

# Sample size determination in R

Given group means 50, 60, 50, and 60; experimental error variance  $5^2 = 25$ ; a level-0.05 test with power 0.90 at these settings; find common sample size.

```
> ## Determine sample size
> mu <- c(A=50, B=60, C=50, D=60) # given group means
> var(mu)

[1] 33.33333
> power.anova.test(groups = 4,      # or use groups=length(mu)
+   between.var = var(mu),
+   within.var = 5^2, # given variance 5^2
+   sig.level = 0.05, # default is 0.05 (so you can skip this)
+   power = 0.90)      # and given power
```

Balanced one-way analysis of variance power calculation

```
groups = 4
n = 4.658128
between.var = 33.33333
within.var = 25
sig.level = 0.05
power = 0.9
```

NOTE: n is number in each group

```
> # Hence, the required sample size is n = 5 (actual power
> # is higher).
>
> # The command below compute actual power when n = 5.
> power.anova.test(groups = 4,
+   n = 5, # actual sample size
+   between.var = var(mu), within.var = 5^2)
```

Balanced one-way analysis of variance power calculation

```
groups = 4
n = 5
between.var = 33.33333
within.var = 25
sig.level = 0.05
power = 0.9270285
```

NOTE: n is number in each group

```
> # So, the actual power when n = 5 is 0.9270285.
```