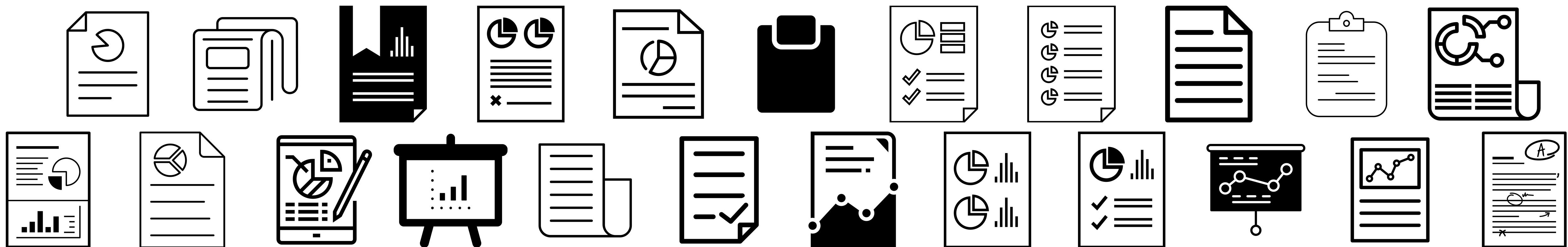


**Before**

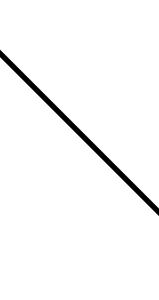


**After**

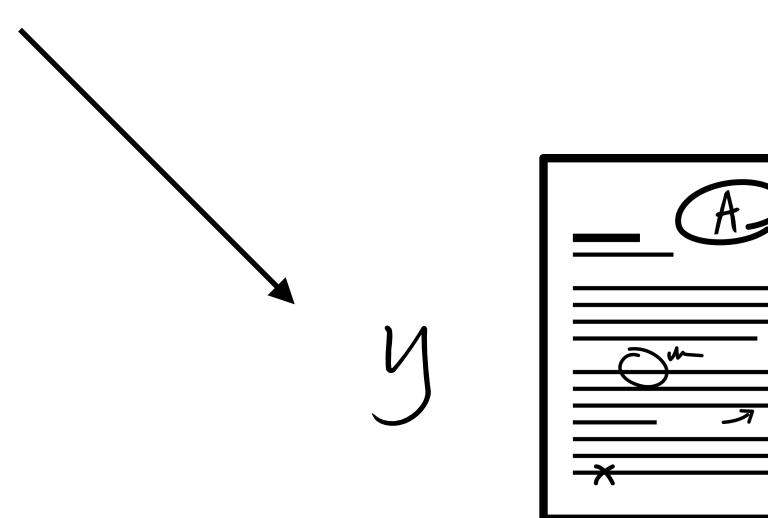


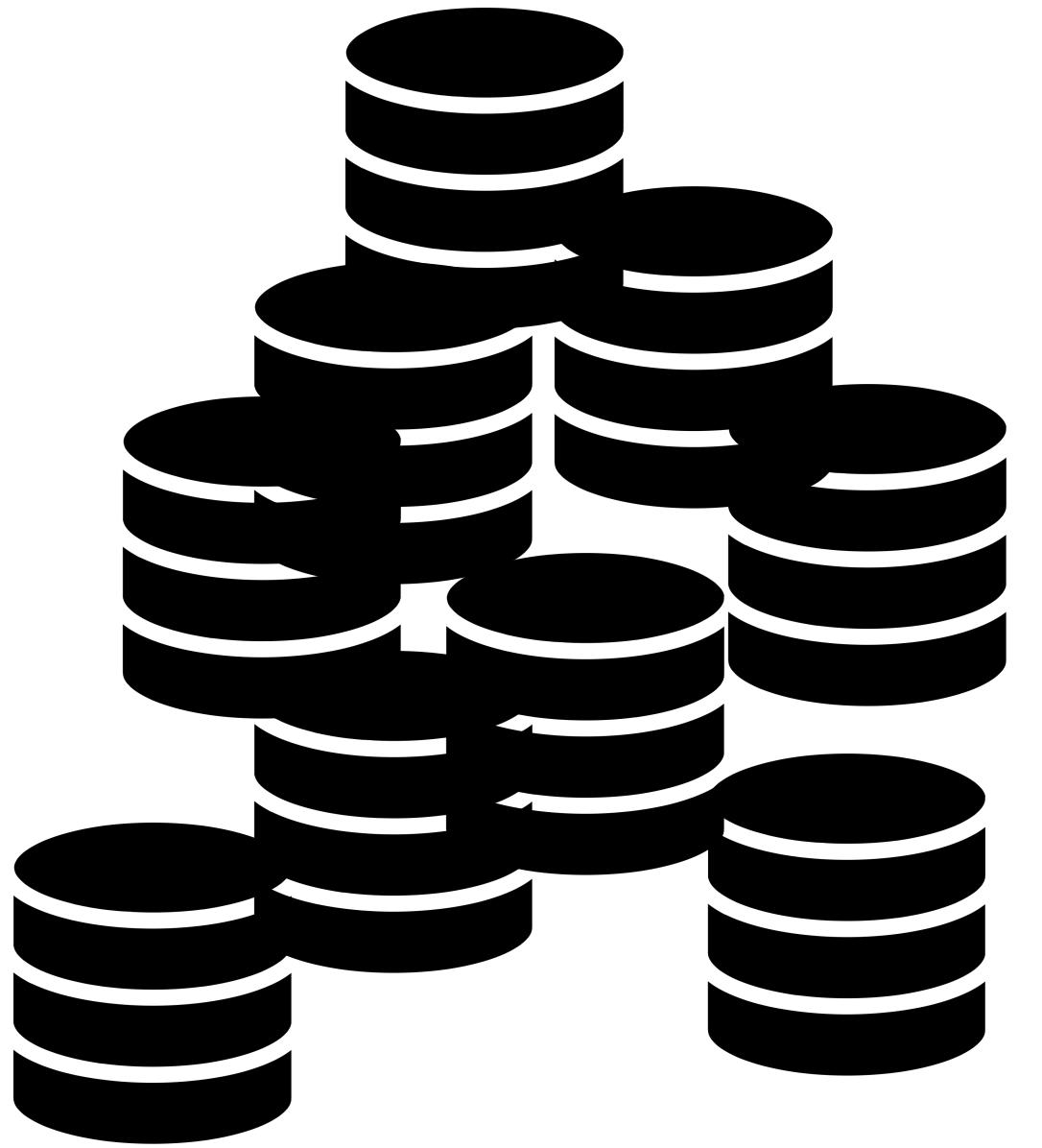


