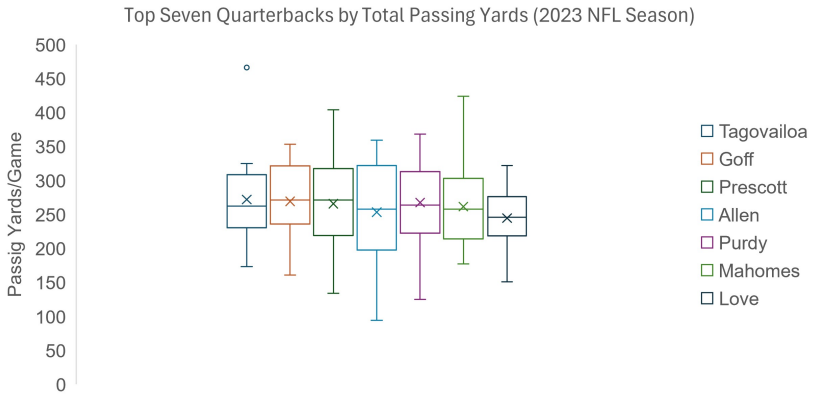
SAVANNAH math labs

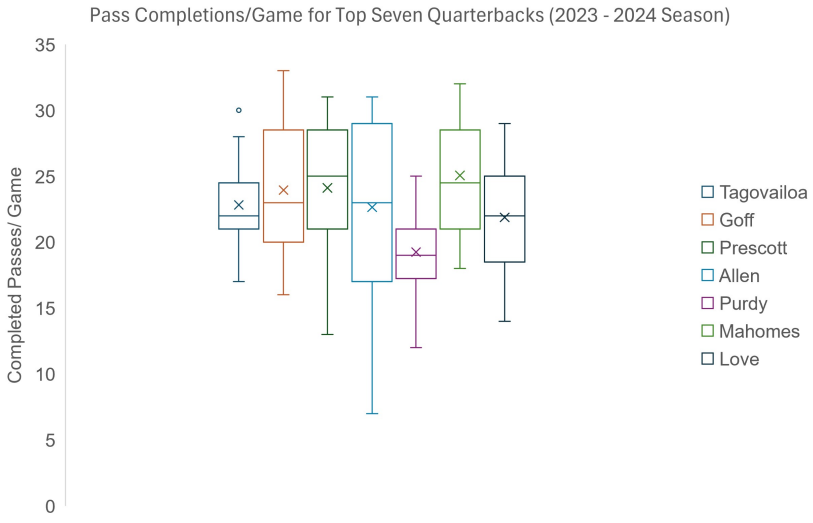
Spotlight on Data Science: Who is the GOAT?

Which NFL quarterback is the Greatest Of All Time (GOAT)? In this graphic, Patrick Mahomes doesn't appear to stand out at first glance.



Mahomes' average of 261 passing yards in the 2023 season is on par with the other top six quarterbacks. He had one stand-out game against the L.A. Chargers, in which he threw 424 passing yards. The inter-quartile range (IQR) of total passing yards for the season is one measure of a quarterback's consistency. In this regard, Mahomes' IQR of 78 total passing yards is also on par with the other top six quarterbacks.

However, the following graphic illustrating pass completions puts Mahomes on top.



Mahomes had the highest average number of pass completions per game (Average = 24.5) of all top seven quarterbacks, with a low of 18 pass completions against the New York Jets and a high of 32 pass completions against the L.A. Chargers. And he went on to win Superbowl LVIII (Superbowl game in 2024) for the Kansas City Chiefs!

Project Details

In this project, you get to decide who is the GOAT in a sport of your choice. It can be baseball, basketball, football, tennis, or something else. Let's get started!

a) Which sport and player position are you interested in? Identify a quantitative variable(s) that optimally reflects player performance in that sport and player position.

b) Select a group of GOAT contenders in your chosen sport. Feel free to compare players from different sports eras (i.e. how does Troy Aikman match up to Tom Brady?).

c) Identify a data source. Some suggestions are:

https://www.nfl.com/stats/player-stats/

https://www.mlb.com/stats/

https://www.nba.com/stats/players

d) Assemble a data set for your group of GOAT contenders, taking note of key identifiers (i.e. year, number of games played). Make sure the quantitative variable(s) you select are comparable for all players.

e) Compute the numerical summaries of sample mean ($\bar{X}$), sample median (M), mode, range (R) and sample standard deviation (s_X) for each player with respect to your selected quantitative variable(s).

f) Create side-by-side box plots and histograms for the players with respect to the selected quantitative variable(s).

g) Review your numerical summaries and graphics and decide who is the GOAT!

h) Prepare a short report, making your case for "Who is the GOAT?".