



Concussions and the NFL

By Randy Leon

Background:



The NFL is a staple of American culture.

This year marks the 100th season.

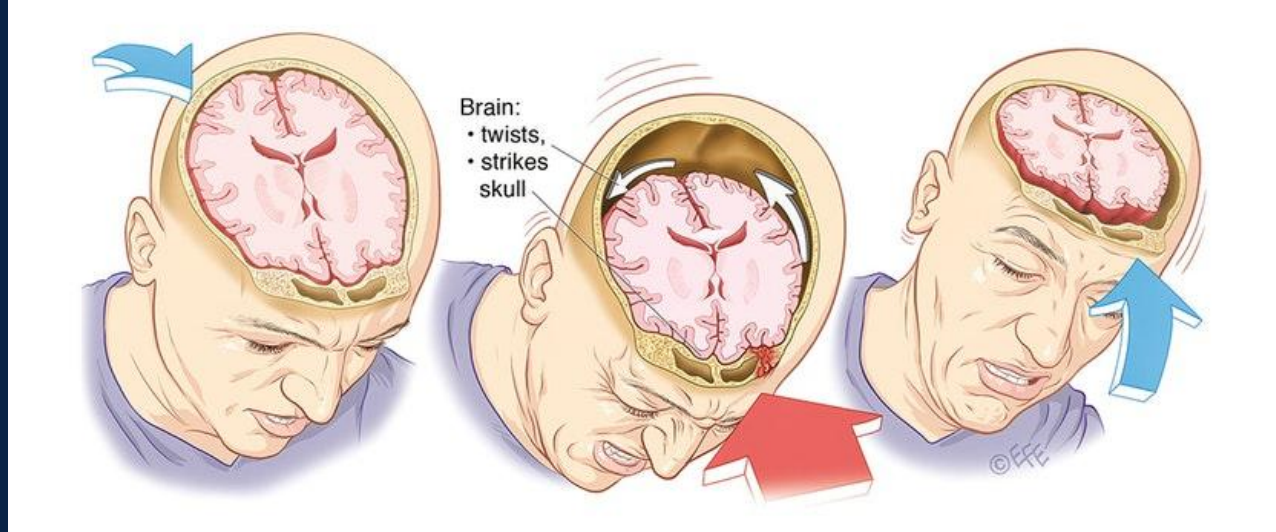
With the development of data science/analytics, a major problem has been given a closer look - concussions.

Agenda:



- **What is a concussion/MTBI?**
- **NFL data on MTBI**
- **The NFL's response**
- **References**
- **Conclusion/Q&A**

What is a concussion?

