

# Gergely Daróczy

Looong report

Sat Jun 2 00:09:17 2012

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I have written the below report in 10 mins :)

## Dataset

Here I will do a pretty fast report on `mtcars` which is:

	mpg	cyl	disp	hp	drat	wt
Mazda RX4	21	6	160	110	3.9	2.6
Mazda RX4 Wag	21	6	160	110	3.9	2.9
Datsun 710	23	4	108	93	3.9	2.3
Hornet 4 Drive	21	6	258	110	3.1	3.2
Hornet Sportabout	19	8	360	175	3.1	3.4
Valiant	18	6	225	105	2.8	3.5
Duster 360	14	8	360	245	3.2	3.6
Merc 240D	24	4	147	62	3.7	3.2
Merc 230	23	4	141	95	3.9	3.1
Merc 280	19	6	168	123	3.9	3.4
Merc 280C	18	6	168	123	3.9	3.4
Merc 450SE	16	8	276	180	3.1	4.1
Merc 450SL	17	8	276	180	3.1	3.7
Merc 450SLC	15	8	276	180	3.1	3.8
Cadillac Fleetwood	10	8	472	205	2.9	5.2
Lincoln Continental	10	8	460	215	3.0	5.4
Chrysler Imperial	15	8	440	230	3.2	5.3
Fiat 128	32	4	79	66	4.1	2.2
Honda Civic	30	4	76	52	4.9	1.6
Toyota Corolla	34	4	71	65	4.2	1.8
Toyota Corona	22	4	120	97	3.7	2.5
Dodge Challenger	16	8	318	150	2.8	3.5
AMC Javelin	15	8	304	150	3.1	3.4
Camaro Z28	13	8	350	245	3.7	3.8
Pontiac Firebird	19	8	400	175	3.1	3.8
Fiat X1-9	27	4	79	66	4.1	1.9
Porsche 914-2	26	4	120	91	4.4	2.1
Lotus Europa	30	4	95	113	3.8	1.5
Ford Pantera L	16	8	351	264	4.2	3.2
Ferrari Dino	20	6	145	175	3.6	2.8
Maserati Bora	15	8	301	335	3.5	3.6
Volvo 142E	21	4	121	109	4.1	2.8

	qsec	vs	am	gear	carb
Mazda RX4	16	0	1	4	4
Mazda RX4 Wag	17	0	1	4	4
Datsun 710	19	1	1	4	1
Hornet 4 Drive	19	1	0	3	1
Hornet Sportabout	17	0	0	3	2
Valiant	20	1	0	3	1
Duster 360	16	0	0	3	4
Merc 240D	20	1	0	4	2
Merc 230	23	1	0	4	2
Merc 280	18	1	0	4	4
Merc 280C	19	1	0	4	4
Merc 450SE	17	0	0	3	3
Merc 450SL	18	0	0	3	3
Merc 450SLC	18	0	0	3	3
Cadillac Fleetwood	18	0	0	3	4
Lincoln Continental	18	0	0	3	4
Chrysler Imperial	17	0	0	3	4
Fiat 128	19	1	1	4	1
Honda Civic	19	1	1	4	2
Toyota Corolla	20	1	1	4	1
Toyota Corona	20	1	0	3	1
Dodge Challenger	17	0	0	3	2
AMC Javelin	17	0	0	3	2
Camaro Z28	15	0	0	3	4
Pontiac Firebird	17	0	0	3	2
Fiat X1-9	19	1	1	4	1
Porsche 914-2	17	0	1	5	2
Lotus Europa	17	1	1	5	2
Ford Pantera L	14	0	1	5	4
Ferrari Dino	16	0	1	5	6
Maserati Bora	15	0	1	5	8
Volvo 142E	19	<sup>4</sup> <sub>1</sub>	1	4	2

## Descriptives

Variable	Average	Median	Standard deviation	Variance
mpg	20.09	19.2	6.03	3.6e+01
cyl	6.19	6.0	1.79	3.2e+00
disp	230.72	196.3	123.94	1.5e+04
hp	146.69	123.0	68.56	4.7e+03
drat	3.60	3.7	0.53	2.9e-01
wt	3.22	3.3	0.98	9.6e-01
qsec	17.85	17.7	1.79	3.2e+00
vs	0.44	0.0	0.50	2.5e-01
am	0.41	0.0	0.50	2.5e-01
gear	3.69	4.0	0.74	5.4e-01
carb	2.81	2.0	1.62	2.6e+00

## In details

### mpg

We found the folloing values here:

*21, 21, 22.8, 21.4, 18.7, 18.1, 14.3, 24.4, 22.8, 19.2, 17.8, 16.4, 17.3, 15.2, 10.4, 10.4, 14.7, 32.4, 30.4, 33.9, 21.5, 15.5, 15.2, 13.3, 19.2, 27.3, 26, 30.4, 15.8, 19.7, 15 and 21.4*

The mean of mpg is *20.090625* while the standard deviation is: *6.0269480520891*. The most frequent value in mpg is 10.4, but let us check out the frequency table too:

10.4	13.3	14.3	14.7	15	15.2	15.5	15.8
2	1	1	1	1	2	1	1

16.4	17.3	17.8	18.1	18.7	19.2	19.7	21
1	1	1	1	1	2	1	2

21.4	21.5	22.8	24.4	26	27.3	30.4
2	1	2	1	1	1	2

32.4	33.9
1	1

Tables are boring, let us show the same with a **histogram**:

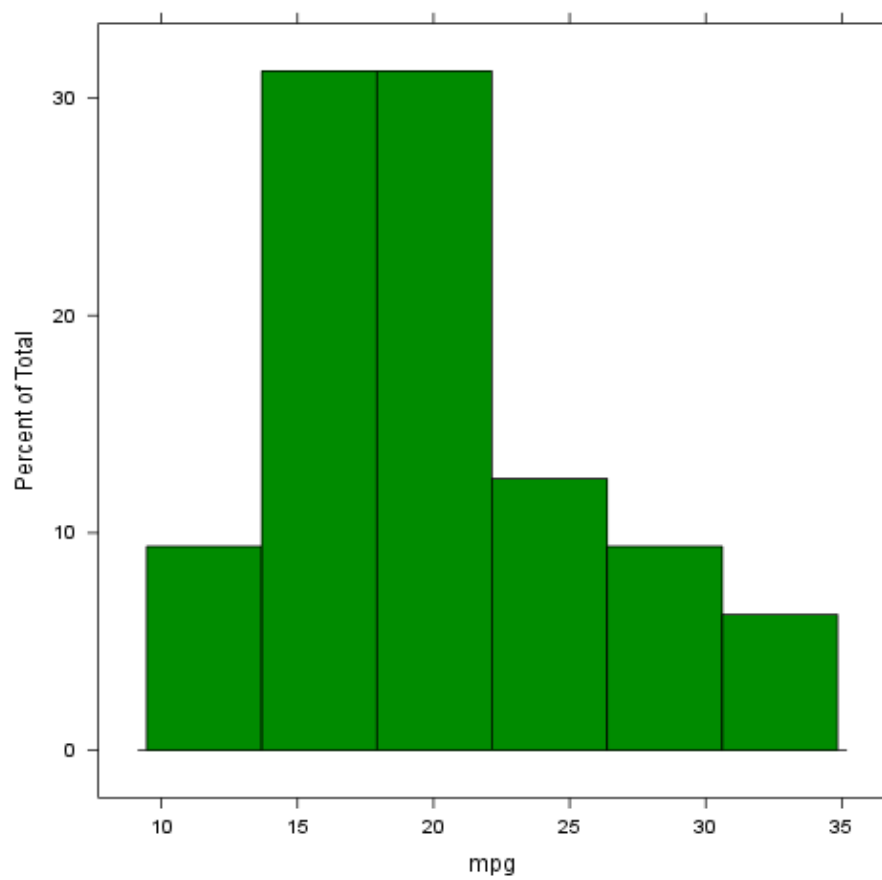


Figure 1:

## cyl

We found the folloing values here:

*6, 6, 4, 6, 8, 6, 8, 4, 4, 6, 6, 8, 8, 8, 8, 8, 8, 4, 4, 4, 4, 8, 8, 8, 8, 4, 4, 4, 8, 6, 8*  
and *4*

The mean of cyl is *6.1875* while the standard deviation is: *1.78592164694654*.  
The most frequent value in cyl is 8, but let us check out the frequency table too:

4	6	8
11	7	14

Tables are boring, let us show the same with a **histogram**:

## disp

We found the folloing values here:

*160, 160, 108, 258, 360, 225, 360, 146.7, 140.8, 167.6, 167.6, 275.8, 275.8, 275.8,*  
*472, 460, 440, 78.7, 75.7, 71.1, 120.1, 318, 304, 350, 400, 79, 120.3, 95.1, 351,*  
*145, 301* and *121*

The mean of disp is *230.721875* while the standard deviation is: *123.938693831382*.  
The most frequent value in disp is 275.8, but let us check out the frequency  
table too:

71.1	75.7	78.7	79	95.1	108	120.1	120.3
1	1	1	1	1	1	1	1

121	140.8	145	146.7	160	167.6	225	258
1	1	1	1	2	2	1	1

275.8	301	304	318	350	351	360	400
3	1	1	1	1	1	2	1

440	460	472
1	1	1

Tables are boring, let us show the same with a **histogram**:

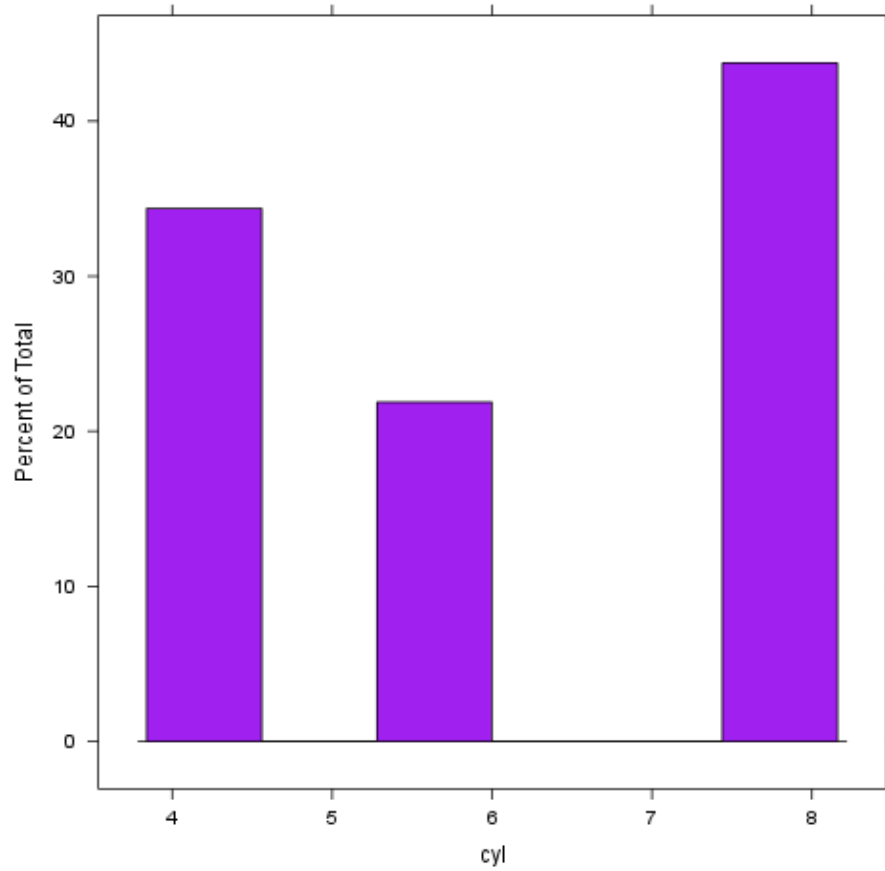


Figure 2:



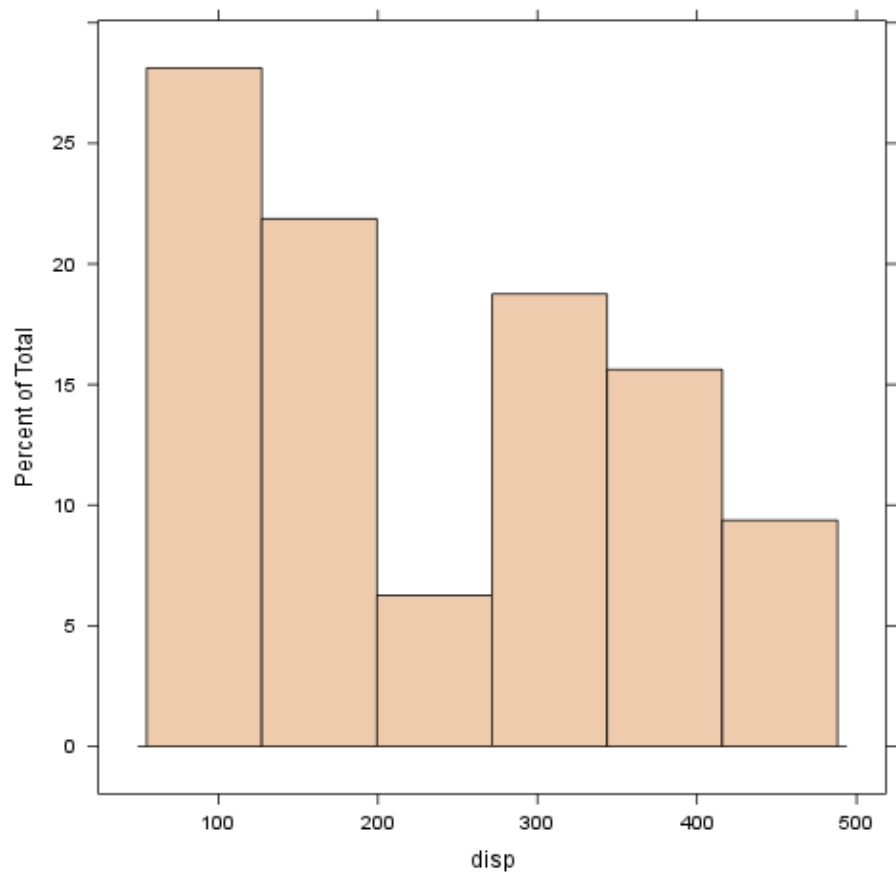


Figure 3:

## hp

We found the folloing values here:

*110, 110, 93, 110, 175, 105, 245, 62, 95, 123, 123, 180, 180, 180, 205, 215, 230, 66, 52, 65, 97, 150, 150, 245, 175, 66, 91, 113, 264, 175, 335 and 109*

The mean of hp is *146.6875* while the standard deviation is: *68.5628684893206*. The most frequent value in hp is 110, but let us check out the frequency table too:

52	62	65	66	91	93	95	97	105
1	1	1	2	1	1	1	1	1

109	110	113	123	150	175	180	205
1	3	1	2	2	3	3	1

215	230	245	264	335
1	1	2	1	1

Tables are boring, let us show the same with a **histogram**:

## drat

We found the folloing values here:

*3.9, 3.9, 3.85, 3.08, 3.15, 2.76, 3.21, 3.69, 3.92, 3.92, 3.92, 3.07, 3.07, 3.07, 2.93, 3, 3.23, 4.08, 4.93, 4.22, 3.7, 2.76, 3.15, 3.73, 3.08, 4.08, 4.43, 3.77, 4.22, 3.62, 3.54 and 4.11*

The mean of drat is *3.5965625* while the standard deviation is: *0.534678736070971*. The most frequent value in drat is 3.07, but let us check out the frequency table too:

2.76	2.93	3	3.07	3.08	3.15	3.21	3.23
2	1	1	3	2	2	1	1

3.54	3.62	3.69	3.7	3.73	3.77	3.85	3.9
1	1	1	1	1	1	1	2

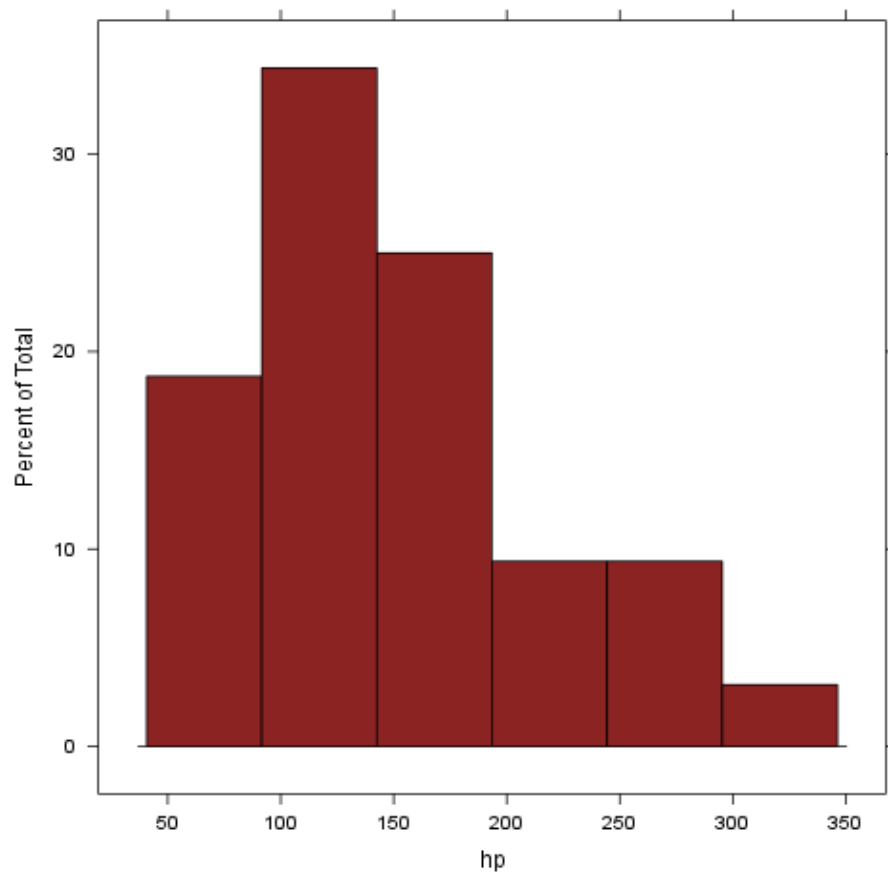


Figure 4:

3.92	4.08	4.11	4.22	4.43	4.93
3	2	1	2	1	1

Tables are boring, let us show the same with a **histogram**:

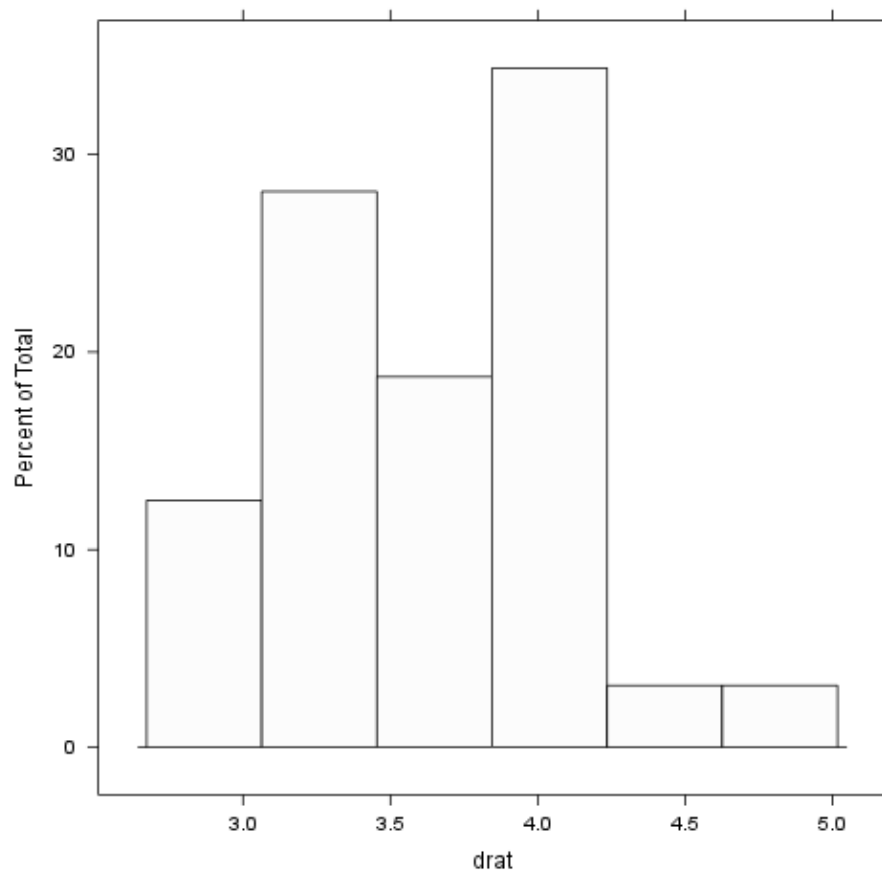


Figure 5:

**wt**

We found the folloing values here:

*2.62, 2.875, 2.32, 3.215, 3.44, 3.46, 3.57, 3.19, 3.15, 3.44, 3.44, 4.07, 3.73, 3.78, 5.25, 5.424, 5.345, 2.2, 1.615, 1.835, 2.465, 3.52, 3.435, 3.84, 3.845, 1.935, 2.14, 1.513, 3.17, 2.77, 3.57 and 2.78*

The mean of wt is *3.21725* while the standard deviation is: *0.978457442989697*.  
The most frequent value in wt is 3.44, but let us check out the frequency table too:

1.513	1.615	1.835	1.935	2.14	2.2	2.32
1	1	1	1	1	1	1

2.465	2.62	2.77	2.78	2.875	3.15	3.17
1	1	1	1	1	1	1

3.19	3.215	3.435	3.44	3.46	3.52	3.57
1	1	1	3	1	1	2

3.73	3.78	3.84	3.845	4.07	5.25
1	1	1	1	1	1

5.345	5.424
1	1

Tables are boring, let us show the same with a **histogram**:

### qsec

We found the folloing values here:

*16.46, 17.02, 18.61, 19.44, 17.02, 20.22, 15.84, 20, 22.9, 18.3, 18.9, 17.4, 17.6, 18, 17.98, 17.82, 17.42, 19.47, 18.52, 19.9, 20.01, 16.87, 17.3, 15.41, 17.05, 18.9, 16.7, 16.9, 14.5, 15.5, 14.6* and *18.6*

