Mobile recognition!

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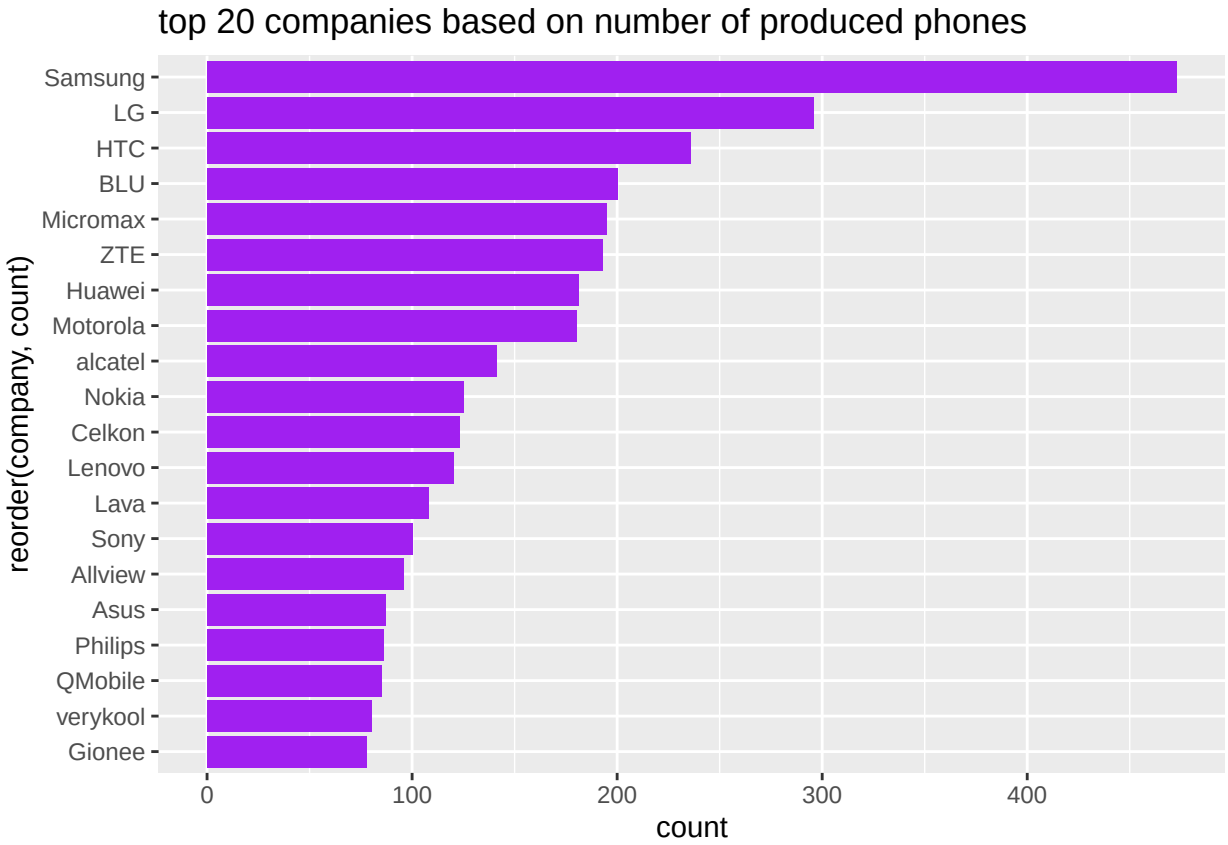
top 20 companies with maximum numer of produced phones

We want to see which company produces the largest number of phones(and tablets).

```
library(ggplot2)
library(dplyr)
library(ggrepel)
dat = readRDS("mobile_data.rds")
#View(dat)
dat1 = dat %>%
  filter(sim_no > 0) %>%
  filter(display_size > 2.4) %>%
  filter(display_size < 6.5) %>%
  group_by(company) %>%
  summarise(count =n()) %>%
  arrange(desc(count)) %>%
  slice(1:20)
#View(dat1)
#as you can see,sumsung is the biggest producer
ggplot(dat1,
       aes(x= reorder(company,count),
           y=count)) +
  coord_flip() +
  geom_bar(stat = "identity",fill="purple") +
  ggtitle("top 20 companies based on number of produced phones")
```

