Tables and Regressions

Tables

So far we have only looked at tables in the console like so

```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.2     v readr     2.1.4
v forcats   1.0.0     v stringr   1.5.0
v ggplot2   3.4.2     v tibble    3.2.1
v lubridate 1.9.2     v tidyr     1.3.0
v purrr     1.0.1
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to beco
```

```
mtcars
```

```
                   mpg cyl  disp  hp drat    wt  qsec vs am gear carb
Mazda RX4         21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
Mazda RX4 Wag     21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
Datsun 710        22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
Hornet 4 Drive    21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
Hornet Sportabout 18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
Valiant           18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
Duster 360        14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
Merc 240D         24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
Merc 230          22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
Merc 280          19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
```

```
Merc 280C           17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
Merc 450SE          16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
Merc 450SL          17.3   8 275.8 180 3.07 3.730 17.60  0  0    3    3
Merc 450SLC         15.2   8 275.8 180 3.07 3.780 18.00  0  0    3    3
Cadillac Fleetwood  10.4   8 472.0 205 2.93 5.250 17.98  0  0    3    4
Lincoln Continental 10.4   8 460.0 215 3.00 5.424 17.82  0  0    3    4
Chrysler Imperial   14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
Fiat 128            32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
Honda Civic         30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
Toyota Corolla      33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
Toyota Corona       21.5   4 120.1  97 3.70 2.465 20.01  1  0    3    1
Dodge Challenger    15.5   8 318.0 150 2.76 3.520 16.87  0  0    3    2
AMC Javelin         15.2   8 304.0 150 3.15 3.435 17.30  0  0    3    2
Camaro Z28          13.3   8 350.0 245 3.73 3.840 15.41  0  0    3    4
Pontiac Firebird    19.2   8 400.0 175 3.08 3.845 17.05  0  0    3    2
Fiat X1-9           27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
Porsche 914-2       26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
Lotus Europa        30.4   4  95.1 113 3.77 1.513 16.90  1  1    5    2
Ford Pantera L      15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
Ferrari Dino        19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
Maserati Bora       15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
Volvo 142E          21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

But we can create publication quality tables in R too, using flextable

```
## Flextable-------------------------------------------------------------------

#install.packages("flextable")
library(flextable)
```

```
Attaching package: 'flextable'

The following object is masked from 'package:purrr':

    compose
```

```
mtcars
```

```
                   mpg cyl  disp  hp drat    wt  qsec vs am gear carb
```

```
Mazda RX4           21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
Mazda RX4 Wag       21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
Datsun 710          22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
Hornet 4 Drive      21.4   6 258.0 110 3.08 3.215 19.44  1  0    3    1
Hornet Sportabout   18.7   8 360.0 175 3.15 3.440 17.02  0  0    3    2
Valiant             18.1   6 225.0 105 2.76 3.460 20.22  1  0    3    1
Duster 360          14.3   8 360.0 245 3.21 3.570 15.84  0  0    3    4
Merc 240D           24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
Merc 230            22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
Merc 280            19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
Merc 280C           17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
Merc 450SE          16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
Merc 450SL          17.3   8 275.8 180 3.07 3.730 17.60  0  0    3    3
Merc 450SLC         15.2   8 275.8 180 3.07 3.780 18.00  0  0    3    3
Cadillac Fleetwood  10.4   8 472.0 205 2.93 5.250 17.98  0  0    3    4
Lincoln Continental 10.4   8 460.0 215 3.00 5.424 17.82  0  0    3    4
Chrysler Imperial   14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
Fiat 128            32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
Honda Civic         30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
Toyota Corolla      33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
Toyota Corona       21.5   4 120.1  97 3.70 2.465 20.01  1  0    3    1
Dodge Challenger    15.5   8 318.0 150 2.76 3.520 16.87  0  0    3    2
AMC Javelin         15.2   8 304.0 150 3.15 3.435 17.30  0  0    3    2
Camaro Z28          13.3   8 350.0 245 3.73 3.840 15.41  0  0    3    4
Pontiac Firebird    19.2   8 400.0 175 3.08 3.845 17.05  0  0    3    2
Fiat X1-9           27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
Porsche 914-2       26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
Lotus Europa        30.4   4  95.1 113 3.77 1.513 16.90  1  1    5    2
Ford Pantera L      15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
Ferrari Dino        19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
Maserati Bora       15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
Volvo 142E          21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

```
# First lets turn the row names into columns called make and model. Note that currently
# they are formatted as rownames rather than as a column which are treated differently

mtcars %>%
  rownames_to_column(var = "Model") %>%
  separate(Model, c("make", "model"))
```

```
Warning: Expected 2 pieces. Additional pieces discarded in 5 rows [2, 4, 26,
27, 29].
```

```
Warning: Expected 2 pieces. Missing pieces filled with `NA` in 1 rows [6].
```

