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On predicting an NBA game outcome from half-time statistics

Predicting the outcome of an NBA game is a major concern for betting companies and individuals who are willing to bet. We attack this task by employing various advanced machine learning algorithms and techniques, utilizing simple half-time statistics from both teams. Data collected from 3 seasons, from 2020/21 up to 2022/23 were used to assess the predictive performance of the algorithms at two axes. For each season separately, apply the algorithms and estimate the outcomes of the games of the same season and secondly, apply the algorithms in one season and estimate the outcomes of the games in the next season. The results showed high levels of accuracy as measured by the area under the curve. The analysis was repeated after performing variable selection using a non-linear algorithm that selected the most important half-time statistics, while retaining the predictive performance at high levels of accuracy.

Keywords
Half-time statistics, Game outcome, Machine learning

Biography
Michail Tsagris is an Associate Professor at the Department of Economics of the University of Crete (UoC) and an Adjunct Professor in the Department of Mathematics and Statistics at the University of New Brunswick Saint John. Prior to these he worked as a Teaching Fellow and then as an Assistant Professor at the Department of Economics (UoC), as a Research Associate at the Department of Computer Science (UoC), as an Assistant Professor at the American University of the Middle East (Kuwait) and as a Research Associate at the School of Mathematical Sciences of the University of Nottingham. He received his BSc and MSc in statistics from the Athens University of Economics and Business (Greece) and his PhD in statistics from the University of Nottingham. Michail has published more than 70 papers in journals, conference proceedings and book chapters and has (co-)developed 50 R packages. His current research interests include computational statistics, compositional and directional data analysis, applied econometrics and machine learning.

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