Continuous Uniform Probability Distribution

$$f(x) = \frac{1}{b-a} \; for \; a \leq x \leq b$$

$$f(x) = 0 \; elsewhere$$

Normal Probability Distribution

$$Z = \frac{x - \overline{x}}{s}$$

Exponential Distribution

$$\lambda = \frac{1}{\mu}$$

$$P(X \leq x) = 1 - e^{-\lambda x}$$

$$P(X \geq x) = e^{-\lambda x}$$

Sampling Mean

$$\mu = \frac{\sum x}{N}$$

Mean of Sampling Distribution

$$\mu_{\overline{x}} = \frac{sum \; of \; all \; sample \; means}{total \; number \; of \; samples}$$

Sampling Error

$$\overline{x} - \mu = sample \;\&\; pop \; mean$$
$$s - \sigma = \text{ standard deviation}$$
$$s^2 - \sigma^2 = variance$$

Cochran's Formula for Sample size

$$n = \frac{n_o}{1 + \frac{n_o - 1}{N}}$$

$$n_o = \frac{Z^2 pq}{e^2}$$

Slovin's Formula for Sample Size

$$n = \frac{N}{1 + Ne^2}$$

Systematic Sampling

$$k = \frac{N}{n}$$

Equal Allocation

$$n_i = \frac{n}{k}$$

Proportional Allocation

$$n_i = \frac{N_i}{N} \times n$$

Pearson Product-Moment Correlation

$$r = \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{[n \sum X^2 - (\sum X)^2][n \sum Y^2 - (\sum Y)^2]}}$$

Test of Significance

$$t = r\sqrt{\frac{n-2}{1-r^2}}$$

Simple Linear Regression

$$\hat{y} = a + bx$$

Slope b

$$b = \frac{N \sum xy - \sum x \sum y}{N \sum x^2 - (\sum x)^2}$$

Value of a

$$a = \overline{y} - b\overline{x}$$