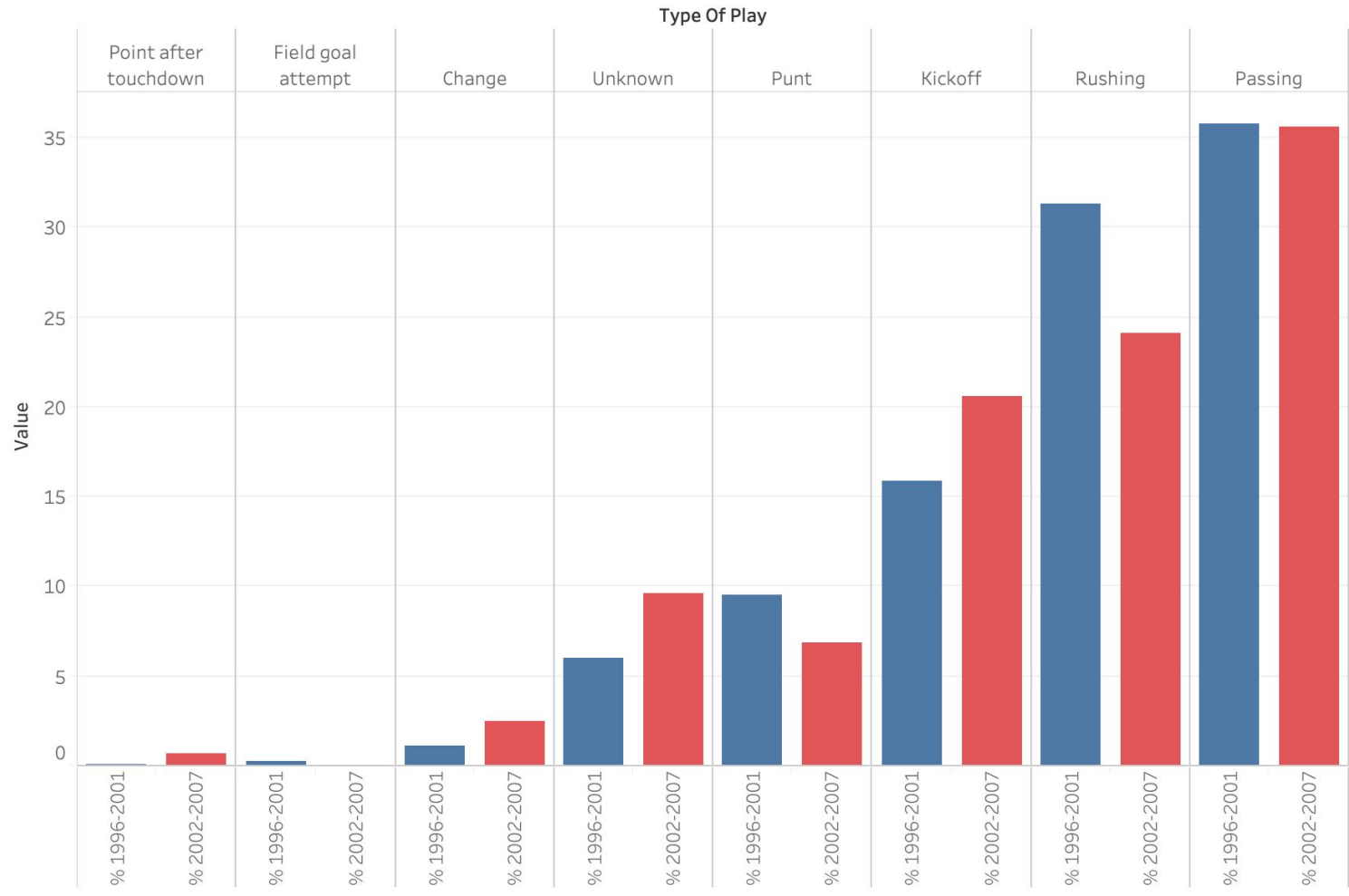


A concussion is an injury to the brain that results in temporary loss of normal brain function, one which is usually caused by a blow to the head.

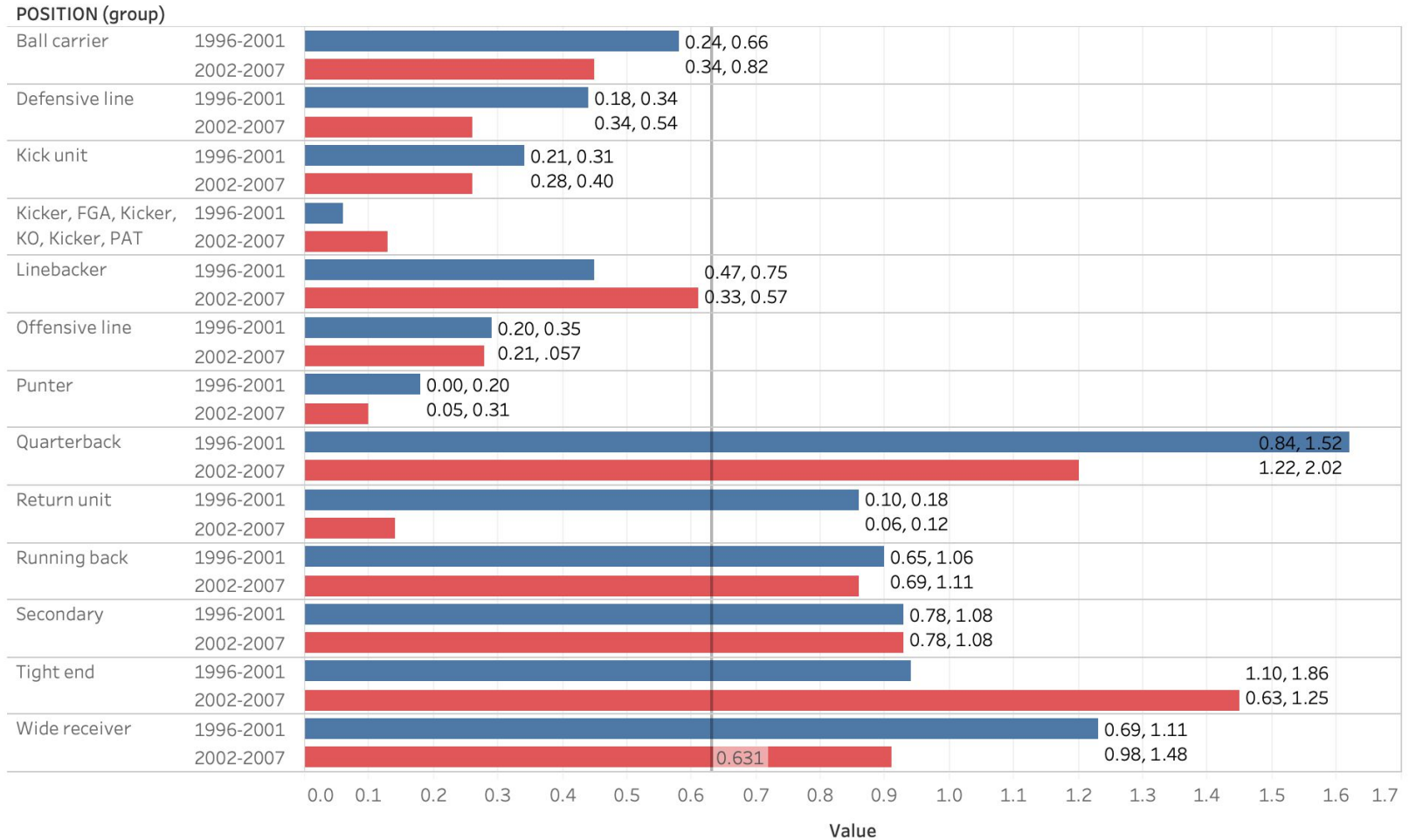
Percentage of Football Activities from 1996-2001 & 2002-2007 that Resulted in MTBIs.