*x*

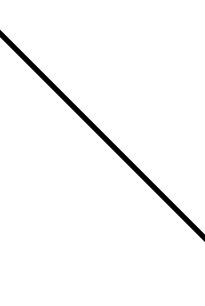


$$f(x) = y$$





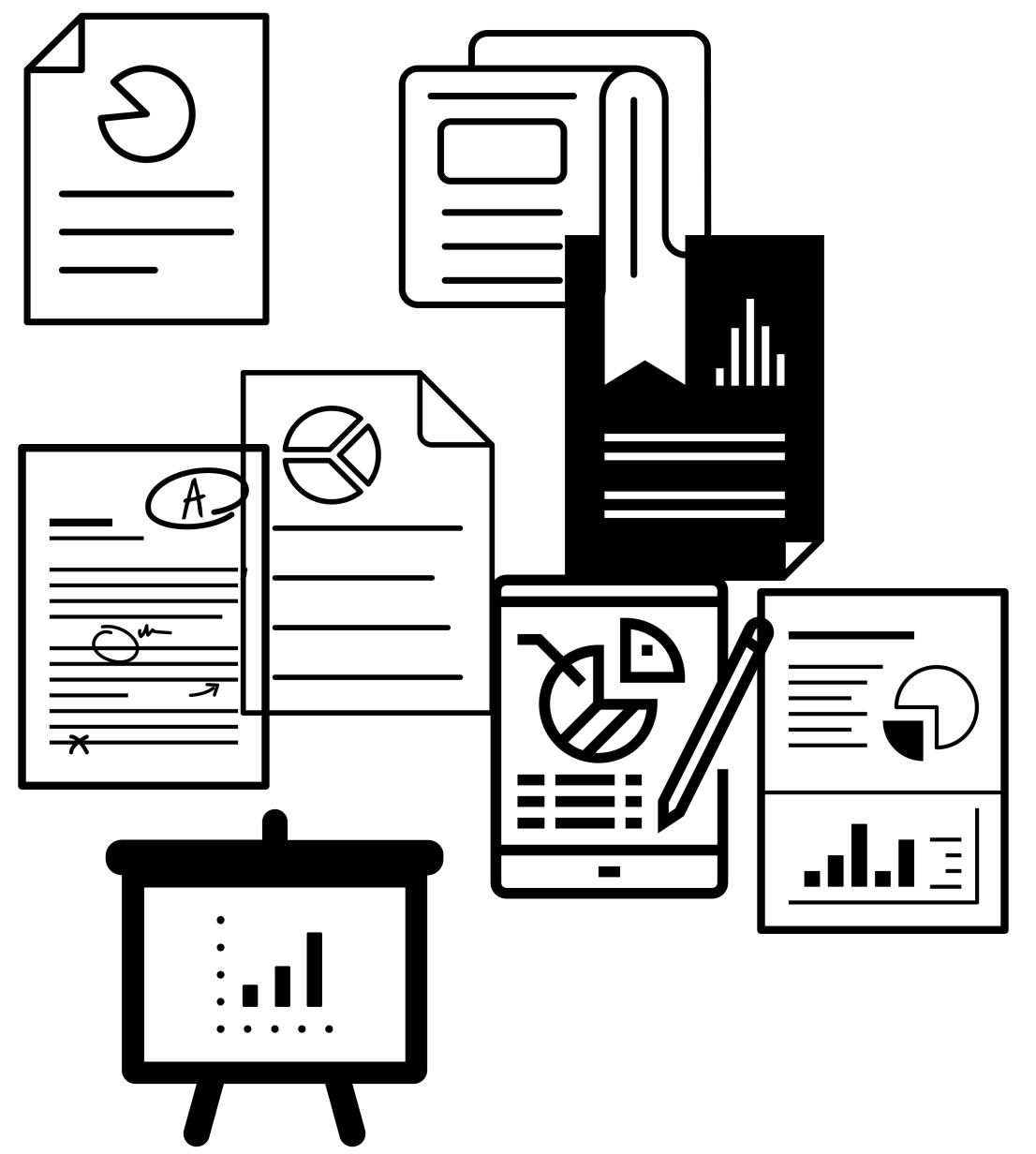
$$\lim_{n \rightarrow \infty} \sum_{i=1}^n x_i$$

