

Statistics in Sports: Introductions

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Roadmap

- 1. Introduction (Me)
- 2. Introductions (You)

Introduction (Me)

Who Am I?

- PhD, Epidemiology, Emory, 2018
- Assistant Professor of Quantitative Theory and Methods
 - Past: Adjunct Instructor at Emory and GSU
- Statistical consultant for sports (NFL/MLB/NBA/NCAA) teams, pharmaceutical companies, media outlets
 - Past: healthcare consultant, end-of-life care
- Staff Writer, FootballOutsiders.com
- Been on *Jeopardy!*
- ...lost on *Jeopardy!*



Epidemiologists...They
hunt viruses, right?



What is Epidemiology: Dictionary Definition

- Epidemiology is the study of the distribution and determinants of states or events in specified populations, and the application of this study

. (Last,

Dictionary of Epi)

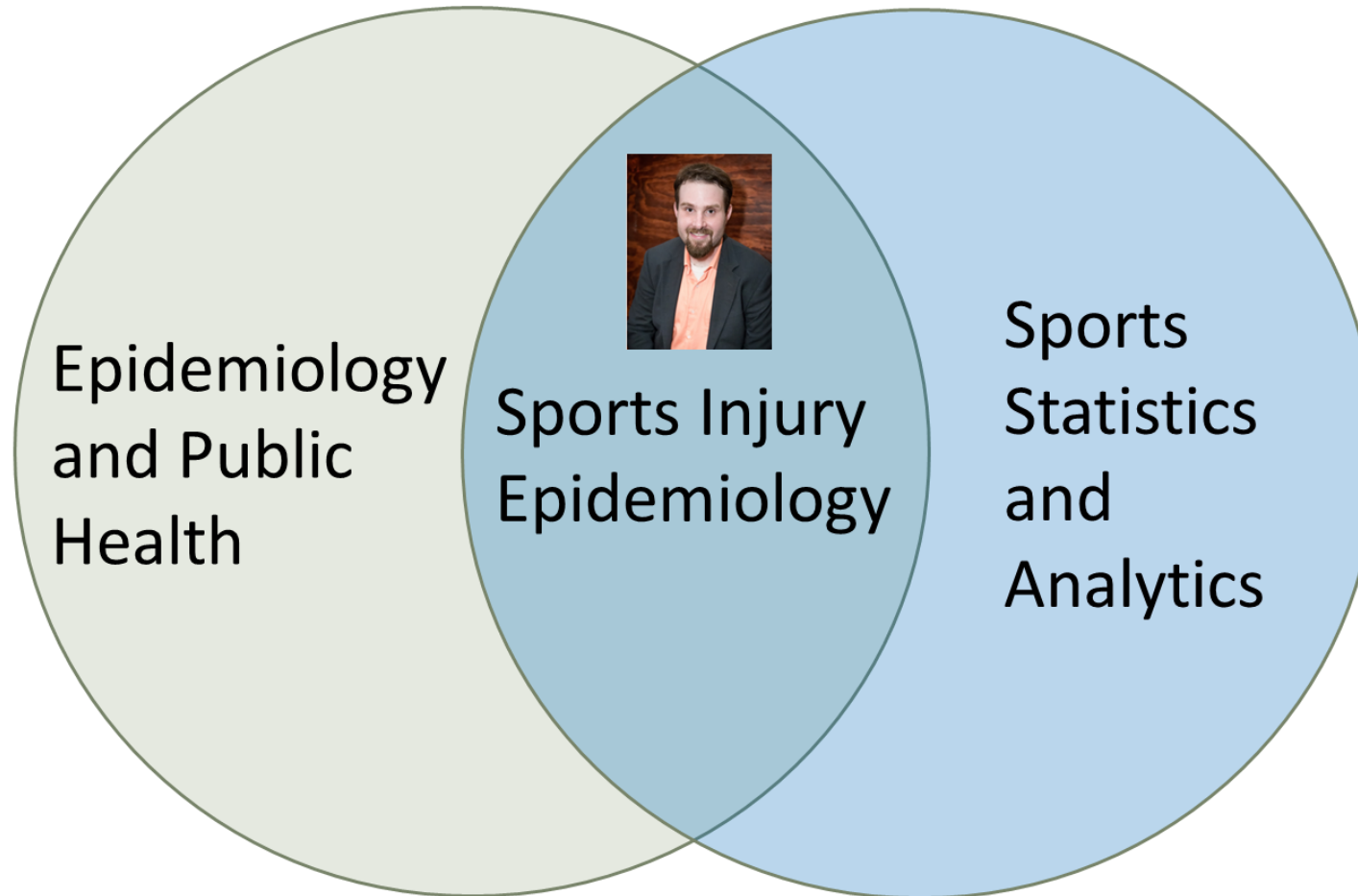


What is Epidemiology: My Definition

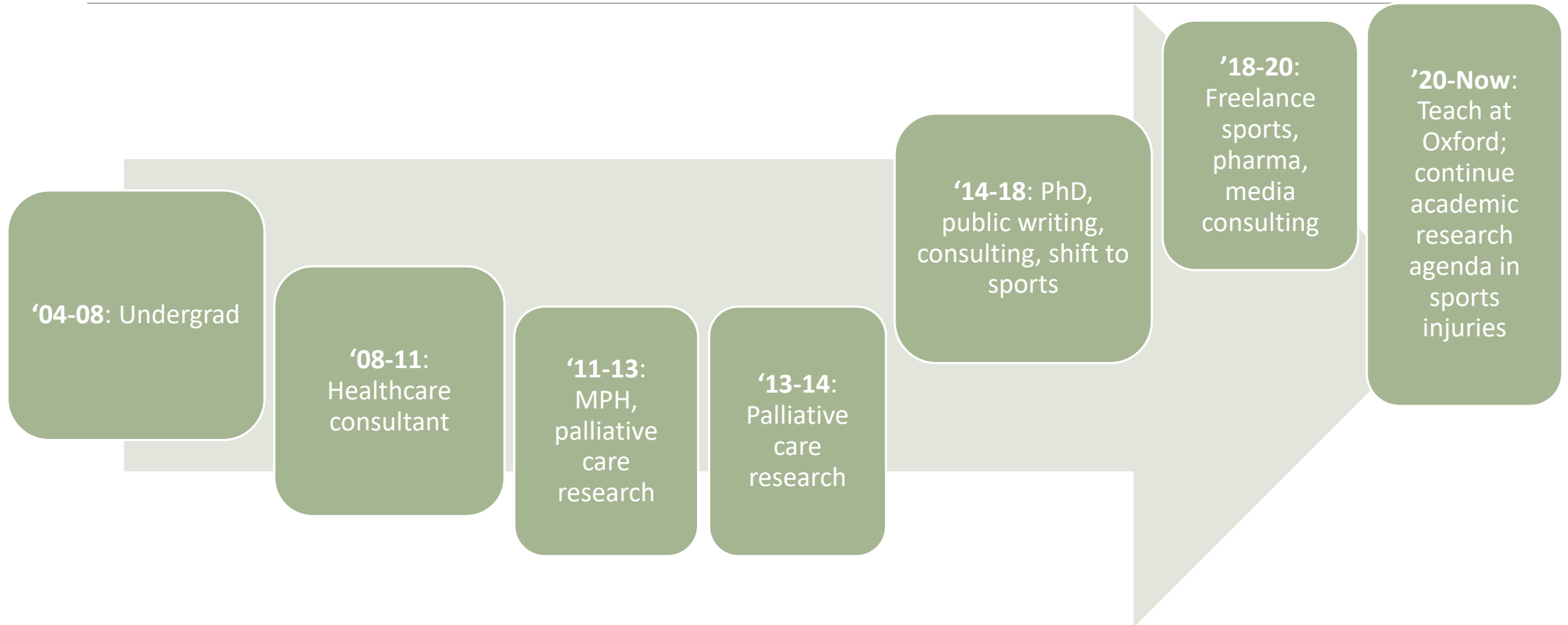
- Epidemiology teaches you how to ASK and ANSWER questions about the world around you using rigorous, mostly quantitative, methods



