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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

Risk Diff = .10 - .30 = -.20 (-20%)

Solutions

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

Solutions

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. sampsi .1  .3, alpha(.05) power(.8)

Estimated sample size for two-sample comparison of proportions

Test Ho: p1 = p2, where p1 is the proportion in population 1
                  and p2 is the proportion in population 2
Assumptions:

        alpha =   0.0500  (two-sided)
        power =   0.8000
           p1 =   0.1000
           p2 =   0.3000
        n2/n1 =   1.00

Estimated required sample sizes:

           n1 =       72
           n2 =       72
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