

3.

MENWOMEN

$X_1 = 200$

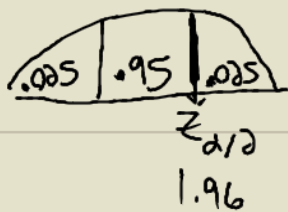
$X_2 = 100$

$n_1 = 1000$

$n_2 = 780$

$p_{\text{MEN}} - p_{\text{WOMEN}}$

95% CONFIDENCE INTERVAL

BY HAND① FIND $Z_{\alpha/2}$ 

so $Z_{\alpha/2} = 1.96$

② FIND \hat{p}_1 AND \hat{p}_2

$$\hat{p}_1 = \frac{X_1}{n_1}$$

$$= \frac{200}{1000}$$

$\hat{p}_1 = .2$

$$\hat{p}_2 = \frac{X_2}{n_2}$$

$$= \frac{100}{780}$$

$\hat{p}_2 = .1282051282$

③

$$LB = (\hat{p}_1 - \hat{p}_2) - Z_{\alpha/2} \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$

$$= (.2 - .1282051282) - 1.96 \sqrt{\frac{.2(1-.2)}{1000} + \frac{.1282051282(1-.1282051282)}{780}}$$

$LB = .0377$

$$UB = (\hat{p}_1 - \hat{p}_2) + Z_{\alpha/2} \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}}$$

$$UB = (.2 - .1282051282) + 1.96 \sqrt{\frac{.2(1-.2)}{1000} + \frac{.1282051282(1-.1282051282)}{780}}$$

$UB = .1059$

$$(.0377, .1059)$$