

Injury Analysis

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11 October 2020

Loading libraries

```
source("setupCarmen.R")
```

Hypothesis

The third hypothesis we are looking predicts that sports with high instances of injury will also have steady declines in participation.

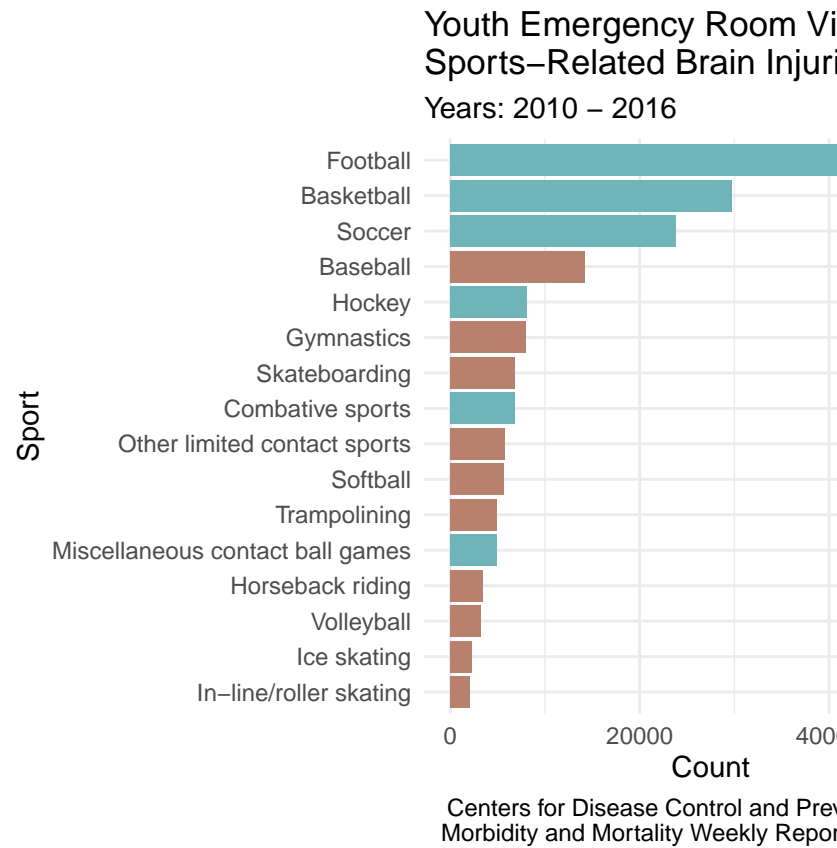
Data

The data used are as follows:

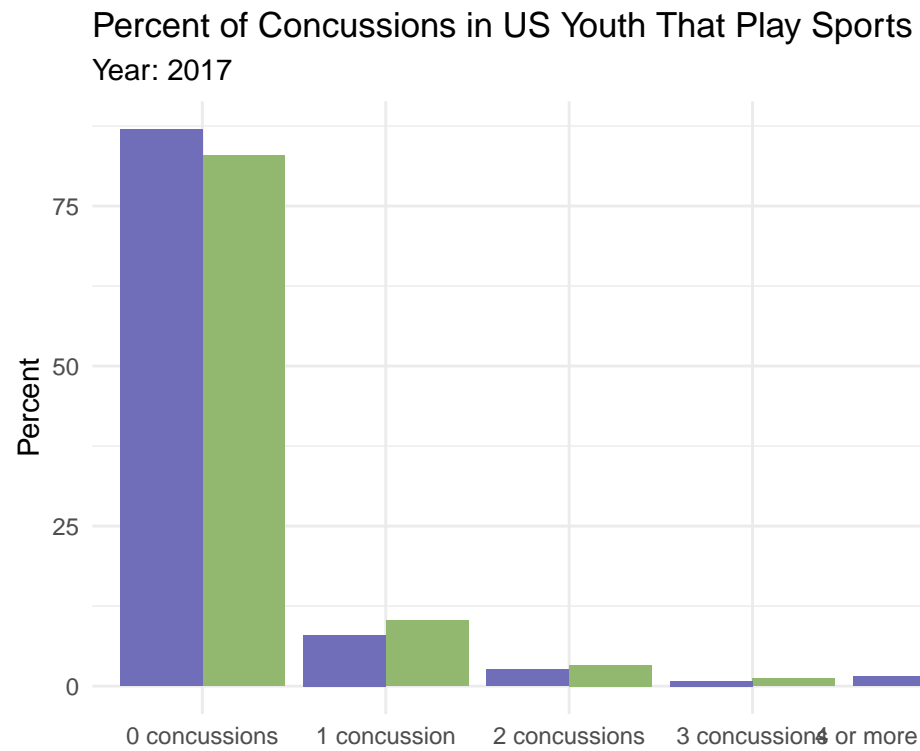
- Youth emergency visits among US children for sports-related brain injuries from 2010-2016
- US annual average emergency department visits for all sports injuries 2010-2016
- US emergency department visits ages 5 to 24 from 2010 to 2016 by gender and activity
- Percent of concussions in US youth that play sports as of 2017
- Survey on the long-term effects of concussions in sports
- Average annual number of US college female sports injuries during the fall season from 2009 to 2014
- Average annual number of US college male sports injuries during the fall season from 2009 to 2014
- Average annual number of US college for all seasons from 2009 to 2014 by gender
- High School Participation Archive
- Program for Injury Prevention, Education, & Research