Sports Injury Epidemiology



My Journey to Sports Statistics



My Journey to Sports Statistics

- 2008: Graduate with Bachelor's in "History, Philosophy, and Social Studies of Science and Medicine" (HiPS)
- Straight into the Great Recession



My Journey to Sports Statistics

- 2008-11: Healthcare consultant for The Advisory Board Company in D.C.
 - “Countercyclical investment” saved my butt
 - Told hospitals what cancer technologies to invest in
 - Paid off student loans
 - My mother was dying of cancer
 - Coping through research



My Journey to Sports Statistics

- 2011: I'm 24 y/o, tired of helping hospitals make money off cancer patients. What now?
 - Grad school, obviously
 - Read *The Hot Zone* as a teen, epidemiology always sounded interesting
 - Took an undergrad course in it, “got it,” meshed well with how my brain worked
 - MPH in Epi-> do the quant stuff I was doing, but for good
 - Focus on palliative & end-of-life care



My Journey to Sports Statistics

- 2011-13: MPH in Epi, Emory
 - Worked at Emory Palliative Care Center (EPCC)
 - May 2013: applied on a lark for internship with Jacksonville Jaguars; became freelance injury analyst
 - How did I get into sports? Incredible luck, privilege
- 2013-14: EPCC, paid off student loans
 - Started managing data, writing at Football Outsiders (FO)



My Journey to Sports Statistics

- 2014-18: PhD in Epi, Emory
 - Browbeat into it. Still ambivalent on if the right call
 - Dissertation originally on cardiovascular epi, then switched to sports
- Gradually more well-known in sports analytics world:
 - Published more on FO, started blog, some academic papers, conference presentations, Twitter
 - Niche: health and injuries. Really helped
 - Started doing more consulting

My Journey to Sports Statistics

- 2018-2020: Founded Binney Research, Analytics, and Sports Services (BRASS), LLC
 - Freelance consulting for sports, pharma, media; teaching
 - Work from home; no steady schedule, office, 9-to-5, single employer



BINNEY RESEARCH, ANALYTICS, and SPORTS SERVICES

The Odd and Interesting Destination

- Now Assistant Professor at Emory-Oxford; teaching-focused position
 - Still do some of my own sports research
 - Scholarly + popular
 - Consulting dialed back
 - Student research; Sports Analytics Club – Oxford

My Journey to Sports Statistics

- How did I get into sports statistics?
 - Got that lucky in with the Jags in 2013
 - Once your foot is in the door, you're taken more seriously
 - Started writing, presenting at conferences -> raise public reputation -> get opportunities
 - Injuries/health the next big analytics revolution in sports -> lots of buy-in
 - Cis white straight male – that helps



My Journey to Sports Statistics

- How can you get into sports statistics?
 - Do analyses, write it up on personal blog
 - Pitch sports analytics websites you like
 - Promote on social media (Twitter, for now)
 - “Network”
 - Conferences – partial list

[MIT Sloan Sports Analytics Conference](#)

[New England Symposium on Statistics in Sports](#)

[OptaPro Forum](#)

[Carnegie Mellon Sports Analytics Conference](#)

[StatsBomb Innovation in Football Conference](#)

[Seattle Hockey Analytics Conference](#)

[Vancouver Hockey Analytics Conference](#)

[Rochester Institute of Technology Sports Analytics Conference](#)

[Ottawa Hockey Analytics Conference at Carleton](#)

[UConn Sports Analytics Symposium](#)

[MathSport International](#)

[Great Lakes Analytics Conference](#)

[Columbus Blue Jackets Hockey Analytics Conference](#)

[Sports IDEAS Symposium](#)

A Word on Luck

- “You Make Your Own Luck”
 - Half-agree. You can put yourself in positions to get lucky, but sometimes shit just happens (good or bad)
 - Important to recognize role of luck in where I am
 - Privilege (white, male, cis, straight, middle-class childhood, etc.) is a huge part of luck



Introductions (You)

Small Groups of 4: Who Are You?

