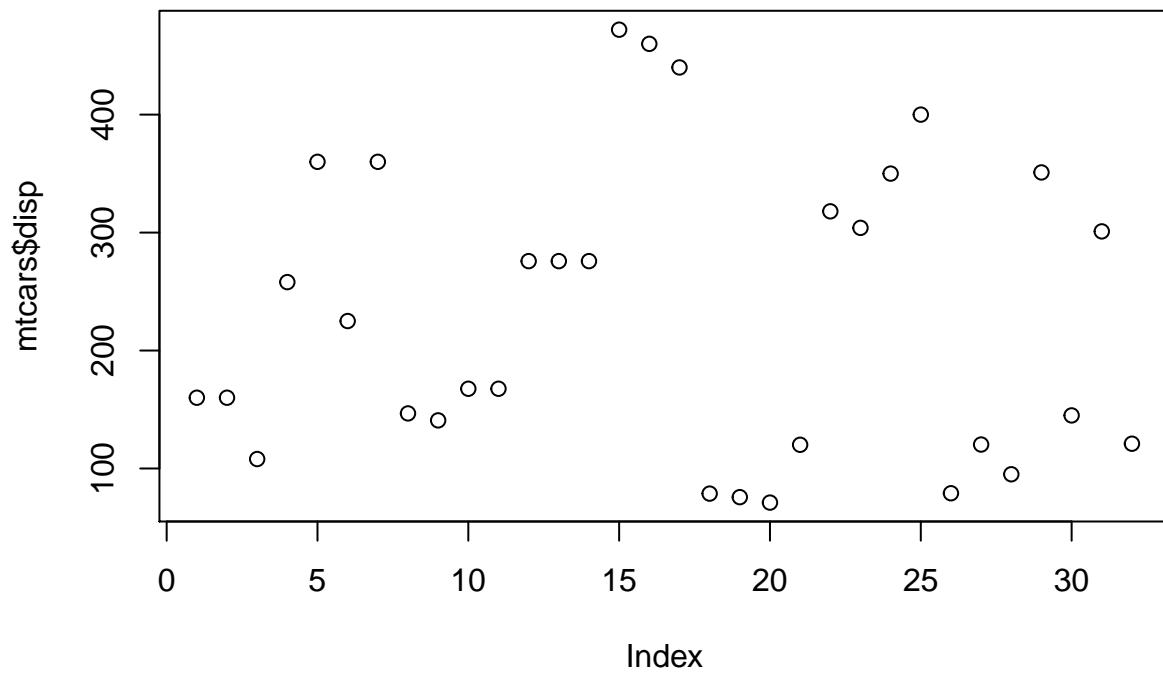# mtcars

Nick Blackbourn

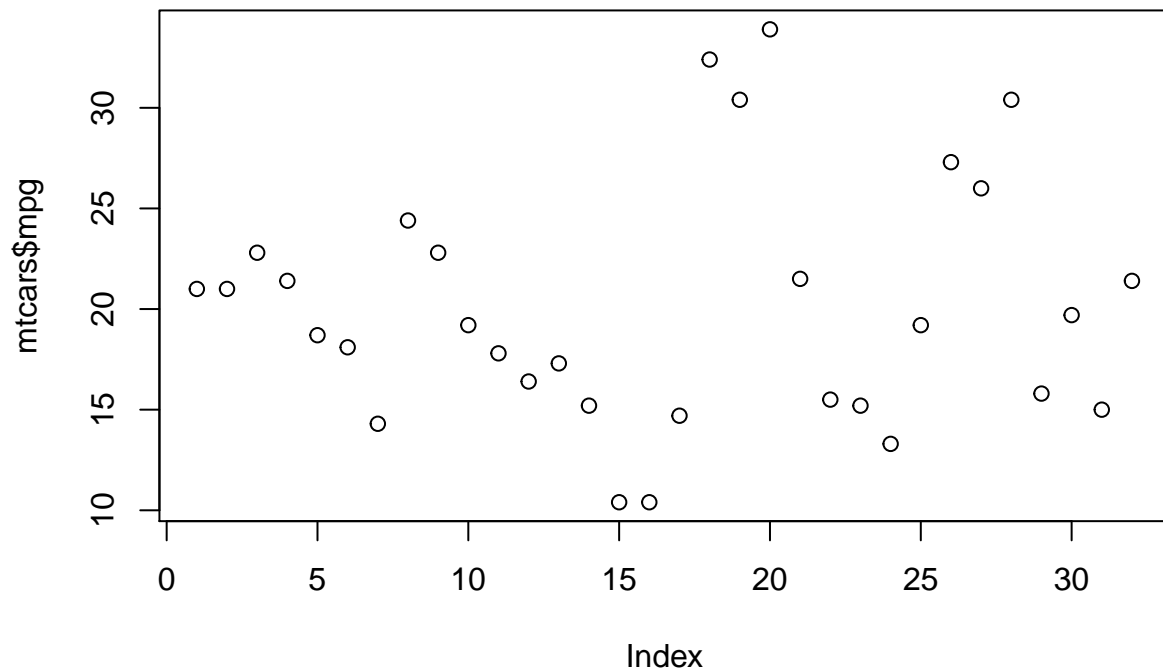*September 27, 2016*

```r
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