	make	model	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
1	Mazda	RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
2	Mazda	RX4	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
3	Datsun	710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
4	Hornet	4	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
5	Hornet	Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
6	Valiant	<NA>	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
7	Duster	360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
8	Merc	240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
9	Merc	230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
10	Merc	280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
11	Merc	280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
12	Merc	450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
13	Merc	450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
14	Merc	450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
15	Cadillac	Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
16	Lincoln	Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
17	Chrysler	Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
18	Fiat	128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
19	Honda	Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
20	Toyota	Corolla	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
21	Toyota	Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
22	Dodge	Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
23	AMC	Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2
24	Camaro	Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
25	Pontiac	Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
26	Fiat	X1	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
27	Porsche	914	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
28	Lotus	Europa	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
29	Ford	Pantera	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
30	Ferrari	Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
31	Maserati	Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
32	Volvo	142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

```r
# Now lets only select those columns relating to engine specifications and other
#  specifications
mtcars %>%
  select(cyl, hp, disp, mpg, wt, gear)
```

	cyl	hp	disp	mpg	wt	gear

```
Mazda RX4             6 110 160.0 21.0 2.620    4
Mazda RX4 Wag         6 110 160.0 21.0 2.875    4
Datsun 710            4  93 108.0 22.8 2.320    4
Hornet 4 Drive        6 110 258.0 21.4 3.215    3
Hornet Sportabout     8 175 360.0 18.7 3.440    3
Valiant               6 105 225.0 18.1 3.460    3
Duster 360            8 245 360.0 14.3 3.570    3
Merc 240D             4  62 146.7 24.4 3.190    4
Merc 230              4  95 140.8 22.8 3.150    4
Merc 280              6 123 167.6 19.2 3.440    4
Merc 280C             6 123 167.6 17.8 3.440    4
Merc 450SE            8 180 275.8 16.4 4.070    3
Merc 450SL            8 180 275.8 17.3 3.730    3
Merc 450SLC           8 180 275.8 15.2 3.780    3
Cadillac Fleetwood    8 205 472.0 10.4 5.250    3
Lincoln Continental   8 215 460.0 10.4 5.424    3
Chrysler Imperial     8 230 440.0 14.7 5.345    3
Fiat 128              4  66  78.7 32.4 2.200    4
Honda Civic           4  52  75.7 30.4 1.615    4
Toyota Corolla        4  65  71.1 33.9 1.835    4
Toyota Corona         4  97 120.1 21.5 2.465    3
Dodge Challenger      8 150 318.0 15.5 3.520    3
AMC Javelin           8 150 304.0 15.2 3.435    3
Camaro Z28            8 245 350.0 13.3 3.840    3
Pontiac Firebird      8 175 400.0 19.2 3.845    3
Fiat X1-9             4  66  79.0 27.3 1.935    4
Porsche 914-2         4  91 120.3 26.0 2.140    5
Lotus Europa          4 113  95.1 30.4 1.513    5
Ford Pantera L        8 264 351.0 15.8 3.170    5
Ferrari Dino          6 175 145.0 19.7 2.770    5
Maserati Bora         8 335 301.0 15.0 3.570    5
Volvo 142E            4 109 121.0 21.4 2.780    4
```

```r
# Combine both steps and send to flextable
mtcars %>%
  rownames_to_column(var = "Model") %>%
  select(Model, cyl, hp, disp, mpg, wt, gear) %>%
  separate(Model, c("make", "model")) %>%
  flextable()
```

```
Warning: Expected 2 pieces. Additional pieces discarded in 5 rows [2, 4, 26, 27, 29].
Expected 2 pieces. Missing pieces filled with `NA` in 1 rows [6].
```