- Name
- Where you're from
- Teams you root for? (If any of you says Patriots I swear to God...)
- “Two truths and a lie”
 - Group votes – do not reveal what's the lie, though!
- Each person writes down info for one groupmate and will introduce them in a moment

Small Groups of 4

- One person stays put
- Each of the others goes to a *different group*



Small Groups of 4: Highlights

- Share your favorite sports highlight with your group
- Have fun!

Small Groups of 4

- One person stays put
- Each of the others goes to a *different group* you haven't visited before



Small Groups of 4: Immaculate Grid?

- Play a round together!
- Goal: fill in the whole grid and get the lowest rarity score
- Choose any sport
- <https://www.immaculategrid.com/> or <https://www.immaculategrid.io>

Next Class

- For next class:
 - Do the readings on Canvas
 - **Install R and Rstudio (complete “Tutorial 0”)**

Thanks!

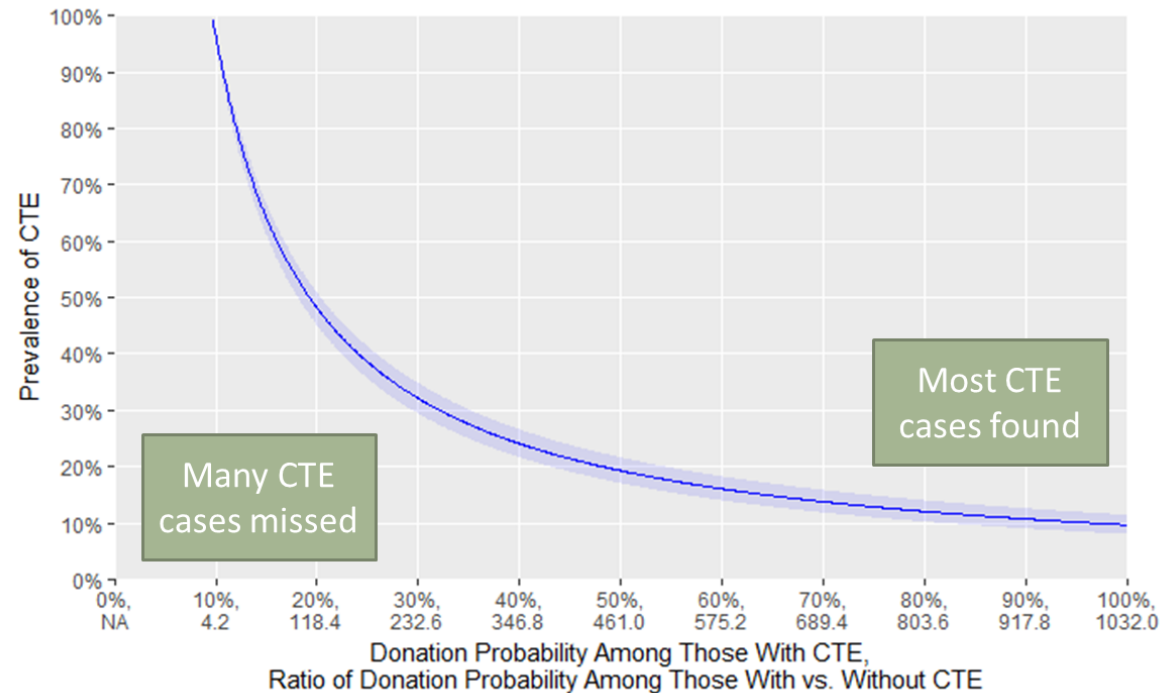
- Questions? zbinney@emory.edu, @binney_z on Twitter