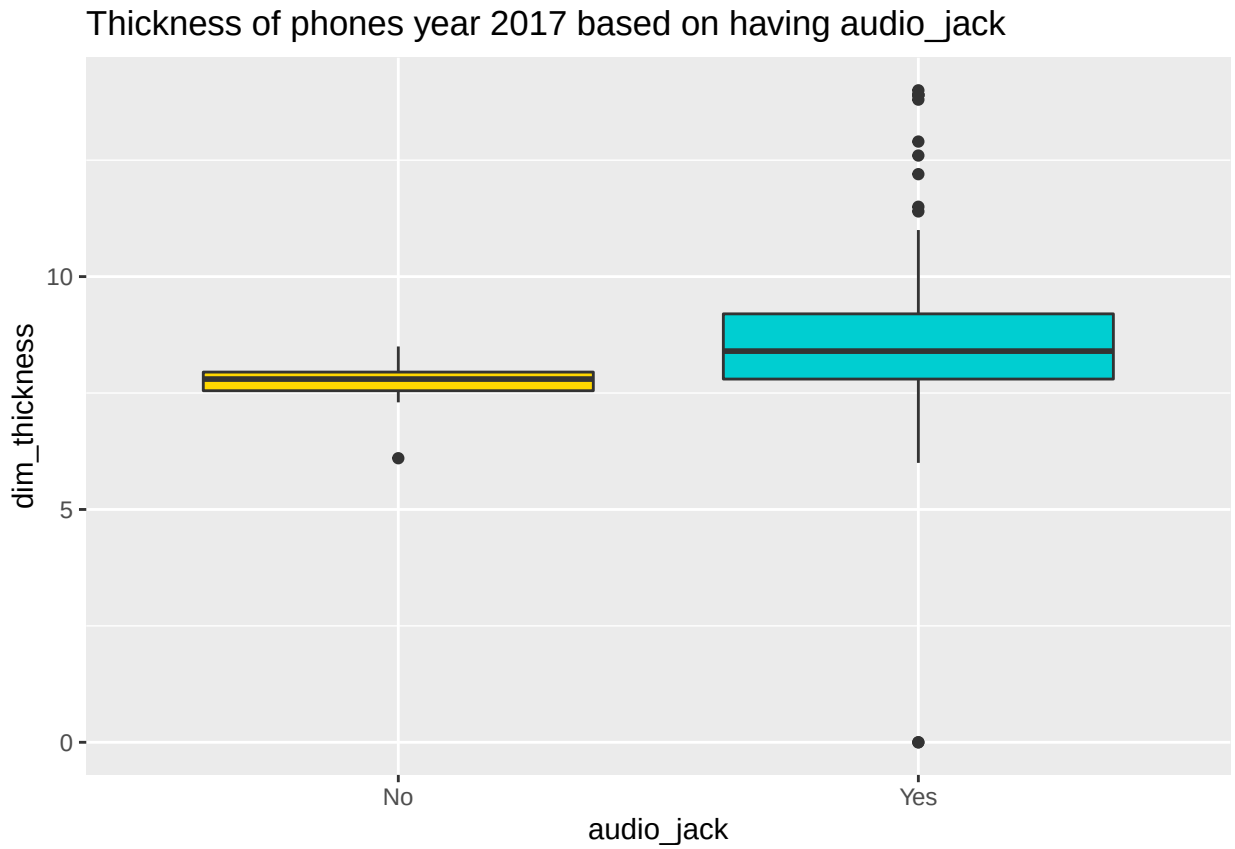


Average price of phones based on the number of SIM cards and accessibility to LTE

```
stat3 <-  dat %>%
  filter(sim_no >0) %>%
  filter(!is.na(price)) %>%
  filter(display_size > 2.4) %>%
  filter(display_size < 6.5) %>%
  group_by(sim_no) %>%
  mutate(ave_price = mean(price)) %>%
  arrange(sim_no)
ggplot(data =stat3,
       aes(x =sim_no,
        y = ave_price)) +
  geom_bar(stat = "identity",aes(fill = LTE),
           position = "fill") +
  ggtitle("Average price of phones based on the number of SIM cards and accessibility
to LTE")
```

