

Risky Business Week 14

The Big Picture: GWC vs Expected Points

We are often asked if our analytics ever endorse conservative actions on 4th and short decisions. While it is true that as a general rule aggressive first down attempts are often the dominant strategy with respect to GWC, every decision is unique. Two examples of exceptions occurred yesterday at the end of the first half for the Buccaneers and the Colts. The Bucs had a 4th and goal at the 1-yard line leading by 8 points and the Colts had a 4th and goal from the 2-yard line leading by 3 points. In both instances there was time for just one play before the half, and in each case, it was correct to kick the field goal! What makes these situations different? The answer lies in the big picture.

- Bucs face 4th and goal at the Vikings 1-yard line leading 14-6
 - Field goal attempt: Bucs' GWC = 88.6%
 - Touchdown attempt: Bucs' GWC = 88.1%
- Colts face 4th and goal at the Raiders 2-yard line leading 17-14
 - Field goal attempt: Colts' GWC = 69.6%
 - Touchdown attempt: Colts' GWC = 65.8%

Two important considerations that normally support aggressive 4th down attempts are clock management and ball position. Because these two decisions occurred at the very end of the first half and near the goal line, a successful conversion (score in this case) does not have the benefit of extending the possession for the leading team and burning additional clock. Also, when a 4th and short attempt fails near the goal line it normally provides significant residual value because of the resulting field position. That does not apply in these cases as the first half comes to a close. The Bucs' decision to kick was closer due the fact their GWC was already very high. The Colts' decision is surprisingly clear with a difference of +3.8% GWC in the balance. Frank Reich's choice to kick is worthy of a deeper examination.

Sometimes the simplest argument for attempting a touchdown at the goal line instead of kicking a field goal is grounded in the metric of expected points. Let's assume the Colts are successful scoring a touchdown at the NFL average two-point conversion rate of 47.5%. We will also assume approximate league averages for field goal success (98%) and extra point (94%).

Expected point comparison for Colts:

- Field goal attempt: $(.98*3) = 2.94$ points
- Touchdown attempt: $(.475*6)+(.475*.94*1) = 3.30$ points

Interestingly, while the touchdown attempt has higher expected point value it does not optimize GWC. This is where the simulation model picks up on some complexities that are not

obvious. Because of score, clock and match-up considerations the utility of points and their affect on GWC can change considerably. This is why football is such a fascinating game of risk management.

Now let's imagine a similar decision occurs for the Colts with a 4th and goal at 14:00 of the 3rd quarter rather than the end of the first half. In this scenario the Colts would stand to benefit from backing up the Raiders on their own goal line when the touchdown attempt fails.

Colts face 4th and goal at the Raiders 2-yard line leading 17-14 at 14:00 of 3rd Quarter

- Field goal attempt: Colts' GWC = 71.5%
- Touchdown attempt: Colts' GWC = 70.7%

While the decision would be close, we see a substantial change in favor of the touchdown attempt as a result of the residual benefit of field position.

Frank Reich and the Colts have benefited from calculated aggression on 4th downs this season and found themselves in the spot of the EdjSports' Coach Rankings through week 13. Here Reich shows that he grasps the importance of assessing each decision in its proper context and shifting his approach when necessary.