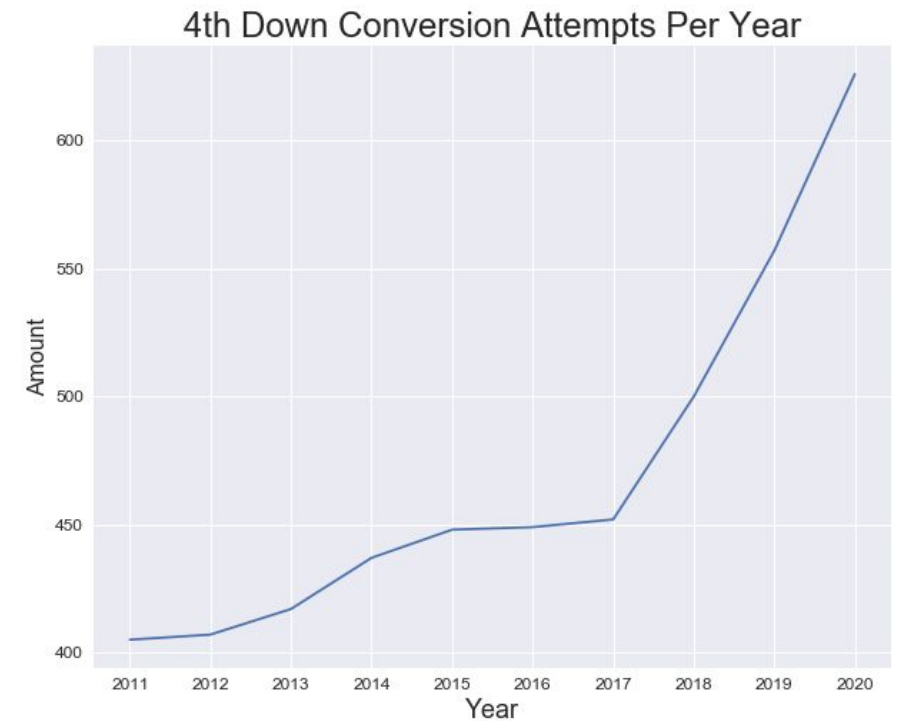# NFL 4th Down Efficiency

By Dave Brown

Business Problem

To create a machine learning algorithm that can predict the likelihood of a success or failure on a 4th down conversion attempt.

