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Do Elite Defenses or Offenses Significantly Outperform Expectations in the NFL Playoffs?

My research question originated out of trying to find if the common football myth that “Defense wins championships” is true. What does this myth even mean, and what is a way that one can empirically test this myth? A common interpretation of this myth is that a NFL team needs an elite defense to win championships. It also can be interpreted to mean that NFL teams with elite defensives do better in the playoffs than elite offenses. So, does having an elite defense in the NFL mean the team will do better in the playoffs than expected? This was the question I sought out to answer in my research.

Some subjective questions had to be answered to carry out the research. What qualifies a defense as elite? What would these teams expectations be based on?

When it came to formulating what an elite defense would be defined as, I considered various statistics. The first one that comes to mind is points allowed per game. The problem with this statistic is that it is affected by how fast a team plays. Teams that run the ball and take their time between running plays will naturally make it easier for their defense to give up less points because their slow offense will result in fewer possessions/chances for both teams to score. Thus, team that play fast will naturally make it easier for their opposing teams to score more, while slow teams make it harder for their opposing teams to score. The statistics used should not be biased by the different paces teams play at. A superior statistic to points allowed per game is points allowed per possession. Due to being based on possessions instead of games, this statistic is not affected by differing paces. There is only two possible variables out of a defense’s control that could bias this statistic. This would be a team’s strength of schedule and its opponent’s averaging starting position. Defenses that have a tougher schedule and/or their opponent’s offense starting closer to the end zone to score may have significantly lower (better) points per possession allowed statistic. To see if these two variables should be included in the analysis, I sampled a random NFL season where points per possession allowed was available from FootballOutsiders.com. I copied the data into a text file and measured the correlation between the three statistics in SAS. If strength of schedule and average starting position was significant in affecting a defense’s points allowed per possession, than the correlation between them and points allowed per possesion would be significant (p-value below 0.1).