Who Was the Most Clutch NFL Quarterback Between 2009 and 2018?

Quarterback is generally regarded as football's most difficult position, requiring deep understanding of strategy, lightning-quick reaction times, and immense poise under pressure. No football player is more relied upon to produce wins and serve as the principal leader of the team. When a game is on the line and a team has a chance to score the game-winning points, all eyes are intently watching how the quarterback handles a game-defining (sometimes career-defining) moment. Those who fail to win are lambasted. Those who succeed are celebrated as being "clutch."

So who were the most clutch quarterbacks in the NFL? Here, I answer this question using concrete, reliable data. The data was collected by a group of Carnegie Mellon University statistical researchers who built an R package to scrape and clean data from every NFL play between 2009 and 2018. The resulting data set, containing over 350,000 rows and 100 columns, presents opportunities to derive rich insights from NFL games.

Masters of the Two-Minute Drill

To define what "clutch" means in terms of the data, I started by looking at crunch-time scenarios, in which a team's offense has relatively little time to try to score points. The most common crunch-time scenario in football is the "two minute drill." This is defined as the last two minutes of each half of an NFL game, during which the team with possession of the ball is trying to score before the half ends. Given the offense only has two minutes or less, they run the two minute drill, involving faster-paced play, more passing, less time to adjust to the defense, and fewer substitutions. The quarterback plays a crucial role in the two minute drill: he has to call plays quickly, look for big gains while avoiding negative plays, and find the optimal outcome based on the specific situation and amount of time left.

(The following analysis was done in postgreSQL)

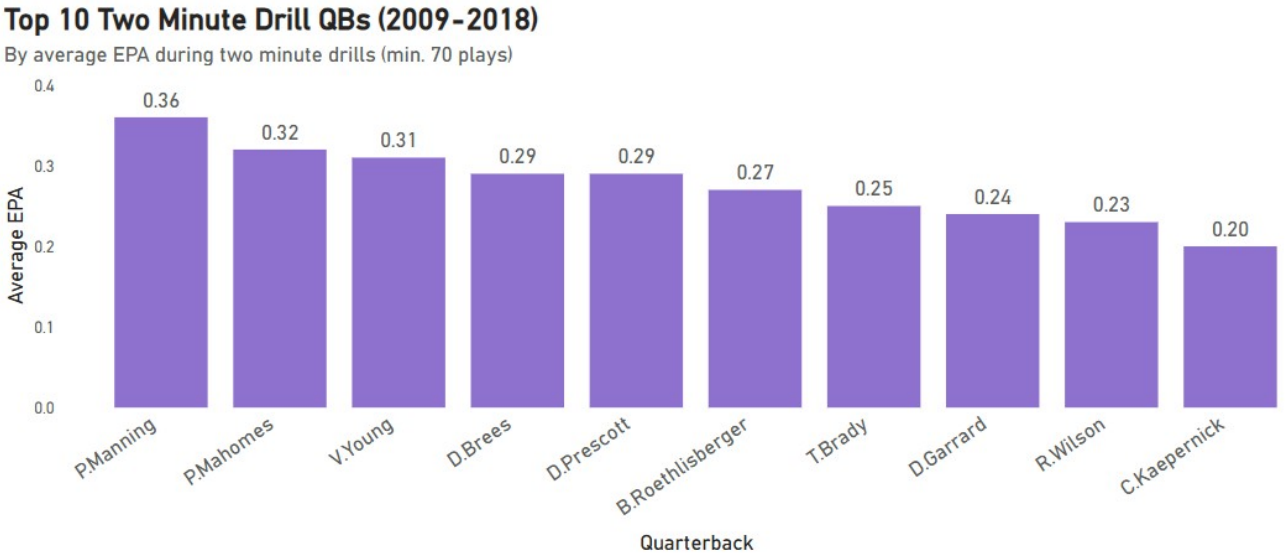
To find the most clutch quarterbacks, I started by looking at all NFL plays between 2009 and 2018 that occurred with 2 minutes or less in the half. These can be classified as two minute drill plays. Since I am analyzing the quarterback's role in two minute drills, I then filtered for plays in which the quarterback was directly involved in moving the ball, including both passing plays and quarterback runs. I identified two missing factors that needed to be considered. First, when a team is losing by an insurmountable gap in the final minutes of a game and that team is on offense, there is no crunch-time or two-minute drill. Both teams understand the game is essentially over, so the defense plays conservatively to lower injury risk and fatigue, while the offense mostly plays for pride and individual success. This is called "garbage time," the period of a game during which the outcome is essentially set and both the offense and defense have little incentive to play their hardest. Offensive performance often increases during garbage time compared to the rest of the game due to the lack of stakes. Second, on the flip side, when a team is winning in the final minutes of a game and that team is on offense, there is less or no incentive to score more points. The offense's goal shifts to playing conservatively and wasting time so the game ends faster. Even a team winning by one point with less than 2 minutes left in the game will typically employ a more conservative strategy, because running the clock out is generally a safer way to win than trying to extend the lead.

