

## Risky Business Week 8

### Is Belichick Sinking in the Rising Tide of Analytics?

It was more than a decade ago when Bill Belichick made a very controversial decision to go for it on 4<sup>th</sup> and 2 from his own 28 yard line with a 6 point lead against the Indianapolis Colts. At the time, we defended his choice as both courageous and analytically sound.

<https://fifthdown.blogs.nytimes.com/2009/11/25/the-anatomy-of-a-fourth-down-decision/>.

Although Belichick took considerable heat after coming up short and handing the ball back to Peyton Manning for the Colts' victory, this decision illustrated just how far ahead of the curve he was at that time.

Going for it on 4<sup>th</sup> and short in your own territory with a lead may still be controversial in 2020 but it certainly isn't as big of an outlier as it was in 2009. Analytics, and particularly the merits of highly leveraged 4<sup>th</sup> down aggression, is beginning to change the NFL. Belichick has always been considered one of the most innovative coaches relative to his peers, but how is he keeping up? As Aaron Schatz of Football Outsiders sums it up, *"The problem isn't as much that Belichick is less aggressive now on fourth downs, but more that the league as a whole has passed him by. If you look at the period from 1986 through 2017, Belichick comes out as one of the ten most aggressive coaches on fourth downs (minimum three years). But as the league as a whole has started going for it much more often on fourth downs, Belichick hasn't changed, so his rank in the league has dropped to average or below."* Even while the Patriots were posting impressive results in recent years, we began to notice just how much GWC they were squandering on suboptimal 4<sup>th</sup> down decisions.

Year	(High Confidence*) Regular Season Cost in GWC
2017	159%
2018	95%
2019	85%
2020 through week 8	31% (71% projected)

\*High Confidence errors are a subset of total errors that are subjected to a stress test of a strong counter argument to the model's recommendation. For example, if the model indicates a team should have attempted a first down on a 4<sup>th</sup> and short, the simulation is rerun by substituting a very weak offense and a very strong opposing defense to see if the optimal choice is overturned. Only errors that are upheld by this criteria are labeled "High Confidence".

While it may appear Belichick is improving slightly during this period, the cost of approximately 1.6 expected games in 2017 was an NFL worst. So far in 2020, they are ranked 20<sup>th</sup> with regard to total GWC cost. It should be noted that very strong offenses, as was the case with the Patriots in 2017, are typically under greater scrutiny in our analysis because of their higher expected conversion rates. In their Superbowl loss to the Eagles that season, the Patriots gave up more than 20% GWC on high confidence 4<sup>th</sup> down errors.

With a very disappointing 2-5 record, much of the Patriots' woes can be attributable to the loss of Tom Brady. The Patriots offense is currently 6<sup>th</sup> in rushing and 23<sup>rd</sup> in passing according to the EdjSports Power Index. An example of how Belichick is missing the mark this season occurred during their close loss to Bills yesterday.

Trailing 14-6 with 7:36 remaining in the 3<sup>rd</sup> quarter, the Patriots chose to punt on 4<sup>th</sup> and 6 at the Buffalo 43 yard line. According to our analysis, this decision costs the Patriots -2.2% GWC on average. Jake Bailey managed to pin the Bills on their 8 yard line, but surprisingly even if this punt was downed at the one yard line it would have still shown a slight GWC cost to the Patriots. The average historical starting position for a punt of this type, inclusive of touchbacks, is the 17 yard line. While the actual punt was much better than average it was still costly to the Patriots' winning prospects.

With 9 games remaining this season, Bill Belichick will need to once again find ways to generate an advantage against the competition. With the rising tide of analytical adoption among his peers, this won't be an easy task.