

Exploratory Analysis of Quarterback behavior during the NFL '05 Season.



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Introduction

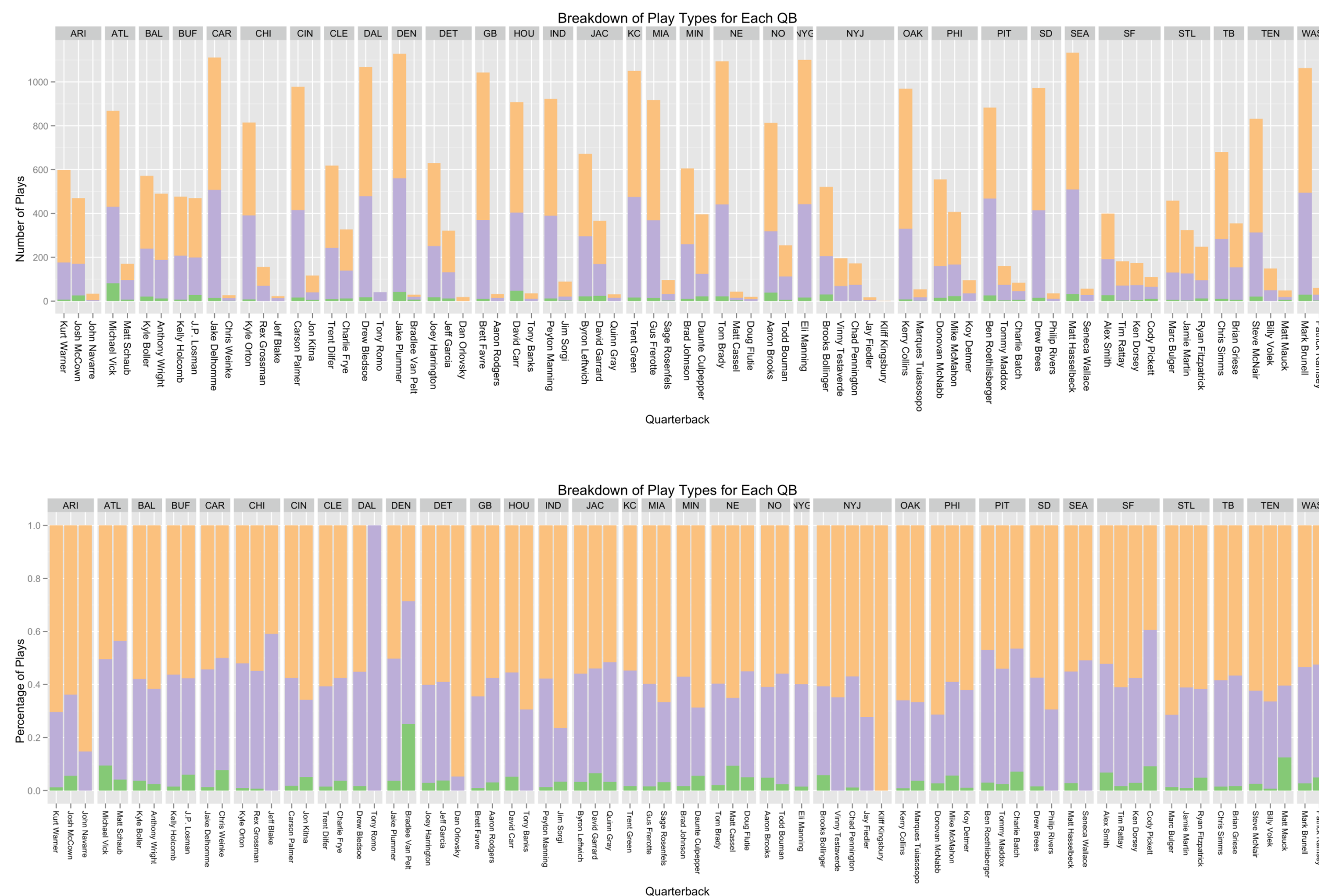
- While a Quarterback has hundreds of plays at his disposal during an American football game, he ultimately chooses between three basic play types – passing, handing the ball off, and running the ball himself.
- Plays are likely chosen for unique situations, but we hypothesize that some quarterbacks may favor one play type over another.
- Similarly, we expect that the plays that put the QB at the most risk of injury are less likely to occur, and even less so as the QB ages.
- Finally, while the strategic option is to pass to the receiver with the highest probability of completion, we hypothesize that such decisions are never that simple and that there can be complicated confounds affecting passing behavior.