Therefore, plays in these two scenarios should not be considered when evaluating offensive performance in crunch time. To account for this, I filtered out all second-half two minute drills during which the team on offense was winning, or losing by more than 8 points (the maximum possible points scored in one drive). We are left with the plays under two minutes where the offense has an incentive to score points and thus run the two minute drill. (Note: the first half is not affected because it has no garbage time, because no matter the score both teams have an incentive to maximize points and have another half of the game to play.)

After narrowing down the appropriate set of plays, I decided to use "expected points added" to measure how good or bad a play is for the offense. Expected points added (EPA), which is already provided in the source data, measures the expected amount of points added (or lost) by each play. In other words, EPA quantifies the value of a play by measuring how much it increases or decreases a team's odds of scoring. For example, if a quarterback completes a 60-yard pass, this would greatly increase the team's chance of scoring, so the play would have a positive EPA of large magnitude. If a quarterback takes a sack and loses 8 yards, this would reduce the team's chance of scoring and would result in a negative EPA. EPA takes into account the context of the play, such as down, distance, and field position, resulting in a value that shows how good a play is **relative to expectation.**

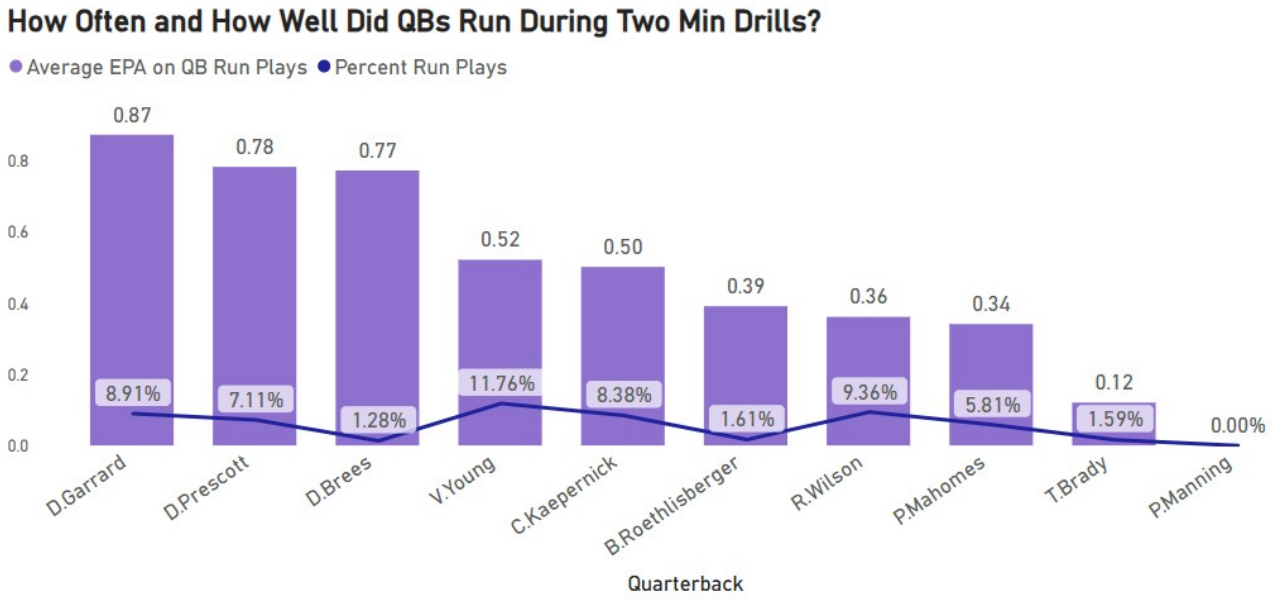
To show the quarterbacks that produce the greatest EPA, I took the appropriate set of plays, grouped them by quarterback, and calculated the average EPA per play for each quarterback. There was one more issue with this result: it included dozens of quarterbacks who only participated in a handful of two minute drill plays. These were likely backups or temporary starters who had limited experience in crunch time, and their sample size of plays is not nearly large enough to draw conclusions. To determine an appropriate sample size cutoff, I calculated the average number of two minute drill quarterback plays (excluding garbage time) that the average team had in one season. On average, an NFL team will run about 70 two minute drill plays involving the quarterback in one season. This means 70 plays is essentially one season's worth, so filtering on quarterbacks with 70 or more such plays will show the quarterbacks with at least one season's worth of experience running two minute drills.

