
LS88: Sports Analytics

— Course Summary —

So what did we do?

- Pythagorean Expectation
 - ◆ The fundamental relationship of scoring/defense and winning
- Measurement
 - ◆ BA vs OBP vs SLG
 - ◆ OPS and wOBA even better
- Expectation modeling
 - ◆ Run Expectancy
 - ◆ Linear Weights

So what did we do?

→ Efficiency and Basketball

- ◆ Shooting measures
- ◆ The Four Factor model: shooting, rebounding, turnovers, and free throws

→ Spatial analysis

- ◆ Basketball shooting in space
- ◆ The evolution of shooting and the 3 point shot
- ◆ Defender proximity

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So what did we do?

- Football
 - ◆ The complexity of strategy
 - ◆ Expected value models for points, punts, kicking, etc
- Decision making
 - ◆ Bunting and stolen bases
 - ◆ 4th down bot
- WAR/WinShares
 - ◆ The modern summarization of a player in wins instead of something else

So what did we do?

→ Advanced tools

- ◆ Regression (and penalized regression)
- ◆ Bootstrap
- ◆ Inference
- ◆ Testing
- ◆ Causality

So what did we do?

- Real Plus/Minus
 - ◆ Multiple regression
 - ◆ Multicollinearity and penalized regression
- Modern Data Collection
 - ◆ Radar, cameras, etc
- Causal inference
- The Hot Hand
 - ◆ Bootstrapping and statistical testing
- Regression to the Mean and Projection
- Ranking Systems
 - ◆ Elo, Matrix/Regression, Graph/Network/Walker/Markov Chain

So what's next?

- This course was secretly about data and statistical literacy
- Learning about important concepts in data as they show up in data analysis for sports
- This can't be the end of the road

So what's next?

→ Things you can do to get better

- ◆ Join the Berkeley Sports Analytics Group
- ◆ Work with a professor in Econ or Stats (I know of one)
- ◆ Do an honors thesis
- ◆ Major in Statistics
 - Data + programming + mathematical theory + modeling + ... = Statistics
 - Psssst... Data Science = Applied Statistics

So you want a job as a data scientist....

Go to graduate school (it's okay to just want to go work)

Why graduate school?

- It's ridiculously intellectually stimulating
- A PhD opens doors that are otherwise unavailable (advanced research type positions)
 - ◆ What is even research?

Find a mentor

No one knows everything, least of all you (sorry)

You're growing/learning. You're not supposed to know things yet or you'd be up here

I'm leaving Berkeley at the end of the month but if you have questions, I'm available

Keep working at it

It's a life-long pursuit. And it's fun.