1 Inference Procedures

Point Estimates:

$$\hat{p}_1 = \frac{x_1}{n_1}$$
$$\hat{p}_2 = \frac{x_2}{n_2}$$

`Hypotheses:`

$$H_0: \quad \pi_1 \leq \pi_2$$
$$H_1: \quad \pi_1 > \pi_2$$

- The population proportion for group 1 does not exceed the corresponding value for group 2.
- The population proportion for group 1 does exceed (is greater than) the corresponding value for group 2.

$$H_0: \quad \pi_1 - \pi_2 \leq 0$$
$$H_1: \quad \pi_1 - \pi_2 > 0$$

Standard Error First we computed the aggregate sample proportion $\bar{p}$.

$$\bar{p} = \frac{x_1 + x_2}{n_1 + n_2}$$

The Standard Error is

$$S.E.(\pi_1 - \pi_2) = \sqrt{\bar{p} \times (100 - \bar{p}) \times \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

(*Given in formula sheet*) **Standard Error**

The Test Statistic is therefore

$$TS = \frac{(\hat{p}_1 - \hat{p}_2) - (\pi_1 - \pi_2)}{S.E.(\pi_1 - \pi_2)}$$

Critical Vale

- $\alpha = 0.05$
- One-tailed Procedure (refer back to H_1) k=1
- Large sample ($x_1 + x_2 > 30$)

Descision is $|TS| > CV$?

Comclusion: We can reject the null hypothesis, We can reasonably conclude that....