

Soccer Penalty Shootouts

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Closed to further applications

Faculty Member: [Nils Rudi](#)

This project is eligible for remote work.

Proposal Description:

Soccer penalty shootouts have created many iconic sport moments. It has also received a lot of criticism, in part that after 120 minutes of regular play, a few kicks on the ball will decide the outcome of a match. From the players' side, penalty shootouts do not tend to be very popular – in part because of the high pressure it puts on them.

This project will use modeling and data analysis to address a range of questions about penalty shootouts. Examples are:

- Better understand the impact that alternative sequences have on the shootout win probability.
- Analyze impact of psychological pressure on shooter and goalkeeper performance.
- To which extent various factors influence scoring probabilities in penalty shootouts (such as penalty experience, defender/midfielder/forward, age, recent history with penalties and in-game performance).
- What are the best shooting and goalkeeper strategies for penalties?

This project will combine large scale archival data with a newly collected dataset that in great detail captures each shot (including running distance of shooter before shooting, position of goalkeeper at shot, where goalkeeper goes in the saving attempt, location of shot).

Requisite Skills and Qualifications:

- Strong methodological background (data analysis and quantitative modeling).
- Strong Python skills (having knowledge about R would be a plus).
- Experience with databases and SQL.

Award: Drew Beckman

Nhi Nguyen

Tobin Application Link: [Tobin Application](#)

Project Type: Tobin RA

Project Year: 2021

Term: Spring 2021

Source URL: <https://economics.yale.edu/undergraduate/tobin-ra/spring-2021/soccer-penalty-shootouts>