By doing this, I found the top ten quarterbacks at the two minute drill between 2009 and 2018, shown in the chart below:



From this data, we can see that Peyton Manning was the king of the two minute drill during this time period. This aligns with Manning's reputation of being a master strategist who excelled at thinking on the fly. Unparalleled at reading defenses, Manning once said, "Pressure is something you feel when you don't know what you're doing."[1] Notably, Patrick Mahomes is not far behind, despite being only 23 years old in 2018 and having played only one full season. Based on his early career success, it is unsurprising that Mahomes is now lauded for his ability to win close games.

Many of these names are Hall of Fame caliber quarterbacks, with a few exceptions: Vince Young, David Garrard, and Colin Kaepernick.[2] These quarterbacks were still very solid starters for at least part of their careers, but when comparing career statistics and accolades they are undoubtedly a step down from their peers on this list. What made these 3 quarterbacks elite at running the two minute drill? Perhaps they were better at literally "running" the offense, given all 3 were known for their ability to run the ball, which was uncommon for quarterbacks. The following chart shows the same 10 quarterbacks above, now ranked by average EPA on two minute drill plays where the quarterback ran the ball, and how often they ran during two-minute drills.



Out of the 10 best QBs in the two minute drill, Garrard, Young, and Kaepernick all placed top 5 in rushing effectiveness and frequency. Garrard was the best at running the ball in the two minute drill, while Young ran the most. This may explain why these non-elite quarterbacks still excelled with limited time: their dual-threat ability allowed them to gain yards on the ground when defenses were more focused on defending the pass. Remarkably, Peyton Manning did not run at all during two-minute drills but still had the highest overall average EPA, making his passing prowess even more impressive.

Based on EPA, Peyton Manning's greatest two minute drill play happened against the Arizona Cardinals on October 5, 2014. With 1:48 left in the first half, the Broncos' Manning threw a beautiful deep pass to Demaryius Thomas for an 86-yard touchdown. The play had an EPA of 6.5, meaning the Broncos were only expected to score 0.5 points on that drive, but instead scored 7. You can watch this play here: https://www.denverbroncos.com/video/thomas-scores-on-86-yard-td-reception-13926455

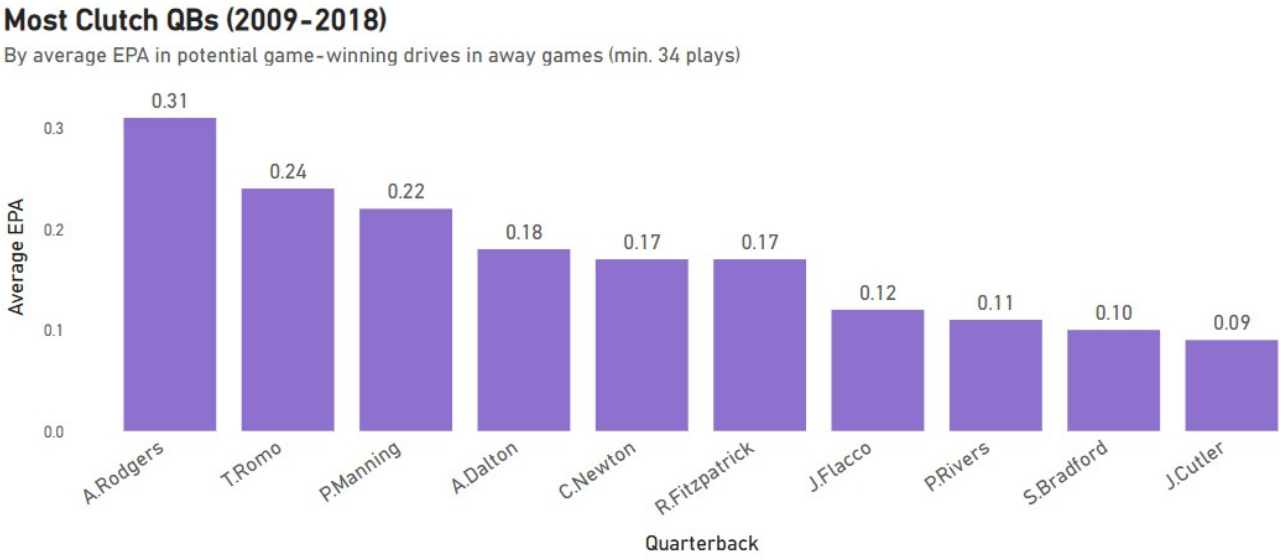
1 https://houston.culturemap.com/news/society/11-16-17-touchdown-for-teach-peyton-manning-houston-fundraiaser/

2 Dak Prescott could arguably be included here since he is not HOF-caliber yet, but he already has significantly better stats and accolades than the other three quarterbacks named, and Prescott is still mid-career.

