

NFL Big Data Bowl 2023: Help evaluate linemen on pass plays

Potential Idea for New Metric:

1. Distance Denied
 - a. This metric keeps track of how much distance is left between the pass rusher and the passer at the end of the play.
 - b. The amount of distance denied is awarded to the offensive lineman who blocked the pass rusher.
2. Distance Denied While in Pocket Per Play
 - a. We are mainly interested in the distance denied while the passer is in the pocket due to events in which the passer is rushed or runs outside and the distance denied is no longer an adequate measure of how well an offensive lineman does at blocking.
 - i. For example, the play could involve a snap and quick run to either side of the field by the quarterback followed by a throw to a receiver. Say the quarterback runs to the right side of the field and throws the ball. In this case, the left tackle will likely have a large distance denied because the player they blocked on the play is nowhere near the quarterback. This particular play is not a good indication of how well the lineman blocked the opponent because this opponent may not have much of an impact on the play and the distance denied as a measure of offensive lineman performance will be inflated.
 - b. The pocket could be defined as a parabolic shaped area (or u-shaped area) stemming from the tackles (left and right side) and going behind the quarterback by a few yards.
 - i. Or, alternatively, the pocket could be box shaped with the two tackles defining the width.
 - c. The distance denied would represent how far the blocker (or the blocker's target) is away from the quarterback by the time the quarterback passes the ball or is tackled.
 - i. If the O-lineman is responsible for a sack or hit on the quarterback, then this distance will be 0.
 - ii. If the O-lineman is responsible for a hurry or they are beaten, then this distance will equal the distance between the defender and the passer
 - d. Divide the final aggregated amount of distance denied by the amount of plays to disallow overinflation of this value by players who simply block on more plays or are on teams that pass more.

Data that I will need for Distance Denied While in Pocket:

1. PlayerID's for offensive linemen
 - a. This ID will indicate who the linemen are and allow me to assign the metric for each lineman that is graded with this metric.
2. Whether the offensive lineman blocked someone
 - a. If the O-lineman didn't block someone on the play, then I can't apply this metric

3. The *distance at the end of the play (if sacked), when a pass is thrown, or when the quarterback fumbles the ball* between the passer and the linemen who blocked defensive players during the play.
4. Whether the passer is out of the pocket at the end of the play
 - a. If the passer is out of the pocket at the end of the play, then this metric does not apply (stat inflation issue as mentioned previously)
 - b. I will need to define the pocket - I'm thinking as long as the passer is between the outermost O-linemen, then I should consider the passer still in the pocket.
5. The player that is blocked.
 - a. I need this to determine the distance denied when the O-lineman is beaten or allows a hit or sack on the passer..

Potential problems involved with this project:

1. What if the O-lineman assists a block (i.e. there are two linemen blocking the same D-lineman)?
 - a. Would probably need to split the distance denied to allow the metric to more objectively explain the amount of distance denied contributed by each individual lineman.
2. Accurate definition of the pocket
 - a. There doesn't seem to be a true and complete definition of the pocket that is standard.
 - b. My definition currently is simply defined by the passer being between the two-outermost O-linemen. This definition seems a bit too simplistic and has potential overinflating effects on the data:
 - i. Overinflation will happen if a passer typically scrambles one way or another. For instance, if the passer typically runs right but stays in the pocket, then the blockers on the left side of the play will have inflated values.
 - ii. Overinflation will happen by team if the passer on that particular team drops back farther than other teams. The O-linemen on a team that has a passer that drops deep in the pocket will have overinflated success in comparison to other teams because their distance denied will tend to be greater than other teams.
3. I'm not counting fumbles
 - a. Was not sure if these occurred from the quarterback fumbling or not, so I decided not to include them.