Significance Tests

Categorical Data = Proportion

Quantitative Data = Mean

1 sample

2-sample

1 sample

2 sample

If matched pairs, subtract the 2 lists to create a list of differences and perform a 1 sample T-Test

1-PropZTest

2-PropZTest

T-Test

2 Samp T-Test

$H_o : p =$

$H_a : p$

$z = \dfrac{\hat{p} - p}{\sqrt{\dfrac{p(1-p)}{n}}}$

$conditions:$

$*np \geq 10 \, AND$

$\quad n(1-p) \geq 10$

$*SRS \, from \, the \, population$

$\quad of \, \text{int} erest$

$H_o : p_1 = p_2$

$H_a : p_1 \quad p_2$

$z = \dfrac{\hat{p}_1 - \hat{p}_2}{\sqrt{\left(\dfrac{\hat{p}_c(1-\hat{p}_c)}{n_1} + \dfrac{\hat{p}_c(1-\hat{p}_c)}{n_2} \right)}}$

$conditions:$

$*n_1\hat{p}_1 \geq 10 \, AND \, n_1(1-\hat{p}_1) \geq 10$

$\quad n_2\hat{p}_2 \geq 10 \, AND \, n_2(1-\hat{p}_2) \geq 10$

$\quad (can \, use \, 10 \, or \, 5)$

$*2 \, independent \, SRS \, from \, the$

$\quad populations \, of \, \text{int} erest \, (obs. study)$

$\quad OR \, random \, assignment \, (\exp.)$

$H_o : \mu =$

$H_a : \mu$

$t = \dfrac{\overline{x} - \mu}{\dfrac{s}{\sqrt{n}}}$

$conditions:$

$*n \geq 30$

$\quad OR \, the \, population \, is \, normal$

$*SRS \, from \, the \, population$

$\quad of \, \text{int} erest$

$matched \, pairs:$

$H_o : \mu_d = 0$

$H_a : \mu_d \quad 0$

$H_o : \mu_1 = \mu_2$

$H_a : \mu_1 \quad \mu_2$

$t = \dfrac{\overline{x}_1 - \overline{x}_2}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$

$conditions:$

$*n_1 \geq 30 \, AND \, n_2 \geq 30$

$OR \, the \, populations \, are \, normal$

$*2 \, independent \, SRS \, from \, the$

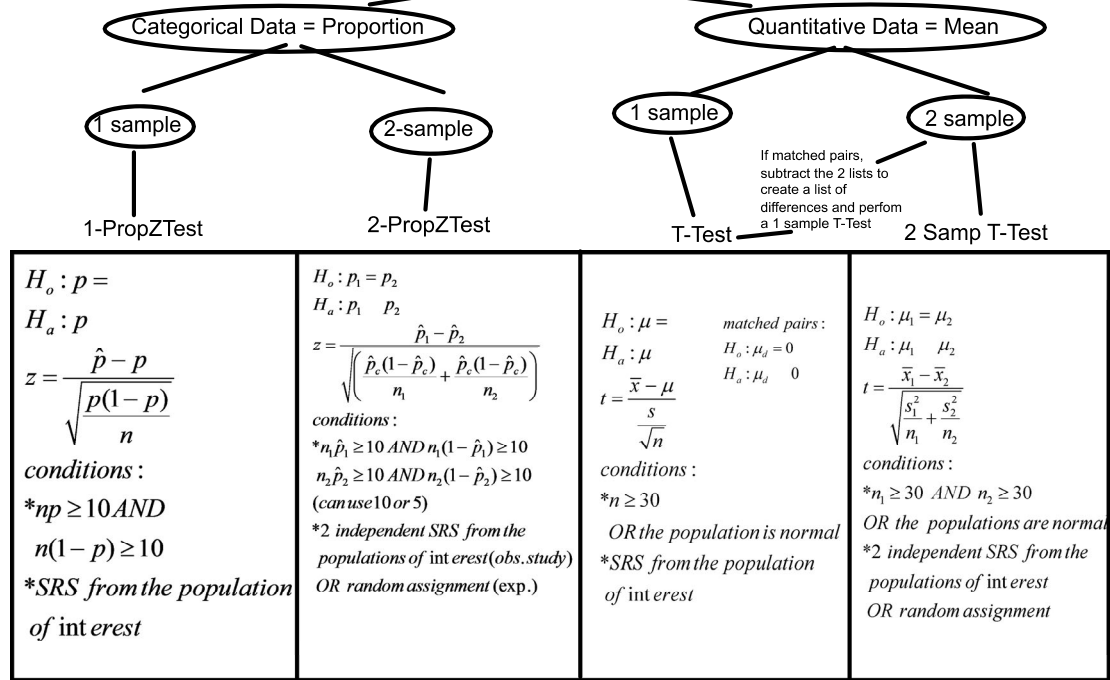$\quad populations \, of \, \text{int} erest$

$\quad OR \, random \, assignment$

1-PropZInt

2-PropZInt

T-Int

2-SampT-Int

$\hat{p} \pm z^* \sqrt{\dfrac{\hat{p}(1-\hat{p})}{n}}$

$conditions:$

$*n\hat{p} \geq 10 \, AND \, n(1-\hat{p}) \geq 10$

$*SRS \, from \, the \, population$

$of \, \text{int} erest$

$(\hat{p}_1 - \hat{p}_2) \pm z^* \sqrt{\dfrac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \dfrac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$

$conditions:$

$*n_1\hat{p}_1 \geq 10 \, AND \, n_1(1-\hat{p}_1) \geq 10$

$\quad n_2\hat{p}_2 \geq 10 \, AND \, n_2(1-\hat{p}_2) \geq 10$

$*2 \, independent \, SRS \, from \, the \, populations$

$of \, \text{int} erest$

$OR \, random \, assignment$

$\overline{x} \pm t^* \dfrac{s}{\sqrt{n}}$

$conditions:$

$*n \geq 30$

$OR \, population \, is \, normal$

$*SRS \, from \, the \, population$

$of \, \text{int} erest$

$(\overline{x}_1 - \overline{x}_2) \pm t^* \sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}$

$conditions:$

$*n_1 \geq 30 \, AND \, n_2 \geq 30$

$OR \, populations \, are \, normal$

$*2 \, independent \, SRS \, from$

$the \, populations \, of \, \text{int} erest$

$OR \, random \, assignment$