

Statistics and Parameters

Def: Statistic

A number calculated from sample data to understand the characteristics of the sample.

Def: Parameter

A number that describes the characteristics of a population. May be a guess about population or a calculation from an unbiased census.

Sample Statistics

\bar{x} : Sample Mean
"x-bar"

s : Sample Standard Deviation

n : Sample size or frequency

\hat{p} : Sample proportion
"p-hat"

s^2 : Sample variance

r : Sample Correlation Coefficient

b_1 : Sample slope

b_0 : Sample y-intercept

Population Parameters

μ : Population Mean
Greek letter "mu"

σ : Population Standard Deviation
Greek letter "sigma"

N : Population size or frequency

π or p : Population proportion
Greek letter "pi"

σ^2 : Population Variance

ρ : Population Correlation Coefficient
Greek letter "rho"

β_1 : Population Slope
Greek letter "beta"

β_0 : Population Y-intercept

Example: IQ Tests are supposed to have a population mean of 100 and population standard deviation of 15, but a random sample of 45 adults found the sample mean to be 97.7 and the sample standard deviation of 15.3"

$\mu = 100$ Parameter

$\sigma = 15$ Parameter

$n = 45$ statistic

$\bar{x} = 97.7$ statistic

$s = 15.3$ statistic

Example: Voting for Candidate

Poll of 200 people: 47.2%

Actual votes: 41.3%

$n = 200$ statistic

$\hat{p} = 0.472$ statistic

$\pi = 0.413$ } parameter

$p = 0.413$ }