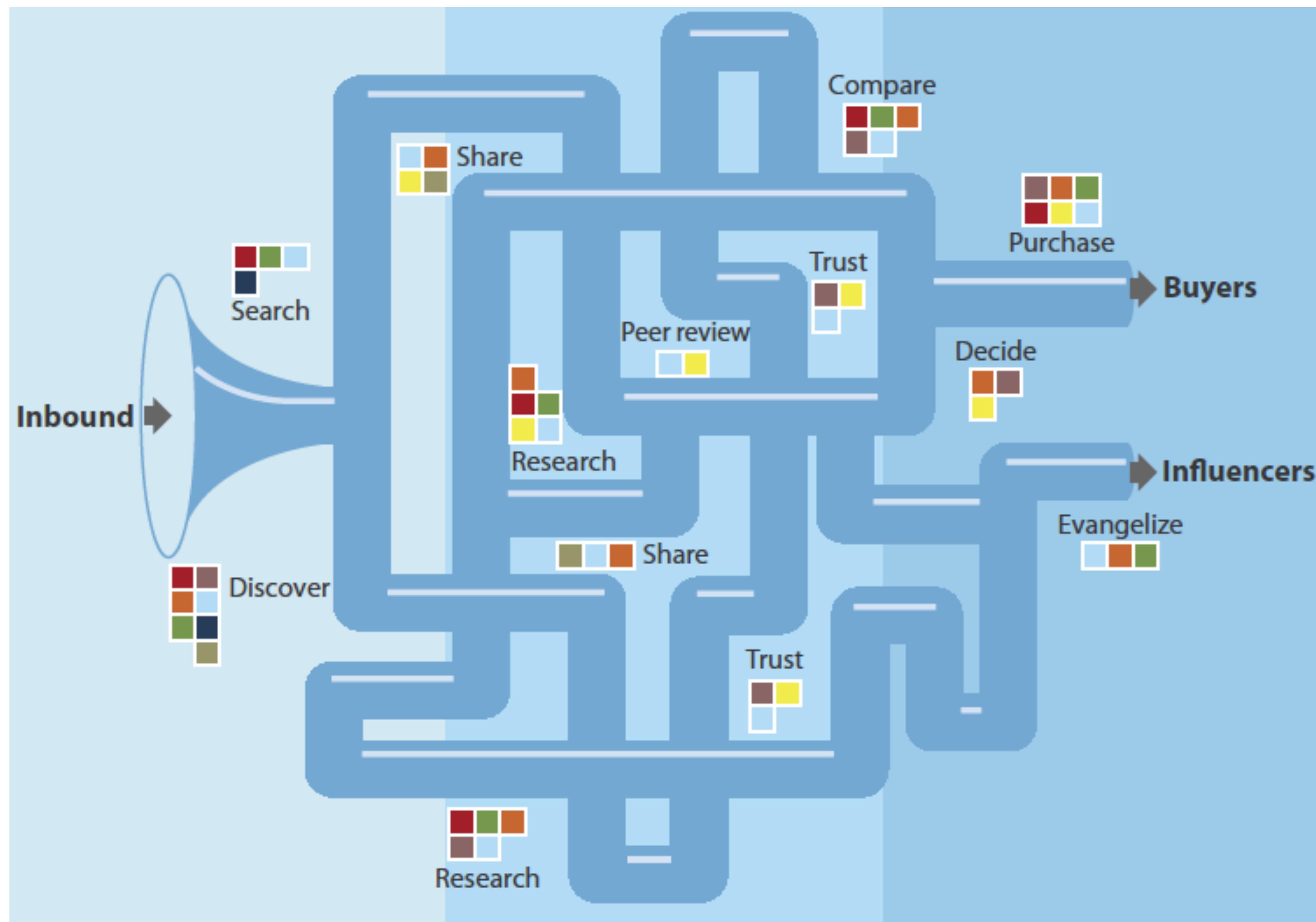


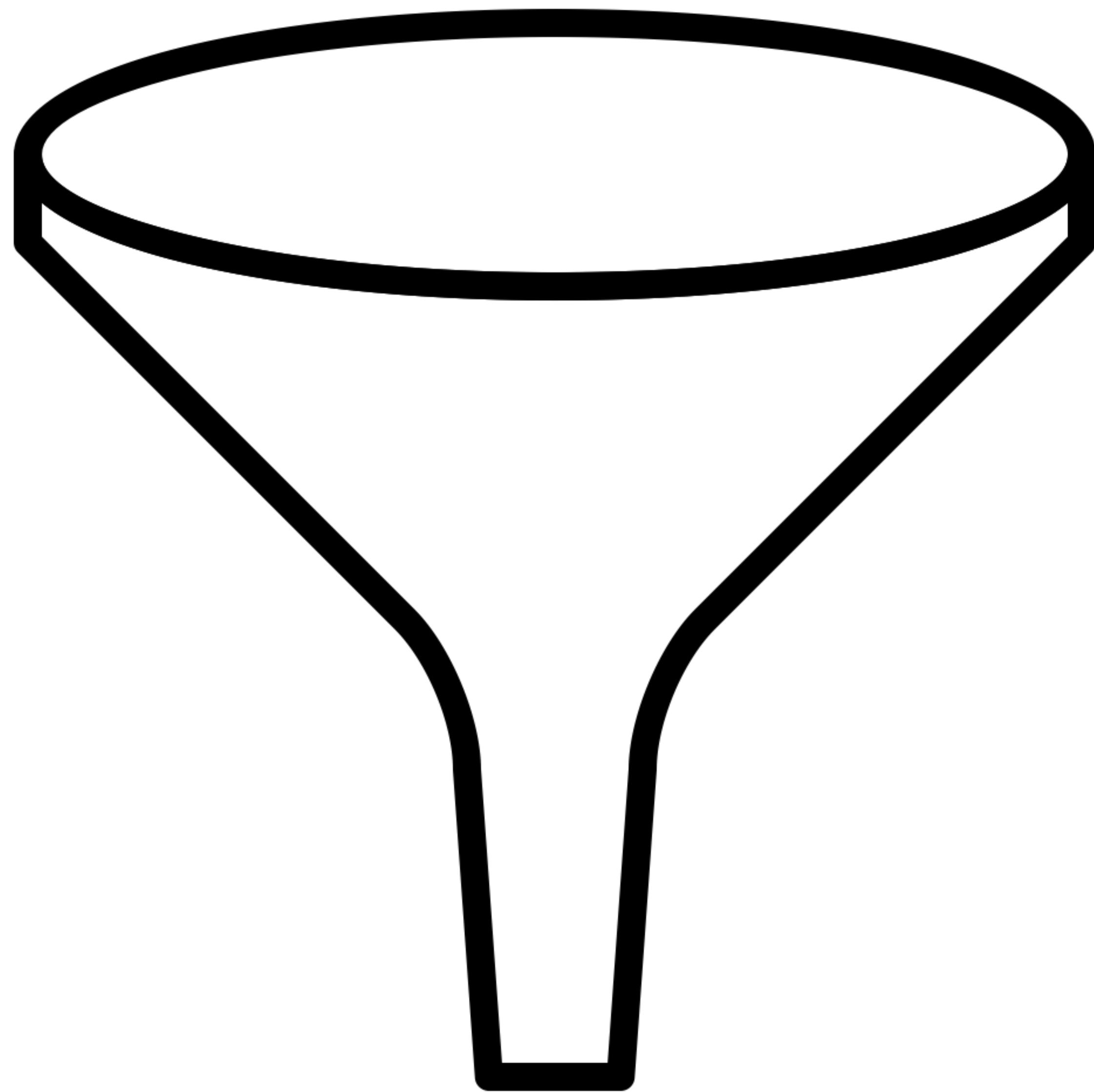
$$f(x_i) = y_i$$

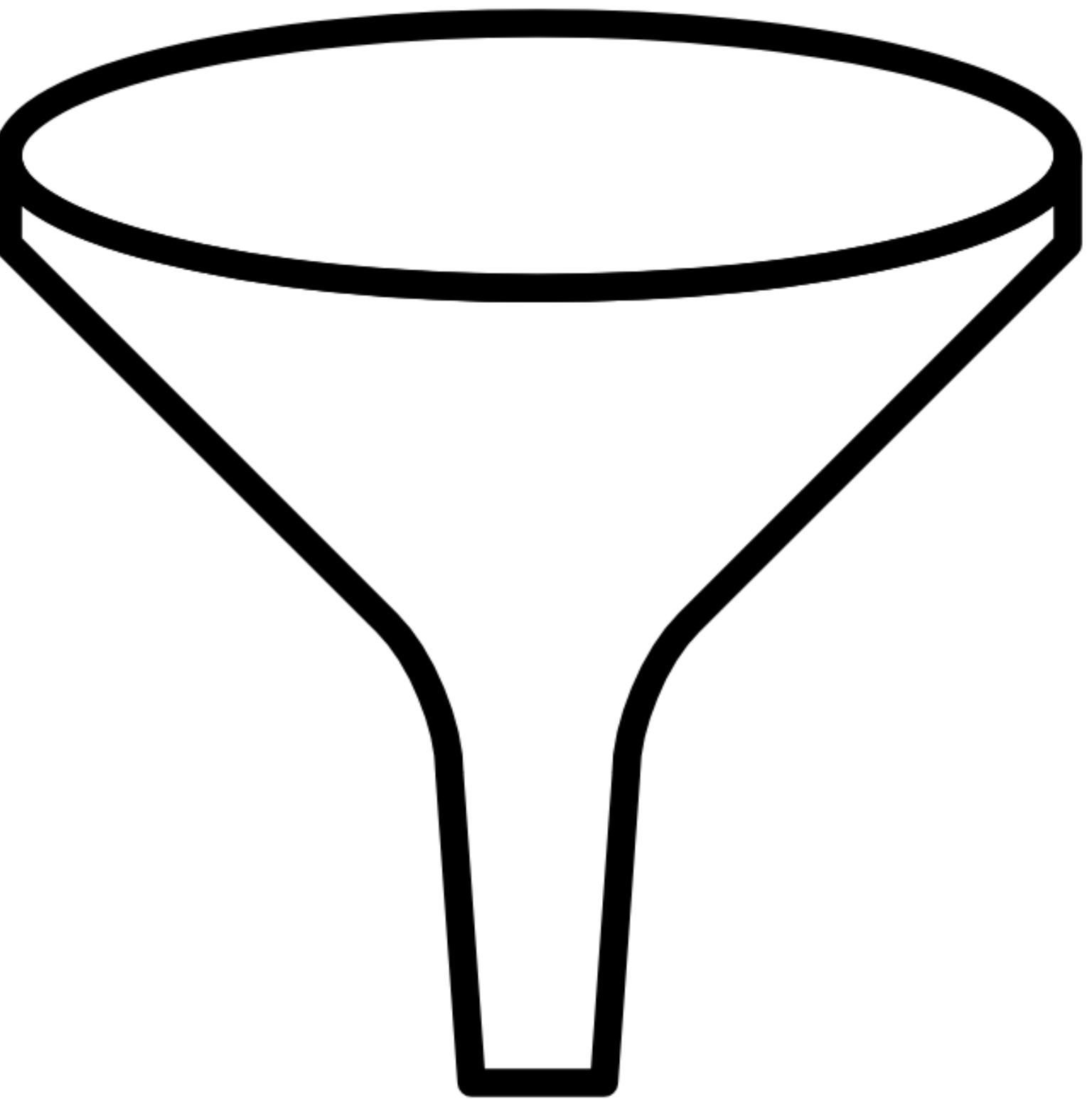
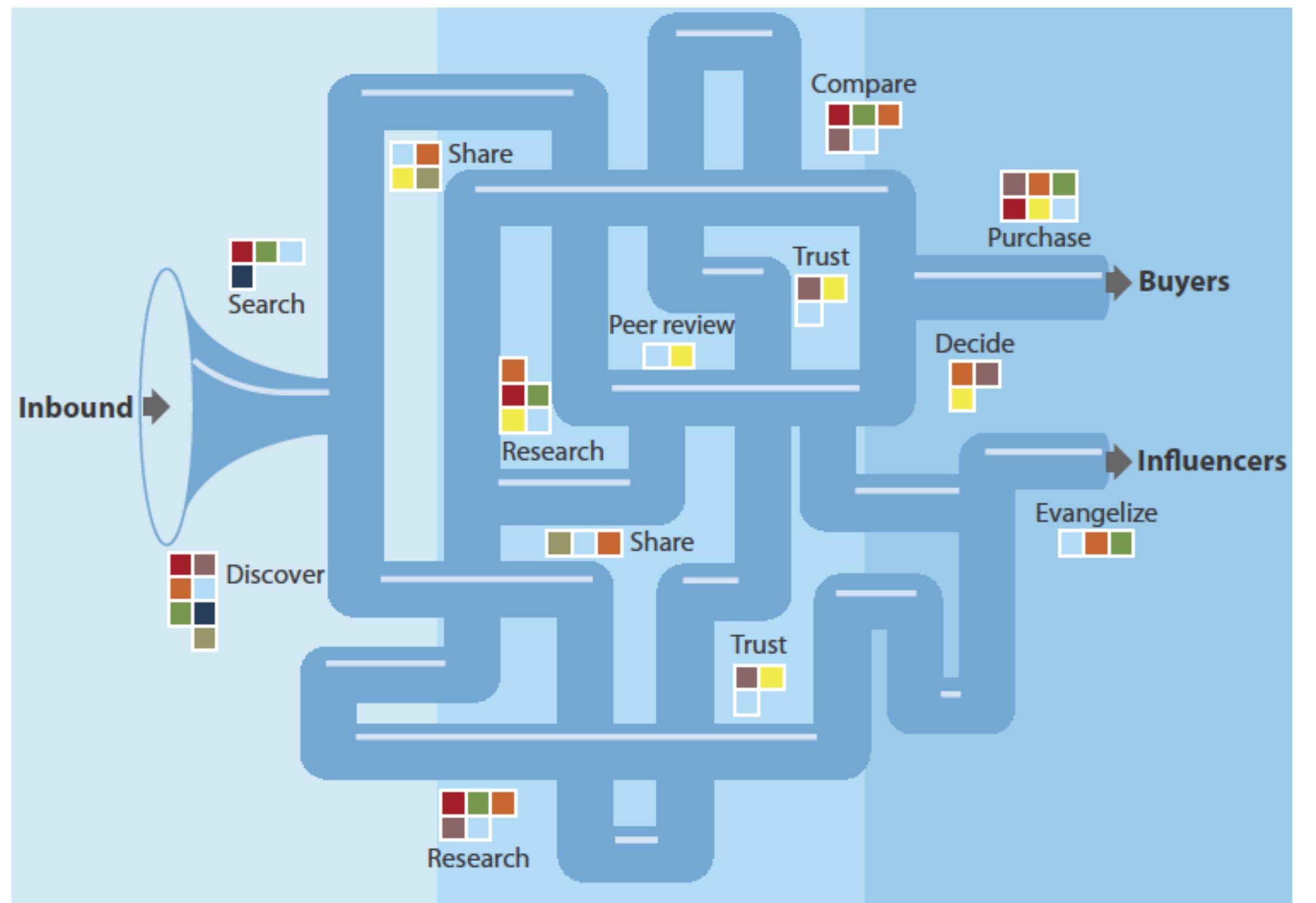


$$\lim_{n \rightarrow \infty} \sum_{i=1}^n y_i$$









제목 없음 - 메모장  
파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)

```
select t1.*, t2.amt amt0515,
       case
         when t2.amt is null then '00. non'
         when t2.amt > 0 and t2.amt <= 10000 then '01. 1~10000'
         when t2.amt > 10000 and t2.amt <= 30000 then '02. 10000~30000'
         when t2.amt > 30000 and t2.amt <= 100000 then '03. 30000~100000'
         when t2.amt > 100000 then '04. 100000~'
       end user_group
  into [temp].[lovetoken_kr_daily_predset]
  from [dbmart03].[kr_daily] t1
 left join [metainfo].[prop_rate] t2
    on t1.key_id = t2.key_id
   and t1.sn = t2.sn
 where t1.dt >= timestamp '2018-01-01 00:00 UTC' and t1.dt < timestamp '2018-05-16 00:00 UTC'
```

```
SELECT      t1.* , t2.amt amt0515 ,
CASE
WHEN t2.amt IS NULL THEN '00. Non'
WHEN t2.amt > 0 AND t2.amt <= 10000 THEN '01. 1~10000'
WHEN t2.amt > 10000 AND t2.amt <= 30000 THEN '02. 10000~30000'
WHEN t2.amt > 30000 AND t2.amt <= 100000 THEN '03. 30000~100000'
WHEN t2.amt > 100000 THEN '04. 100000~'
END user_group
INTO      [TEMP].[lovetoken_kr_daily_predset]
FROM      [dbmart03].[kr_daily] t1
LEFT JOIN [metainfo].[prop_rate] t2
ON        t1.key_id = t2.key_id
AND       t1.sn = t2.sn
WHERE     t1.dt >= timestamp '2018-01-01 00:00 UTC' AND t1.dt < timestamp '2018-05-16 00:00 UTC'
```