The mean of qsec is *17.84875* while the standard deviation is: *1.78694323609684*.  
The most frequent value in qsec is 17.02, but let us check out the frequency table too:

14.5	14.6	15.41	15.5	15.84	16.46	16.7
1	1	1	1	1	1	1

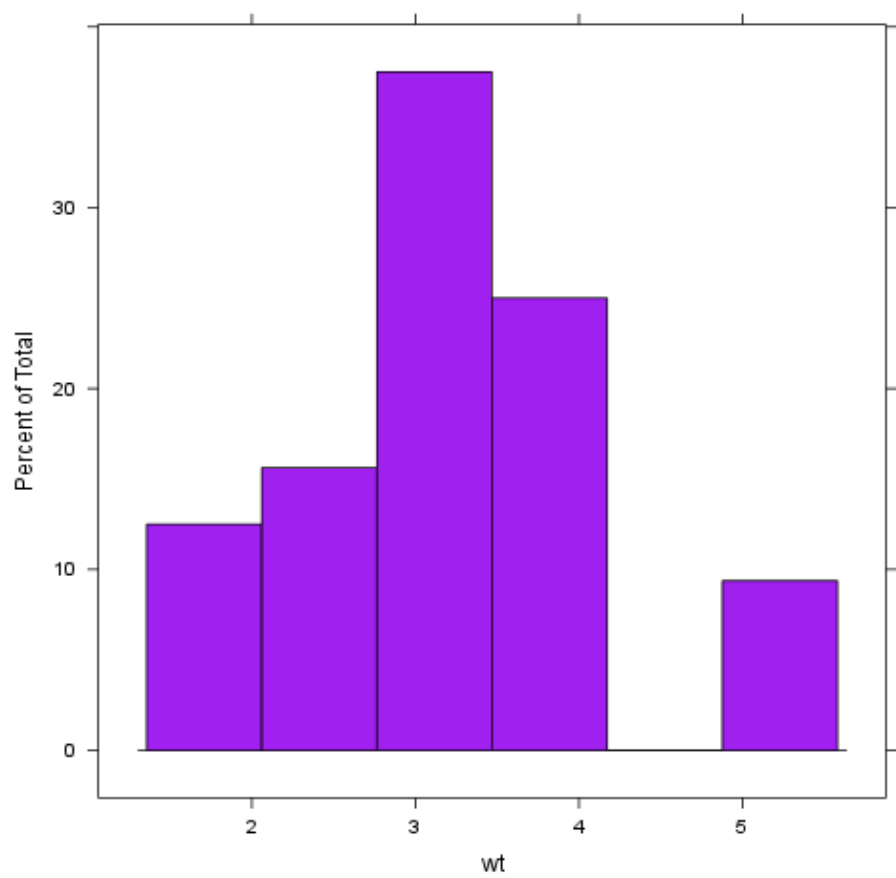


Figure 6:

16.87	16.9	17.02	17.05	17.3	17.4	17.42
1	1	2	1	1	1	1

17.6	17.82	17.98	18	18.3	18.52	18.6
1	1	1	1	1	1	1

18.61	18.9	19.44	19.47	19.9	20	20.01
1	2	1	1	1	1	1

20.22	22.9
1	1

Tables are boring, let us show the same with a **histogram**:

**vs**

We found the folloing values here:

*0, 0, 1, 1, 0, 1, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0*  
and *1*

The mean of vs is *0.4375* while the standard deviation is: *0.504016128774185*.  
The most frequent value in vs is 0, but let us check out the frequency table too:

0	1
18	14

Tables are boring, let us show the same with a **histogram**:

**am**

We found the folloing values here:

*1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1*  
and *1*

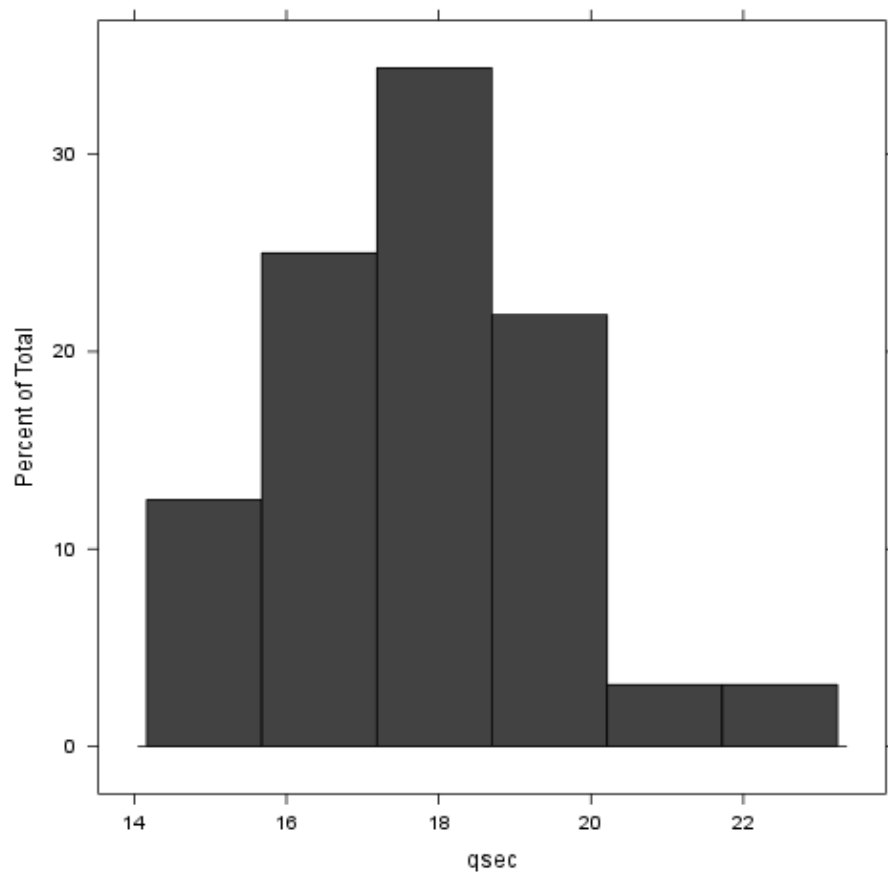


Figure 7:



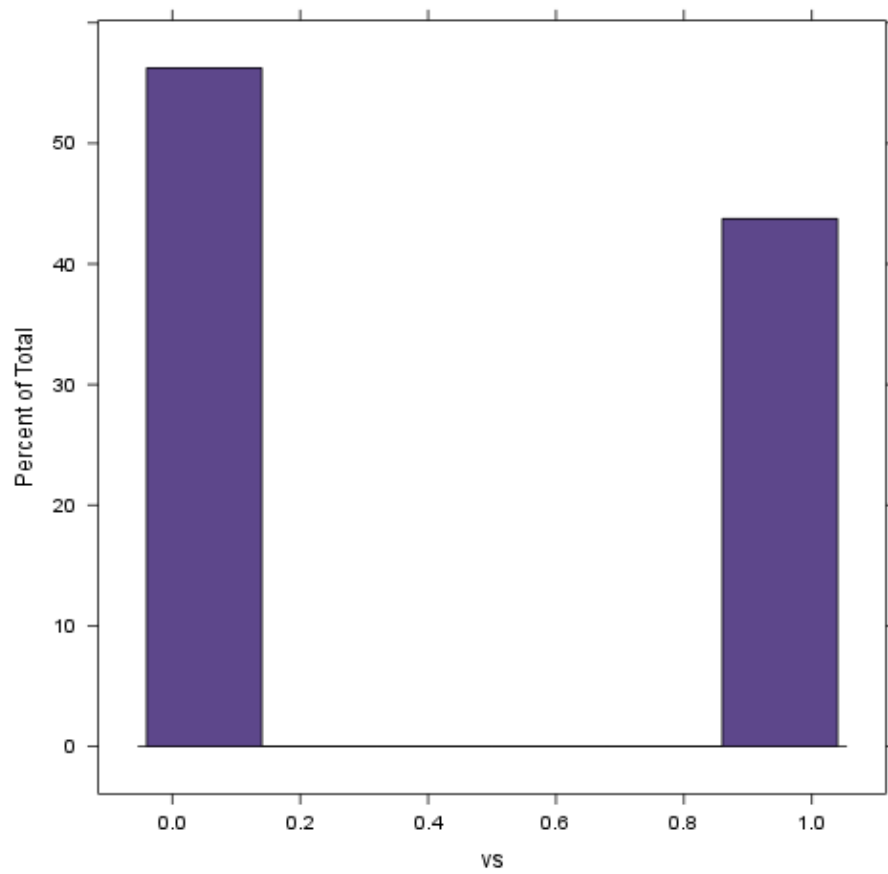


Figure 8:

The mean of `am` is *0.40625* while the standard deviation is: *0.498990917235846*. The most frequent value in `am` is 0, but let us check out the frequency table too:

0	1
19	13

Tables are boring, let us show the same with a **histogram**:

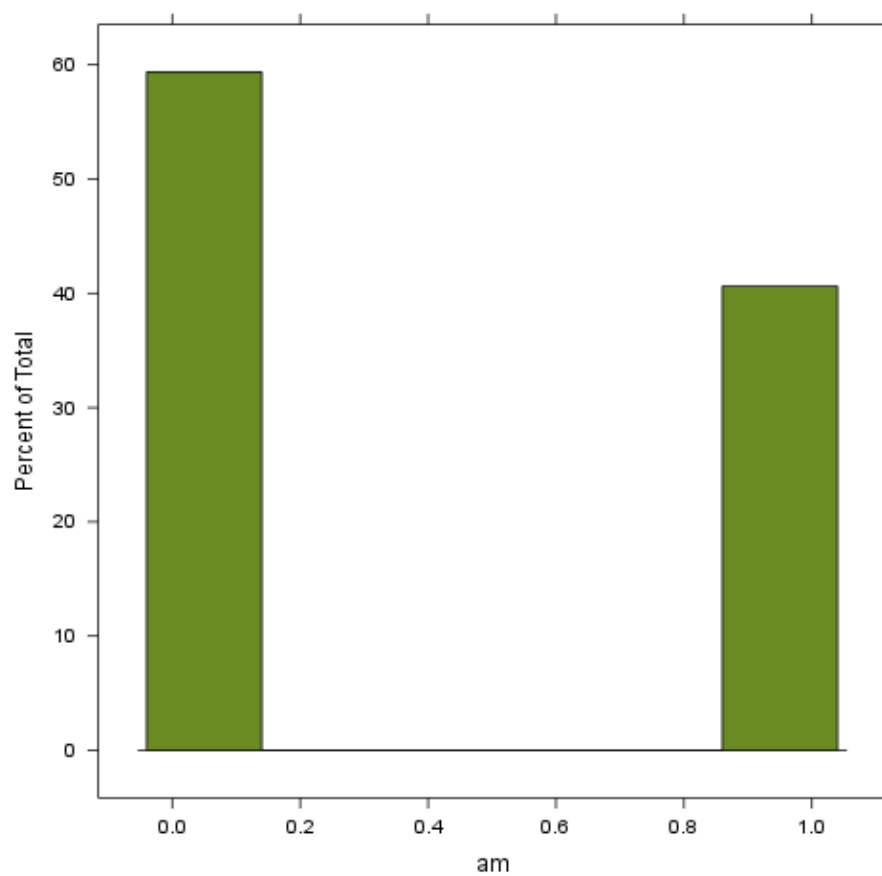


Figure 9:

**gear**

We found the folloing values here:

4, 4, 4, 3, 3, 3, 3, 4, 4, 4, 4, 3, 3, 3, 3, 3, 3, 4, 4, 4, 3, 3, 3, 3, 4, 5, 5, 5, 5, 5  
and 4

The mean of gear is  $3.6875$  while the standard deviation is:  $0.737804065256947$ .  
The most frequent value in gear is 3, but let us check out the frequency table  
too:

3	4	5
15	12	5

Tables are boring, let us show the same with a **histogram**:

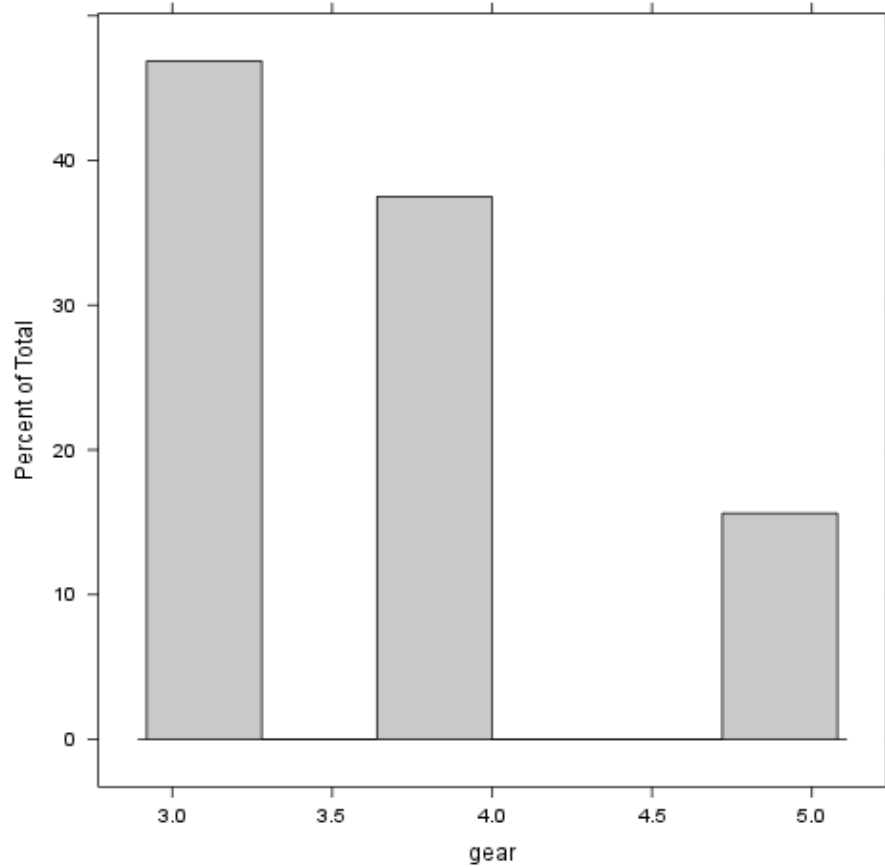


Figure 10:

## carb

We found the folloing values here:

4, 4, 1, 1, 2, 1, 4, 2, 2, 4, 4, 3, 3, 3, 4, 4, 4, 1, 2, 1, 1, 2, 2, 4, 2, 1, 2, 2, 4, 6, 8  
and 2

The mean of carb is *2.8125* while the standard deviation is: *1.61519997763185*.  
The most frequent value in carb is 2, but let us check out the frequency table  
too:

1	2	3	4	6	8
7	10	3	10	1	1

Tables are boring, let us show the same with a **histogram**:

## Correlation

And here goes a correlation table:

	mpg	cyl	disp	hp	drat	wt	qsec
mpg	1.000	-0.852	-0.848	-0.776	0.681	-0.868	0.419
cyl	-0.852	1.000	0.902	0.832	-0.700	0.782	-0.591
disp	-0.848	0.902	1.000	0.791	-0.710	0.888	-0.434
hp	-0.776	0.832	0.791	1.000	-0.449	0.659	-0.708
drat	0.681	-0.700	-0.710	-0.449	1.000	-0.712	0.091
wt	-0.868	0.782	0.888	0.659	-0.712	1.000	-0.175
qsec	0.419	-0.591	-0.434	-0.708	0.091	-0.175	1.000
vs	0.664	-0.811	-0.710	-0.723	0.440	-0.555	0.745
am	0.600	-0.523	-0.591	-0.243	0.713	-0.692	-0.230
gear	0.480	-0.493	-0.556	-0.126	0.700	-0.583	-0.213
carb	-0.551	0.527	0.395	0.750	-0.091	0.428	-0.656

