EFFICENCY IN THE NBA

/2023-24 SEASON

Fundamentals of Probability and Statistics Exam

METHODOLOGY:

/01

Population

All players from the 2023–24 season

/02

Sample

4 main players, split between "bigs" (forwards/centers) and "smalls" (guards). 2 bigs and 2 smalls.

/03
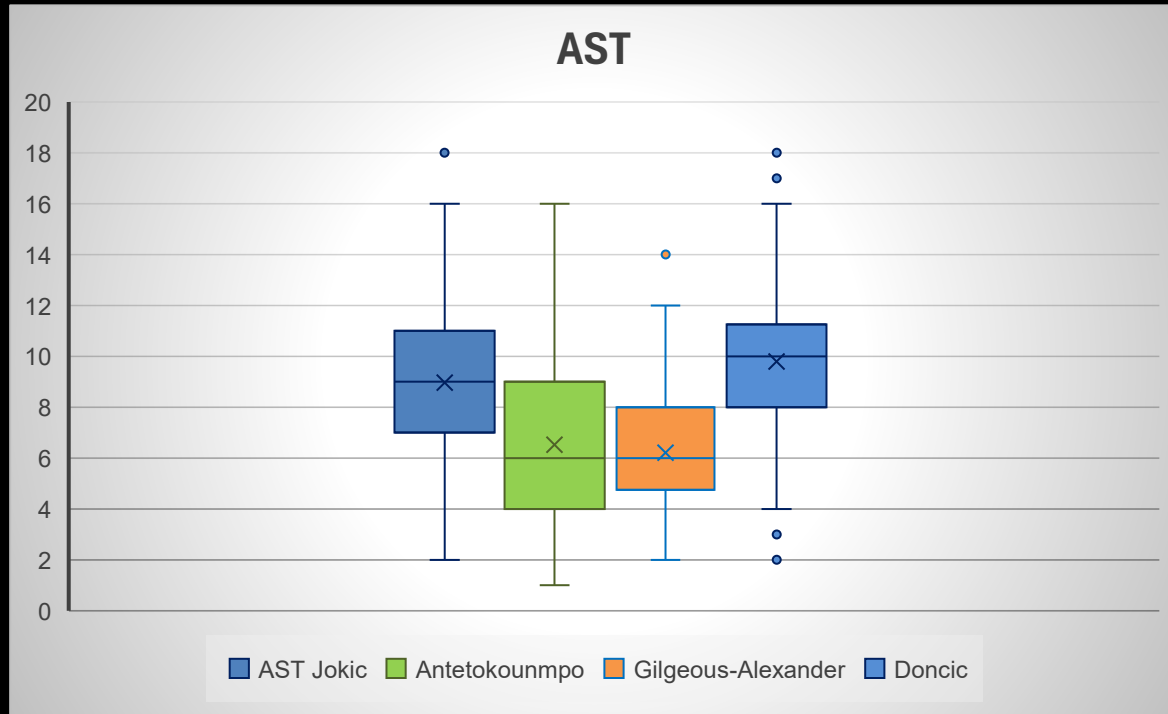
