

(a) Take $\alpha = 0.05$, then $z_{\alpha/2} = 1.96$.

$$n = 86$$

Point estimates for p_7 and p_8 are

$$\hat{p}_7 = 0.1396, \hat{p}_8 = 0.73255.$$

The confidence interval for p_7 is

$$\left(\hat{p}_7 - z_{\alpha/2} \sqrt{\frac{\hat{p}_7(1 - \hat{p}_7)}{n}}, \hat{p}_7 + z_{\alpha/2} \sqrt{\frac{\hat{p}_7(1 - \hat{p}_7)}{n}}\right) = (0.0663, 0.2128)$$

The confidence interval for p_8 is

$$\left(\hat{p}_8 - z_{\alpha/2} \sqrt{\frac{\hat{p}_8(1 - \hat{p}_8)}{n}}, \hat{p}_8 + z_{\alpha/2} \sqrt{\frac{\hat{p}_8(1 - \hat{p}_8)}{n}}\right) = (0.6390, 0.8261)$$

(b)

(i) The confidence interval contains 0.1, thus we cannot reject H_0 .

(ii) The confidence interval contains 0.8, thus, we cannot reject H_0 .