

Formula Sheet

Hypothesis Test for Population Variance:

Test Statistic:

Confidence Interval:

$$\chi^2 = \frac{(n-1)s^2}{\sigma^2} \quad \frac{(n-1)s^2}{\chi_{\alpha/2}^2} \quad \text{to} \quad \frac{(n-1)s^2}{\chi_{1-\alpha/2}^2}$$

Goodness-of-Fit, Hypothesis test for Independence, Hypothesis Test for Homogeneity:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Goodness of fit degrees of freedom: $df = k - 1$

Test of Independence and Test of Homogeneity degrees of freedom: $df = (R - 1)(C - 1)$

Test of Independence and Test of Homogeneity Expected Frequency formula:

$$E = \frac{(\text{Row total})(\text{Column total})}{\text{sample size}}$$

ANOVA

$$SSB = \left(\frac{T_1^2}{n_1} + \frac{T_2^2}{n_2} + \frac{T_3^2}{n_3} + \dots \right) - \frac{(\sum x)^2}{n}$$

$$SSW = \sum x^2 - \left(\frac{T_1^2}{n_1} + \frac{T_2^2}{n_2} + \frac{T_3^2}{n_3} + \dots \right)$$

$$MSB = \frac{SSB}{k-1} \quad \text{and} \quad MSW = \frac{SSW}{n-k}$$

$$F = \frac{\text{Variance between samples}}{\text{Variance within samples}} \quad \text{or} \quad \frac{MSB}{MSW}$$

Spearman Correlation Coefficient

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$