Stata Lecture Notes
Class 2

Sample size calculations (or power calculations) for hypothesis testing with one or two samples is easily accomplished using the `Stata` immediate command `sampsi`. The following are examples of sample size or power calculations based on a scenario from the Lecture Notes:

1) An example of the sample size required for a two-sample test of a difference in means:

```
. sampsi 0 5, p(0.8) sd1(15) sd2(15)

Estimated sample size for two-sample comparison of means

Test Ho: m1 = m2, where m1 is the mean in population 1
                  and m2 is the mean in population 2
Assumptions:

         alpha =   0.0500  (two-sided)
         power =   0.8000
            m1 =        0
            m2 =        5
           sd1 =       15
           sd2 =       15
         n2/n1 =     1.00

Estimated required sample sizes:

            n1 =      142
            n2 =      142
```

```
. sampsi 0 5, sd1(15) sd2(15)

Estimated sample size for two-sample comparison of means

Test Ho: m1 = m2, where m1 is the mean in population 1
                  and m2 is the mean in population 2
Assumptions:

         alpha =   0.0500  (two-sided)
         power =   0.9000   * Note that the default is 80% power
            m1 =        0
            m2 =        5
           sd1 =       15
           sd2 =       15
         n2/n1 =     1.00

Estimated required sample sizes:

            n1 =      190
            n2 =      190
```

```
. sampsi 0 5, sd1(15) sd2(15) n1(190) n2(190)

Estimated power for two-sample comparison of means

Test Ho: m1 = m2, where m1 is the mean in population 1
                  and m2 is the mean in population 2
Assumptions:

         alpha =   0.0500  (two-sided)
            m1 =        0
            m2 =        5
           sd1 =       15
           sd2 =       15
sample size n1 =      190
            n2 =      190
         n2/n1 =     1.00

Estimated power:
         power =   0.9013
```

```
. sampsi 0 5, sd1(15) sd2(15) n1(100) n2(100)

Estimated power for two-sample comparison of means

Test Ho: m1 = m2, where m1 is the mean in population 1
                  and m2 is the mean in population 2
Assumptions:

         alpha =   0.0500  (two-sided)
            m1 =        0
            m2 =        5
           sd1 =       15
           sd2 =       15
sample size n1 =      100
            n2 =      100
         n2/n1 =     1.00

Estimated power:
         power =   0.6543
```

```
. sampsi 0 5, sd1(15) sd2(15) n1(100) r(2)

Estimated power for two-sample comparison of means

Test Ho: m1 = m2, where m1 is the mean in population 1
                  and m2 is the mean in population 2
Assumptions:
         alpha =   0.0500  (two-sided)
            m1 =        0
            m2 =        5
           sd1 =       15
           sd2 =       15
sample size n1 =      100
            n2 =      200
         n2/n1 =     2.00

Estimated power:
         power =   0.7769
```

2) An example of the sample size (or power) required for a two-sample test of a difference in proportions:

```
. sampsi 0.25 0.35, p(0.8)

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 =   0.2500
            p2 =   0.3500
         n2/n1 =   1.00

Estimated required sample sizes:

            n1 =      349
            n2 =      349


. sampsi 0.25 .35

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 =   0.9000
            p1 =   0.2500
            p2 =   0.3500
         n2/n1 =   1.00

Estimated required sample sizes:

            n1 =      460
            n2 =      460



sampsi 0.25 .15, r(2) n1(500)

Estimated power 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)
            p1 =   0.2500
            p2 =   0.1500
sample size n1 =      500
            n2 =     1000
         n2/n1 =     2.00

Estimated power:
         power =   0.9945
```

```
. sampsi 0.25 0.35, n(50)

Estimated power 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)
            p1 =   0.2500
            p2 =   0.3500
sample size n1 =       50
            n2 =       50
         n2/n1 =     1.00

Estimated power:
         power =   0.1371


. sampsi 0.25 0.35, n(150)

Estimated power 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)
            p1 =   0.2500
            p2 =   0.3500
sample size n1 =      150
            n2 =      150
         n2/n1 =     1.00

Estimated power:
         power =   0.4218


. sampsi 0.25 0.35, n(400)

Estimated power 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)
            p1 =   0.2500
            p2 =   0.3500
sample size n1 =      400
            n2 =      400
         n2/n1 =     1.00

Estimated power:
         power =   0.8543
```