Project Overview

- Designed to answer questions about injuries in the NFL
    - Which injuries are most common?
    - Which injures cause players to be out for the longest period of time?
    - Is there any connection between the number of injures and the number of wins a team has?
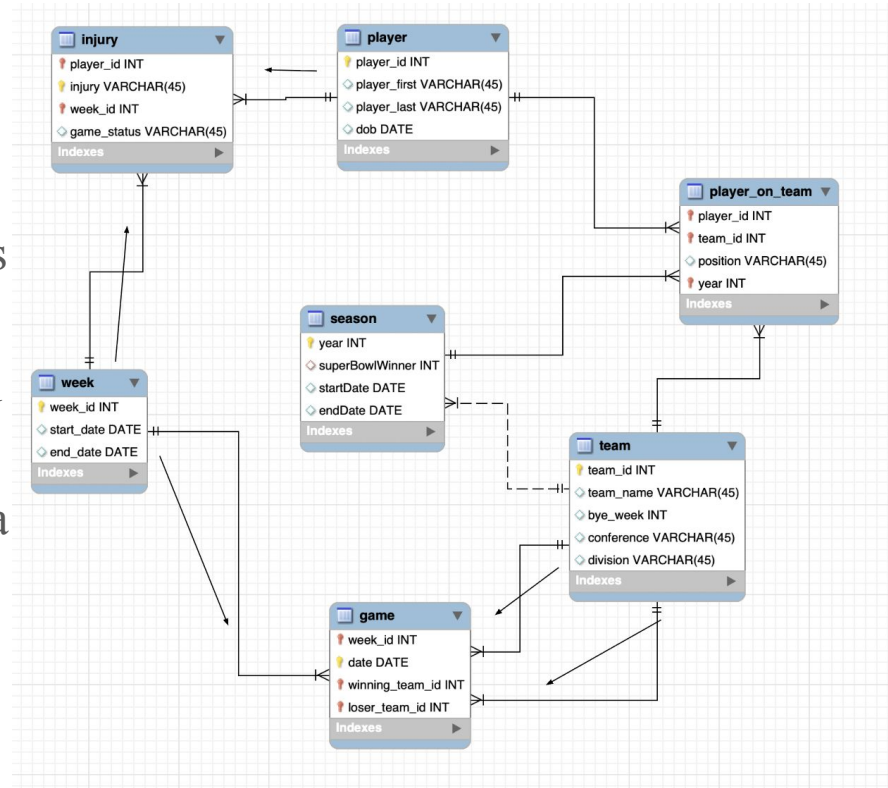- Our dataset looks at the 2024 regular season

Data Collection

- Injury data comes from the official NFL injury reports
  - We used a Google App Script to scrape tables from their website and combine it
- The list of players come from Pro Football Reference rosters
- We wrote scripts in Java to clean up data and create with IDs

Database Design

- Injures table has the player, injury description, the week id, and the status of the player in that weeks game
- Player_on_team connects a player and team for a season
- The game table shows each game for a team in a season

How many total injuries per week?

SELECT w.week_id, COUNT(i.player_id) AS total_injuries
FROM week w
LEFT JOIN injury i ON w.week_id = i.week_id
GROUP BY w.week_id
ORDER BY w.week_id;

week_id	total_injuries
1	114
2	155
3	163
4	180
5	210
6	209
7	208
8	214
9	221
10	188
11	176
12	166
13	193
14	177
15	228
16	221
17	219
18	198

How many injuries are there per team?