make	model	cyl	hp	disp	mpg	wt	gear
Mazda	RX4	6	110	160.0	21.0	2.620	4
Mazda	RX4	6	110	160.0	21.0	2.875	4
Datsun	710	4	93	108.0	22.8	2.320	4
Hornet	4	6	110	258.0	21.4	3.215	3
Hornet	Sportabout	8	175	360.0	18.7	3.440	3
Valiant		6	105	225.0	18.1	3.460	3
Duster	360	8	245	360.0	14.3	3.570	3
Merc	240D	4	62	146.7	24.4	3.190	4
Merc	230	4	95	140.8	22.8	3.150	4
Merc	280	6	123	167.6	19.2	3.440	4
Merc	280C	6	123	167.6	17.8	3.440	4
Merc	450SE	8	180	275.8	16.4	4.070	3
Merc	450SL	8	180	275.8	17.3	3.730	3
Merc	450SLC	8	180	275.8	15.2	3.780	3
Cadillac	Fleetwood	8	205	472.0	10.4	5.250	3
Lincoln	Continental	8	215	460.0	10.4	5.424	3
Chrysler	Imperial	8	230	440.0	14.7	5.345	3
Fiat	128	4	66	78.7	32.4	2.200	4
Honda	Civic	4	52	75.7	30.4	1.615	4
Toyota	Corolla	4	65	71.1	33.9	1.835	4
Toyota	Corona	4	97	120.1	21.5	2.465	3
Dodge	Challenger	8	150	318.0	15.5	3.520	3
AMC	Javelin	8	150	304.0	15.2	3.435	3
Camaro	Z28	8	245	350.0	13.3	3.840	3
Pontiac	Firebird	8	175	400.0	19.2	3.845	3
Fiat	X1	4	66	79.0	27.3	1.935	4
Porsche	914	4	91	120.3	26.0	2.140	5

make	model	cyl	hp	disp	mpg	wt	gear
Lotus	Europa	4	113	95.1	30.4	1.513	5
Ford	Pantera	8	264	351.0	15.8	3.170	5
Ferrari	Dino	6	175	145.0	19.7	2.770	5
Maserati	Bora	8	335	301.0	15.0	3.570	5
Volvo	142E	4	109	121.0	21.4	2.780	4

```
# This is ok, but we can add headers and footers to make this better

mtcars %>%
  rownames_to_column(var = "Model") %>%
  select(Model, cyl, hp, disp, mpg, wt, gear) %>%
  separate(Model, c("make", "model")) %>%
  flextable() %>%
  add_header_row(values = c("Car","Engine specifications", "Other physical specifications"
                 colwidths = c(2,3,3)) %>%
  add_footer_lines("mtcars data set showing headers and footers in flextable")
```

```
Warning: Expected 2 pieces. Additional pieces discarded in 5 rows [2, 4, 26, 27, 29].
Expected 2 pieces. Missing pieces filled with `NA` in 1 rows [6].
```

Car		Engine specifications			Other physical specifications		
make	model	cyl	hp	disp	mpg	wt	gear
Mazda	RX4	6	110	160.0	21.0	2.620	4
Mazda	RX4	6	110	160.0	21.0	2.875	4
Datsun	710	4	93	108.0	22.8	2.320	4
Hornet	4	6	110	258.0	21.4	3.215	3
Hornet	Sportabout	8	175	360.0	18.7	3.440	3
Valiant		6	105	225.0	18.1	3.460	3
Duster	360	8	245	360.0	14.3	3.570	3
Merc	240D	4	62	146.7	24.4	3.190	4
Merc	230	4	95	140.8	22.8	3.150	4

Car		Engine specifications			Other physical specifications		
make	model	cyl	hp	disp	mpg	wt	gear
Merc	280	6	123	167.6	19.2	3.440	4
Merc	280C	6	123	167.6	17.8	3.440	4
Merc	450SE	8	180	275.8	16.4	4.070	3
Merc	450SL	8	180	275.8	17.3	3.730	3
Merc	450SLC	8	180	275.8	15.2	3.780	3
Cadillac	Fleetwood	8	205	472.0	10.4	5.250	3
Lincoln	Continental	8	215	460.0	10.4	5.424	3
Chrysler	Imperial	8	230	440.0	14.7	5.345	3
Fiat	128	4	66	78.7	32.4	2.200	4
Honda	Civic	4	52	75.7	30.4	1.615	4
Toyota	Corolla	4	65	71.1	33.9	1.835	4
Toyota	Corona	4	97	120.1	21.5	2.465	3
Dodge	Challenger	8	150	318.0	15.5	3.520	3
AMC	Javelin	8	150	304.0	15.2	3.435	3
Camaro	Z28	8	245	350.0	13.3	3.840	3
Pontiac	Firebird	8	175	400.0	19.2	3.845	3
Fiat	X1	4	66	79.0	27.3	1.935	4
Porsche	914	4	91	120.3	26.0	2.140	5
Lotus	Europa	4	113	95.1	30.4	1.513	5
Ford	Pantera	8	264	351.0	15.8	3.170	5
Ferrari	Dino	6	175	145.0	19.7	2.770	5
Maserati	Bora	8	335	301.0	15.0	3.570	5
Volvo	142E	4	109	121.0	21.4	2.780	4

