

國立高雄大學統計學研究所

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Dynamic Prediction of Major League Baseball Audience

Engagement: GEE Approach to Short-Term Demand and

Outcome Uncertainty

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Abstract

This study delves into the dynamic realm of Major League Baseball, utilizing Generalized Estimating Equations (GEE) to predict short-term audience engagement. Focused on the interplay between short-run demand and the uncertainty of game outcomes, our research aims to decipher the intricate factors influencing viewer preferences. By leveraging GEE, we analyze the multifaceted relationships among team performance, game dynamics, and audience attendance. Although it would be easier to calculate using a generalized linear model, GEE addresses issues overlooked by a generalized linear model, specifically the correlation between different teams and games. This consideration proves essential in capturing the complexities of the baseball audience experience. We discovered the nature of audience interest by exploring recent data, specifically from each team's last 40 home games in 2019, 2021, and 2022. This research not only contributes to the growing field of sports analytics but also offers practical insights for baseball stakeholders seeking to optimize fan engagement strategies in the ever-evolving landscape of professional sports.

Keywords: Attendance Prediction, Baseball, Generalized Estimating Equations

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