Dataset

- Data was acquired from the Football Project and contained event data (plays), win/loss records, and player and team demographics for the 2005 NFL season.
- There were 43,573 events for 32 teams and 4,124 players across 267 games.
- Each team in the dataset played exactly 16 games, and there are 8 teams from each division (East, North, South, West), split equally among the conferences (NFC and AFC) in the dataset.

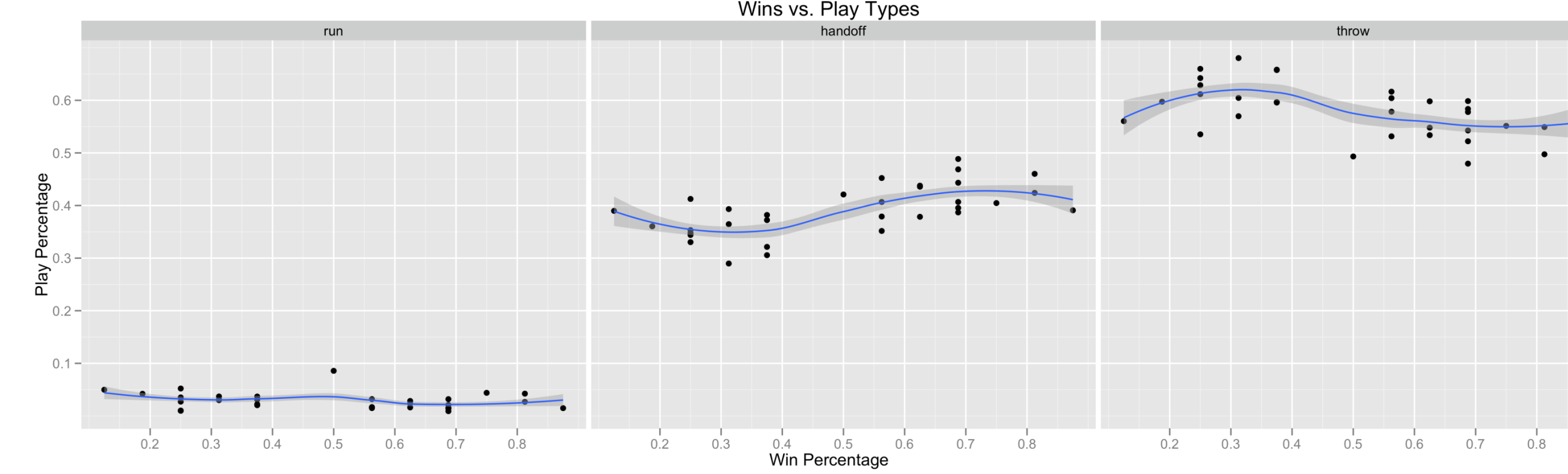
Quarterback Play Style

- During the 2005 season, passing plays occurred 58% of the time, with handing the ball off at 39%.
- Only 3% of plays were run by the quarterback himself, likely due to the decreased potential yards, and increased risk the QB relative to passing.
- For QBs with more than 100 plays in the season, these ratios barely fluctuate.
- A notable exception is Michael Vick on the Atlanta Falcons with almost 10% running plays and only 50% passing plays. He is known as a “running QB”.