mtcars data set showing headers and footers in flextable

```r
# We can even add themes to further improve
mtcars %>%
rownames_to_column(var = "Model") %>%
  select(Model, cyl, hp, disp, mpg, wt, gear) %>%
  separate(Model, c("make", "model")) %>%
  flextable() %>%
  add_header_row(values = c("Car","Engine specifications", "Other physical specifications"
                 colwidths = c(2,3,3)) %>%
  add_footer_lines("mtcars data set showing headers and footers in flextable") %>%
  theme_zebra()
```

```
Warning: Expected 2 pieces. Additional pieces discarded in 5 rows [2, 4, 26, 27, 29].
Expected 2 pieces. Missing pieces filled with `NA` in 1 rows [6].
```

Car		Engine specifications			Other physical specifications		
make	**model**	**cyl**	**hp**	**disp**	**mpg**	**wt**	**gear**
Mazda	RX4	6	110	160.0	21.0	2.620	4
Mazda	RX4	6	110	160.0	21.0	2.875	4
Datsun	710	4	93	108.0	22.8	2.320	4
Hornet	4	6	110	258.0	21.4	3.215	3
Hornet	Sportabout	8	175	360.0	18.7	3.440	3
Valiant		6	105	225.0	18.1	3.460	3
Duster	360	8	245	360.0	14.3	3.570	3
Merc	240D	4	62	146.7	24.4	3.190	4
Merc	230	4	95	140.8	22.8	3.150	4
Merc	280	6	123	167.6	19.2	3.440	4
Merc	280C	6	123	167.6	17.8	3.440	4
Merc	450SE	8	180	275.8	16.4	4.070	3
Merc	450SL	8	180	275.8	17.3	3.730	3
Merc	450SLC	8	180	275.8	15.2	3.780	3
Cadillac	Fleetwood	8	205	472.0	10.4	5.250	3
Lincoln	Continental	8	215	460.0	10.4	5.424	3

mtcars data set showing headers and footers in flextable

Car		Engine specifications			Other physical specifications		
make	**model**	**cyl**	**hp**	**disp**	**mpg**	**wt**	**gear**
Chrysler	Imperial	8	230	440.0	14.7	5.345	3
Fiat	128	4	66	78.7	32.4	2.200	4
Honda	Civic	4	52	75.7	30.4	1.615	4
Toyota	Corolla	4	65	71.1	33.9	1.835	4
Toyota	Corona	4	97	120.1	21.5	2.465	3
Dodge	Challenger	8	150	318.0	15.5	3.520	3
AMC	Javelin	8	150	304.0	15.2	3.435	3
Camaro	Z28	8	245	350.0	13.3	3.840	3
Pontiac	Firebird	8	175	400.0	19.2	3.845	3
Fiat	X1	4	66	79.0	27.3	1.935	4
Porsche	914	4	91	120.3	26.0	2.140	5
Lotus	Europa	4	113	95.1	30.4	1.513	5
Ford	Pantera	8	264	351.0	15.8	3.170	5
Ferrari	Dino	6	175	145.0	19.7	2.770	5
Maserati	Bora	8	335	301.0	15.0	3.570	5
Volvo	142E	4	109	121.0	21.4	2.780	4
mtcars data set showing headers and footers in flextable							

```
# https://ardata-fr.github.io/flextable-book/design.html
# Show some of the very pretty table sin the documentation
```