Appendix: More on my Research

Sports Epidemiology

- Public Work – chronic traumatic encephalopathy (CTE)
- **Problem:** severely selected samples of dead ex-players who donated brains in CTE work
 - 99% of *donated brains* had CTE != 99% of football players have CTE. But we know total # of players who died → *possible* donated brains. Use a little algebra and...
- **Results:**
 - Don't know true prevalence, but can graph the range, and reason from there
- **Conclusions:**
 - Plausible that 20-50% of NFL retirees will show signs of CTE, mostly severe
 - Severe CTE never shown in substantial fraction of general population



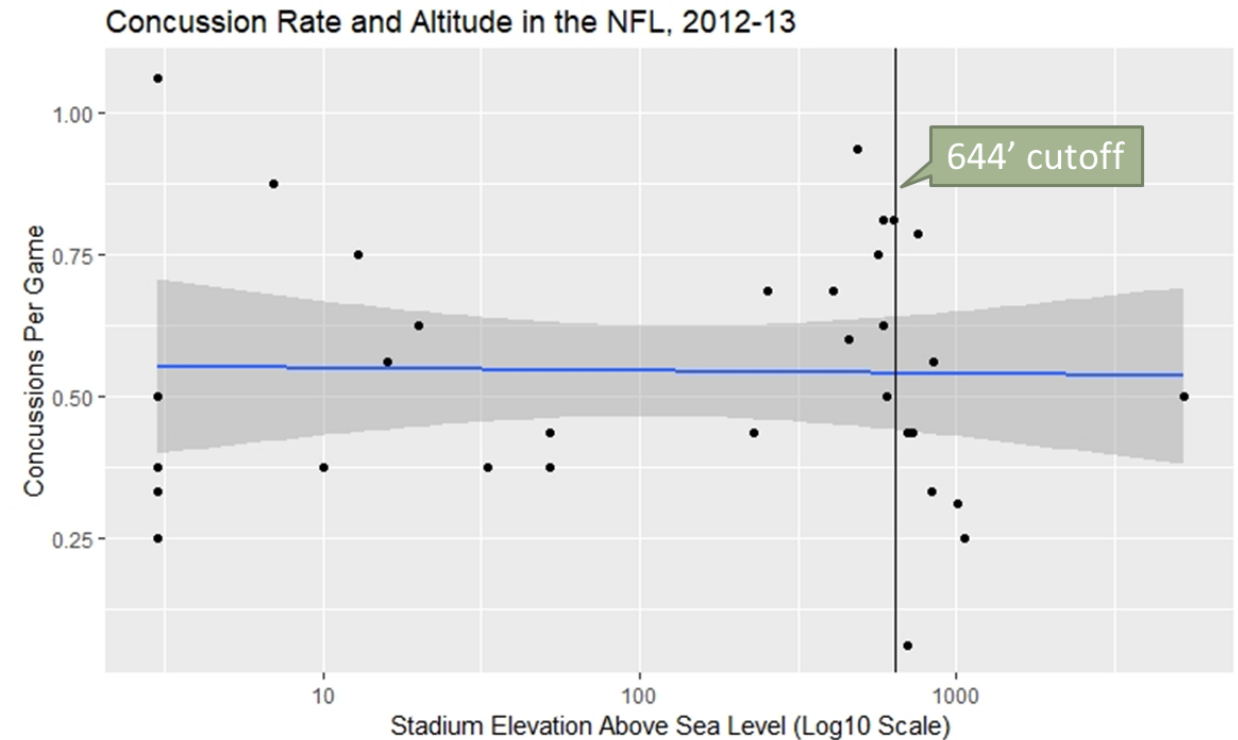
Sports Epidemiology

- Public Work – bust snake oil
- Claim: association between concussions and altitude (high vs. low) in NFL

- **Results:** no association

- **Conclusions:**

- Collars being tested on, sold to vulnerable children and parents on shoddy science
- Conflicts of interest abound