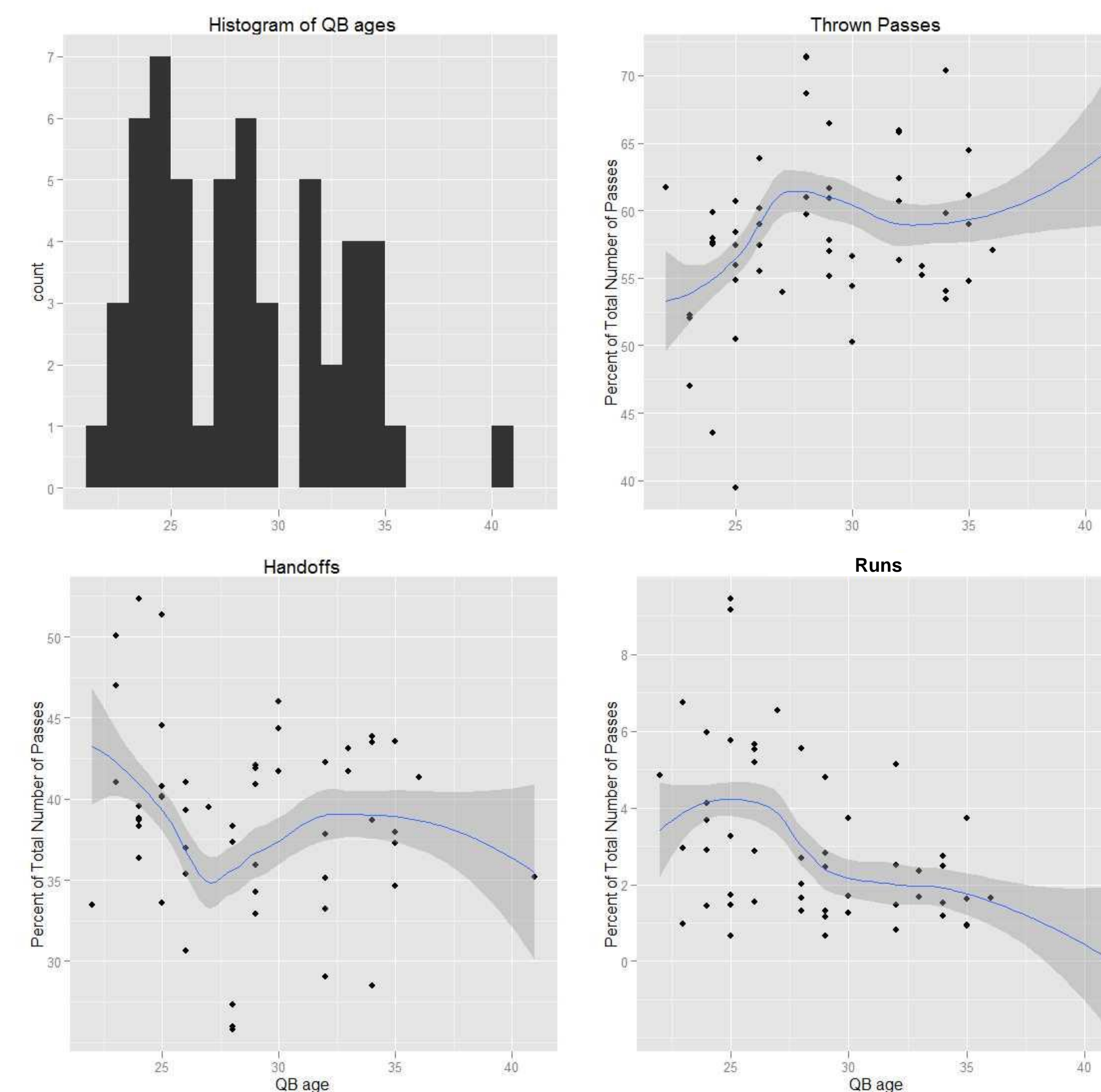
Team Play Style

- The play style for entire teams closely mimics the play style of primary QBs (not shown) with ATL, HOU, and SF having the highest run percentages.
- Win percentages appear marginally higher for teams that can effectively utilize more hand-off plays.