For a good example of a quarterback using his legs in a two minute drill, see Vince Young scramble for 9 yards against the Titans on Christmas in 2009: https://www.youtube.com/watch?v=e14eOzBjBQQ&ab_channel=JustSim%2CBaby (play begins at 54:15)

What if We Go One Step Further?

Two minute drills are already high-pressure, but can we look at specific game scenarios in which a two minute drill becomes even more intense, providing an even better opportunity for a quarterback to be clutch? To start, two minute drills at the end of the game where the offense is losing by 8 or fewer points means the quarterback has a final opportunity to score the game-winning points. This is much more intense than any two minute drill in the first half. Additionally, what if the quarterback in this situation had the added pressure of playing in the opponent's stadium? Imagine you are the leader of your team, taking the field with one last chance to secure a win, with over 60,000 opposing fans screaming so loudly you can barely hear your teammates standing a few yards away, and millions more watching from home to see whether you prevail or fall short. The pressure doesn't get much higher than that. Let's see which quarterbacks did the best in these situations – less than two minutes left in the game, down by no more than 1 possession (8 points), and on the road (minimum 34 plays, the average number of such plays for one team in one season).



A new face has emerged to the top: Aaron Rodgers.[3] Between 2009 and 2018, Rodgers was remarkably effective in potential game-winning drives on the road. Peyton Manning is high on this list as well. Otherwise, this is a mostly surprising list. Many fans would not consider Tony Romo, Andy Dalton, Cam Newton, or Ryan Fitzpatrick among the most clutch quarterbacks, but the data shows otherwise – they were elite at coming back on the road. Some of the most elite quarterbacks during this time, including those who excelled at two minute drills overall, are surprisingly low on this list. In potential game-winning drives on the road, Tom Brady and Drew Brees both had an average EPA of -0.05 points. Russell Wilson came in at -0.03 and Ben Roethlisberger averaged 0.03. The other quarterbacks from the first top 10 list did not have enough plays to be evaluated here.

3 Rodgers barely missed the previous top 10 list, ranking 11th in average EPA during two minute drills.

What was Aaron Rodgers' most clutch play? On December 29, 2013, the Packers were down one point against the Bears in Chicago, with 46 seconds left in the game. On 4th and 8, Rodgers evaded a sack and launched a 48-yard pass to Randall Cobb for the touchdown. The Packers won the game, 33-28. You can watch this play here: https://www.youtube.com/watch?v=YXq8C5sbRzU&ab_channel=NFL

Coincidentally, the least clutch QB play between 2009 and 2018 happened only 6 days earlier: on December 23, 2013, Matt Ryan and the Atlanta Falcons were 10 yards away from scoring a likely game-winning touchdown against the San Francisco 49ers. With 1:31 on the clock, Ryan threw an interception to NaVorro Bowman, who ran it back 89 yards for a defensive touchdown. This play was nicknamed "The Pick at the Stick." To be fair, watching the play shows the interception may be less on Ryan and more on poor catching and great defense: https://www.49ers.com/video/can-t-miss-bowman-lights-up-candlestick-12253592

This reveals an important and persistent issue with analytics in football: it is extremely difficult to capture fault and other ambiguous factors. When a quarterback throws an interception, it can be entirely the quarterback's fault, entirely the receiver's fault, somewhere in between, or none of the above if the defense just makes an amazing play. This is very difficult to quantify, and can lead to skewed data. Without a way to measure such factors, this risk of misleading data can only be minimized by filtering on specific scenarios and maximizing sample sizes.

So which of the two measures of "clutchness" is better? The first measure (two minute drills) has a higher sample size and includes more quarterbacks, but looks at a broader scenario that includes some plays (first-half two minute drills) that don't have nearly as much pressure as other plays. The second measure narrows in on especially high-stakes and high-pressure plays, but has smaller sample sizes as a result and could be less reliable. There is room for improvement in this analysis. Given more years of data and better measures of individual player performance independent of uncontrollable factors, we could create a clearer picture of the most clutch quarterbacks in the NFL.

Regardless, the available data suggests that with the game on the line, Peyton Manning or Aaron Rodgers might be more likely to score than Tom Brady, Drew Brees, or Ben Roethlisberger.