

# Predicting Likelihood of a successful Quarterback Pass in the NFL based on Player and Environmental Attributes

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## **Abstract**

The NFL currently uses a rating known as the *Passer rating* which has been used as the official formula to determine the passing leader. This rating does not assess Quarterbacks, but passers in general regardless of their position on the team. In addition to this, the passer rating does not take into consideration fumbles, sacks, rushing statistics or passing under high stress situations such as in the third or fourth down. It also does not take into consideration the physical attributes that would make a player ideal for certain positions, e.g. a player's height and weight.

### **1. What problem are you trying to solve?**

I would like to predict the likelihood of a successful pass from a Quarterback based on certain variables. While the passer rating is a good indicator of success for a team, it does not assess individual quarterbacks on how well they pass to their team members.

### **2. Who is your client and why do they care about this problem?**

Possible clients include sports bettors, sports analysts, sports commentators and the decision makers on the NFL teams. I think they would be interested in this project to make strategic decisions (e.g. who to place in fantasy sports, or who to draft as the next quarterback) or for further analysis to stir discussions.

### **3. What data are you going to use for this? How will you acquire this data?**

The project will use player statistics from the NFL by way of a python module called nflgame. It will also scrape weather data from weather underground website.

### **4. In brief, outline your approach to solving this problem.**

The data will be downloaded/scraped from the sources listed above. Using python, a parser will be implemented to put the data together into a pandas dataframe for further analysis.

### **5. What are your deliverables?**

ipython notebook with code

Paper of an academic nature

Slide deck with exploratory data analysis, and predictions about passes on the 2015 playoff games with data based on the regular season.