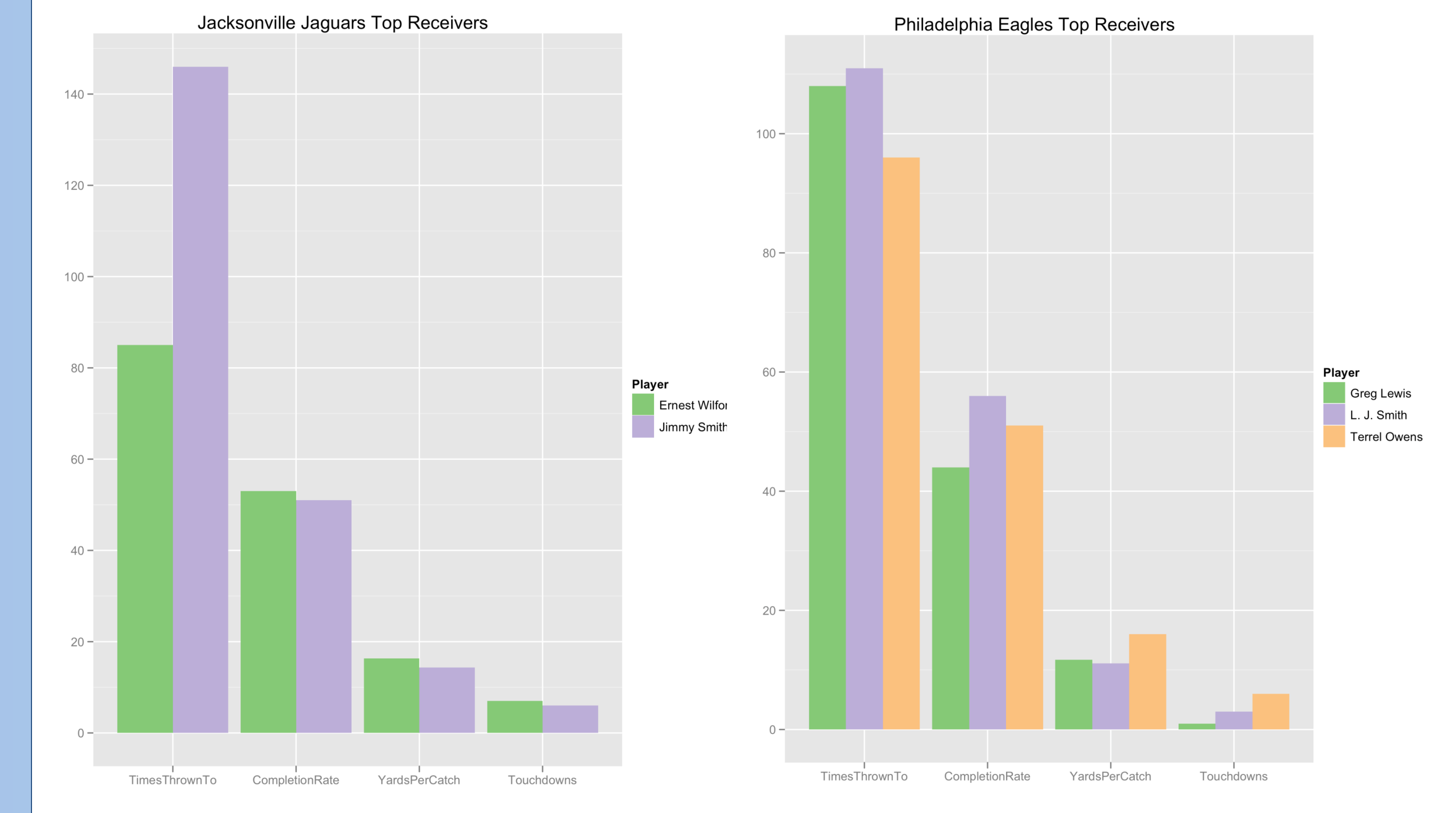
Does QB Age Affect Play Style?

- Looking at the ages of QBs in the NFL, it is clear that most are in their twenties and early thirties.
- Play style analysis was limited to those QBs with at least 100 plays in the season, to ensure an accurate representation of their favored styles.
- The percentage of thrown passes tends to increase as the QB age increases.
- Handoffs and runs tend to decrease as QB age increases.
- Thus older, more experienced QBs tend to be more comfortable with thrown passes than with rushing or running.
- However, the presence of variability indicates that age is not the only factor influencing QB play style.



Do QBs throw to best receivers?

- For the most part, the best receivers (most yards, etc.) are the ones that are thrown to most.
- 16 of the 32 teams' favorite receiver had a lower completion rate than the 2nd most thrown to receiver.
- A better or more relied on receiver would be thrown deeper passes or harder passes to catch, and since these are more difficult it would not be unreasonable for the favorite receiver to have a lower rate.
- In terms of yards per catch, only 2 teams had 2nd receivers with more yards/catch.
- Examining these teams, and a third, the Philadelphia Eagles, revealed a large disparity (see below).
- The Philadelphia Eagles receiver Terrell Owens had far more touchdowns than either of the top receivers and he also had far more yards/catch and a higher completion rate than the 2nd receiver.
- As explanation, Terrell Owens served a 4 game suspension (25% of data), and had a very public dispute with the team and QB, on top of Jimmy Smith being considered a superstar based on past productivity.



Summary

- Play style is dominated by passing and hand-offs, with only a very select group of QBs consistently making running plays themselves.
- QBs in the NFL favor passing plays, especially as they age beyond 30 years.
- The best receivers are favored by QBs with rare exception. We have shown one case where off-field player interaction and politics likely affected the QBs better judgment with Terrell Owens and The Philadelphia Eagles.

Citations/Sources

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