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A BATSMAN'S SURVIVAL IN CRICKET: A STATISTICAL PERSPECTIVE

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Cricket is the most popular sport among the Sri Lankan audience. Even though each player is essential in cricket, the batsman plays a crucial role. Therefore, the primary objective of this study is to compare the survival of a player on the field in different innings, venues, and batting positions, and the secondary objective is to find the variables, i.e., runs, singles, doubles, boundaries and dot balls, that are associated with the survival rate of each player for the different criteria mentioned above. For this study, the ball-by-ball data of Sri Lankan innings in One-Day International matches contested between the time range of 01/01/2016 and 30/06/2021 was used. According to the exploratory data analysis, nine players who have played enough matches for different innings, venues, and batting positions are chosen for this study. The primary objective of the study is met by comparing the area under the adjusted survival curve formed using the cox proportional hazard models for each player and for each criterion such that the area is proportional to the survival probability. The predictor variables used in this model are the cumulative number of runs, singles, doubles, and boundaries scored, and the cumulative number of dot balls faced. The cox model is fitted with a right censoring technique by taking the survival time as the number of balls faced until the player gets out. Aalen model is fitted to attain the secondary objective, which provides a graphical method to check on the time dependence of covariate effects. For example, the probability of getting out increases for A.D. Mathews when more fours were scored in the fifth batting position after facing more than 75 balls. The results of this research may help in team selection because the strength of a player is identified. Also, this can help a player survive more on-field by identifying the variables that affect their survival and improving them by practising. This research will be a helpful tool to improve the performance of the Sri Lankan team, which will result in a higher success rate.

Keywords: Aalen's additive hazard model, Cricket, Cox Proportional Hazard, Survival Analysis