Power Analysis

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What are the variables in a power analysis?

n, d, sig.level, and power are dependent on each other. If you have three, you can calculate the fourth.

n = number of samples in each group d = Cohen's d, or "effect size" sig.level = 0.05 power = 0.75 (0.2 is low power, 0.5 is medium, 0.8 is high power) alternative = two.sided (default)

Calculating Cohen's d

d = effect size calculated with help from http://www.socscistatistics.com/effectsize/Default3.aspx Cohen's d = (M2 - M1) / SDpooled SDpooled = sqrt((SD12 + SD22) / 2)

For my predicted data:

Cohen's d = (40.47 - 33.05) / 5.458416 = 1.359369.

Running the code:

```
library(pwr)
pwr.t.test(n = NULL, d = 1.359369, power = 0.75, sig.level = 0.05,
           type = "two.sample", alternative = "two.sided")
```

```
## 
##        Two-sample t test power calculation 
## 
##               n = 8.583404
##               d = 1.359369
##       sig.level = 0.05
##           power = 0.75
##     alternative = two.sided
## 
## NOTE: n is number in *each* group
```

It is possible that I could see an effect with an n=9. If I drop the power to 0.5...

```
pwr.t.test(n = NULL, d = 1.359369, power = 0.5, sig.level = 0.05,
           type = "two.sample", alternative = "two.sided")
```

```
## 
##        Two-sample t test power calculation 
## 
##               n = 5.28125
##               d = 1.359369
##       sig.level = 0.05
##           power = 0.5
##     alternative = two.sided
## 
## NOTE: n is number in *each* group
```

Conclusion: It is possible to see a moderate to large effect with n= ~8