Injuries

How many kids are getting hurt?



What demographics are most affected?

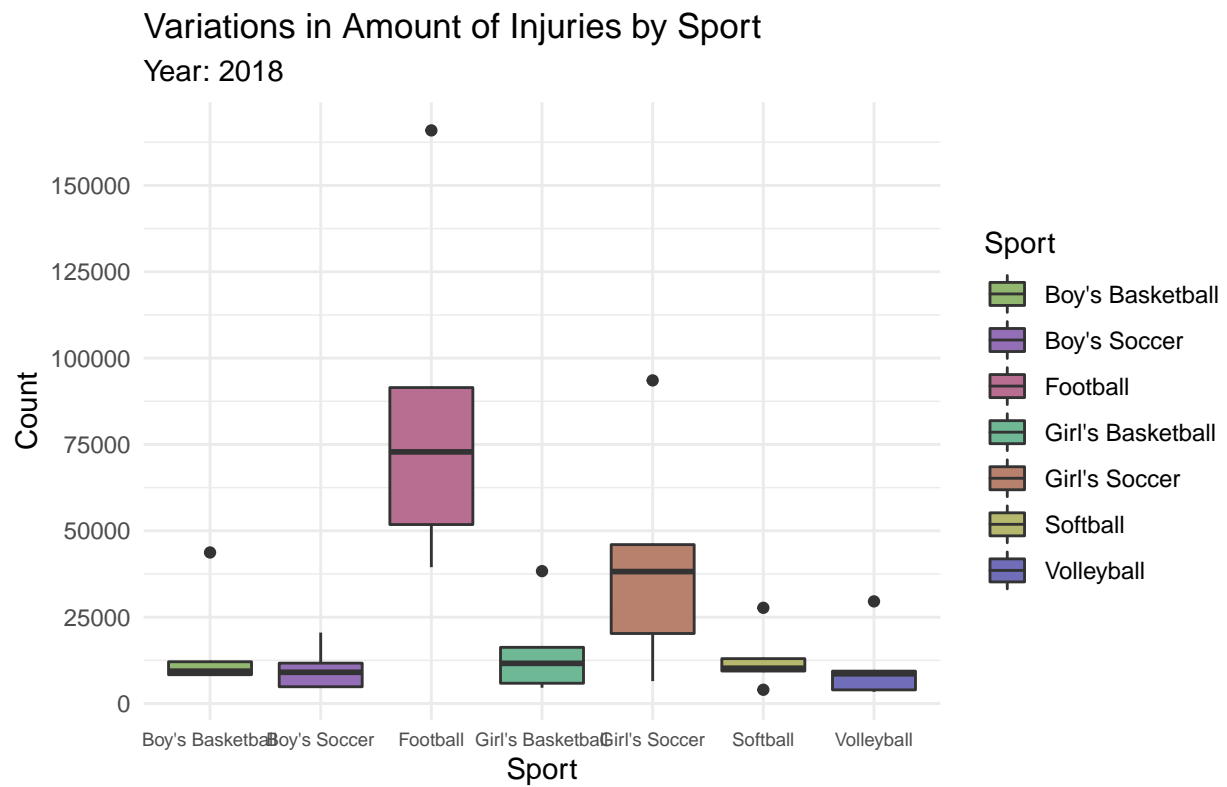


CDC: Self-Reported Concussions from Playing a Sport or Being Physically Active
Among High School Students

