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Project Proposal

EDPS 971 – SEM

3.20.2020

**Research Question:** A Structural Equation Model of the influence of position group, league tenure, environmental conditions and stadium type factors on the quality of performance of an NFL player after an injury related to the game day conditions that lead up to the injury.

**Anticipated sample size(s):** 267,005 player-plays

**Abstract/Rationale (~500 words):**

Using structural equation modeling, test a conceptual model of associations between constructs predicting the quality of career of an NFL player after an injury. NFL players with a confirmed injury diagnosis along with complete measures of the conditions leading up to injury report on their quality of their career. Measurement and structural models for predicting an NFL players quality of career provided a good fit of data to the conceptual model. Severity of injury and body part injured are the variables that impact the quality of career. Severity of the injury and number of games played jointly contribute to quality of career outcomes. Findings would suggest that position group outcomes have different determinants in the severity and body part of the injury.

**Anticipated problems** (non-normality, missing data, categorical outcomes, etc.)

1. There are missing data in the play type, weather, temperature and stadium type
2. Some players will be repeated in the group of players. The actual count of player of students may be smaller but not less than 200 observations.
3. I have a few categorical variables in the model
   1. Field Type (Natural or Synthetic)
   2. Stadium Type (Doomed, Open, Retractable roof)
   3. Position/ Position Group (QB, RB, LB, etc)
   4. Type of injury (knee, ankle, back, etc.)
   5. Play type (Pass, Rush, Kick off return, etc.)
   6. Weather (Sunny with clouds, rain with overcast, etc.)
4. There is a chance that we will run into fewer neck and back injuries in the list based on position group.
5. In my mind the outcome will be a categorical outcome “quality of career.” This will be measured against the following year statistics or whether or not the athlete was inducted into the Hall of Fame.

**Path diagram**

Quality of Career

Severity of Injury

Number of Games Played

Body Part Injured

Position Group

Weather

Field Type

Stadium Type

Temperature