OFFICIAL STAT 201 EXAM 3 FORMULA SHEET
FALL 2024

ONE SAMPLE TESTS

Proportion

Confidence Intervals	$\hat{p} \pm z^* \times SE(\hat{p})$	$SE(\hat{p}) = \sqrt{\frac{\hat{p}\hat{q}}{n}}$
Hypothesis Testing	$z_{\hat{p}} = \frac{\hat{p} - p_0}{SD(\hat{p})}$	$SD(\hat{p}) = \sqrt{\frac{p_0 q_0}{n}}$

Mean

Confidence Intervals	$\bar{y} \pm t^*_{df} \times SE(\bar{y})$	$SE(\bar{y}) = \frac{s}{\sqrt{n}}$
Hypothesis Testing	$t_{df} = \frac{\bar{y} - \mu_0}{SE(\bar{y})}$	$SE(\bar{y}) = \frac{s}{\sqrt{n}}$

(df) degrees of freedom for the t-distribution = $n - 1$

TWO SAMPLE TESTS

Difference Between Two Means

Confidence Intervals	$\bar{y}_1 - \bar{y}_2 \pm t^*_{df} \times SE(\bar{y}_1 - \bar{y}_2)$	$SE(\bar{y}_1 - \bar{y}_2) = \sqrt{\frac{(s_1)^2}{n_1} + \frac{(s_2)^2}{n_2}}$
Hypothesis Testing	$t_{df} = \frac{(\bar{y}_1 - \bar{y}_2) - 0}{SE(\bar{y}_1 - \bar{y}_2)}$	$SE(\bar{y}_1 - \bar{y}_2) = \sqrt{\frac{(s_1)^2}{n_1} + \frac{(s_2)^2}{n_2}}$

(df) degrees of freedom for the t-distribution available from JMP output

Test of Independence

$$\chi^2_{df} = Sum\ of\ \frac{(Obs - Exp)^2}{Exp} \quad \text{where} \quad Exp = \frac{Row\ Total \times Column\ Total}{N} \quad \text{for each cell.}$$

$$Degrees\ of\ freedom = (\#Rows - 1) \times (\#Columns - 1)$$