Bar Graph: Number of concussions by gender

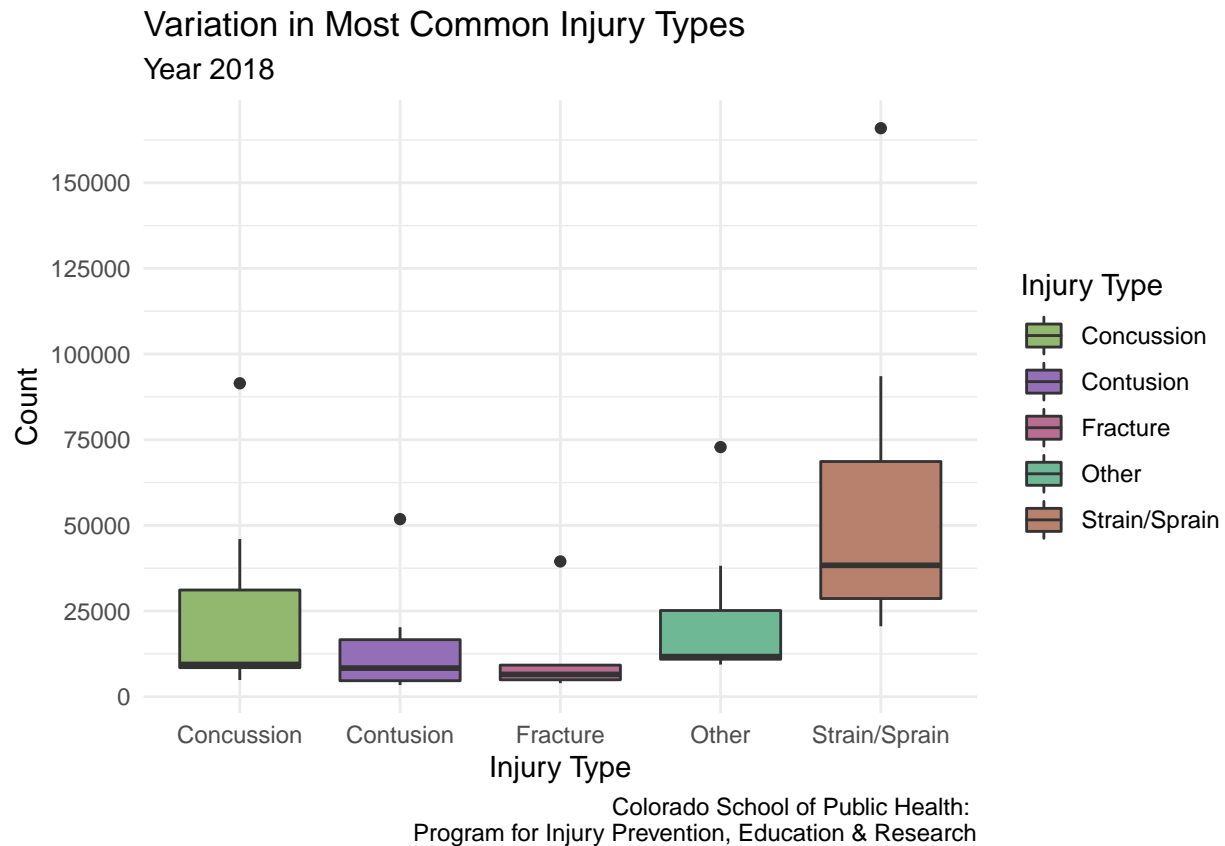
What sports have the most injuries?

Boxplots of injuries by sports



Colorado School of Public Health:
Program for Injury Prevention, Education & Research

Boxplot of injuries by type



How have injuries rates changed over time?