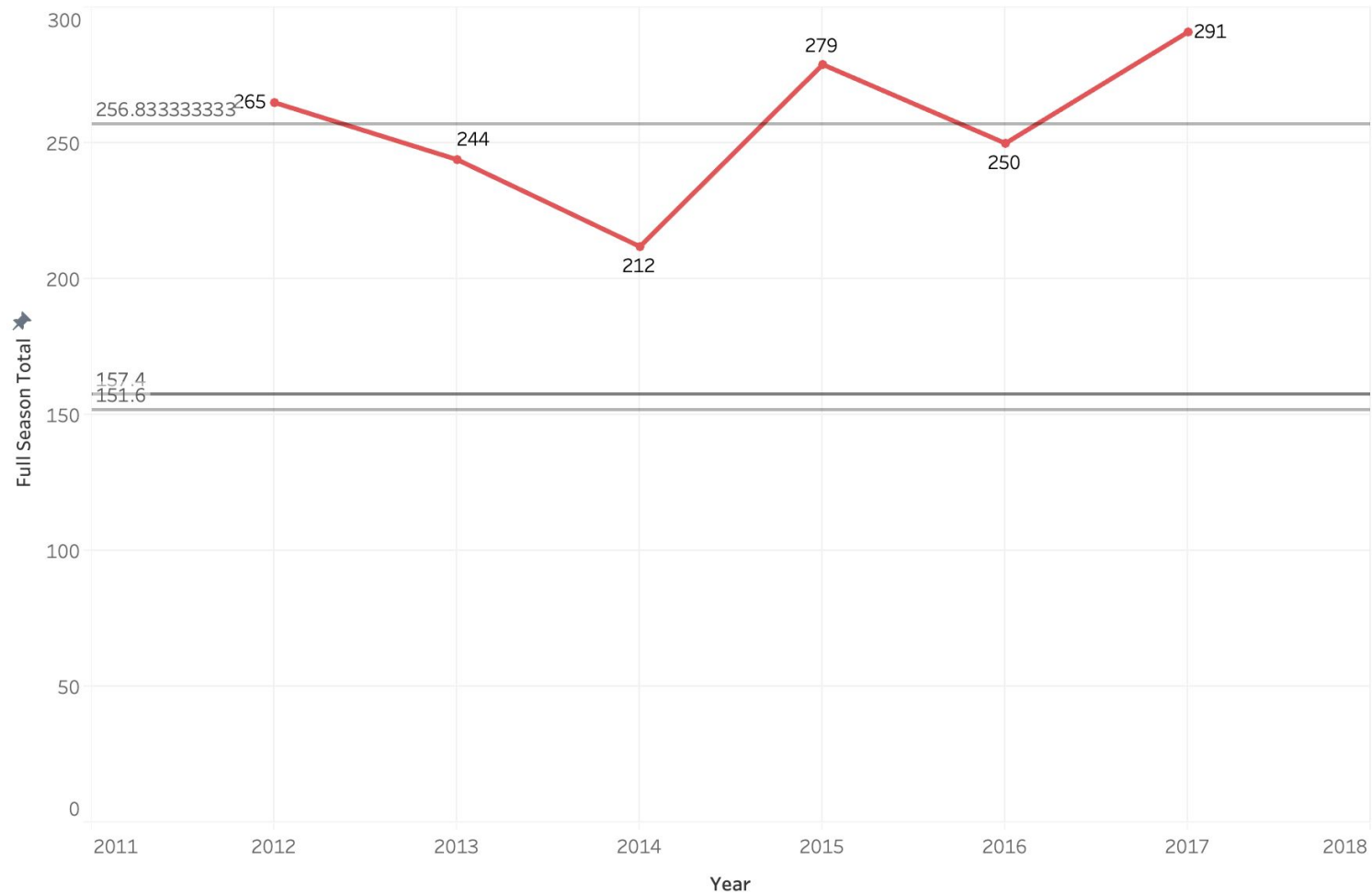
Percentage Breakdown of Play That Results in a MTBI from 1996-2001 & 2002-2007.



