

Statistical Inference

Random observed sampled	Inference to pop.
randomly assigned treatment groups	casual inference

* casual inference -> differences
CAUSED by treatments

population covariance equation

$$s_{xy} = \left(\sum_{i=1}^N (y_i - \bar{y})(x_i - \bar{x}) \right) / (n - 1)$$

sample covariance equation

$$\sigma_{xy} = \left(\sum_{i=1}^N (y_i - \mu_y)(x_i - \mu_x) \right) / N$$

* + # = + relationship
- # = - relationship

Correlation

Population
Correlation

$$\rho_{xy} = \frac{\sigma_{xy}}{\sqrt{\sigma_x^2 \sigma_y^2}}$$

from -1 to +1
with strong neg.
correlation near -1
+ strong pos near +1

Sample correlation

$$r_{xy} = \frac{s_{xy}}{\sqrt{s_x^2 s_y^2}}$$



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Page 1 of 1.

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