The NFL is an inherently violent game. Elite athletes run full speed into each other with incredible force to tackle or overpower opposing players. Since players have gotten bigger, faster, and stronger, they can now generate much more force during player collisions. When player collisions are extreme, the acceleration (g-forces) can exert rotational forces inside the brain, resulting in a concussion. Concussions and other types of repetitive play-related head blows in American football have been shown to be the cause of chronic traumatic encephalopathy (CTE) [1].

In 2013, the NFL reached a tentative $765 million settlement over concussion-related brain injuries among its 18,000 retired players [2]. The NFL admits no wrongdoing in the lawsuit but has since implemented multiple rule changes to help curb the number of concussions.

I gathered the original data set from https://data.world/sportsvizsunday/nfl-combine-data, and it includes NFL Combine results from the years 1987 to 2018. The NFL Combine results from the years 2019 and 2020 were added to the data set from https://nflcombineresults.com/ to create the NFL Combine Data cleaned.csv and NFL Combine Data final.csv data sets used in this project. Due to COVID restrictions, the traditional 2021 NFL Combine was officially canceled, so there is no data for the 2021 NFL Combine included in this project. While not all the NFL Combine participants will play in the NFL, they represent how player size, strength, and speed have evolved in the past 30 years.

Additionally, I include the NFL.com concussion data that lists the total number of concussions in the NFL from the Years 2012 to 2019.

The players were split into three distinct position groups to include similar-sized positions that match up against each other on nearly every play.

- **Group 1: [CB, WR, RB, SS, FS]** - Cornerback, Wide Receiver, Running Back, Strong Safety, and Free Safety.
- **Group 2: [OLB, TE, QB, FB, ILB]** - Outside Linebacker, Tight End, Quarterback, Fullback, and Inside Linebacker.
- **Group 3: [DT, DE, OG, C, OT]** - Defensive Tackle, Defensive End, Offensive Guard, Center, and Offensive Tackle.

The preliminary dashboard displayed line graphs that show how each position group has gotten bigger, faster, and stronger in the last 30 years. Trend lines were included in the three graphs and reinforced the fact that players have become bigger, faster, and stronger in recent years. I used one key influencers graph to derive the insight that player weights prior to 1994 were, on average, 10.4 pounds than players after 1994. I used another key influencer graph to derive the insight that player 40-Yard dash times after 2016 were, on average, .08 seconds faster than players prior to 2016. Finally, I included a bar graph to show the total number of NFL concussions per season since 2012. I will explore NFL rules changes and additional data in upcoming project milestones.