4th Down Conversion Attempts Per Year

The Data

- nflfastR

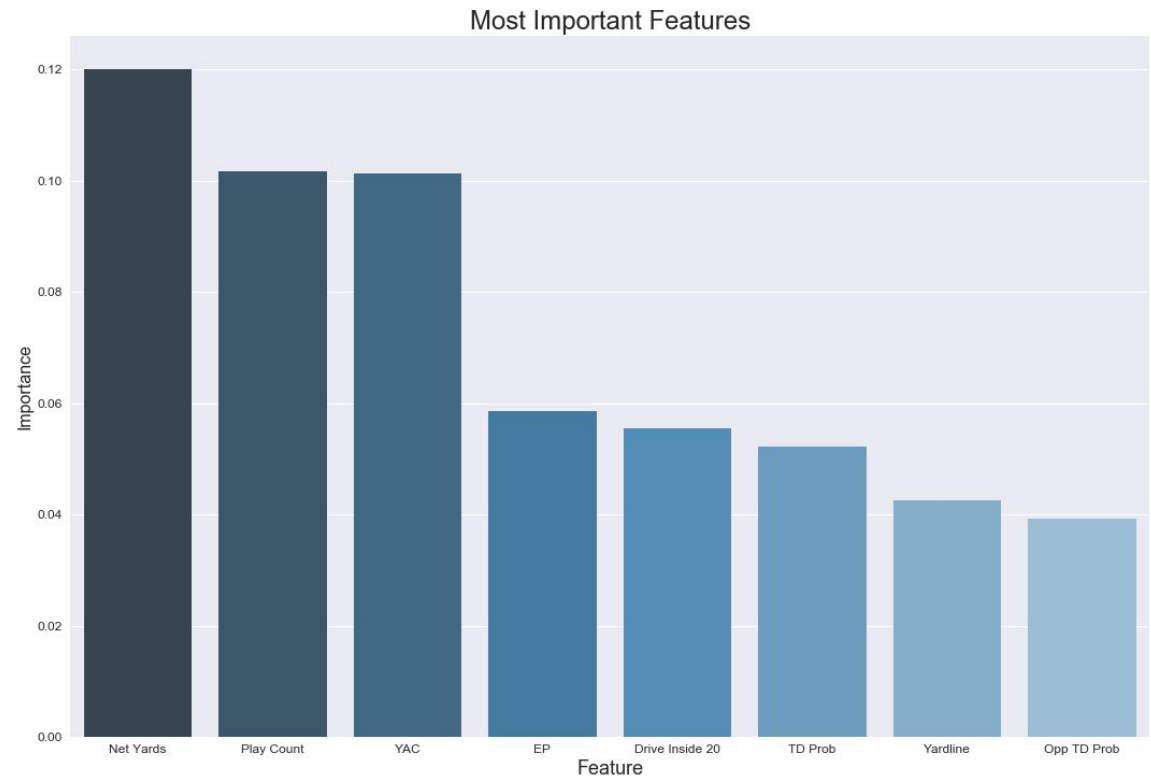- 2011 to 2020

- No Special Teams

- Offense/Defense Ranks

The Steps

1. Explore

2. Clean

3. Feature engineer
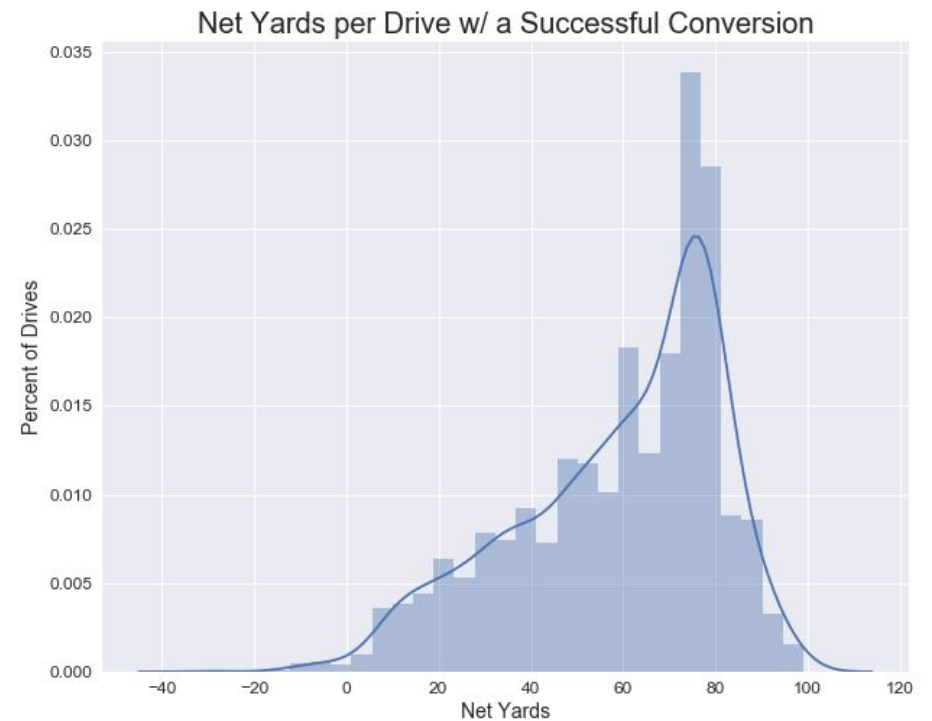
4. Transform

5. Model

6. Best fit

Results

- 83.26% Testing Accuracy

- 88.16% Precision

Most Important Features

Recommendations

1. If it's during a sustained drive, go for it

2. Throw the ball

3. Trust the numbers

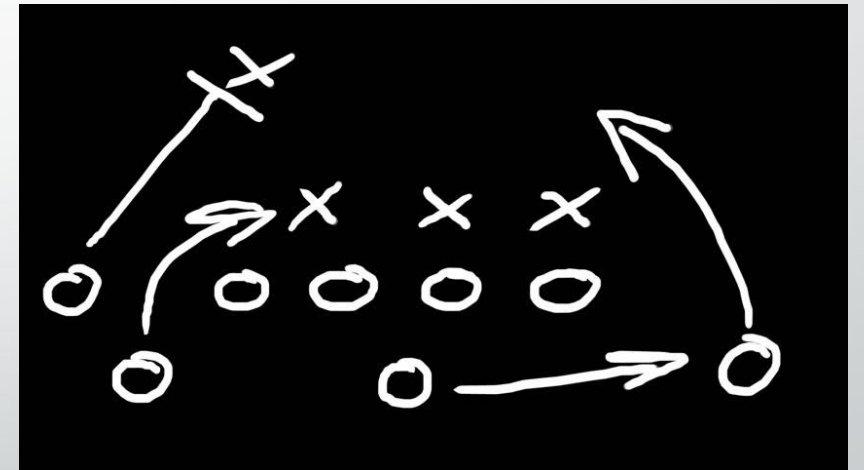Net Yards per Drive w/ a Successful Conversion

Limitations

- Organizational change

- New philosophies

- New personnel

Further Research

- Weather, stadium type and surface

- Coaching rank and impact

- Individual player impact

- Regular season vs. postseason

- Game trends

Thank you!

Any questions?

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