ETC5513-Assignment3

Table of contents

1 Executive Summary

2 Introduction

3 Methodology

3.1 Dataset Introduction

As illustrated in Figure 1, the average number of shots taken per match in the English Premier League (EPL) has steadily increased over the past two decades. This consistent rise suggests that teams are generating more shooting opportunities than in the past. Given this trend, the study investigates whether teams that take more shots tend to achieve better results across a season.
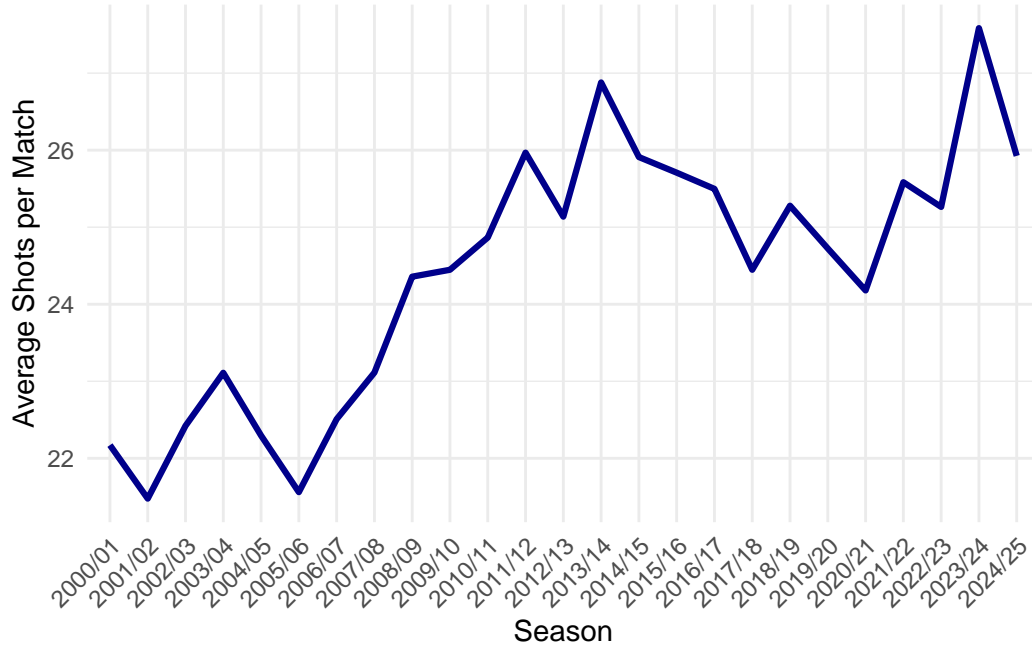
Figure 1: Timeplot of Average Shots per Season in the EPL (2000/01–2024/25)

We used match-level data sourced from Kaggle, covering EPL matches from the 2000/01 season through to 2024/25. From the full dataset, we extracted six key variables related to match outcomes and shot frequency: `Season`, `HomeTeam`, `AwayTeam`, `FullTimeResult`, `HomeShots`, and `AwayShots`. After processing, the extracted dataset contained 9,380 observations across 25 seasons.

3.2 Data Description and Analytical Approach

Table 1: Table of Variable Names for Constructed Dataset

Variable	Description
Season	The English Premier League season (e.g., '2015/16')
Team	Name of the football team
TotalMatches	Total number of matches played by the team that season
TotalShots	Total number of shots taken by the team across the season
TotalWins	Total number of wins recorded by the team that season
AvgShotsPerGame	Average number of shots made by the team each game in that season
WinRatePercent	Win rate percentage (TotalWins / TotalMatches * 100)

For analysis, we focused on the 10 most recent seasons (2015/16 to 2024/25) to reflect current trends. Using this subset, we constructed a team-season-level dataset, where each observation represents one team's performance in a given season. The final dataset includes 200 observations and 7 variables, described above in Table 1.

We use **Win Rate Percent**, which is based only on number of wins, for our performance indicator because wins carry the most points in league standings and best indicate a team's ability to outperform opponents.

To explore the relationship between shot volume and success, we created a scatter plot of **Win Rate Percent** against **Average Shots Per Game**. Each point represents a team's season, allowing us to visually assess whether teams that shoot more frequently also tend to win more matches.

4 Results

5 Discussion,Conclusion & Recommendatinos

6 References