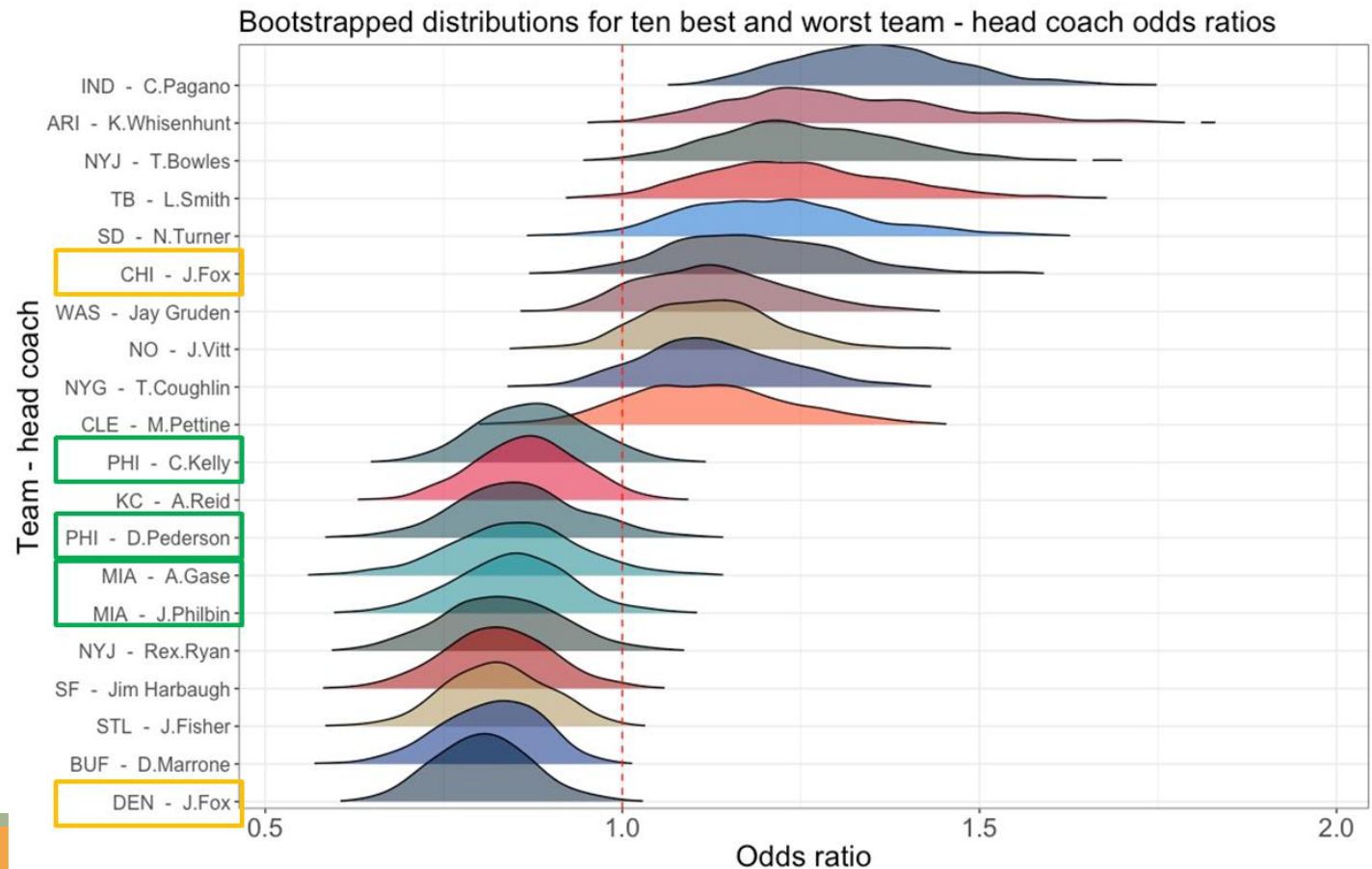


Sports Epidemiology

- Public Work – identify NFL injury risk factors

- Results:**

- Identifying dangerous and safe teams and coaches

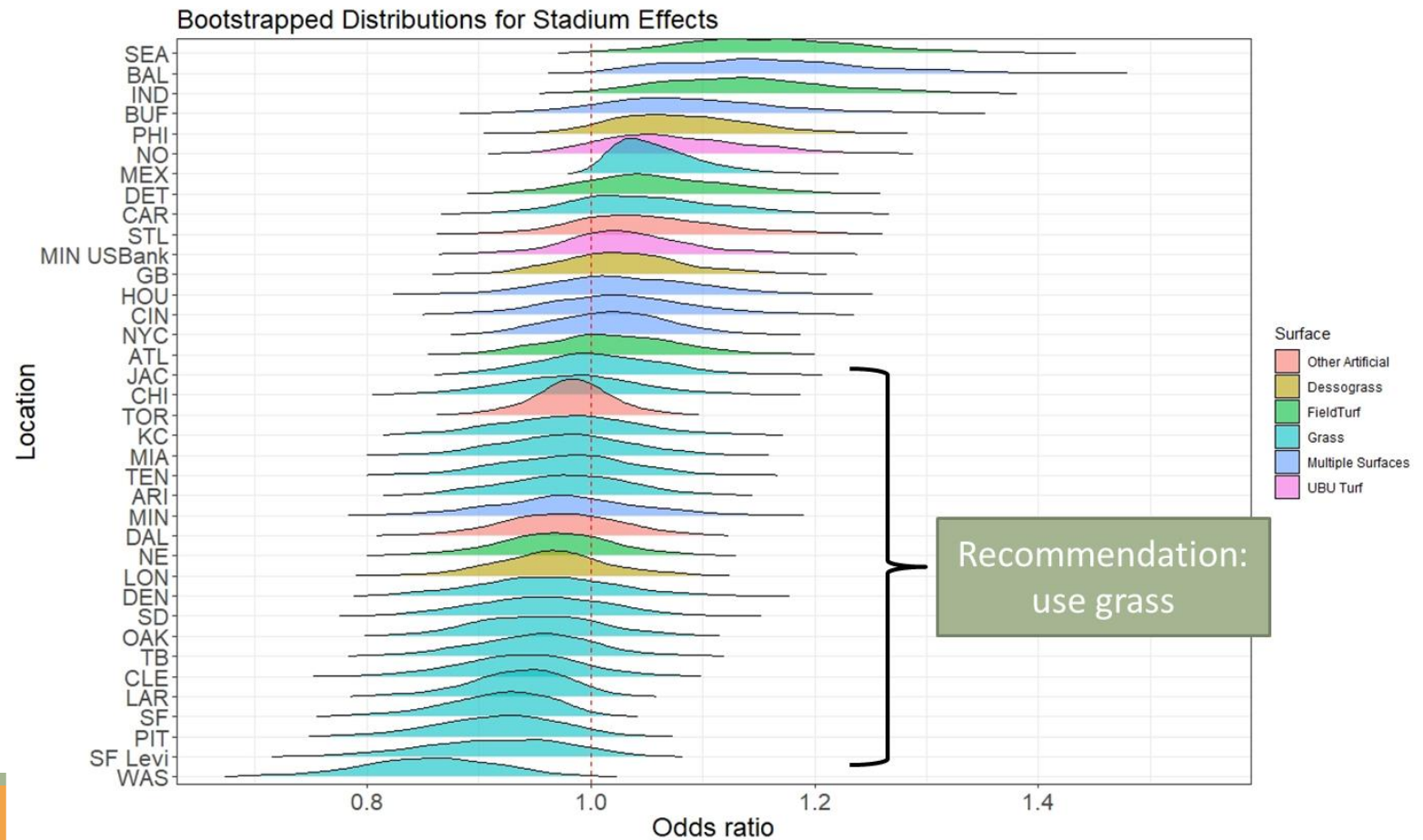


Sports Epidemiology

