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Methods and applications for shot charts from the National Basketball Association (NBA)

WHEN
May, 12th, 2021
10:00 AM, CDT

WHERE
Via ZOOM
ZOOM information will be provided in the email announcement for this seminar.

Brandon Rhodes, MS Candidate

In the past few years, the National Basketball Association (NBA) has witnessed a rise in the use of statistics and machine learning methods, commonly referred to as `(advanced) analytics'. This trend has affected how players are evaluated and even how many teams strategize. Often, these methods involve complicated functions of basic statistics or rely on the use of statistics which require complicated computations. My thesis seeks to examine a simpler set of data from the NBA: shot charts. A shot chart is a map of the basketball court that is typically partitioned into zones, and assigned in each zone is an estimate of a player's (or team's) shooting ability from that zone. The part of my thesis I will present addresses the problem we encounter in the situation where a player does not record a large number of shot attempts or does not record any shot attempts in a particular zone. In practice, this situation is either ignored or an unreliable estimate is used for it. In my thesis, I develop a hierarchical model to assign more appropriate estimates (by shrinking the unreliable estimate towards the estimated prior's mean). The model incorporates basic, but important, information about the player and game. I will show some of the prior distributions which result from the model and qualitatively evaluate them.

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