JMP® ENHANCED DATA SET

NBA BASKETBALL TEAM PERFORMANCE

RELEVANT JMP PLATFORMS AND STATISTICAL TECHNIQUES

Graph Builder : Scatterplots, Correlation, Simple Linear Regression

PROBLEM STATEMENT

Collecting and analyzing a variety of metrics that quantify a sports team’s playing strategy and performance has become a core part of evaluating a team and comparing that to others. Teams in the National Basketball Association (NBA) have people dedicated to doing this.



The focus of the analysis will be to examine data from the 30 teams in the NBA during the 2022-2023 season using a variety of data visualizations to describe and compare the teams’ playing strategies and performance.

DATA SET

# NBA\_Basketball\_Team\_Performance.jmp

WinsNumber of wins in the 82 games of the regular seasons

LossesNumber of losses in the 82 games of the regular seasons

Win/Loss %Win/Loss percentage

Points ScoredAverage points scored pergame

Points AgainstAverage point scored by opponents per game

Field Goal AttemptsAverage number of shots attempted (not including free throws)

Field Goal ScoredAverage number of successful shots (not including free throws)

Field Goal %Average percentage of successful shots (not including free throws)

2 Point AttemptsAverage number of 2 point shots attempted

2 Point ScoredAverage number of successful 2 point shots

2 Point %Average percentage of successful 2 point shots

3 Point AttemptsAverage number of 3 point shots attempted

3 Point ScoredAverage number of successful 3 point shots

3 Point %Average percentage of successful 3 point shots

Free Throw AttemptsAverage number of 3 point shots attempted

Free Throws ScoredAverage number of successful 3 point shots

Free Throw %Average percentage of successful 3 point shots

% of FGA\_All 2 PointAverage percentage of all field goal attemps that are in the 2 point range

% of FGA\_0-3 ftAverage percentage of all field goal attemps that are within 3 feet of the basket

% of FGA\_3-10 ftAverage percentage of all field goal attemps that are within 3 to 10 feet of the basket

% of FGA\_10-16 ftAverage percentage of all field goal attemps that are within 10 to 16 feet of the basket

% of FGA\_16ft-3ptAverage percentage of all field goal attemps that are beyond 16 feet but within the 3 point line.

FG%\_0-3 ftAverage percentage of successful field goal attemps that are within 3 feet of the basket

FG%\_3-10 ftAverage percentage of successful field goal attemps that are within 3 to 10 feet of the basket

FG%\_10-16 ftAverage percentage of successful field goal attemps that are within 10 to 16 feet of the basket

FG%\_16ft-3ptAverage percentage of successful field goal attemps that are beyond 16 feet but within the 3 point line.

Offensive ReboundsAverage rebounds retrieved in offensive zone

Defensive ReboundsAverage rebounds retrieved in defensive zone

Total ReboundsAverage offensive and defensive rebounds

StealsAverage number of steals of the ball from the opponent

BlocksAverage number of opponents’ shots blocked

TurnoversAverage number of turnovers of the ball to the opponent

Personal FoulsAverage number of personal fouls made

EXERCISES  
  
*Tip: Something that may be helpful is to choose a particular color and/or symbol for say the top 5 and bottom 5 teams. This way you can easily see where the data is for these teams in each visualization. To do this, select a desired row(s) and choose Rows > Colors and/or Rows > Markers to choose which to use.*

1. Create scatterplots of Wins vs. the other variables.

*Instructions: Use Graph Builder. Place ‘Wins’ on the Y axis, and ‘Points Scored’ on the X. You can either make separate scatterplots, or create one graph using the Column Switcher tool to change the variable dispayed on the X axis .To do so, choose Redo > Column Switcher under the red triangle. Select that current variable used for the X as the Column to Swittch, and choose that along with others to use* *as the Replacement Columns. Choose to display both the points and a line of fit   
You may find it helpful to also display the equation, R2, and F Test.*

1. Create scatterplots of Points Scores vs. the other variables.

*Instructions: Use Graph Builder. Place ‘Point Scores’ on the Y axis, and ‘Points Against’ on the X. You can either make separate scatterplots, or create one graph using the Column Switcher tool to change the variable dispayed on the X axis .To do so, choose Redo > Column Switcher under the red triangle. Select that current variable used for the X as the Column to Swittch, and choose that along with others to as the Replacement Columns. Choose to display both the points and a line of fit**You may find it helpful to also display the equation, R2, and F Test.*

1. Create scatterplots of Points Against vs. the variables ‘Defensive Rebounds’, ‘Steals’, and ‘Blocks’.

*Instructions: Use Graph Builder. Place ‘Point Against’ on the Y axis, and ‘Defensive Rebounds’ on the X. You can either make separate scatterplots, or create one graph using the Column Switcher tool to change the variable dispayed on the X axis .To do so, choose Redo > Column Switcher under the red triangle. Select that current variable used for the X as the Column to Swittch, and choose that along with others to as the Replacement Columns. Choose to display both the points and a line of fit   
You may find it helpful to also display the equation, R2, and F Test.*

1. Create scatterplots of ‘2 Point %’ vs. ‘2 Point Attempts’ and ‘3 Point % vs. ‘3 Point Attempts’.
2. Create scatterplots of other variables that may be of interest to examine together and compare data across teams.
3. Based upon the visualizations created in Exercises 1-5, write a few paragraphs summarizing some features these data reveal about the teams’ playing strategies and performance.  
   *Note: Not necessary to write about every feature revealed in these data. Select a few themes to focus on that you would consider important and that can be communicated through these visualizations. Perhaps focus on certain teams or specific metrics to compare.*