Analyzed Variables

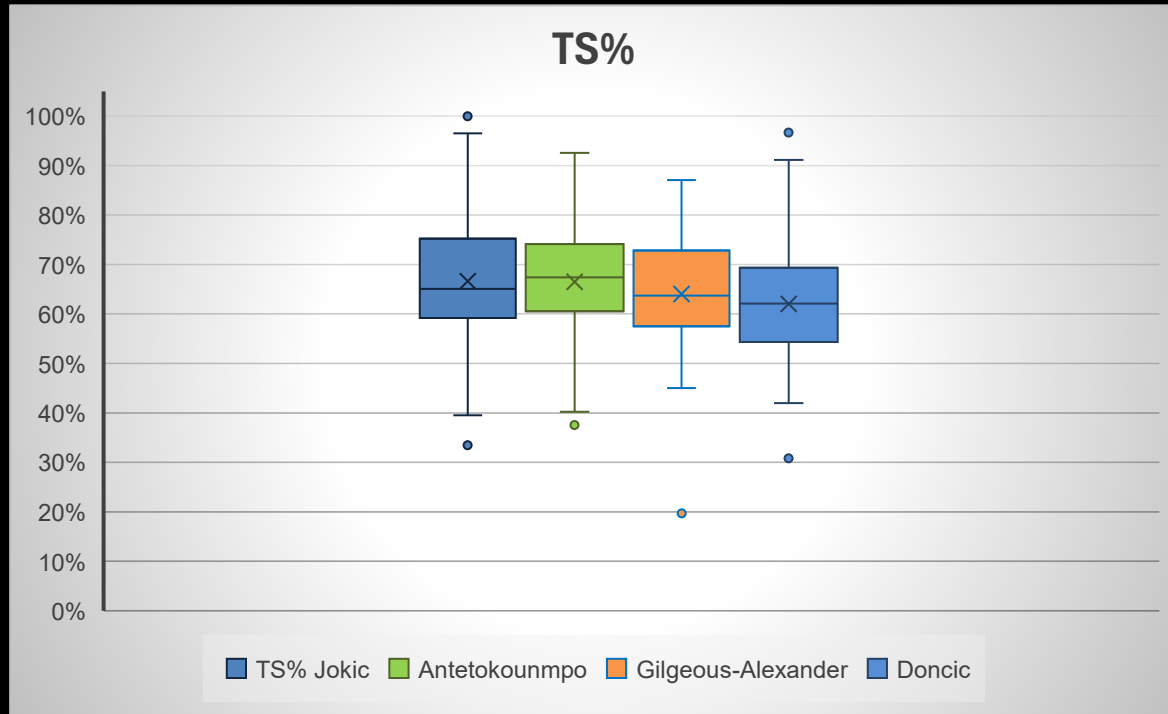Both qualitative and quantitative

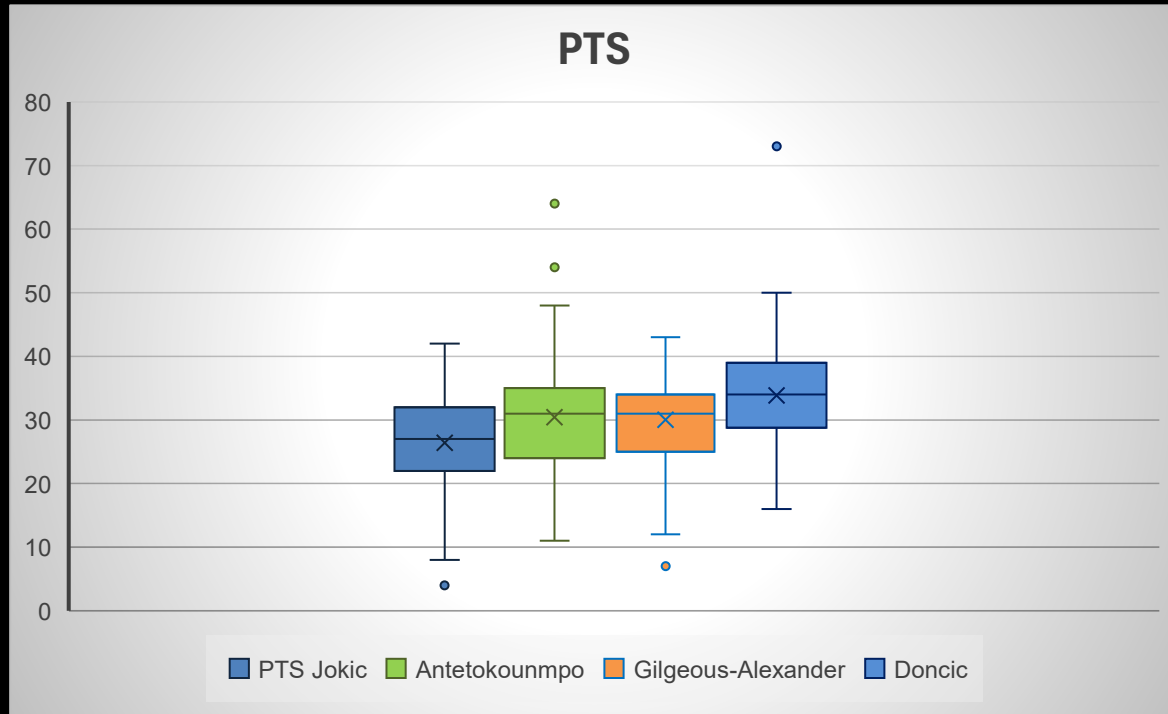| Player	Team	PER	WS	TS%	PPG	APG	RPG
Jokić	DEN	31,0	55	65,0%	26,4	9,0	12
Giannis	MIL	29,9	55	64,9%	30,4	6,5	6,5
Dončić	DAL	23,3	44	61,7%	33,9	9,2	9,2
SGA	OKC	28,1	46	63,6%	30,1	6,2	5,5