Untitled

<functions>

```
1 mtcars[sample(1:nrow(mtcars),10),]
```

>  
>  
>  
> mtcars[sample(1:nrow(mtcars),10),]  
mpg cyl disp hp drat wt qsec vs am gear carb  
Toyota Corona 21.5 4 120.1 97 3.70 2.465 20.01 1 0 3 1  
Lotus Europa 30.4 4 95.1 113 3.77 1.513 16.90 1 1 5 2  
Merc 240D 24.4 4 146.7 62 3.69 3.190 20.00 1 0 4 2  
Volvo 142E 21.4 4 121.0 109 4.11 2.780 18.60 1 1 4 2  
Valiant 18.1 6 225.0 105 2.76 3.460 20.22 1 0 3 1  
Chrysler Imperial 14.7 8 440.0 230 3.23 5.345 17.42 0 0 3 4  
Honda Civic 30.4 4 75.7 52 4.93 1.615 18.52 1 1 4 2  
Merc 230 22.8 4 140.8 95 3.92 3.150 22.90 1 0 4 2  
Merc 280C 17.8 6 167.6 123 3.92 3.440 18.90 1 0 4 4  
Mazda RX4 Wag 21.0 6 160.0 110 3.90 2.875 17.02 0 1 4 4  
>  
  
sample(x, size, replace = FALSE, prob = NULL)

RStudio

Project: (None)

Console Terminal Jobs

```
1 mtcars %>%  
2   sample_n(10)  
3 |
```

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
1	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
2	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
3	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
4	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
5	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
6	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
7	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
8	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
9	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
10	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4

RStudio

Untitled1\* Untitled2\*

Source Source

```
1 mtcars[sample(1:nrow(mtcars),10),]
```



1:35 (Top Level) R Script

RStudio

Untitled1\* Untitled2\*

Source Source

```
1 mtcars %>%
2   sample_n(10) %>%
3     tbl_df|
```

3:9 (Top Level) R Script

RStudio

Untitled1\* Untitled2\*

Source on Save | Source

```
1 unique(subset(mtcars, select = c("vs", "am")))
2
```

2:1 (Top Level) R Script

Console Terminal Jobs

```
> unique(subset(mtcars, select = c("vs", "am")))
      vs am
Mazda RX4     0  1
Datsun 710    1  1
Hornet 4 Drive 1  0
Hornet Sportabout 0  0
>
```

RStudio

Untitled1\* . x Untitled2\*

Filter

Project: (None)

	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

Showing 1 to 22 of 32 entries, 11 total columns

Console

RStudio

Untitled1\* Untitled2\*

Source on Save Run Source

```
1 nrow(mtcars)
2 length(unique(mtcars$qsec))
3 |
```

3:1 (Top Level) R Script

Console Terminal Jobs

```
~/
> nrow(mtcars)
[1] 32
> length(unique(mtcars$qsec))
[1] 30
> |
```

RStudio

Untitled1\* Untitled2\*

Source on Save Run Source

```
1 mtcars %>%
2   group_by(qsec)
3 |
```

3:1 (Top Level) R Script

Console Terminal Jobs

```
~/
> mtcars %>%
+   group_by(qsec)
# A tibble: 32 × 11
# Groups:   qsec [30]
  mpg   cyl  disp    hp  drat    wt  qsec    vs    am  gear  carb
* <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
 1 21     6   160   110   3.9   2.62  16.5     0     1     4     4
 2 21     6   160   110   3.9   2.88  17.0     0     1     4     4
 3 22.8    4   108    93   3.85  2.32  18.6     1     1     4     1
 4 21.4    6   258   110   3.08  3.22  19.4     1     0     3     1
 5 18.7    8   360   175   3.15  3.44  17.0     0     0     3     2
 6 18.1    6   225   105   2.76  3.46  20.2     1     0     3     1
 7 14.3    8   360   245   3.21  3.57  15.8     0     0     3     4
 8 24.4    4   147.    62   3.69  3.19   20      1     0     4     2
 9 22.8    4   141.    95   3.92  3.15  22.9     1     0     4     2
10 19.2    6   168.   123   3.92  3.44  18.3     1     0     4     4
# ... with 22 more rows
> |
```

RStudio

Untitled1\* Untitled2\*

Source on Save Run Source

```
library(sqldf)
sqldf("
  SELECT vs, am, count(*) AS n, avg(mpg) AS avg_mpg, avg(hp) AS avg_hp
  FROM mtcars
  WHERE cyl <> '4'
  GROUP BY vs, am
")
```

1:15 (Top Level) R Script

Console Terminal Jobs

```
>
> sqldf("
+   SELECT vs, am, count(*) AS n, avg(mpg) AS avg_mpg, avg(hp) AS avg_hp
+   FROM mtcars
+   WHERE cyl <> '4'
+   GROUP BY vs, am
+ ")
  vs am n avg_mpg avg_hp
1 0 0 12 15.050 194.1667
2 0 1 5 18.500 198.8000
3 1 0 4 19.125 115.2500
> |
```

RStudio

Untitled1\* Untitled2\*

Source on Save Run Source

```
mtcars %>%
  filter(cyl != 4) %>%
  group_by(vs, am) %>%
  summarise(n = n(), avg_mpg = mean(mpg), avg_hp = mean(hp))
```

5:1 (Top Level) R Script

Console Terminal Jobs

```
> mtcars %>%
+   filter(cyl != 4) %>%
+   group_by(vs, am) %>%
+   summarise(n = n(), avg_mpg = mean(mpg), avg_hp = mean(hp))
# A tibble: 3 x 5
# Groups:   vs [2]
  vs     am     n   avg_mpg   avg_hp
<dbl> <dbl> <int>    <dbl>    <dbl>
1     0     0     12     15.0     194.
2     0     1      5     18.5     199.
3     1     0      4     19.1     115.
```

The screenshot shows the RStudio interface with the following details:

- Script Editor (Top Panel):** Displays R code for creating a grouped mpg variable and summarizing it. The first line, `mpg\_group`, is highlighted with a red box.
- Console (Bottom Panel):** Shows the execution of the code and the resulting data frame `d`.
- Data Output:** The console displays the following data frame:

	mpg_group	n	prop
~15	~15	6	0.1875
15~20	15~20	12	0.3750
20~25	20~25	8	0.2500
25~30	25~30	2	0.0625
30~	30~	4	0.1250

The screenshot shows the RStudio interface. The top bar includes standard OS X window controls, the title 'RStudio', and a menu bar with 'File', 'Edit', 'View', 'Project', 'Tools', 'Help'. The main area has two tabs open: 'Untitled1\*' and 'Untitled2\*'. Untitled2\* contains the following R code:

```
1 d <- mtcars %>%
2   mutate(mpg_group = cut(mpg,
3     breaks = c(-Inf, 15, 20, 25, 30, Inf),
4     labels = c("~15", "15~20", "20~25", "25~30", "30~")) %>%
5   count(mpg_group) %>%
6   mutate(prop = n / sum(n))
```

The code editor features syntax highlighting and a code completion feature that highlights 'n' in the last line of the code.

The bottom panel shows the R console with the following output:

```
8:2 | (Top Level) | R Script
```

	Console	Terminal	Jobs
~/ ↗	Console	Terminal	Jobs
	> d		
	# A tibble: 5 x 3		
	mpg_group      n    prop		
	<fct>        <int> <dbl>		
1	~15           6  0.188		
2	15~20         12  0.375		
3	20~25         8  0.25		
4	25~30         2  0.0625		
5	30~           4  0.125		
>			

RStudio

Go to file/function Addins Project: (None)

Untitled2\* Untitled1\*

Source on Save Run Source

```

1 mtcars2 <- cbind(mtcars, car_name = row.names(mtcars))
2 mtcars3 <- reshape2::melt(mtcars2, id = "car_name")
3
4 subset(
5   mtcars3,
6   car_name %in% c("AMC Javelin", "Ferrari Dino", "Fiat X1-9") &
7   variable %in% c("mpg", "hp", "wt", "drat", "qsec", "disp")
8 )
9
9:1 (Top Level) R Script
```

Console Terminal Jobs

```

+ )
      car_name variable  value
23  AMC Javelin     mpg 15.200
26  Fiat X1-9      mpg 27.300
30  Ferrari Dino   mpg 19.700
87  AMC Javelin    disp 304.000
90  Fiat X1-9      disp 79.000
94  Ferrari Dino   disp 145.000
119 AMC Javelin    hp 150.000
122 Fiat X1-9      hp 66.000
126 Ferrari Dino   hp 175.000
151 AMC Javelin    drat 3.150
154 Fiat X1-9      drat 4.080
158 Ferrari Dino   drat 3.620
183 AMC Javelin    wt 3.435
186 Fiat X1-9      wt 1.935
190 Ferrari Dino   wt 2.770
215 AMC Javelin    qsec 17.300
218 Fiat X1-9      qsec 18.900
222 Ferrari Dino   qsec 15.500
> |
```

RStudio

Go to file/function Addins Project: (None)

Untitled1\* . Untitled2\*

Source on Save Run Source

	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

Showing 1 to 22 of 32 entries, 11 total columns

Console

```

17  Fiat X1-9 qsec 18.900
18 Ferrari Dino qsec 15.500
> |
```

RStudio

Untitled2\* Untitled1\*

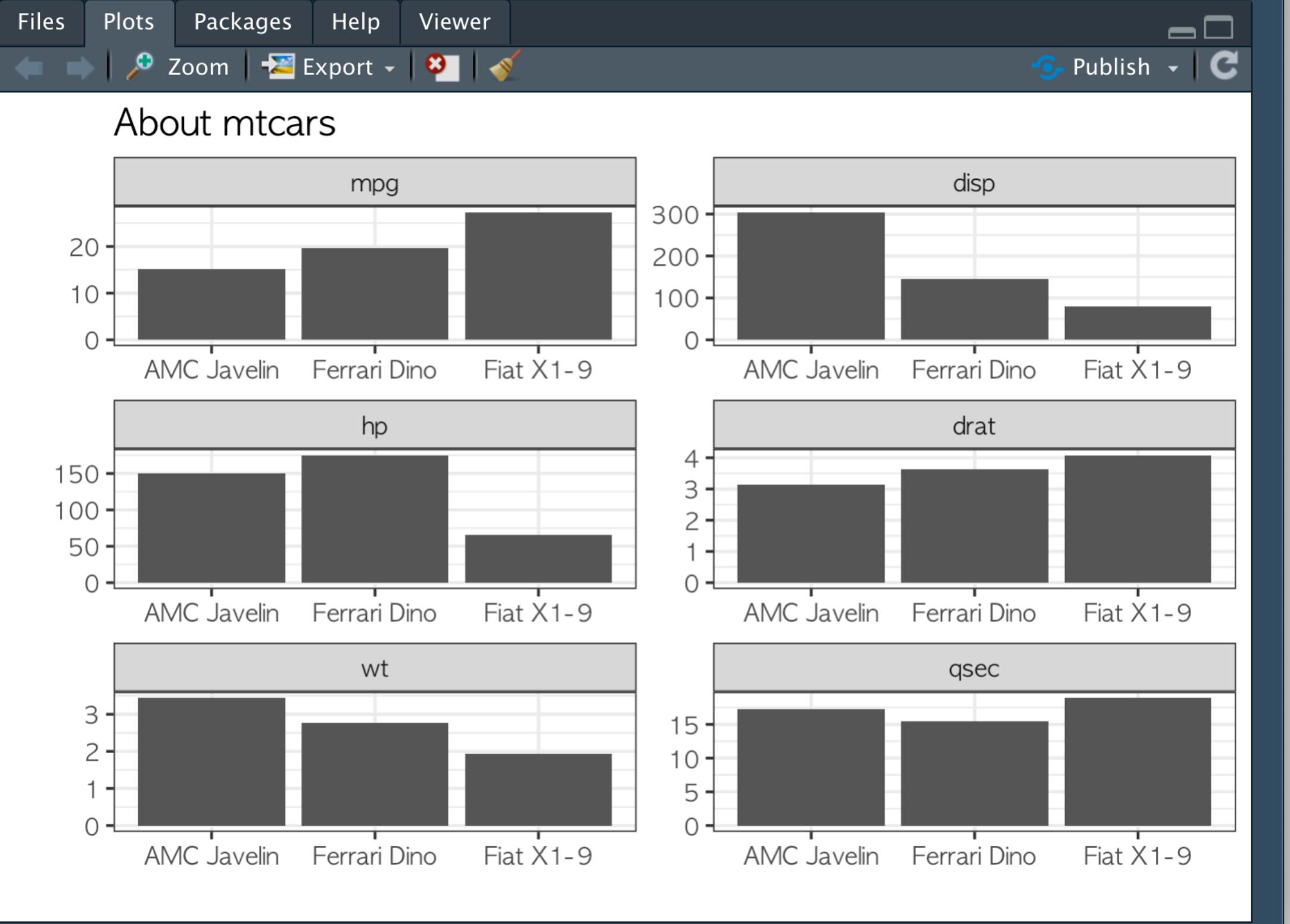
Addins Project: (None)

```

1 mtcars2 <- cbind(mtcars, car_name = row.names(mtcars))
2 mtcars3 <- reshape2::melt(mtcars2, id = "car_name")
3 mtcars4 <- subset(
4   mtcars3,
5   car_name %in% c("AMC Javelin", "Ferrari Dino", "Fiat X1-9") &
6   variable %in% c("mpg", "hp", "wt", "drat", "qsec", "disp"))
7 )
8
9 ggplot(mtcars4, aes(car_name, value)) +
10   geom_bar(stat = "identity") +
11   facet_wrap(~variable, scales = "free", ncol = 2) +
12   labs(x = "", y = "") + ggtitle("About mtcars")

