The National Football League

Predicting NFL Outcomes

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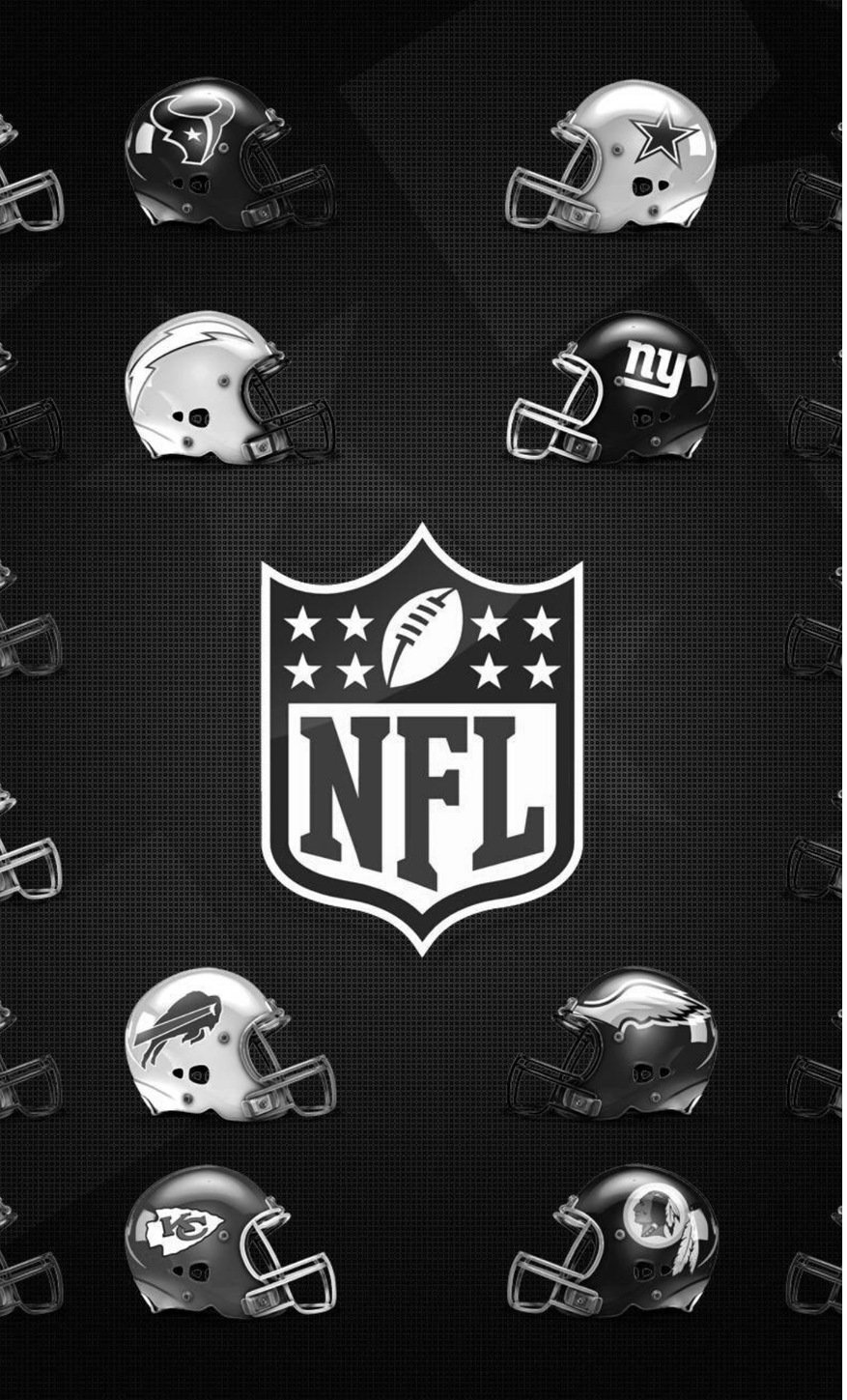