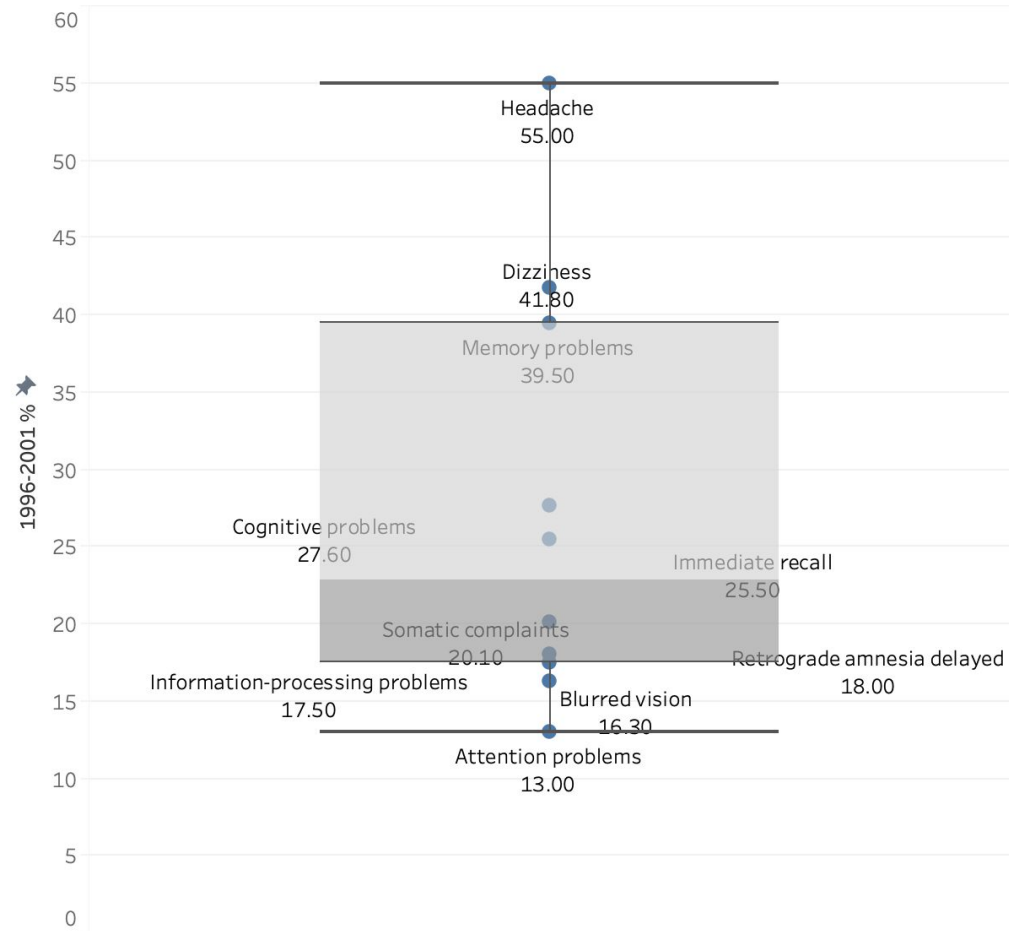
Concussion Rates/100 Team Games by 5 Year Groupings with 95% CI



