Math 110 Final Exam Review

Sample 1 | Sample 2 | #44 Marijuana Use (yes/no) → categorical
DARE | No DARE |
\[ n_1 = 288 \quad n_2 = 335 \]
\[ \hat{p}_1 = \frac{141}{288} = 0.490 \quad \hat{p}_2 = \frac{181}{335} = 0.540 \]

#45 Two proportions

\[ \hat{p}_1 = \frac{141}{288} = 0.490 \quad \hat{p}_2 = \frac{181}{335} = 0.540 \]

#46 Criteria are met.

\[ \frac{141}{288} = 0.490 \quad \frac{335}{181} = 1.81 \]
\[ 288 - 141 = 147 \text{ fails} \geq 10 \quad 335 - 181 = 154 \text{ fails} \geq 10 \]

#47 \[ H_0: p_1 = p_2 \quad H_1: p_1 < p_2 \]

#48 \[ \hat{p}_1 = 0.490 \quad \hat{p}_2 = 0.540 \]
\[ \bar{p} = \frac{n_1 \hat{p}_1 + n_2 \hat{p}_2}{n_1 + n_2} = \frac{288 \times 0.490 + 335 \times 0.540}{288 + 335} \approx 0.517 \]

\[ \bar{q} = 1 - \bar{p} = 0.483 \]

#49 \[ Z = \frac{\hat{p}_1 - \hat{p}_2 - (p_1 - p_2)}{\sqrt{\frac{\hat{p}_1 \hat{q}_1}{n_1} + \frac{\hat{p}_2 \hat{q}_2}{n_2}}} = \frac{0.490 - 0.540}{\sqrt{\frac{0.49 \times 0.51}{288} + \frac{0.54 \times 0.483}{335}}} \approx 1.25 \]

Table A2: \( \alpha = 0.09 \) one-tail

Fail to Reject \( H_0 \)

#50 Table A1 - Z-dist p-val's

\[ Z \rightarrow 1.05 \]
\[ \text{p-val} = 0.1056 \]

#52 Fail to reject \( H_0 \)

Don't support \( H_1 \).

#53 The data do not support the claim that the proportion of seniors who have used marijuana is lower for DARE kids.