Performance Analysis in Team games (ΑΠ-197επ)

Lecture 10

Sports Data Management

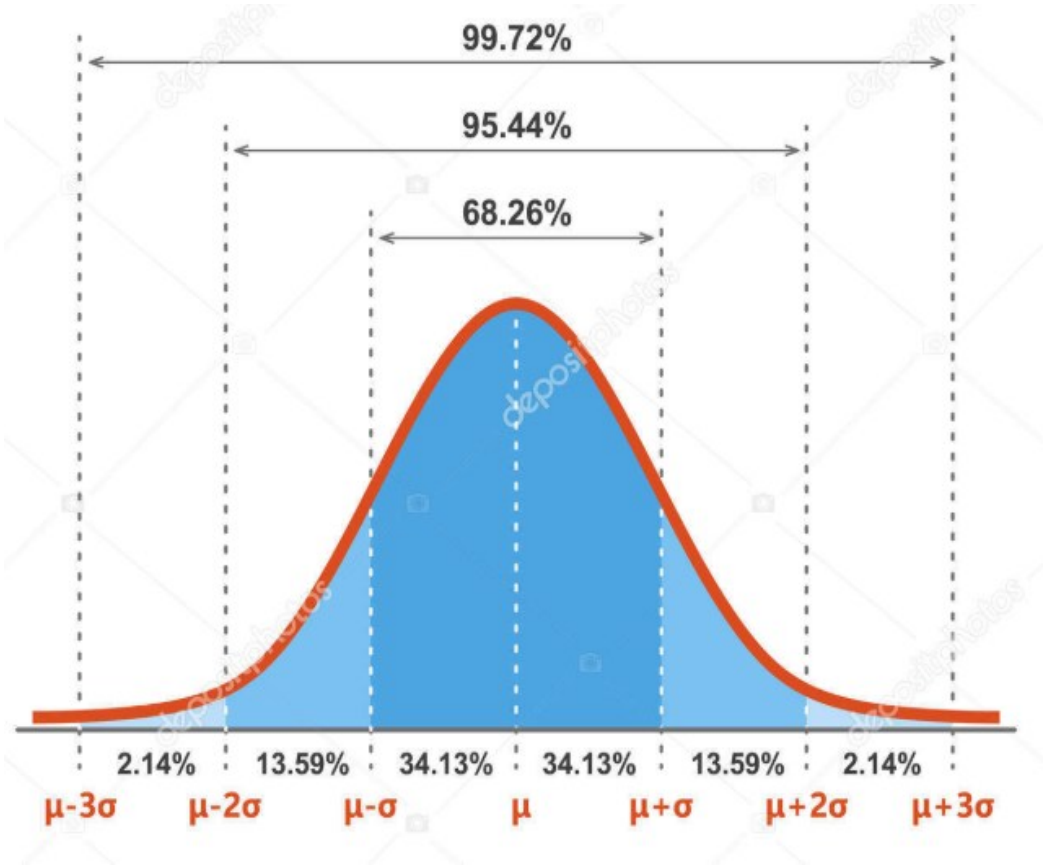
2-Sample Proportions

Standard Normal Distribution

Z-scores

Normal Distribution

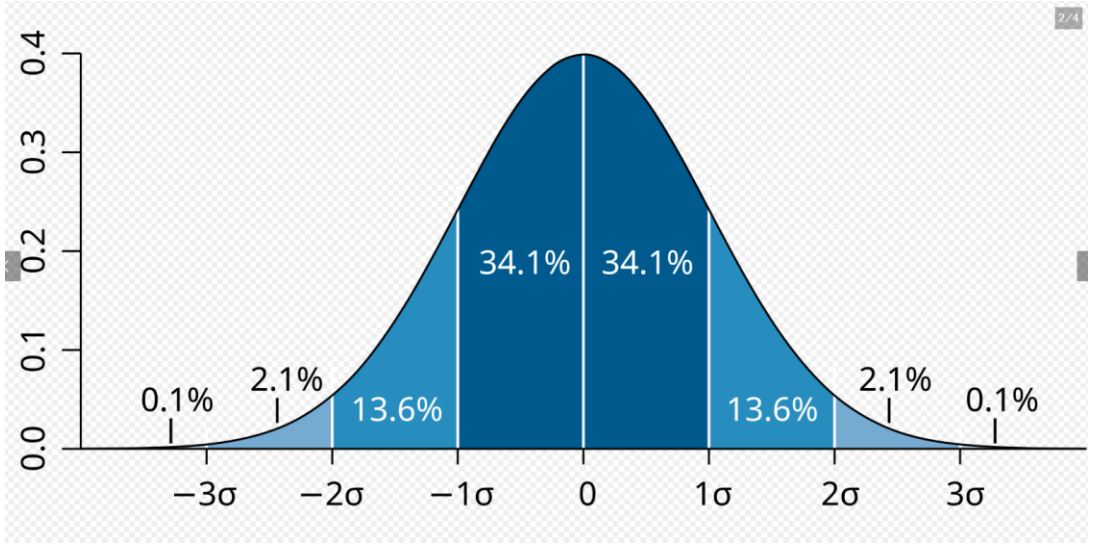
- The normal distribution:
- is bell-shaped
- most sample means are close to the true population mean
- a few means will be a greater distance away and
- even fewer will be very far from the population mean



Normal Distribution

- Any normal distributioncan be transformed into a standard normal distribution where:
- we do NOT study the original X*i* values anymore
- BUT we transform them into z - standard values (Z-scores)
- and study their distance from the mean on a new scale that has the standard deviation (σ) as its unit of measurement.

$$z = \frac{X - \mu}{\sigma}$$



Standardized Normal Distribution

- The z-standard distribution differs from the normal distribution
- The units on the X-axis are standard deviation units, not units of the variable X
- The mean of the standard distribution is zero (0)
- The standard deviation of the standard distribution is = 1
  - By converting the normal distribution to a z-standard distribution, we can describe the relative position of each value Xi within the distribution by saying how many standard deviations away from the mean that particular value Xi is

Two Sample Proportions

- The Coach's Dilemma
- Numerical Difference Vs Statistically Significant Difference
- Calculator
- Calculator 2

2p/3p	Fournier	Vezencov
Basket	52	30
No Basket	27	31
Total	79	61

Enter data:

Sample size for group 1: n_1 =

Number of scores with trait for group 1: f_1 =

Sample size for group 2: n_2 =

Number of scores with trait for group 2: f_2 =

Specify hypotheses:

$H_0 : P_1 - P_2 =$ 0

$H_a :$ Two-tails

$\alpha =$ 0.05

Run Test

Test summary

Null hypothesis	$H_0 : P_1 - P_2 =$
Alternative hypothesis	$H_a : P_1 - P_2$
Type I error rate	$\alpha =$
Sample size for group 1	$n_1 =$
Sample size for group 2	$n_2 =$
Sample proportion for group 1	$p_1 =$
Sample proportion for group 2	$p_2 =$
Pooled proportion	$p =$
Standard error	$s_{p_1 - p_2} =$
Test statistic	$z =$
p value	$p =$
Decision	
Confidence interval critical value	$z_{cv} =$
Confidence interval	$CI_{95}=$

Steps to Calculate Z-scores

- Calculating the Sample Mean (μ) (Function Average)
- Calculate the Sample Standard Deviation (σ) (Function STDEV)
- Calculate the Quantity for Each Cell with a Value X

$$z = \frac{X - \mu}{\sigma}$$

- Classify into ascending or descending order
- Usefulness (characterisation of overall athleticism, learning ability, etc.)

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