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STAT 306
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Executive Summary

Home-Court Advantage In NCAA Basketball

We examined the impacts of home court advantage on NCAA basketball statistics. Specifically, we looked at the Big Ten, and considered conference games from the past three seasons. We only analyzed away team's statistics to separate venue impacts from team strength.

First, we conducted a MANOVA test, considering the independent variable of home team venue, and the dependent variables of FG%, 3pt%, Total Rebounds, Assists, Steals, Blocks, Turnovers Committed, and Fouls. We found statistically significant evidence to reject the null hypothesis that the true mean for each statistic is equal across all venues. However, our data did not meet the multivariate normality, linearity, and independence conditions.

Upon finding that our conditions were not met for MANOVA, we decided to pivot from doing Linear Discriminant Analysis (LDA) to understand MANOVA outputs and instead do K-means clustering. We wanted to know whether we could group up the venues by their effects on team performance and felt that K-means clustering was appropriate. Using the subset of nine variables, we found that the clusters were decently accurate as 13/14 schools had all three seasons in the same cluster. Each cluster showed differences regarding offensive and defensive performance as well as general playstyle.

Our work showed that this topic has potential to be explored further and potentially used to identify the specific impacts that certain arenas have on team performance in NCAA basketball, specifically if we could isolate the strength of each team from the specific impact of the arena.