SELECT t.team_name, t.conference, t.division, COUNT(*) AS total_injuries
FROM injury i
JOIN player_on_team pot ON i.player_id = pot.player_id
JOIN team t ON pot.team_id = t.team_id
GROUP BY t.team_id, t.team_name, t.conference, t.division
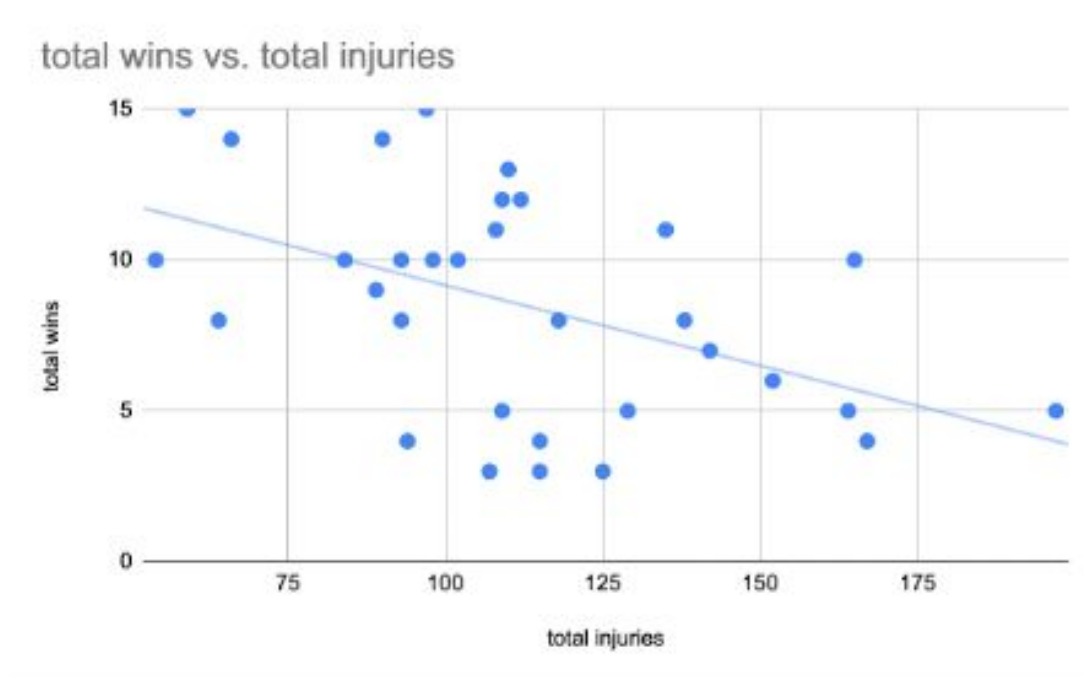ORDER BY total_injuries DESC;

team_name	conference	division	total_injuries
Carolina	National	South	197
New England	American	East	167
Tampa Bay	National	South	165
New Orleans	National	South	164
San Francisco	National	West	152
Dallas	National	East	142
Miami	American	East	138
Los Angeles C	American	West	135
New York J	American	East	129
New York G	National	East	125
Arizona	National	West	118
Cleveland	American	North	115
Las Vegas	American	West	115
Baltimore	American	North	112
Buffalo	American	East	110
Washington	National	East	109
Chicago	National	North	109
Green Bay	National	North	108
Tennessee	American	South	107
Houston	American	South	102
Seattle	National	West	98
Detroit	National	North	97
Jacksonville	American	South	94
Indianapolis	American	South	93
Pittsburgh	American	North	93
Philadelphia	National	East	90
Cincinnati	American	North	89
Los Angeles R	National	West	84
Minnesota	National	North	66
Atlanta	National	South	64
Kansas City	American	West	59
Denver	American	West	54

How many wins did each team get?

SELECT t.team_name, COUNT(g.winning_team_id) AS total_wins
FROM team t
LEFT JOIN game g ON t.team_id = g.winning_team_id
GROUP BY t.team_id, t.team_name
ORDER BY total_wins DESC;

team_name	total_wins
Kansas City	15
Detroit	15
Minnesota	14
Philadelphia	14
Buffalo	13
Baltimore	12
Washington	12
Green Bay	11
Los Angeles C	11
Tampa Bay	10
Denver	10
Los Angeles R	10
Seattle	10
Pittsburgh	10
Houston	10
Cincinnati	9
Indianapolis	8
Arizona	8
Miami	8
Atlanta	8
Dallas	7
San Francisco	6
New York J	5
Carolina	5
Chicago	5
New Orleans	5
Jacksonville	4
New England	4
Las Vegas	4
New York G	3
Cleveland	3
Tennessee	3

Is there a correlation between injury and wins?

