Offense Pass Completion as a Predictor of NFL Score Differential*

A comparision betweeen

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Measuring the importance of an NFL team's offense by

Introduction

Increase in quarterback pay as % of salary cap

Data

Methods

I fit the simple linear regression model

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

to understand the relationship between our predictor variable, offense completion percentage, and our outcome variable, score-differential. In this model, X_i represents offense completion percentage of the ith observation and Y_i represents the score-differential of the ith outcome.β_0 represents the intercept coefficient, what we expect score-differential to be when the offense has a completion percentage of 0%. β_1 represents the slope coefficient, what we expect the increase in score-differential will be for every percent increase in completion percentage. In this model, we assume the error term, ε_i to be random with mean 0 and finite variance σ^2.

I implemented this analysis using the R programming language (**R_language?**)

*Project repository available at: https://github.com/peteragao/MATH261A-project-template.

Results

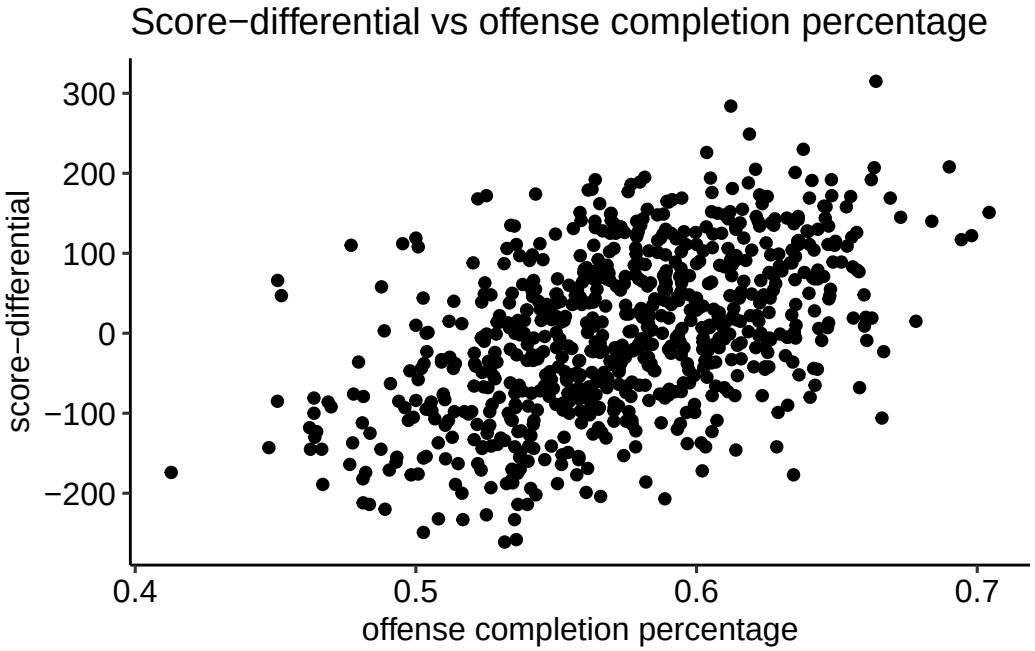

Figure 1: Scatter plot with offense completion percentage as the predictor values and score-differential as the outcome values

weakness: Quality of receiver. This regression analysis also ignores the quality of the team's defense. Sc

References

https://www.cbssports.com/nfl/news/highest-paid-nfl-qbs-by-salary-cap-percentage-top-2024-bargains-long-term-steals-most-expensive-starters/

https://www.nytimes.com/athletic/6576049/2025/08/28/nfl-qb-contracts-mahomes-allen-prescott-burrow/