```r
plot(mtcars$disp)
```



```r
plot(mtcars$mpg)
```

```r
dim(mtcars)
```

```
## [1] 32 11
```

32 rows

```r
nrow(mtcars)
```

```
## [1] 32
```

11 columns

```r
ncol(mtcars)
```

```
## [1] 11
```

```r
# colnames(mtcars)

attributes(mtcars)
```

```
## $names
##  [1] "mpg"  "cyl"  "disp" "hp"   "drat" "wt"   "qsec" "vs"   "am"   "gear"
## [11] "carb"
```

```
##
## $row.names
##  [1] "Mazda RX4"           "Mazda RX4 Wag"       "Datsun 710"
##  [4] "Hornet 4 Drive"      "Hornet Sportabout"   "Valiant"
##  [7] "Duster 360"          "Merc 240D"           "Merc 230"
## [10] "Merc 280"            "Merc 280C"           "Merc 450SE"
## [13] "Merc 450SL"          "Merc 450SLC"         "Cadillac Fleetwood"
## [16] "Lincoln Continental" "Chrysler Imperial"   "Fiat 128"
## [19] "Honda Civic"         "Toyota Corolla"      "Toyota Corona"
## [22] "Dodge Challenger"    "AMC Javelin"         "Camaro Z28"
## [25] "Pontiac Firebird"    "Fiat X1-9"           "Porsche 914-2"
## [28] "Lotus Europa"        "Ford Pantera L"      "Ferrari Dino"
## [31] "Maserati Bora"       "Volvo 142E"
##
## $class
## [1] "data.frame"
```

```
mtcars[1:5,]
```

```
##                    mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
```

```
head(mtcars)
```

```
##                    mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant           18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
```

```
tail(mtcars)
```

```
##                mpg cyl  disp  hp drat    wt qsec vs am gear carb
## Porsche 914-2 26.0   4 120.3  91 4.43 2.140 16.7  0  1    5    2
## Lotus Europa  30.4   4  95.1 113 3.77 1.513 16.9  1  1    5    2
## Ford Pantera L 15.8  8 351.0 264 4.22 3.170 14.5  0  1    5    4
## Ferrari Dino  19.7   6 145.0 175 3.62 2.770 15.5  0  1    5    6
## Maserati Bora 15.0   8 301.0 335 3.54 3.570 14.6  0  1    5    8
## Volvo 142E    21.4   4 121.0 109 4.11 2.780 18.6  1  1    4    2
```

```
summary(mtcars)
```

```
##       mpg             cyl             disp             hp
##  Min.   :10.40   Min.   :4.000   Min.   : 71.1   Min.   : 52.0
##  1st Qu.:15.43   1st Qu.:4.000   1st Qu.:120.8   1st Qu.: 96.5
```