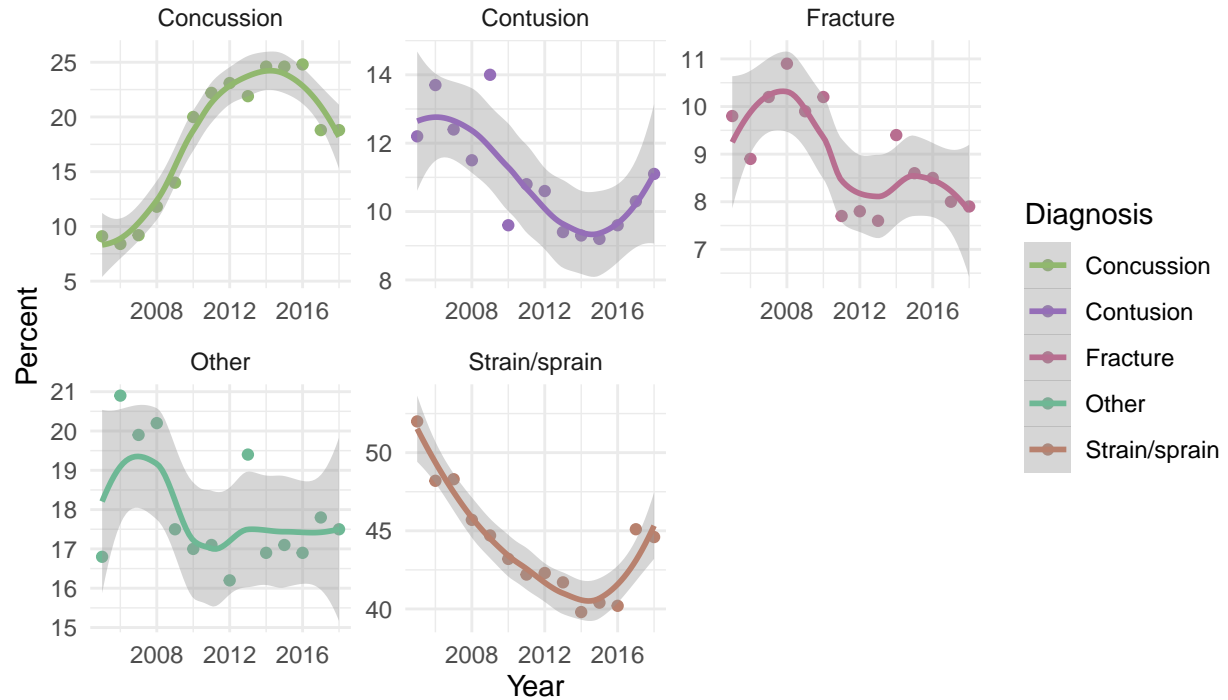
Line charts by sport nat' injury estimates

```
Shows DECREASE in injuries # {r} # national_time <- natl_injury_estimates %>% #
pivot_longer(cols = -X1, names_to = "Year", values_to = "Injury") %>% # rename(Sport
= X1) %>% # filter(Sport != "Overall total") # # temp <- national_time$Year # #
temp <- temp %>% # str_replace_all(pattern = "[[:punct:]]\\d{2}$", replacement =
"") %>% # as.integer() # # national_time <- national_time %>% # select(-Year)
%>% # bind_cols(temp) %>% # rename(Year = `...3`) # # # {r} # national_time %>%
# ggplot(aes(x = Year, y = Injury, color = Sport)) + # geom_line() # # # {r} #
national_time %>% # filter(Injury > 444281) %>% # ggplot(aes(x = Year, y = Injury,
color = Sport)) + # geom_line() #
```

Scatterplot diagnosis by year, color by type

Trends in Injury Diagnosis

Years: 2005 – 2018



Colorado School of Public Health: Program for Injury Prevention, Education & Research

