

Assignment 3

PAI 721: Introduction to Statistics

Prof. Jack Reilly

F2025

Instructions

For this assignment, you must turn in two documents:

1. Your answers (as a PDF), and
2. A plain-text `.do` file containing the Stata code you used to arrive at your answers.

Please consider the data in the following table. You may also find this data as a `.dta` file on the course Blackboard page.

Dataset

| Player | G | MP | FG | FGA | 3P | 3PA | TRB | AST | STL | BLK | TOV | PF | PTS |
|-----------------|----|------|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Carmelo Anthony | 35 | 1274 | 277 | 612 | 56 | 166 | 349 | 77 | 55 | 30 | 77 | 77 | 778 |
| Hakim Warrick | 35 | 1146 | 197 | 364 | 0 | 1 | 297 | 57 | 49 | 44 | 92 | 94 | 518 |
| Gerry McNamara | 35 | 1236 | 146 | 364 | 85 | 238 | 80 | 155 | 77 | 2 | 85 | 69 | 467 |
| Kueth Duany | 35 | 944 | 133 | 303 | 43 | 123 | 128 | 71 | 36 | 17 | 57 | 75 | 386 |
| Billy Edelin | 23 | 533 | 80 | 146 | 0 | 2 | 78 | 58 | 24 | 2 | 53 | 22 | 208 |
| Josh Pace | 32 | 469 | 62 | 118 | 0 | 2 | 86 | 60 | 26 | 8 | 37 | 33 | 138 |
| Craig Forth | 35 | 618 | 56 | 115 | 0 | 1 | 116 | 30 | 15 | 41 | 39 | 90 | 132 |
| Jeremy McNeil | 35 | 657 | 54 | 81 | 0 | 0 | 146 | 8 | 9 | 100 | 36 | 112 | 117 |
| Matt Gorman | 9 | 76 | 8 | 23 | 0 | 1 | 19 | 1 | 3 | 2 | 5 | 14 | 21 |

| Player | G | MP | FG | FGA | 3P | 3PA | TRB | AST | STL | BLK | TOV | PF | PTS |
|-----------------|---|----|----|-----|----|-----|-----|-----|-----|-----|-----|----|-----|
| Andrew Kouwe | 6 | 10 | 3 | 5 | 2 | 2 | 2 | 2 | 0 | 0 | 1 | 2 | 10 |
| Ronneil Herron | 5 | 9 | 2 | 3 | 0 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 6 |
| Xzavier Gaines | 6 | 21 | 1 | 8 | 0 | 3 | 2 | 1 | 1 | 0 | 2 | 0 | 2 |
| Gary Hall | 5 | 6 | 1 | 1 | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 2 |
| Tyrone Albright | 7 | 20 | 0 | 2 | 0 | 1 | 2 | 1 | 2 | 0 | 3 | 1 | 0 |
| Josh Brooks | 5 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |

Variable definitions:

- G = Games Played
- MP = Minutes Played
- FG = Field Goals Made
- FGA = Field Goals Attempted
- 3P = Three Point Field Goals Made
- 3PA = Three Point Field Goals Attempted
- TRB = Total Rebounds
- AST = Assists
- STL = Steals
- BLK = Blocks
- TOV = Turnovers
- PF = Personal Fouls
- PTS = Points Scored

Questions

1. What is the unit of analysis (the cases) in this table?
2. Identify the level of measurement of each variable.
3. What is the mean, median, and mode of the “games played” variable in this data?
4. Do you think the mean, median, or mode is the best estimate of central tendency for games played? Why?
5. Many analysts like to create a statistic called “Stocks,” which is the sum of steals and blocks by a player. Create this variable as *STK*. Who had the most stocks on the team?
6. Calculate each player’s field goal percentage and three point field goal percentage, storing each in new variables *FGP* and *TPP*. Who led the team in field goal percentage and three point percentage?
7. Transform the variable *PTS*, generating a new variable *PPG* (average points scored per game played). How many points per game did Carmelo Anthony, Gerry McNamara, Josh Pace, and Jeremy McNeil average? Who led the team in points per game?
8. Do the same for *3P*, *TRB*, *AST*, *STL*, *BLK*, and *TOV*. Who led the Orange in each statistical category per game?
9. Transform *PTS* again to generate *PPM* (points per minute played). Who led the Orange in points per minute?
10. Create a scatterplot with points per minute (*PPM*) on the Y axis and minutes played (*MP*) on the X axis. Add a best-fit line. What is the relationship between points per minute and minutes played?