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)

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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%)

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Solutions

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

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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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