If that doesn't work for you, you can try the GT package.

```
## gt-------------------------------------------------------------------------

#install.packages("gt")
library(gt)

mtcars %>%
  rownames_to_column(var = "model") %>%
```

```
select(model, mpg) %>%
gt()
```

model	mpg
Mazda RX4	21.0
Mazda RX4 Wag	21.0
Datsun 710	22.8
Hornet 4 Drive	21.4
Hornet Sportabout	18.7
Valiant	18.1
Duster 360	14.3
Merc 240D	24.4
Merc 230	22.8
Merc 280	19.2
Merc 280C	17.8
Merc 450SE	16.4
Merc 450SL	17.3
Merc 450SLC	15.2
Cadillac Fleetwood	10.4
Lincoln Continental	10.4
Chrysler Imperial	14.7
Fiat 128	32.4
Honda Civic	30.4
Toyota Corolla	33.9
Toyota Corona	21.5
Dodge Challenger	15.5
AMC Javelin	15.2
Camaro Z28	13.3
Pontiac Firebird	19.2
Fiat X1-9	27.3
Porsche 914-2	26.0
Lotus Europa	30.4
Ford Pantera L	15.8
Ferrari Dino	19.7
Maserati Bora	15.0
Volvo 142E	21.4

You might be wondering what is the point of covering two ways to create tables, and it comes down to it depends what you are doing. GT lets you compose a table by putting together various parts of the table, and mainly supports html output while Flextable is the most flexible

in terms of output at the cost of customisability[1].

Regressions

Lets create a basic linear regression to investigate hour cut, clarity, and carat impact the price of diamonds in the diamonds dataset.

```
library(tidyverse)

diamonds
```

```
# A tibble: 53,940 x 10
   carat cut       color clarity depth table price     x     y     z
   <dbl> <ord>     <ord> <ord>   <dbl> <dbl> <int> <dbl> <dbl> <dbl>
 1  0.23 Ideal     E     SI2      61.5    55   326  3.95  3.98  2.43
 2  0.21 Premium   E     SI1      59.8    61   326  3.89  3.84  2.31
 3  0.23 Good      E     VS1      56.9    65   327  4.05  4.07  2.31
 4  0.29 Premium   I     VS2      62.4    58   334  4.2   4.23  2.63
 5  0.31 Good      J     SI2      63.3    58   335  4.34  4.35  2.75
 6  0.24 Very Good J     VVS2     62.8    57   336  3.94  3.96  2.48
 7  0.24 Very Good I     VVS1     62.3    57   336  3.95  3.98  2.47
 8  0.26 Very Good H     SI1      61.9    55   337  4.07  4.11  2.53
 9  0.22 Fair      E     VS2      65.1    61   337  3.87  3.78  2.49
10  0.23 Very Good H     VS1      59.4    61   338  4     4.05  2.39
# i 53,930 more rows
```

```
diamond_linear_model <- lm(price ~ cut + color + clarity + carat, data = diamonds)

diamond_linear_model
```

```
Call:
lm(formula = price ~ cut + color + clarity + carat, data = diamonds)

Coefficients:
(Intercept)          cut.L          cut.Q          cut.C          cut^4        color.L
  -3710.603        698.907       -327.686        180.565         -1.207      -1910.288
    color.Q        color.C        color^4        color^5        color^6      clarity.L
```

[1] https://bookdown.org/yihui/rmarkdown-cookbook/table-other.html

```
  -627.954     -171.960       21.678      -85.943      -49.986     4217.535
clarity.Q    clarity.C    clarity^4    clarity^5    clarity^6    clarity^7
-1832.406      923.273     -361.995      216.616        2.105      110.340
    carat
 8886.129
```

We can get an idea about the models performance by calling it, but we can do one better by making an html table we could insert into a document.

```
# install.packages("sjPlot")
# we will use this package to visualise
library(sjPlot)
```