BOXPLOT AST:

BOXPLOT TS%:

BOXPLOT PTS:

PROBLEM 1:

In the 2023–24 season, SGA played 75 games with an average of 30 points. In four games, he scored at least 40 points, registering a probability of 5% of reaching this threshold in a single game. His team, the Oklahoma City Thunder, finished the season with a record of 57 – 25. Furthermore, every time SGA put up at least 40 points, the Thunder won 85% of the time.
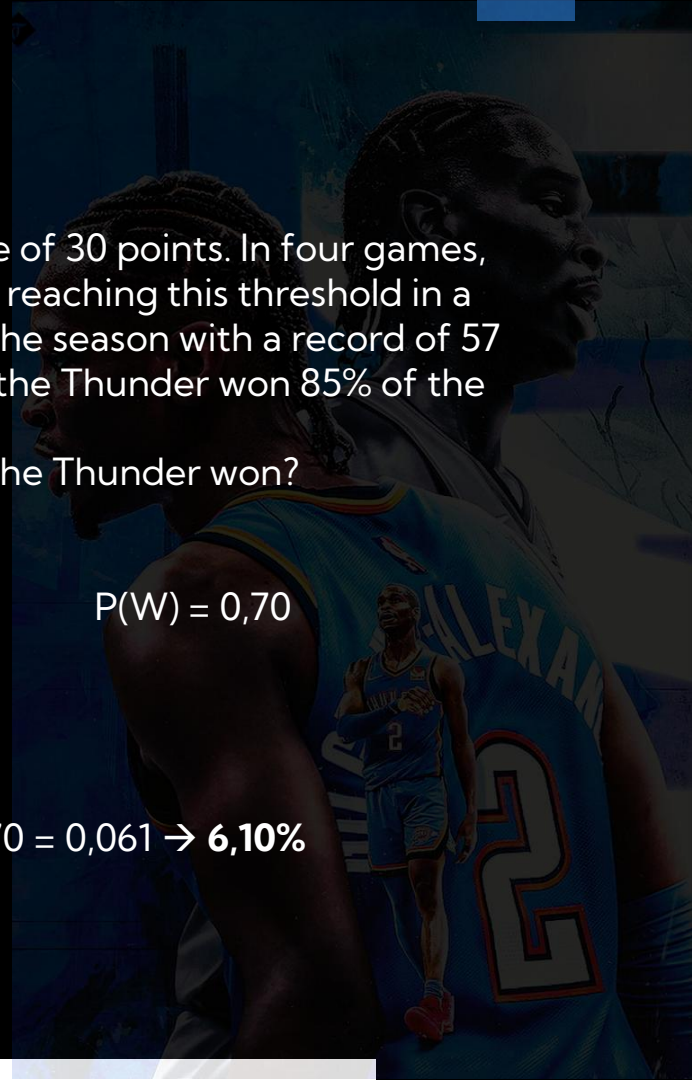   – What is the probability that Shai scored 40pt given that the Thunder won?

P(40pt) = 0,05   P(W | 40pt) = 0,85   P(W) = 0,70
P(40pt | W) = ?