```
## Median :19.20   Median :6.000   Median :196.3   Median :123.0
## Mean   :20.09   Mean   :6.188   Mean   :230.7   Mean   :146.7
## 3rd Qu.:22.80   3rd Qu.:8.000   3rd Qu.:326.0   3rd Qu.:180.0
## Max.   :33.90   Max.   :8.000   Max.   :472.0   Max.   :335.0
##      drat            wt             qsec             vs
## Min.   :2.760   Min.   :1.513   Min.   :14.50   Min.   :0.0000
## 1st Qu.:3.080   1st Qu.:2.581   1st Qu.:16.89   1st Qu.:0.0000
## Median :3.695   Median :3.325   Median :17.71   Median :0.0000
## Mean   :3.597   Mean   :3.217   Mean   :17.85   Mean   :0.4375
## 3rd Qu.:3.920   3rd Qu.:3.610   3rd Qu.:18.90   3rd Qu.:1.0000
## Max.   :4.930   Max.   :5.424   Max.   :22.90   Max.   :1.0000
##       am             gear            carb
## Min.   :0.0000   Min.   :3.000   Min.   :1.000
## 1st Qu.:0.0000   1st Qu.:3.000   1st Qu.:2.000
## Median :0.0000   Median :4.000   Median :2.000
## Mean   :0.4062   Mean   :3.688   Mean   :2.812
## 3rd Qu.:1.0000   3rd Qu.:4.000   3rd Qu.:4.000
## Max.   :1.0000   Max.   :5.000   Max.   :8.000
```
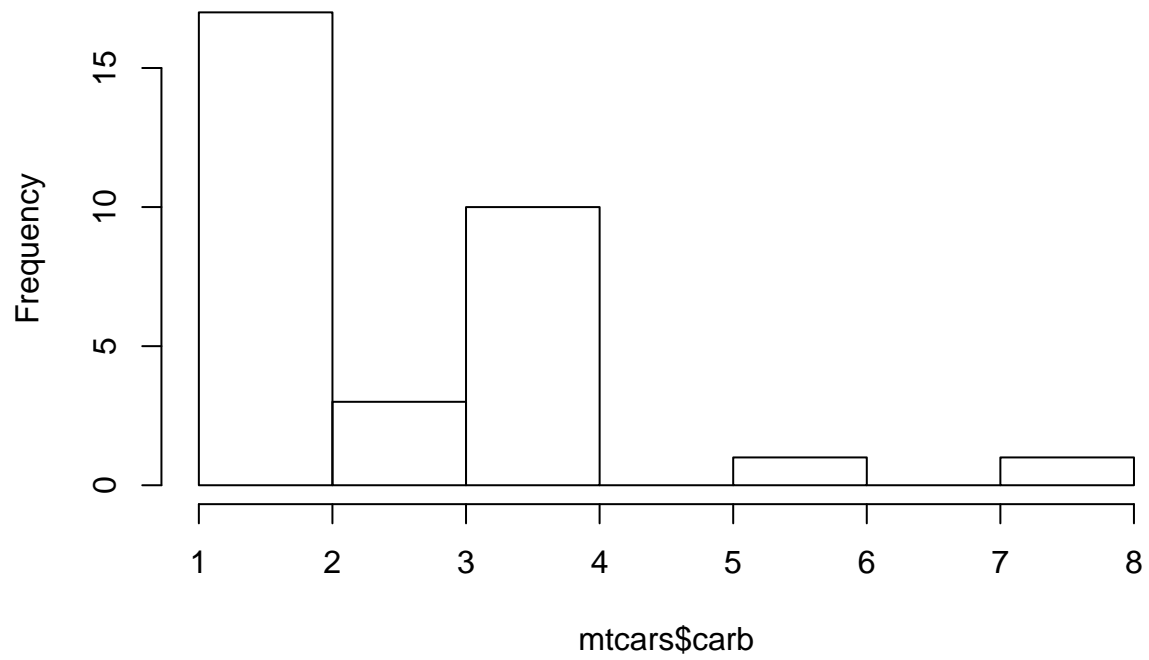
```r
quantile(mtcars$gear)
```

