JMP Instructional data set 012

NBA Basketball Team Performance

JMP STATISTICAL DISCOVERY

JMP platforms and statistical methods

Graph Builder: Scatterplot; simple linear regression

Problem statement

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

This data set contains nineteen metrics describing playing strategies and nine describing performance for the thirty teams in the NBA for 2022-2023 season; they are prepared for analysis.

Objectives of the analyses will be to use visualizations to uncover and describe relationships between the basketball teams' playing strategies and performance, make comparisons between the teams, and identify any correlation between these metrics and the overall ranking of the teams.

Data

IDS_012.jmp

Wins	Number of wins in the 82 games of the regular seasons
Losses	Number of losses in the 82 games of the regular seasons
Win/Loss %	Win/Loss percentage
Points Scores	Average points scored per game
Points Against	Average point scored by opponents per game
Field Goal Attempts	Average number of shots attempted (not including free throws)
Field Goal Scored	Average number of successful shots (not including free throws)
Field Goal %	Average percentage of successful shots (not including free throws)
2 Point Attempts	Average number of 2-point shots attempted
2 Point Scored	Average number of successful 2-point shots
2 Point %	Average percentage of successful 2-point shots
3 Point Attempts	Average number of 3-point shots attempted
3 Point Scored	Average number of successful 3-point shots
3 Point %	Average percentage of successful 3-point shots
Free Throw Attempts	Average number of 3-point shots attempted
Free Throws Scored	Average number of successful 3-point shots
Free Throw %	Average percentage of successful 3-point shots
% of FGA_All 2 Point	Average percentage of all field goal attempts that are in the 2-point range
% of FGA_0-3 ft	Average percentage of all field goal attempts that are within 3 feet of the basket
% of FGA_3-10 ft	Average percentage of all field goal attempts that are within 3 to 10 feet of the basket
% of FGA_10-16 ft	Average percentage of all field goal attempts that are within 10 to 16 feet of the basket
% of FGA_16ft-3pt	Average percentage of all field goal attempts that are beyond 16 feet but within the 3-point line.
FG%_0-3 ft	Average percentage of successful field goal attempts that are within 3 feet of the basket
FG%_3-10 ft	Average percentage of successful field goal attempts that are within 3 to 10 feet of the basket
FG%_10-16 ft	Average percentage of successful field goal attempts that are within 10 to 16 feet of the basket
FG%_16ft-3pt	Average percentage of successful field goal attempts that are beyond 16 feet but within the 3-point line.
Offensive Rebounds	Average rebounds retrieved in offensive zone
Defensive Rebounds	Average rebounds retrieved in defensive zone
Total Rebounds	Average offensive and defensive rebounds
Steals	Average number of steals of the ball from the opponent

Exercises

The exercises will begin by creating a variety of visualizations. You'll then be asked to identify and describe features in the data these graphs reveal.
It will be helpful when viewing the visualizations to use unique symbols and colors to identify the 5 teams with the best and worst record. You will do this by creating Row States. Click on row 1 in the data table (the first place team Milwaukee Buck). Go under the Rows menu and choose Colors > Green. Then choose Rows > Markers > Other. Type in the value "1". Follow similar steps to use a green "2" for the second place team (Boston Celtics), … , green "5" for the 5th place team (Cleveland Cavaliers). For the team in last place (Detroit Pistons), use a red "1". Use a red "2" for the second to last place team (San Antonio Spurs), … , red "5" for the 5th to last place team (Portland Trail Blazers). Every graph that will be created will use those colors and symbols for those 10 teams.

1. Create scatterplots of 'Wins' vs. the 31 variables ('Points Scored', 'Points Against' , … , 'Personal Fouls').

> ***Instructions:***
> *Graph > Graph Builder. Place 'Wins' on the Y axis, and 'Points Scored' on the X. Instead of creating 31 different scatterplots, it would be best to utilize the Column Switcher tool so all the different possible scatterplots can be viewed from the one by selecting the variable to display 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 Switch ('Points Scored'), and choose that along with all the others to use as the Replacement Columns.*
> *Choose to display both the points* *and a line of fit* *by selecting both from the graph palette while holding down the shift key.*

2. Create scatterplots of 'Points Scored' vs. the 30 variables ('Points Against' , … , 'Personal Fouls').

> ***Instructions:***
> *Follow similar process as in Exercise 1.*

3. Create scatterplots of 'Points Against' vs. the variables 'Defensive Rebounds', 'Steals', and 'Blocks'.

> ***Instructions:***
> *Follow similar process as in Exercises 1 and 2.*

4. Create scatterplots of ‘2 Point %’ vs. ‘2 Point Attempts’ and ‘3 Point % vs. ‘3 Point Attempts’.

> ***Instructions:***
> *Use Graph > Graph Builder. Place ‘2 Point %’ on the Y axis, and ‘2 Point Attempts’ on the X. Create a similar separate graph for ‘3 Point %’ vs. ‘3 Point Attempts’*

5. Create scatterplots of other pairs of variables that may be of interest to examine together and compare data across teams.

6. 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.

JMP and all other JMP Statistical Discovery LLC product or service names are registered trademarks or trademarks of JMP Statistical Discovery LLC. ® indicates USA registration. Other brand and product names are trademarks of their respective companies in the USA and other countries. Copyright © 2026 JMP Statistical Discovery LLC. All rights reserved.