Section 9.4 — Comparing Two Population Proportions

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Outline

Introduction

Notation

Population 1

- p_1 = population proportion
- n_1 = sample size
- x_1 = number of successes
- $\hat{p}_1 = \frac{x_1}{n_1}$ = sample proportion

Population 2

- p_2 = population proportion
- n_2 = sample size
- x_2 = number of successes
- $\hat{p}_2 = \frac{x_2}{n_2}$ = sample proportion

Margin of Error

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

Flu Vaccine

A study was conducted to test the efficacy of an experimental nasal spray vaccine for children. 1070 children were given the vaccine and 532 were given a placebo. 14 of the children who got the vaccine developed the flu, compared with 95 of the children who got the placebo. Construct a 95% confidence interval to estimate true difference in proportions. Does this study support the claim that this vaccine works?

Ginkgo for Dementia

In a study on the effectiveness of ginkgo biloba to prevent dementia, 1545 elderly subjects were given ginkgo and 1524 were given a placebo. Among those in the treatment group, 246 later developed dementia. Among those in the control group, 277 later developed dementia. Construct a 99% confidence interval to estimate the true difference in proportions. Does this study support the claim that ginko biloba helps prevent dementia?