```
##   0%  25%  50%  75% 100%
##    3    3    4    4    5
```
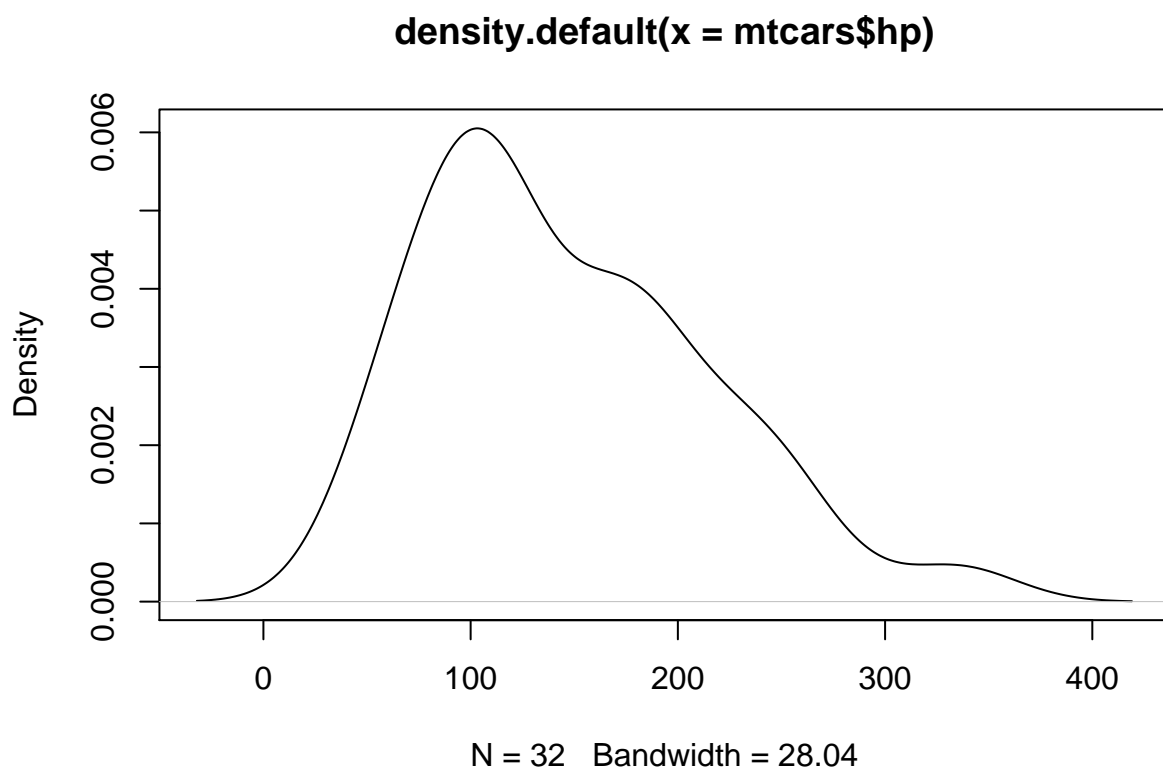
```r
var(mtcars$drat)
```

```
## [1] 0.2858814
```

```r
hist(mtcars$carb)
```
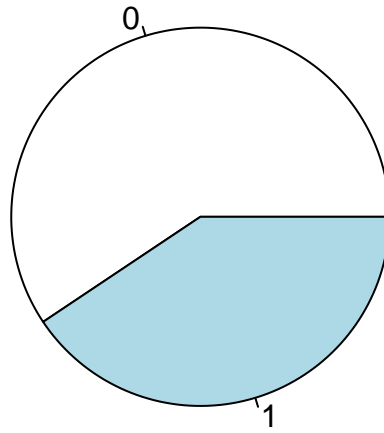
Histogram of mtcars$carb


```
plot(density(mtcars$hp))
```

density.default(x = mtcars$hp)

N = 32   Bandwidth = 28.04