- Public Work – identify NFL injury risk factors

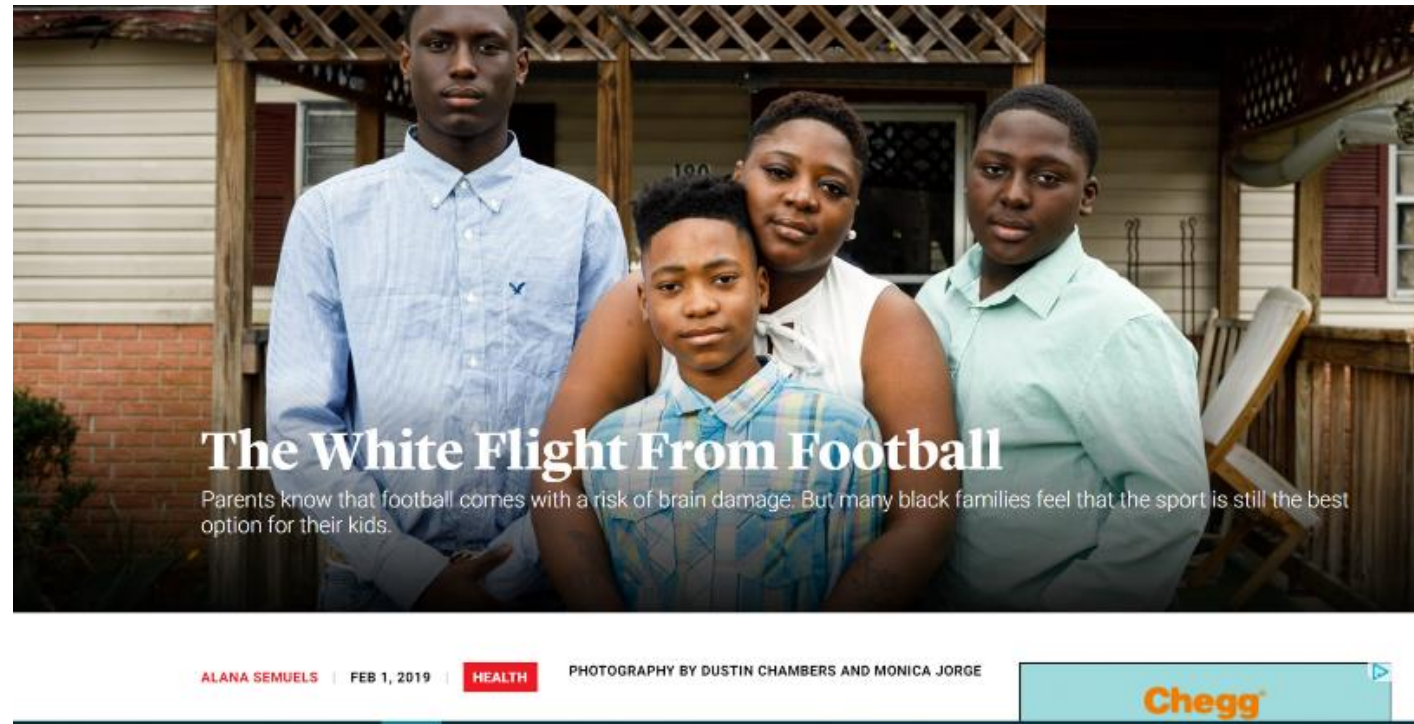
- Results:**

- Identifying safe and dangerous places to play



Children and Football

- As we learn more about dangers to long-term health, who is left to play? Our most vulnerable children.
- -6.6% nationwide in last decade
- Declines in 40 total states; steepest declines in Rust Belt, northeast
- Rising in south
- NFL now >75% black



Children and Football

- HBO Real Sports: in Illinois from 2012-2017,