```

10:32 (Top Level) R Script



RStudio

Untitled2\* Untitled1\*

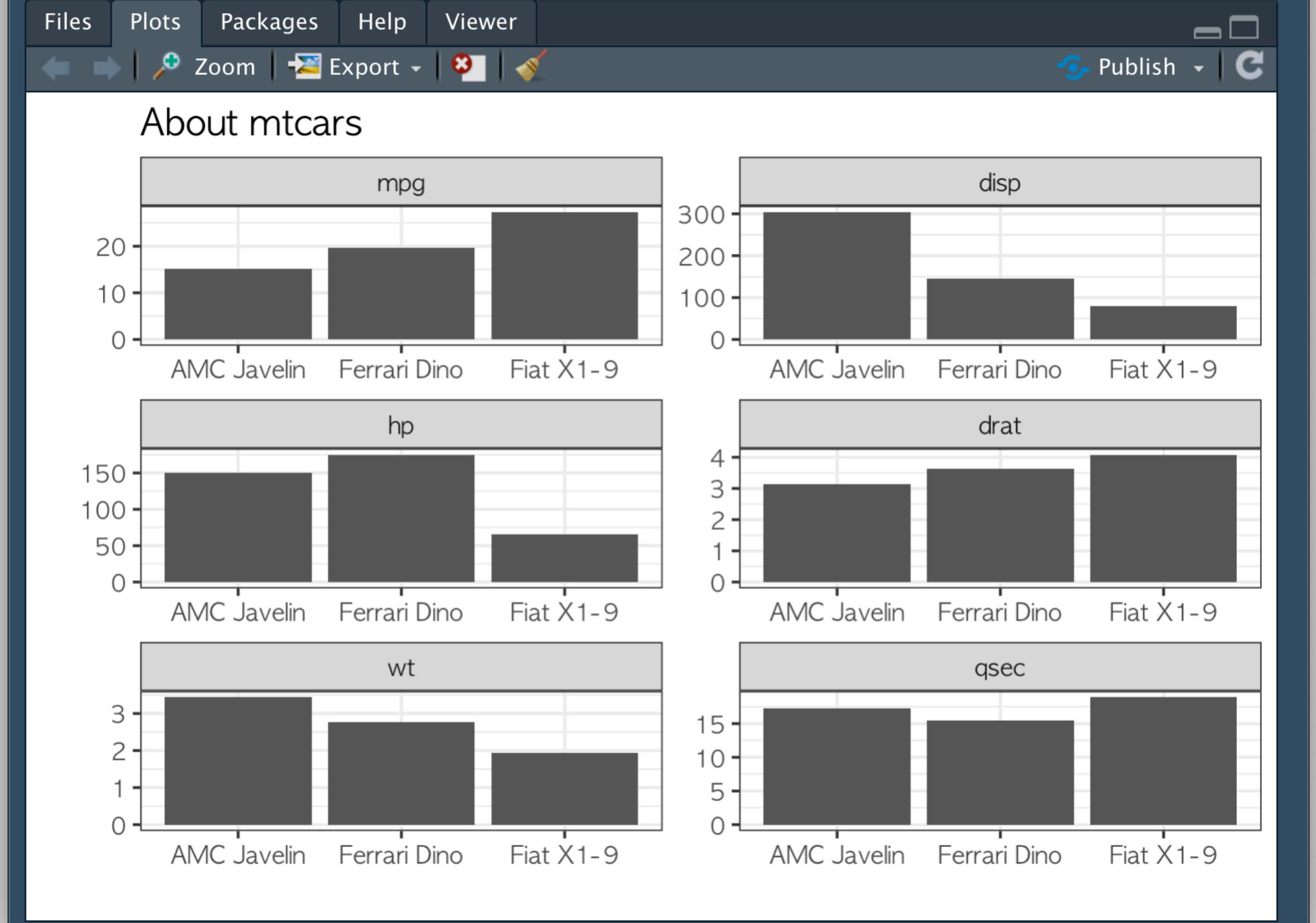
Addins Project: (None)

```

1 mtcars %>%
2   mutate(car_name = row.names(.)) %>%
3   gather(vals, value, -car_name) %>%
4   filter(
5     car_name %in% c("AMC Javelin", "Ferrari Dino", "Fiat X1-9"),
6     vals %in% c("mpg", "hp", "wt", "drat", "qsec", "disp"))
7 ) %>%
8   ggplot(aes(car_name, value)) +
9   geom_bar(stat = "identity") +
10  facet_wrap(~vals, scales = "free", ncol = 2) +
11  labs(x = "", y = "") +
12  ggtitle("About mtcars")
13

```

13:1 (Top Level) R Script



RStudio

Project: (None)

