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STAT 3493
ASSIGNMENT #7

Q5: Ex 50, Pg 525

$$\hat{P_1} = \frac{104}{207} = 0.5024$$

$$\hat{P_2} = \frac{109}{213} = 0.517$$

$$\hat{P} = \frac{m}{m+n}\hat{P_1} + \frac{n}{m+n}\hat{P_2} = \frac{207}{207+213} \cdot \frac{104}{207} + \frac{213}{207+213} \cdot \frac{109}{213}$$

$$= 0.507$$

$$Z = \frac{\hat{P_1} - \hat{P_2}}{\sqrt{\hat{P}(1-\hat{P})\left(\frac{1}{m} + \frac{1}{n}\right)}} = \frac{0.502 - 0.517}{\sqrt{0.507(1-0.507)\left(\frac{1}{207} + \frac{1}{213}\right)}} = -0.191$$

$$H_a : P_1 - P_2 < 0$$

$$P = \Phi(z) = 0.424$$

The null hypothesis cannot be rejected at a significance level $\alpha = 0.10$. The data does not support the researcher's hypothesis at this significance level.