

oneway__power.R

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```
# oneway_power.R
# Power analysis for one-way ANOVA

# Load necessary libraries
library(ggplot2)

# H1 means, sample sizes, standard deviation, alpha
groupmeans <- c(20,22,22,25,18)
nvals <- 2:20
stddev <- 3
alpha <- 0.05

# Power analysis
powout <- power.anova.test(groups = length(groupmeans),n=nvals,
  between.var=var(groupmeans),within.var=stddev^2,sig.level=alpha)
powout

##
##      Balanced one-way analysis of variance power calculation
##
##      groups = 5
##      n = 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
##      between.var = 6.8
##      within.var = 9
##      sig.level = 0.05
##      power = 0.2224267, 0.4560036, 0.6570687, 0.8004897, 0.8911668, 0.9436998, 0.9721479, 0.9867385
##
## NOTE: n is number in each group

# Make data frame from power output
n <- powout$n
power <- powout$power
powdata <- as.data.frame(cbind(n,power))

# Print data
powdata

##      n      power
## 1  2 0.2224267
## 2  3 0.4560036
## 3  4 0.6570687
## 4  5 0.8004897
## 5  6 0.8911668
## 6  7 0.9436998
## 7  8 0.9721479
## 8  9 0.9867385
## 9 10 0.9938920
##10 11 0.9972677
```

```
## 11 12 0.9988090
## 12 13 0.9994928
## 13 14 0.9997885
## 14 15 0.9999134
## 15 16 0.9999652
## 16 17 0.9999862
## 17 18 0.9999946
## 18 19 0.9999979
## 19 20 0.9999992
```

```
# Plot power vs. sample size
ggplot(powdata,aes(n,power))+
  geom_line(color="black",size=1)+
  geom_point(color="black",size=4)+
  ggtitle("Power for one-way ANOVA")
```

