

# §10.1: Two Sample Confidence Intervals for Proportions

Skills:

- Construct a confidence interval for the difference in population proportions



# Confidence Interval

A level  $C$  confidence interval for the difference of two population proportions is

$$\left(\hat{p}_1 - \hat{p}_2\right) \pm z^* \sqrt{\frac{\hat{p}_1(1 - \hat{p}_1)}{n_1} + \frac{\hat{p}_2(1 - \hat{p}_2)}{n_2}}$$



# Example

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A sample of 73 mail carriers in Cleveland found that 10 had been bitten by an animal.

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A sample of 80 mail carriers in Philadelphia found that 16 had been bitten by an animal.

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Estimate the difference in bite rates between the two cities with 90% confidence.

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