#refugeeswelcome

```
summary(diamond_linear_model)
```

```
Call:
lm(formula = price ~ cut + color + clarity + carat, data = diamonds)

Residuals:
     Min       1Q   Median       3Q      Max
-16813.5   -680.4   -197.6    466.4  10394.9

Coefficients:
             Estimate Std. Error  t value Pr(>|t|)
(Intercept) -3710.603     13.980 -265.414  < 2e-16 ***
cut.L         698.907     20.335   34.369  < 2e-16 ***
cut.Q        -327.686     17.911  -18.295  < 2e-16 ***
cut.C         180.565     15.557   11.607  < 2e-16 ***
cut^4          -1.207     12.458   -0.097    0.923
color.L     -1910.288     17.712 -107.853  < 2e-16 ***
color.Q      -627.954     16.121  -38.952  < 2e-16 ***
color.C      -171.960     15.070  -11.410  < 2e-16 ***
color^4        21.678     13.840    1.566    0.117
color^5       -85.943     13.076   -6.572 5.00e-11 ***
color^6       -49.986     11.889   -4.205 2.62e-05 ***
clarity.L    4217.535     30.831  136.794  < 2e-16 ***
clarity.Q   -1832.406     28.827  -63.565  < 2e-16 ***
```

```
clarity.C     923.273     24.679   37.411  < 2e-16 ***
clarity^4    -361.995     19.739  -18.339  < 2e-16 ***
clarity^5     216.616     16.109   13.447  < 2e-16 ***
clarity^6       2.105     14.037    0.150    0.881
clarity^7     110.340     12.383    8.910  < 2e-16 ***
carat        8886.129     12.034  738.437  < 2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1157 on 53921 degrees of freedom
Multiple R-squared:  0.9159,    Adjusted R-squared:  0.9159
F-statistic: 3.264e+04 on 18 and 53921 DF,  p-value: < 2.2e-16
```

```r
#default tab model
tab_model(summary(diamond_linear_model))
```

	price		
Predictors	Estimates	CI	p
(Intercept)	-3710.60	-3738.01 – -3683.20	**<0.001**
cut [linear]	698.91	659.05 – 738.76	**<0.001**
cut [quadratic]	-327.69	-362.79 – -292.58	**<0.001**
cut [cubic]	180.57	150.07 – 211.06	**<0.001**
cut [4th degree]	-1.21	-25.63 – 23.21	0.923
color [linear]	-1910.29	-1945.00 – -1875.57	**<0.001**
color [quadratic]	-627.95	-659.55 – -596.36	**<0.001**
color [cubic]	-171.96	-201.50 – -142.42	**<0.001**
color [4th degree]	21.68	-5.45 – 48.80	0.117
color [5th degree]	-85.94	-111.57 – -60.31	**<0.001**
color [6th degree]	-49.99	-73.29 – -26.68	**<0.001**
clarity [linear]	4217.53	4157.11 – 4277.96	**<0.001**
clarity [quadratic]	-1832.41	-1888.91 – -1775.90	**<0.001**
clarity [cubic]	923.27	874.90 – 971.64	**<0.001**
clarity [4th degree]	-361.99	-400.68 – -323.31	**<0.001**
clarity [5th degree]	216.62	185.04 – 248.19	**<0.001**
clarity [6th degree]	2.11	-25.41 – 29.62	0.881
clarity [7th degree]	110.34	86.07 – 134.61	**<0.001**
carat	8886.13	8862.54 – 8909.72	**<0.001**
Observations	53940		

	price
R^2 / R^2 adjusted	0.916 / 0.916

```
# exploring
tab_model(summary(diamond_linear_model),
          p.val = "wald", # pvalue
          show.df = F,    # degrees of freedom
          digits = 5,     # decimal places
          digits.re = 5,  # decimal places?
          show.ci=F,      # confidence interval
          show.icc = F,   #
          show.stat = F #,
          #file = "RevlmextendedWTAVG.html"
          )
```

	price	
Predictors	Estimates	p
(Intercept)	-3710.60330	**<0.001**
cut [linear]	698.90679	**<0.001**
cut [quadratic]	-327.68586	**<0.001**
cut [cubic]	180.56527	**<0.001**
cut [4th degree]	-1.20691	0.923
color [linear]	-1910.28792	**<0.001**
color [quadratic]	-627.95368	**<0.001**
color [cubic]	-171.96043	**<0.001**
color [4th degree]	21.67814	0.117
color [5th degree]	-85.94324	**<0.001**
color [6th degree]	-49.98593	**<0.001**
clarity [linear]	4217.53491	**<0.001**
clarity [quadratic]	-1832.40606	**<0.001**
clarity [cubic]	923.27297	**<0.001**
clarity [4th degree]	-361.99465	**<0.001**
clarity [5th degree]	216.61614	**<0.001**
clarity [6th degree]	2.10517	0.881
clarity [7th degree]	110.34033	**<0.001**
carat	8886.12888	**<0.001**
Observations	53940	

	price
R^2 / R^2 adjusted	0.916 / 0.916

```
# pvalue is a stat test
```