Bayes' Theorem :

P(40pt | W) = [P(W | 40pt) * P(40pt)] / P(W) = (0,85 * 0,05) / 0,70 = 0,061 → **6,10%**

PROBLEM 2:

Luka Doncic scores at least 30 points in 60% of games, and the Dallas Mavericks win in 75% of these cases. Taking into account that the Mavericks have a seasonal record of 50 - 32.
   - What is the probability that the team wins given that Doncic scored fewer than 30 points?

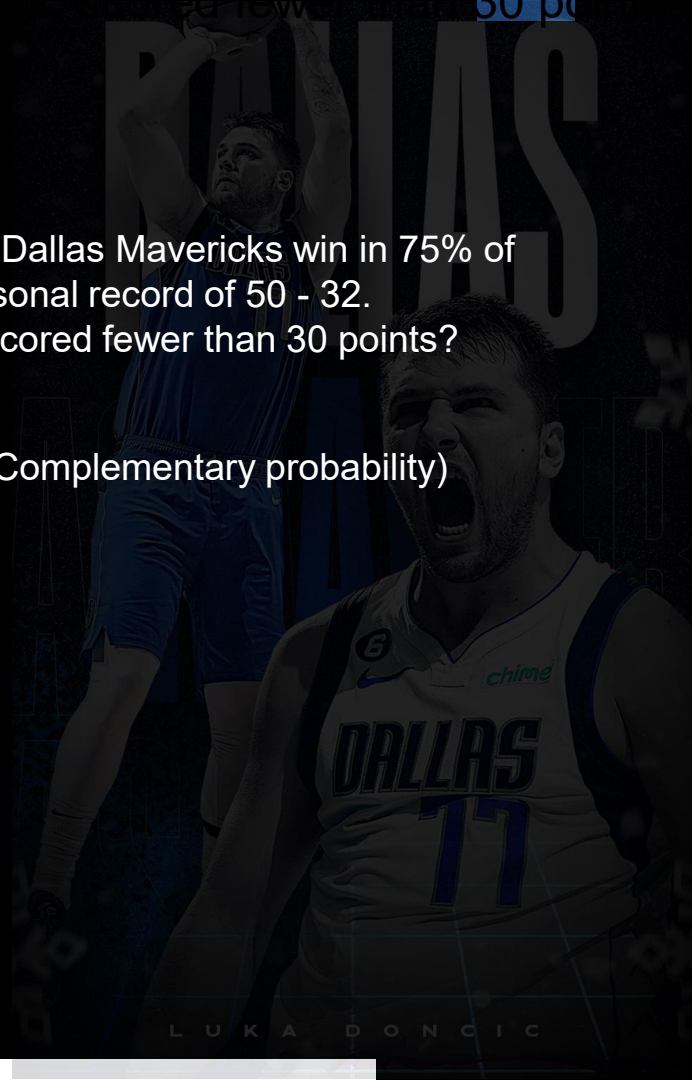P(30PT): 0,60   P(30pt^c): 1 - 0,60 = 0,40 (Complementary probability)
P(W | 30pt): 0,75   P(W): 0,61
P(W | 30pt^c): ?

Total Probability:

P(W | 30pt^c) = [0,61 – (0,75 * 60)] / 0,4 = 0,40 → 40%

CHART:

probabilità di vittoria Dallas Mavericks

PROBLEM 3:

Jokic has a 70% probability of recording at least 8 assists in a game. The probability that he scores at least 25 points is 50%.