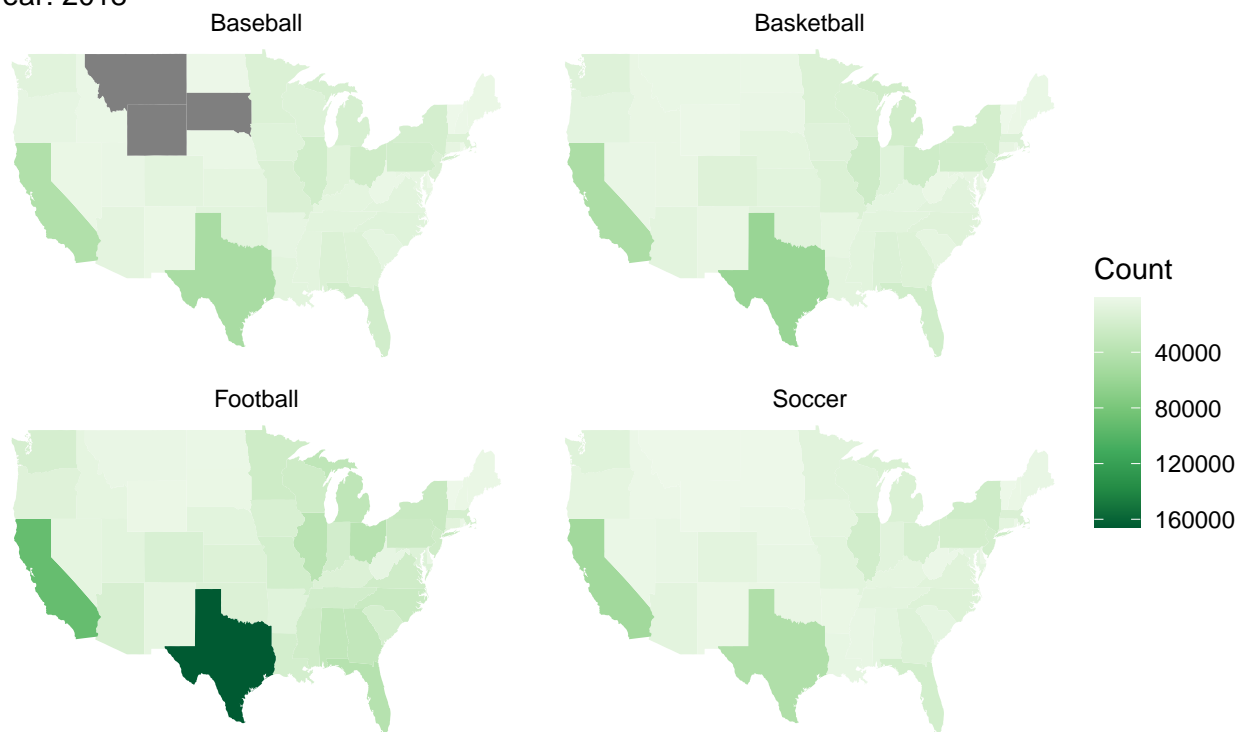
Participation

Who participates in sports?