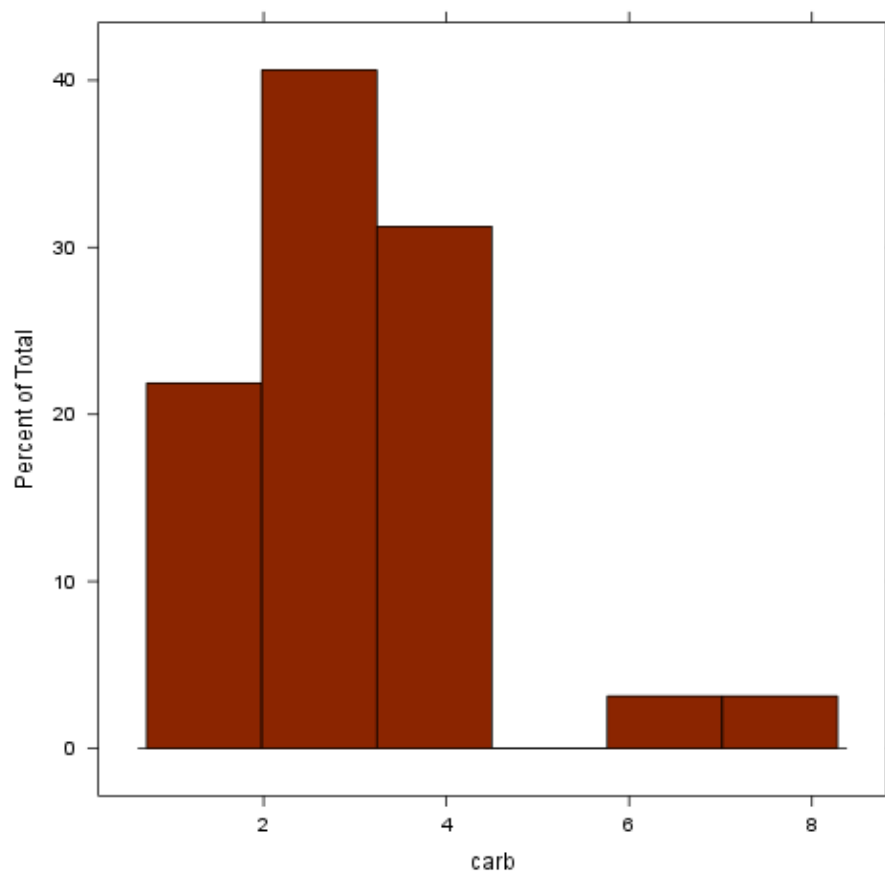


Figure 11:

	vs	am	gear	carb
mpg	0.664	0.600	0.480	-0.551
cyl	-0.811	-0.523	-0.493	0.527
disp	-0.710	-0.591	-0.556	0.395
hp	-0.723	-0.243	-0.126	0.750
drat	0.440	0.713	0.700	-0.091
wt	-0.555	-0.692	-0.583	0.428
qsec	0.745	-0.230	-0.213	-0.656
vs	1.000	0.168	0.206	-0.570
am	0.168	1.000	0.794	0.058
gear	0.206	0.794	1.000	0.274
carb	-0.570	0.058	0.274	1.000

And the same on a graph:

Yeah, that latter took a while to render in an image file :)

That's not a **pander** issue.

## Some models

Okay, let us find out how **weight** affects other variables:

### mpg

A simple linear model: `mtcars$wt ~ mtcars$mpg`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.0e+00	3.1e-01	2.0e+01	1.2e-18
Dependent	-1.4e-01	1.5e-02	-9.6e+00	1.3e-10

Table 1: Fitting linear model: `mtcars$wt ~ Dependent`

### cyl

A simple linear model: `mtcars$wt ~ mtcars$cyl`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	5.6e-01	4.0e-01	1.4e+00	1.7e-01
Dependent	4.3e-01	6.2e-02	6.9e+00	1.2e-07

Table 2: Fitting linear model: `mtcars$wt ~ Dependent`

### **disp**

A simple linear model: `mtcars$wt ~ mtcars$disp`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	1.6e+00	1.7e-01	9.2e+00	2.7e-10
Dependent	7.0e-03	6.6e-04	1.1e+01	1.2e-11

Table 3: Fitting linear model: `mtcars$wt ~ Dependent`

### **hp**

A simple linear model: `mtcars$wt ~ mtcars$hp`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	1.8e+00	3.2e-01	5.8e+00	2.4e-06
Dependent	9.4e-03	2.0e-03	4.8e+00	4.1e-05

Table 4: Fitting linear model: `mtcars$wt ~ Dependent`

### **drat**

A simple linear model: `mtcars$wt ~ mtcars$drat`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	7.9e+00	8.5e-01	9.3e+00	2.5e-10
Dependent	-1.3e+00	2.3e-01	-5.6e+00	4.8e-06

Table 5: Fitting linear model: `mtcars$wt ~ Dependent`

**qsec**

A simple linear model: `mtcars$wt ~ mtcars$qsec`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	4.9248	1.7654	2.7896	0.0091
Dependent	-0.0957	0.0984	-0.9719	0.3389

Table 6: Fitting linear model: `mtcars$wt ~ Dependent`

**vs**

A simple linear model: `mtcars$wt ~ mtcars$vs`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	3.7e+00	2.0e-01	1.9e+01	3.2e-18
Dependent	-1.1e+00	2.9e-01	-3.7e+00	9.8e-04

Table 7: Fitting linear model: `mtcars$wt ~ Dependent`

**am**

A simple linear model: `mtcars$wt ~ mtcars$am`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	3.8e+00	1.6e-01	2.3e+01	1.5e-20
Dependent	-1.4e+00	2.6e-01	-5.3e+00	1.1e-05

Table 8: Fitting linear model: `mtcars$wt ~ Dependent`

**gear**

A simple linear model: `mtcars$wt ~ mtcars$gear`



	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.1e+00	7.4e-01	8.2e+00	3.6e-09
Dependent	-7.7e-01	2.0e-01	-3.9e+00	4.6e-04

Table 9: Fitting linear model: `mtcars$wt ~ Dependent`

## carb

A simple linear model: `mtcars$wt ~ mtcars$carb`

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	2.5e+00	3.2e-01	7.7e+00	1.4e-08
Dependent	2.6e-01	1.0e-01	2.6e+00	1.5e-02

Table 10: Fitting linear model: `mtcars$wt ~ Dependent`

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This report was generated with [R](#) (2.15.0) and [pander](#) (0.1) in 12.309 sec on x86\_64-unknown-linux-gnu platform.