T-Tests in R

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Load data

```
data(mtcars)
```

One sample t-test

```
t.test(mtcars$mpg, mu=50) # Ho: mu=3
```

```
##
##  One Sample t-test
##
## data:  mtcars$mpg
## t = -28.0727, df = 31, p-value < 2.2e-16
## alternative hypothesis: true mean is not equal to 50
## 95 percent confidence interval:
##  17.91768 22.26357
## sample estimates:
## mean of x
##  20.09062
```

Independent two sample t-test by groups

```r
t.test(mtcars$mpg ~ mtcars$am)
```

```
##
##  Welch Two Sample t-test
##
## data:  mtcars$mpg by mtcars$am
## t = -3.7671, df = 18.332, p-value = 0.001374
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -11.280194  -3.209684
## sample estimates:
## mean in group 0 mean in group 1
##        17.14737        24.39231
```

Independent 2-group t-test

```r
mpg1 <- sample(mtcars$mpg, 10, replace=F)
mpg2 <- sample(mtcars$mpg, 10, replace=F)

t.test(mpg1, mpg2)
```

```
##
##  Welch Two Sample t-test
##
## data:  mpg1 and mpg2
## t = 0.7132, df = 17.246, p-value = 0.4853
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -3.929526  7.949526
## sample estimates:
## mean of x mean of y
##     20.95     18.94
```

```r
# possible options:
  # paired = TRUE
  # var.equal = TRUE (pooled variable estimate)
  # alternative="less" or alternative="greater" (one tail tests)
```