

Lab 12: Estimating Required Sample Size

Outcome: Here you will gain experience in estimating the sample size required for a given level of precision and statistical power.

Objectives: The objectives of this lab are to 1) estimate the sample size required to detect a 25% and 50% difference in mean CPUE for each sample gear (a bottom trawl and trap net) for a given level of statistical power, and 2) estimate the required sample size to detect a difference between two CPUE means.

You can do this lab one in an Excel spreadsheet or in R.

Instructions:

Detailed instructions are found in the spreadsheet, which you can use to guide your analysis. If you wish to use R for this, there is some code below to get you started.

Answer all the questions in the spreadsheet. You do not need to write a lengthy report, but summarize the results briefly in text and email your report to M Allen. This report is due by Wednesday, December 3.

R Code

```
# in R, the alternative of either one sided or two sided refers to the pvalue
for alpha the Beta appears always to be one-sided

#Example 7.7 from Zar, solves for sample size
power.t.test(delta=1,sd=1.252278,sig.level=0.05,power=.9,alternative=c('two.sided'),type = c("one.sample"))

#Example 7.8 from Zar, solves for d
power.t.test(n=25,sd=1.252278,sig.level=0.05,power=.9,alternative=c('two.sided'),type = c("one.sample"))

#Example 7.9 zar, solves for power
power.t.test(n=12,delta=1,sd=1.252278,sig.level=0.05,alternative=c('two.sided'),type = c("one.sample"))

#Example 8.4 from Zar
# this is an example of testing for differences between two means for a
particular d and is a two sample test
# this gives the value of n for each sample
# note that the result tells you n for each group... meaning sample size for
each sample
power.t.test(delta=.5,sd=.7211,sig.level=0.05,power=.9,alternative=c('two.sided'),type = c("two.sample"))
```