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Lecture 3c: Practice Problem Solutions

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Solutions

1. Suppose a study was conducted to examine the relationship between Vitamin C and the common cold
 - Of a total of 20 subjects, 10 are randomized to take Vitamin C for one month, and 10 to take a placebo
 - At the end of the one month period, subjects are asked detailed questions about the presence of cold symptoms during the month and then classified as having had a cold or not (one subject in the Vitamin C group was classified as having had a cold, as were three subjects in the placebo group)

Solutions

1. What is the estimated risk difference of getting a cold for the Vitamin C group as compared with the placebo group?

$$\hat{p}_{vitC} = 1/10 = .10; \hat{p}_{Plac} = 3/10 = .30$$

$$\text{Risk Diff} = .10 - .30 = -.20 (-20\%)$$

Solutions

2. What group sizes would be needed to do a study with $\alpha = .05$ and 80% power to detect the difference from (1)?

Solutions

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. sampsi .1 .3, alpha(.05) power(.8)
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Estimated sample size for two-sample comparison of proportions

Test Ho: $p_1 = p_2$, where p_1 is the proportion in population 1
and p_2 is the proportion in population 2

Assumptions:

alpha = 0.0500 (two-sided)

power = 0.8000

$p_1 = 0.1000$

$p_2 = 0.3000$

$n_2/n_1 = 1.00$

Estimated required sample sizes:

$n_1 = 72$

$n_2 = 72$