Untitled2\* Untitled1\*

Source on Save Run Source

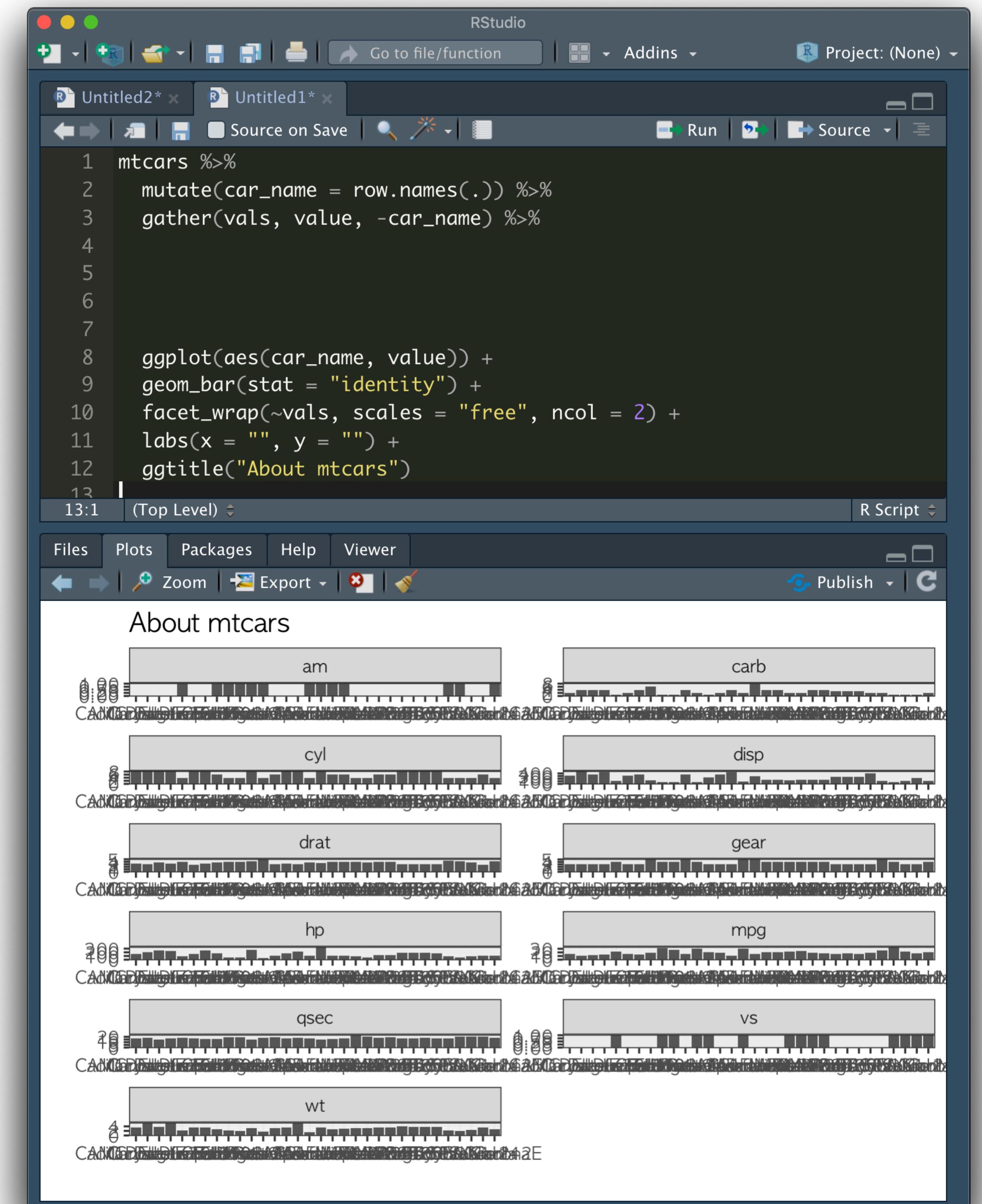
```
1 mtcars2 <- cbind(mtcars, car_name = row.names(mtcars))
2 mtcars3 <- reshape2::melt(mtcars2, id = "car_name")
3
4
5
6
7
8 ggplot(mtcars4, aes(car_name, value)) +
9   geom_bar(stat = "identity") +
10  facet_wrap(~variable, scales = "free", ncol = 2) +
11  labs(x = "", y = "") + ggtitle("About mtcars")
12
13
```

13:1 (Top Level) R Script

Files Plots Packages Help Viewer

Zoom Export

Error: object 'mtcars4' not found



RStudio

Untitled2\* Untitled1\*

Source on Save Run Source

```
1 res <- list()
2
3 for(i in unique(mtcars$cyl)){
4   mtcars2 <- subset(mtcars, cyl == i, select = c("mpg", "disp", "hp", "drat"))
5   lmfit <- lm(disp ~ ., data = mtcars2)
6   res[[paste0("cyl = ", i)]] <- summary(lmfit)$coefficients
7 }
8
9 res
10 |
```

10:1 (Top Level) R Script

Console Terminal Jobs

```
~/
> res
$`cyl = 6`
      Estimate Std. Error t value Pr(>|t|)
(Intercept) 409.7810370 157.6040990 2.6000659 0.08037125
mpg         4.3156170  6.9553459 0.6204748 0.57889061
hp        -0.5577404  0.4240994 -1.3151171 0.27995856
drat       -67.8987957 21.5800161 -3.1463737 0.05140931

$`cyl = 4`
      Estimate Std. Error t value Pr(>|t|)
(Intercept) 291.95739382 94.2296040 3.0983617 0.01736213
mpg        -4.43485184 1.5364290 -2.8864672 0.02343414
hp        -0.06905319 0.3396118 -0.2033298 0.84466159
drat       -15.44260687 18.3034139 -0.8437009 0.42672465

$`cyl = 8`
      Estimate Std. Error t value Pr(>|t|)
(Intercept) 599.07461416 188.0764183 3.18527235 0.009731938
mpg        -13.36500593  7.8802088 -1.69602180 0.120737856
hp         0.04906465  0.5310913  0.09238459 0.928217072
drat       -16.85451710 69.8014973 -0.24146355 0.814075033
```

RStudio

Untitled2\* Untitled1\*

Source on Save Run Source

```
1 mtcars %>%
2   group_by(cyl) %>%
3   select(mpg, disp, hp, drat) %>%
4   group_map(~ broom::tidy(lm(disp ~ ., data = .x)))
5 |
```

5:1 (Top Level) R Script

Console Terminal Jobs

```
~/
> mtcars %>%
+   group_by(cyl) %>%
+   select(mpg, disp, hp, drat) %>%
+   group_map(~ broom::tidy(lm(disp ~ ., data = .x)))
Adding missing grouping variables: `cyl`
# A tibble: 12 × 6
# Groups:   cyl [3]
  cyl term      estimate std.error statistic p.value
  <dbl> <chr>      <dbl>     <dbl>      <dbl>    <dbl>
1     4 (Intercept) 292.        94.2       3.10    0.0174
2     4 mpg          -4.43       1.54      -2.89    0.0234
3     4 hp           -0.0691    0.340     -0.203   0.845 
4     4 drat         -15.4       18.3      -0.844   0.427 
5     6 (Intercept) 410.        158.       2.60    0.0804
6     6 mpg          4.32        6.96      0.620   0.579 
7     6 hp           -0.558     0.424     -1.32    0.280 
8     6 drat         -67.9       21.6     -3.15    0.0514
9     8 (Intercept) 599.        188.       3.19    0.00973
10    8 mpg          -13.4       7.88     -1.70    0.121 
11    8 hp           0.0491    0.531     0.0924   0.928 
12    8 drat         -16.9       69.8     -0.241   0.814
```

**Before**



**After**

# Q & A

*Do you have any question?*