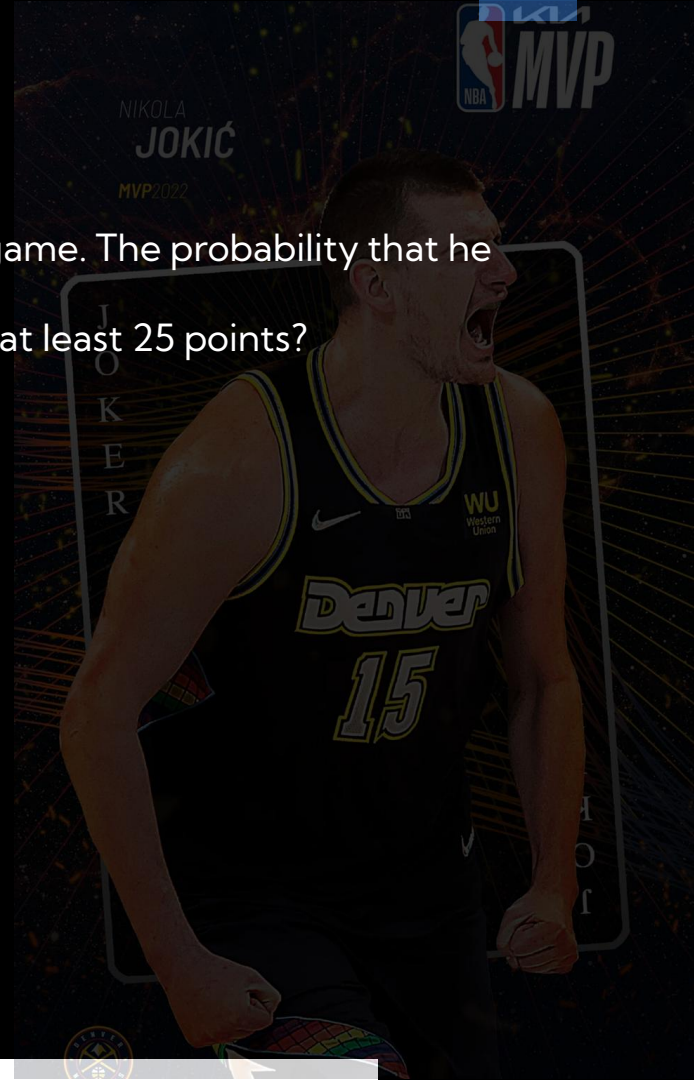 – What is the probability that he records both 8 assists and at least 25 points?
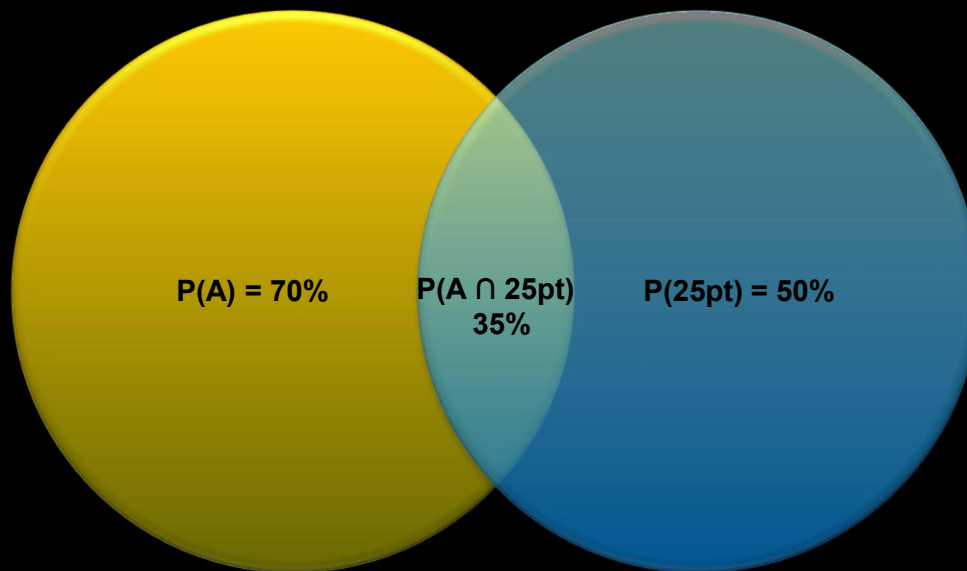
P(A) = 0,7   P(25pt) = 0,5

P(A ∩ 25pt) = ?

Third Probability Theorem (Multiplication Rule): :

P(A ∩ 25pt) = P(A) * P(25pt | A) = 0,7 * 0,5 = 0,35 → 35%

VENN DIAGRAM:

P(A) = 70%   P(A ∩ 25pt) 35%   P(25pt) = 50%

THANKS

Casavecchia Dario BD 2024-26