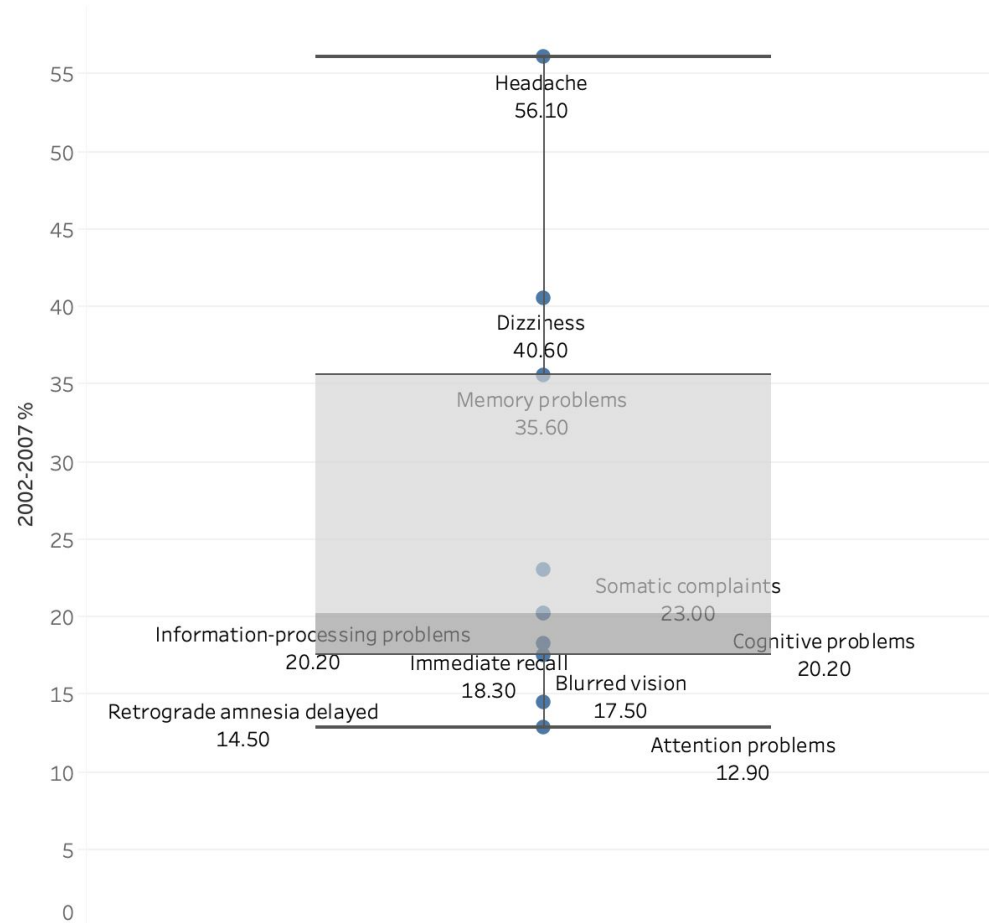
Concussions by Year in a Full Season (Pre, Regular, and Post incl.)



Top Ten Symptoms of Concussions Experienced by All Players in 1996-2001 as a Percentage of all Symptoms



Top Ten Symptoms of Concussions Experienced by All Players in 2002-2007 as a Percentage of all Symptoms



The NFL's Response



- Jeff Crandall, Ph.D has led the way through biomechanics and data.
- He's advised the NFL on fundamental changes that need to happen on the field to reduce the epidemic of MTBIs.



The NFL's Response



- The NFL has changed a myriad of rules since 2002 designed to help promote player's safety.
- Changes focused on where concussions were prevalent. (kickoffs, passing, defenseless receiver, etc.)



References



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2. NFL Picture with Helmet: <https://www.usatoday.com/story/sports/nfl/2014/06/25/concussion-settlement-no-monetary-cap-head-injuries-ex-players-anita-brody/11356645/>
3. “What is a Concussion?” Center for Disease Control and Prevention: https://www.cdc.gov/headsup/basics/concussion_what.html
4. NFL 100 Logo: <http://www.nfl.com/news/story/0ap3000000975734/article/nfl-reveals-logo-celebration-plans-for-100th-season>
5. Concussion diagram: <https://qbi.uq.edu.au/concussion/what-is-concussion>
6. YouTube Video Compilation: https://www.youtube.com/watch?v=Wn9NdHpTWrg&t=599s&ab_channel=DingProductions
7. Player Safety in the NFL Featuring Dr. Crandall’s work: <https://www.playsmartplaysafe.com/newsroom/videos/health-safety-related-changes-2018-season/>
8. Kickoff Diagram: <https://www.nbcsports.com/boston/tags/nfl-kickoff-rules-changes>

Questions?