How many distinct players got injured per team?

SELECT t.team_name, t.conference, t.division, COUNT(DISTINCT i.player_id) AS distinct_injured_players
FROM injury i
JOIN player_on_team pot ON i.player_id = pot.player_id
JOIN team t ON pot.team_id = t.team_id
GROUP BY t.team_id, t.team_name, t.conference, t.division
ORDER BY distinct_injured_players DESC;

team_name	conference	division	distinct_injured_players
Carolina	National	South	47
New Orleans	National	South	44
New England	American	East	44
San Francisco	National	West	42
New York G	National	East	42
Miami	American	East	42
Arizona	National	West	42
Tampa Bay	National	South	42
Cleveland	American	North	41
Los Angeles C	American	West	41
Houston	American	South	40
Detroit	National	North	39
Baltimore	American	North	39
Dallas	National	East	38
New York J	American	East	38
Tennessee	American	South	36
Jacksonville	American	South	36
Las Vegas	American	West	36
Chicago	National	North	35
Washington	National	East	34
Kansas City	American	West	34
Seattle	National	West	34
Buffalo	American	East	32
Cincinnati	American	North	32
Los Angeles R	National	West	32
Indianapolis	American	South	31
Green Bay	National	North	31
Pittsburgh	American	North	31
Philadelphia	National	East	30
Minnesota	National	North	29
Atlanta	National	South	26
Denver	American	West	22

What are the proportions for each injury status?

SELECT game_status, COUNT(*) AS count,
ROUND(COUNT(*) / (SELECT COUNT(*) FROM injury), 4) AS proportion
FROM injury
GROUP BY game_status
ORDER BY proportion DESC;

game_status	count	proportion
Questionable	1836	0.5337
Out	1378	0.4006
Doubtful	226	0.0657

What are the most common injuries?

SELECT injury, COUNT(*) AS occurrence_count
FROM injury
GROUP BY injury
ORDER BY occurrence_count DESC
LIMIT 10;

injury	occurrence_count
Knee	592
Ankle	495
Hamstring	353
Shoulder	264
Concussion	256
Groin	164
Calf	120
Foot	118
Back	102
Hip	101

What are the top 5 most injuries by age?

SELECT TIMESTAMPDIFF(YEAR, p.dob, w.start_date) AS age, COUNT(*) AS injury_count
FROM injury i JOIN player p USING (player_id) JOIN week w USING (week_id)
GROUP BY age
ORDER BY injury_count DESC
LIMIT 5;

age	injury_count
25	511
24	392
26	388
23	383
27	372

What are the top 5 injury counts by position?

SELECT pt.position, COUNT(*) AS injury_count
FROM player_on_team pt JOIN injury i USING (player_id)
GROUP BY pt.position
ORDER BY injury_count DESC
LIMIT 5;

position	injury_count
WR	479
CB	319
RB	272
LB	271
TE	190

Findings and Conclusion

- Injuries are very common
- The number of injured player per team shows that generally over half of a team has an injury at some point in the season
- There are many more injuries than distinct injured players, which means that there are players who have an injury for more than a week
- The most common injuries are to the knee and ankle, which shows that they are the most vulnerable body parts in contact sports
- Most injuries occur to players aged 23 to 26 which corresponds to 2nd to 6th year players
- Wide Receivers and Cornerbacks are the most susceptible to injury because these positions require a lot of running and physicality

References:

[1] National Football League, "Official Latest NFL Injury Report for Players - Week 13 of the 2025 Season," NFL.com, 2025. [Online]. Available: https://www.nfl.com/injuries/. [Accessed: Nov. 26, 2025].

[2] Sports Reference LLC, "Pro Football Stats, History, Scores, Standings, Playoffs, Schedule & Records," Pro-Football-Reference.com, 2025. [Online]. Available: https://www.pro-football-reference.com/. [Accessed: Nov. 26, 2025].

Intro slide image generated by Google Gemini