

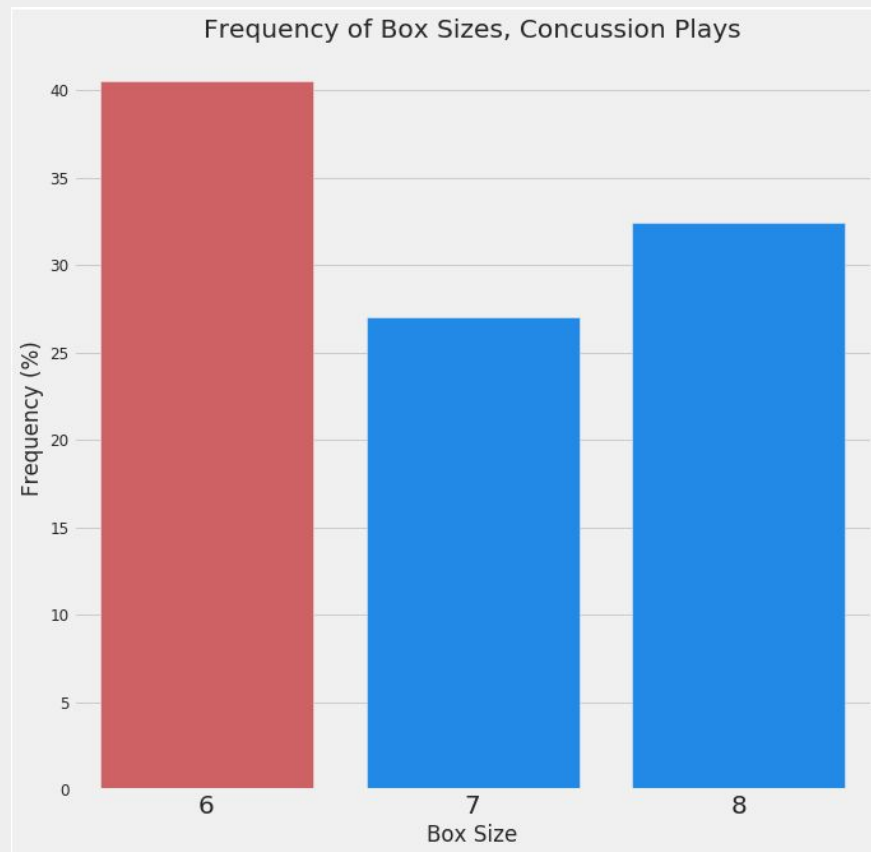
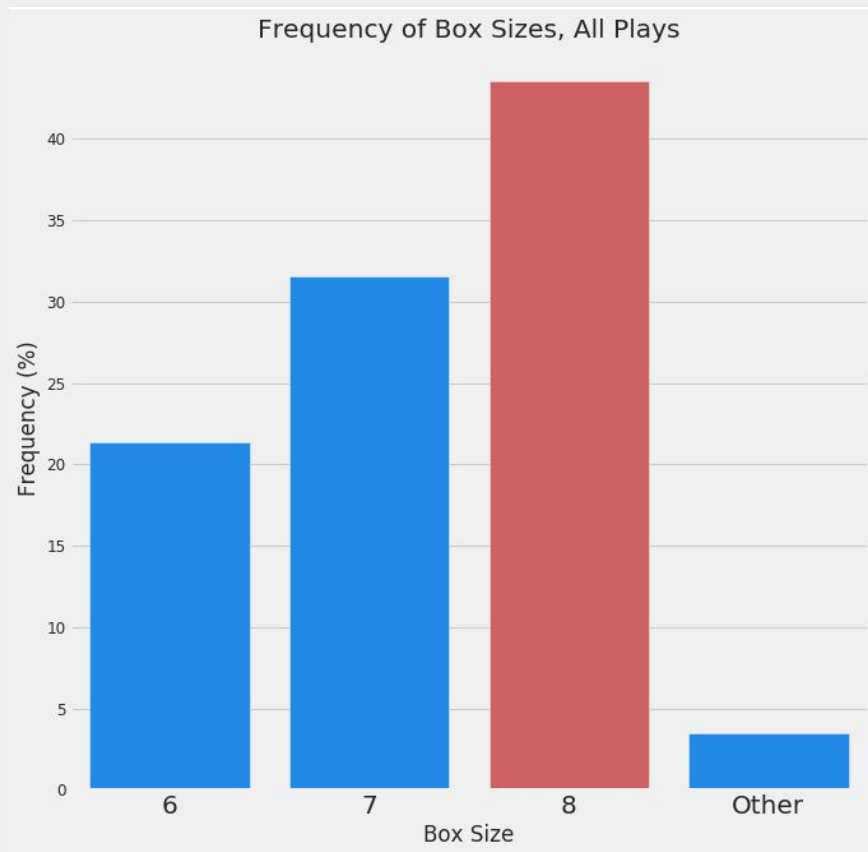
NFL Punt Analytics Kaggle Competition

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Personnel & Formations

- Explored how changes in personnel and formations may lead to different outcomes (both play & injury related) on punt plays.
- The main decision that a return team faces is whether to double or single cover (or one of each) the punting team's two gunners.
- Punting teams' formations remained largely agnostic to field position or return team formations.

