SPECIFICATIONS

MONGODB

Bluemix Storage: 1 GB

Data Size: 14.3 MB

Database Server: Compose for
MongoDB-jj

Database Version: 3.2.11

Database Location: US South

Cloud Hosting Service: IBM Bluemix

1 x 2.0 GHz Cores

1 GB RAM

OS X EL CAPITAN

VERSION 10.11.6

MacBook Pro (Retina 15-inch, Mid
2015)

Processor: 2.2 GHz Intel Core i7

Memory: 16 GB 1600 MHz DDR3

Graphics: Intel Iris Pro 1536 MB

PREVIOUS WORK

- Underrated NFL Stats
 - Based on 2010 season
 - Looks at the relationship between big-plays allowed and touchdowns allowed
 - Big-play defined as 20 or more yards
- How to Quantify the NFL
 - Based on 2015 season
 - Looks at five different statistics – we focus on big-play percentage
 - Big-play defined as runs of more than 10 yards or passes of more than 25 yards

"UNDERRATED NFL STATS"

BEST TEAMS AT PREVENTING BIG-PLAYS

- 1. Steelers** (36, 5 TDs)
- 2. Chargers** (43, 5 TDs)
- 3. Falcons** (48, 9 TDs)
- 4. Vikings** (49, 9 TDs)
- 5. Buccaneers** (51, 9 TDs)

WORST TEAMS AT PREVENTING BIG-PLAYS

- 32. Broncos** (84, 20 TDs)
- 31. Seahawks** (76, 14 TDs)
- 30. Cardinals** (74, 14 TDs)
- 29. Jaguars** (72, 16 TDs)
- 28. Redskins** (70, 10 TDs)

"UNDERRATED NFL STATS" (CONT.)

KEY INSIGHTS

- "Only six of [the top ten teams] finished .500 or better last season, but those six teams fall in the top seven on the list."
- "Of [the bottom ten teams], only Seattle, with a sub-.500 record, and Philadelphia made the playoffs."

"HOW TO QUANTIFY THE NFL"

KEY INSIGHTS

- Teams with the best big-play percentage were the Bills, Vikings, Seahawks, Panthers, Chiefs, and Steelers (roughly 9% of all plays were big-plays).
- Five of these six teams made the playoffs.

EXPANDING UPON PREVIOUS WORK

Ultimately, we are looking to expand upon the role of big-plays in the NFL. Previous work looked more at the defensive side whereas we are focusing on the offensive side of the equation. Furthermore, we seek to discover the importance of consistency in relation to big-plays. We want to know if smaller but more consistent gains are more effective than larger but more irregular gains.

DATA & ANALYSIS



REFERENCES

- 2015 NFL Data from Kaggle
 - <https://www.kaggle.com/maxhorowitz/nflplaybyplay2015>
- NFL Articles
 - <https://www.theringer.com/2016/8/4/16038580/five-better-nfl-stats-teddy-bridgewater-dwight-freeney-187cb19326f1>
 - <http://www.sportingnews.com/nfl/news/191984-underrated-nfl-stats-big-plays-allowed>
- GitHub Link
 - <https://github.com/tigerninaproject1/nfl>