The Problem

- The NFL is the world's **highest grossing sports organization**
- Projections indicate that the NFL’s revenue will increase to over **$25 billion** per year by 2026
- The Sports Betting Market reached a total estimated value of **$242 billion** in 2023
- Approximately **$100 billion of legal wagers** were placed on NFL games in 2022 ($7.6 billion on Super Bowl LVII)
- The ability to anticipate winners and spreads offers **substantial monetary advantages.**

Solution

Predictive Models

History	
Football Outsiders	DVOA
Bill James	OSA
Advanced Football Analytics	EPA
FiveThirtyEight	ELO

Our Model	
NFLpbp	Play-by-play data for every season
Critical Metrics	Yards Gained, EPA, YPC, Points
Aim	Harness the power of machine learning (XGBoost)
GOAL	**Predict WINNERS of NFL Games**

Results

Xgboost

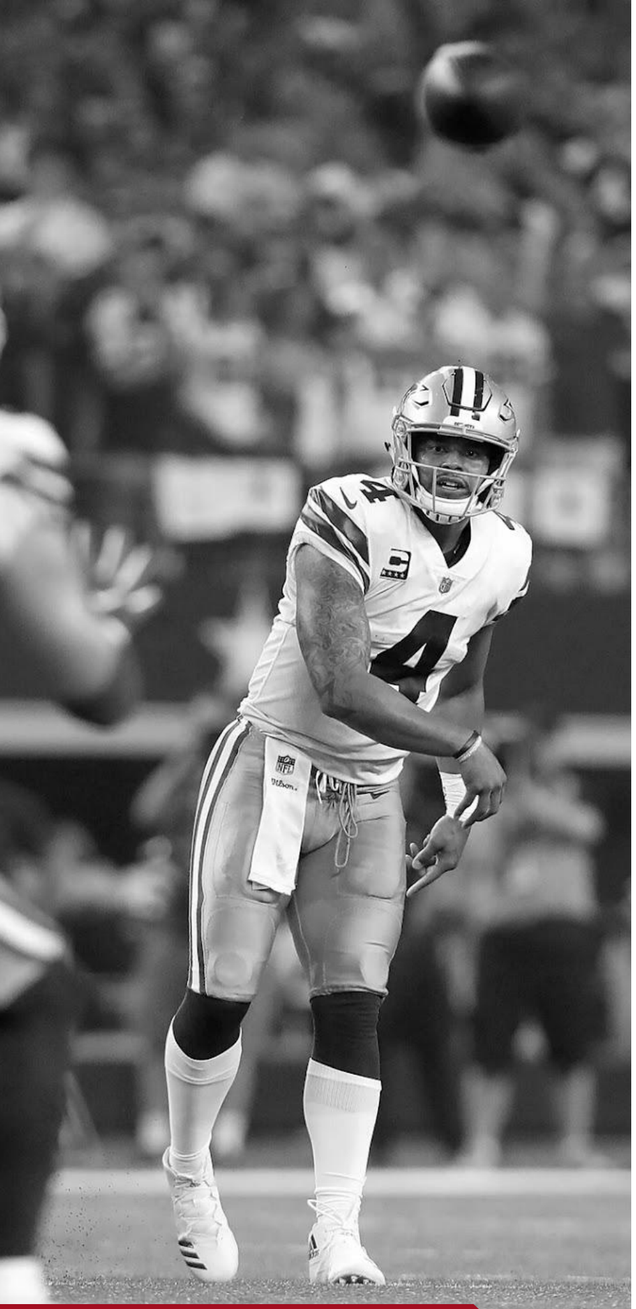
We ran two regression models XGBoost and Random Forest to determine which one was more effective.

58.03%

The accuracy of our XGBoost model was .5803. The accuracy of the random forest was only .5028.

Interceptions

The most important variable within our model is interceptions thrown followed closely by number of plays, and mean epa.



Rationale

Unpredictability

Inherent nature of sports is **unpredictable**
The difference between teams is **marginal** at best
Many **sources of variation** including refs, weather, penalties, and injuries
At the granular level the inputs are human and **humans are not consistent**
Metrics that are important but excluded **special teams, defensive statistics**

Where is your team?