Boys Participants Map

Counts of Participation in Boy's Sports by State

Year: 2018

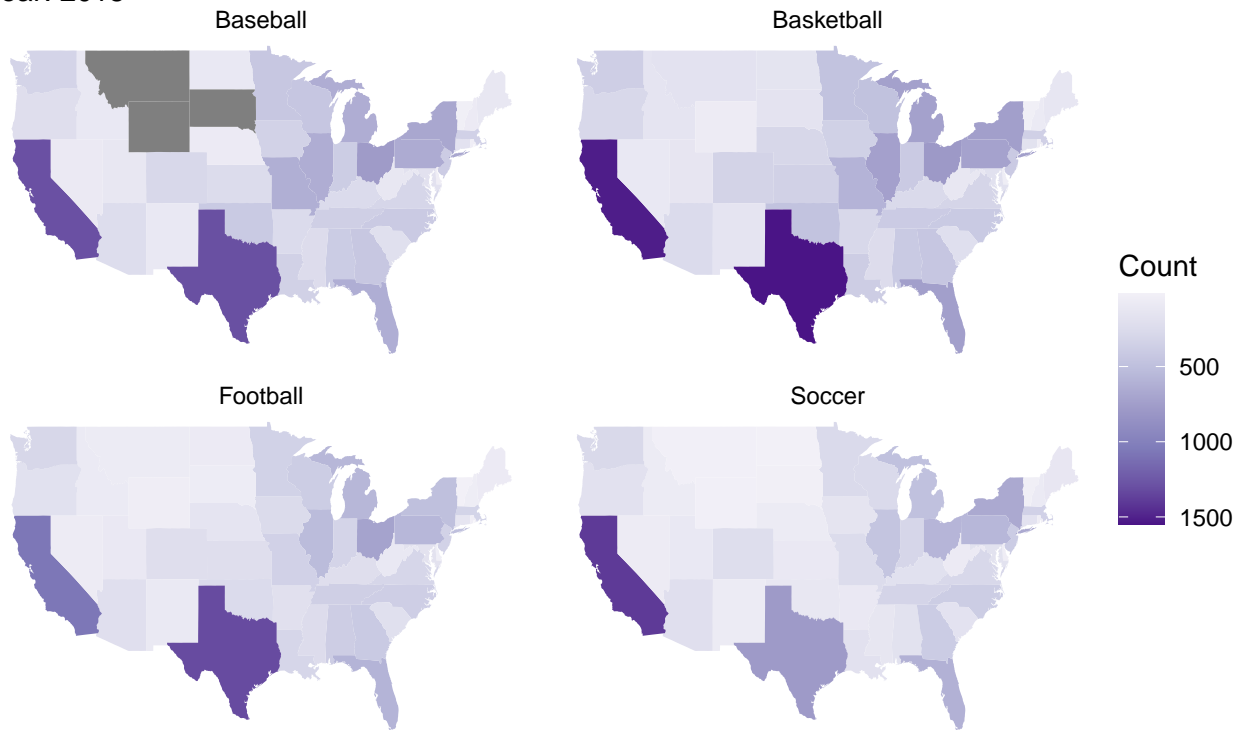


High School Participation Survey Archive

Boys Programs Availability Map

Counts of Programs for Boy's Sports by State

Year: 2018

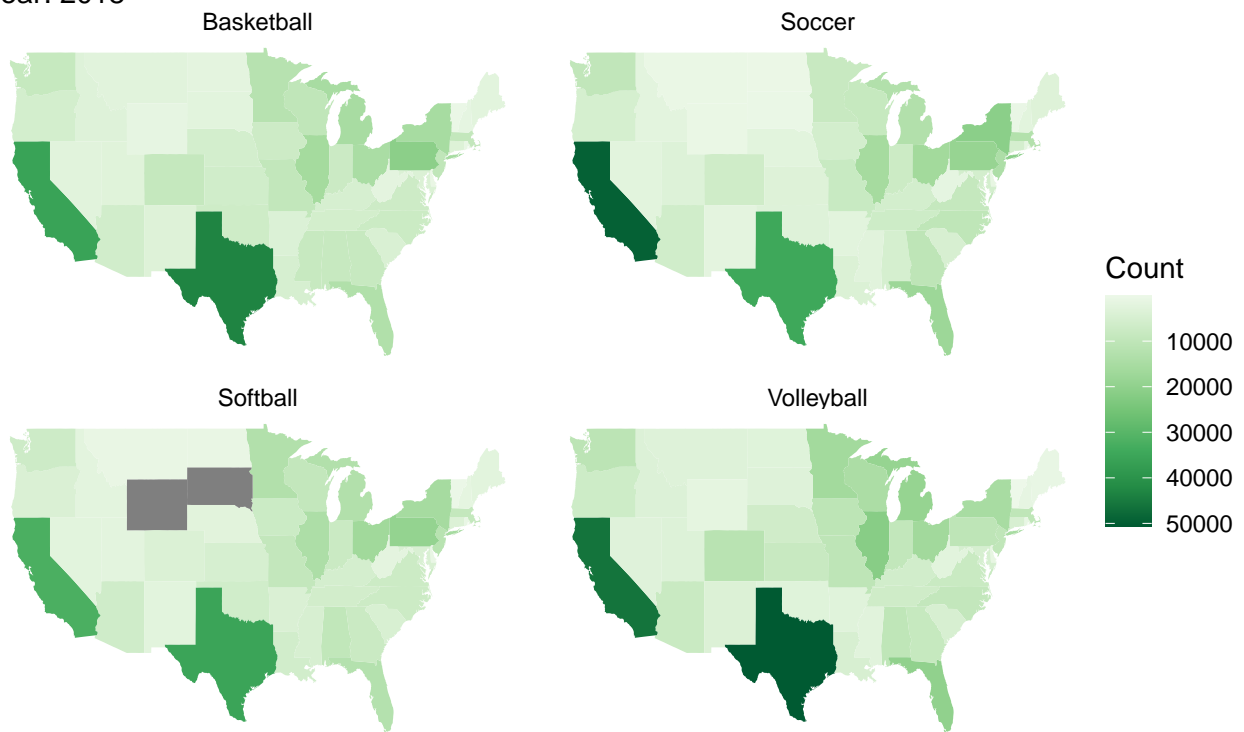


High School Participation Survey Archive

Girls Participants Map

Counts of Participation in Girl's Sports by State

Year: 2018

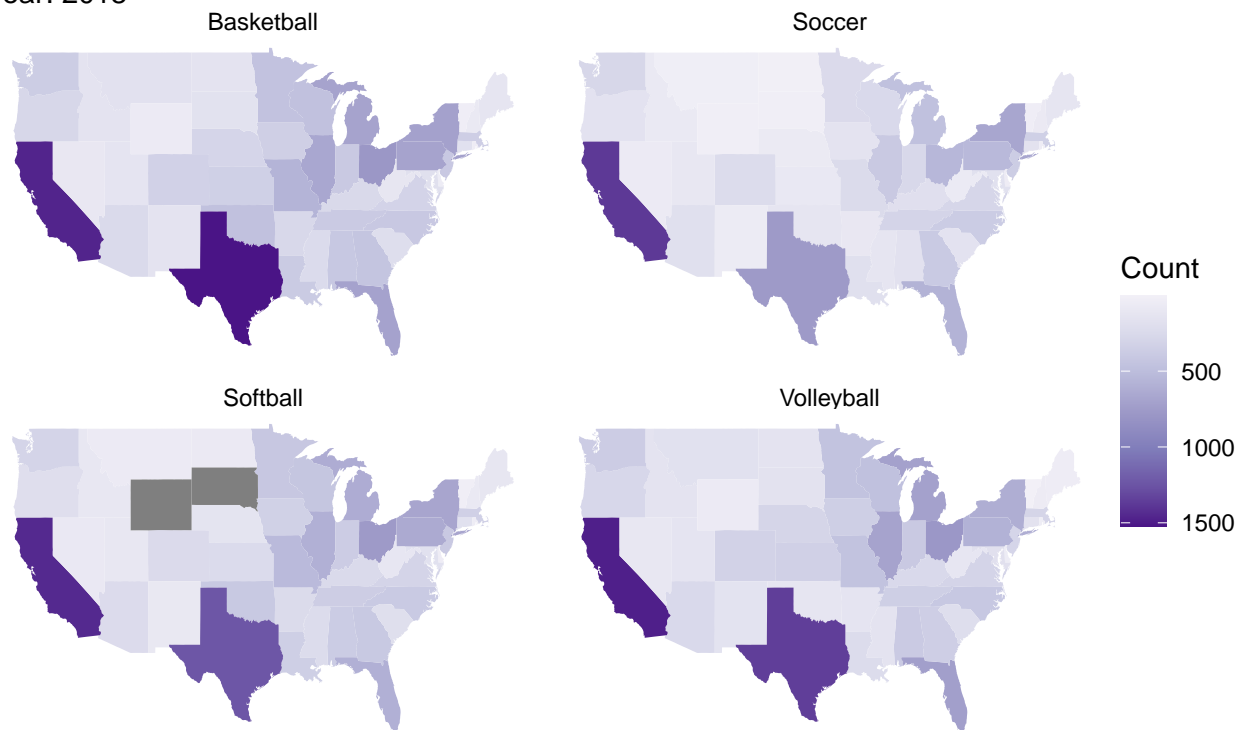


High School Participation Survey Archive

Girls Programs Map

Counts of Programs for Girls's Sports by State

Year: 2018



High School Participation Survey Archive

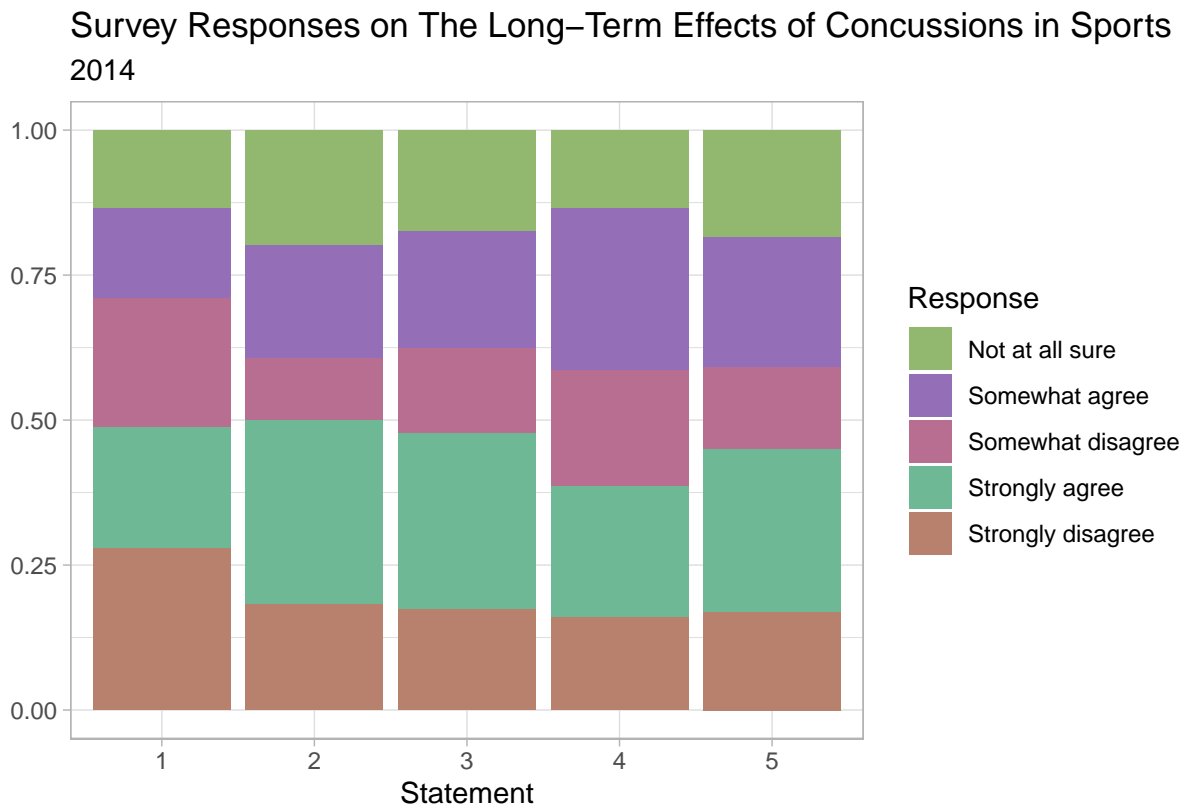