```
table(mtcars$wt)
```

```
##
## 1.513 1.615 1.835 1.935  2.14   2.2  2.32 2.465  2.62  2.77  2.78 2.875
##     1     1     1     1     1     1     1     1     1     1     1     1
##  3.15  3.17  3.19 3.215 3.435  3.44  3.46  3.52  3.57  3.73  3.78  3.84
##     1     1     1     1     1     3     1     1     2     1     1     1
## 3.845  4.07  5.25 5.345 5.424
##     1     1     1     1     1
```
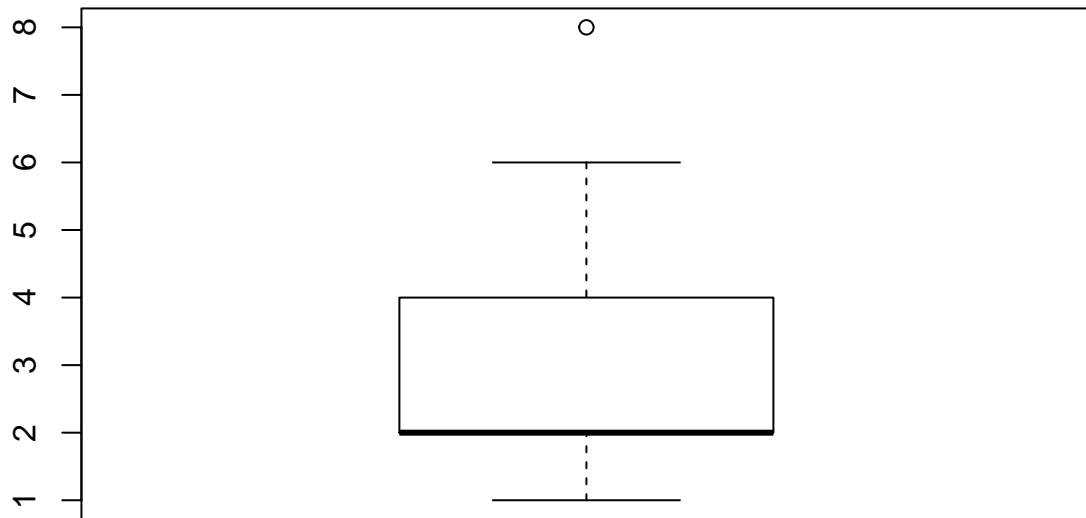
```
pie(table(mtcars$am))
```
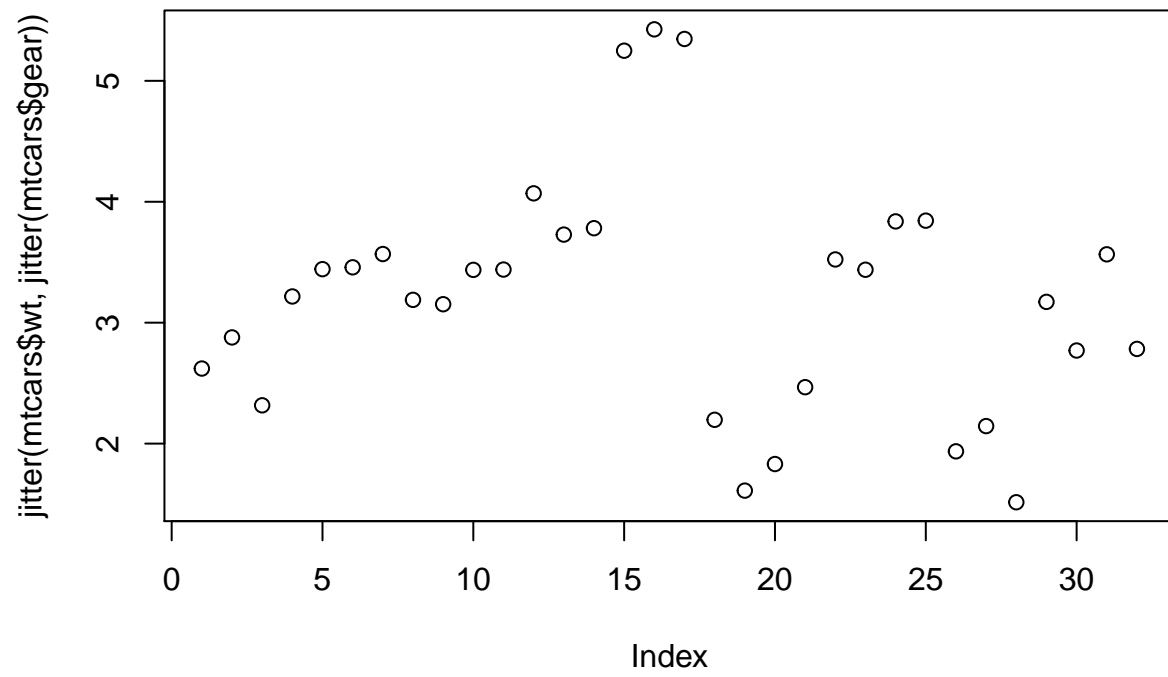
```r
cov(mtcars$drat, mtcars$qsec)
```

```
## [1] 0.08714073
```

```r
cor(mtcars$cyl, mtcars$mpg)
```

```
## [1] -0.852162
```

```r
boxplot(mtcars$carb, data=mtcars)
```

```r
plot(jitter(mtcars$wt, jitter(mtcars$gear)))
```

```r
pairs(mtcars)
```