Box Size - All Plays vs Concussion-Incurring Plays



Box Size & Fair Catches

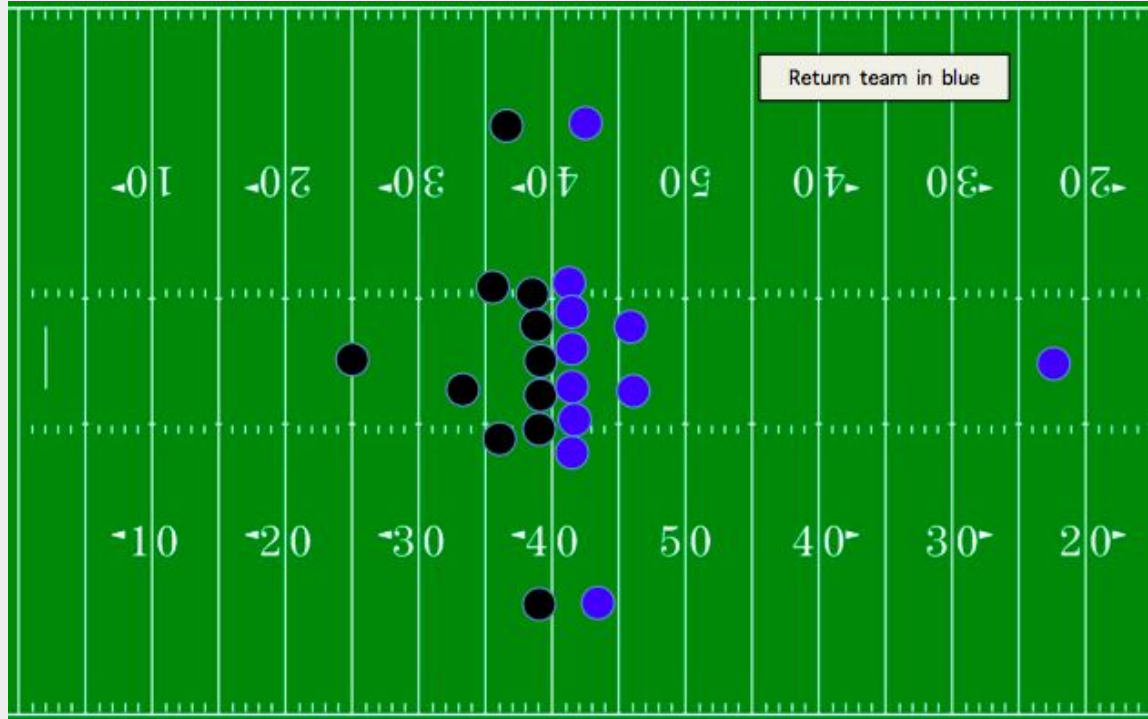
- The charts on the previous slide show how frequently 6-man boxes were used on punts that ended up resulting in a concussion.
 - The theory behind this is simply that an 8-man box leaves the punt team's gunners single covered and more likely to close on the punt returner, resulting in a fair catch.
 - On the other hand, 6-man boxes result in punts being fielded, extending the duration of the punt play.
- Fair catches occurred on **36%** of 8-man box plays, but only **14%** of 6-man box plays.
 - Only **8%** of plays during which a concussion occurred were fair catch punts.

Rule Change Proposal

Given the high rate of concussions sustained on 6-man box plays, and the increased rate of fair catches called on 8-man box plays, I propose the following rule change:

On any punt play, the return team must have no more than an equal amount of players as the punting team lined up on or outside of the yardage numbers on the field.

“The restriction does not apply if a team does not present a standard punt formation (an equal number of players on either side of the snapper in a tight formation, and one player split out wide to either side), or if, after the offensive team has assumed a set position, there is a shift, or a player goes in motion” (Rule 9, Section 1 of the 2018 NFL Rulebook).



This already commonly used alignment (or similar) will become the norm under the proposed rule change.

Implications of Proposed Rule Change

- The key difference caused by a shift to an 8-man box is an increased fair catch rate, from 14% on 6-man box plays to 36% on 8-man box plays.
- Other features of the punt plays remain largely unaffected by the box size:
 - Average punt hang-time
 - Average time from snap to punt
 - Average player speed
 - Fumble rate
 - Blocked punt rate
 - Touchdown rate
 - Average return yardage on fielded punts

Implications of Proposed Rule Change

- The proposed rule change should primarily serve to increase the fair catch rate, but leave the structure and spirit of punt plays intact.
 - Similar to how recent kickoff rule changes resulted in fewer returns, this rule change requires a trade-off between per-play activity and safety.
- From a public relations perspective, the rule does not blatantly alter the way punting plays will be viewed and should not receive pronounced backlash.
 - The rule change doesn't require but leaves open the possibility for strategic innovation by special teams coaches