How many people participate in sports?

```
SHOWS INCREASE Line graph of sports # {r} # national_time <- natl_injury_estimates %>%
#   pivot_longer(cols = -X1, names_to = "Year", values_to = "Injury") %>% #   rename(Sport
= X1) %>% #   filter(Sport == "Overall total") #   # temp <- national_time$Year #   #
temp <- temp %>% #   str_replace_all(pattern = "[[:punct:]]\\d{2}$", replacement =
"") %>% #   as.integer() #   # national_time <- national_time %>% #   select(-Year)
%>% #   bind_cols(temp) %>% #   rename(Year = `...3`) #   # {r} # national_time %>%
#   ggplot(aes(x = Year, y = Injury, color = Sport)) + #   geom_line() #   # {r} #
national_time %>% #   filter(Injury > 444281) %>% #   ggplot(aes(x = Year, y = Injury,
color = Sport)) + #   geom_line() #   # {r} # temp <- participation_count_1971_2019$Year
#   # temp <- temp %>% #   str_replace_all(pattern = "[[:punct:]]\\d{2}$", replacement
= "") %>% #   as.integer() #   # participation_recent <- participation_count_1971_2019
%>% #   select(-Year) %>% #   bind_cols(temp) %>% #   rename(Year = `...4`) #   #
participation_recent <- participation_recent %>% #   filter(Year > 2004) #   # participation_recent
#   # {r} # participation_recent %>% #   ggplot(aes(x = Year, y = `Girls Participants`))
+ #   geom_line() #
```

Conclusion

Injuries and participation over time

Stacked Bar Graph: Public opinion



Source: Harris Interactive | The Harris Poll #92