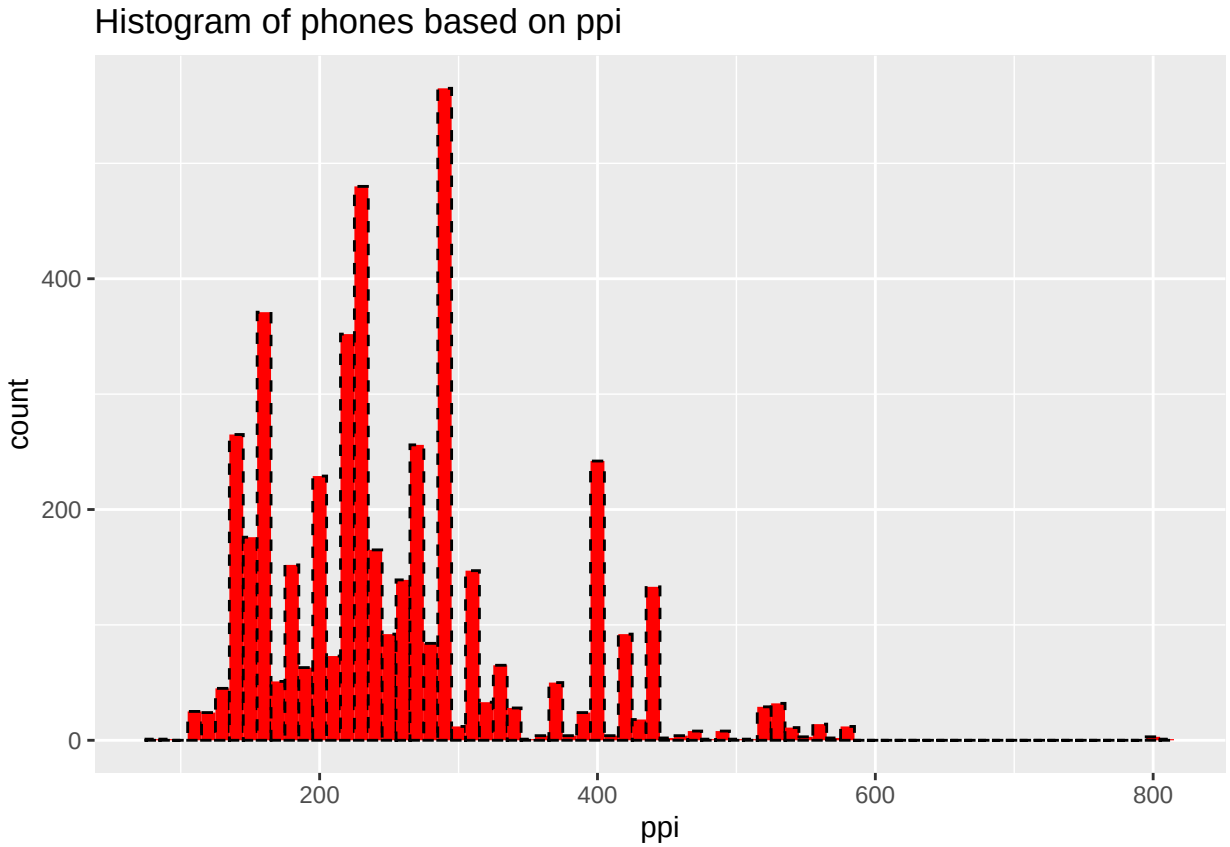
Thickness of phones year 2017 based on having audio_jack

```
statt <-  dat %>%
  filter(sim_no > 0) %>%
  filter(display_size > 2.4) %>%
  filter(display_size < 6.5) %>%
  filter(year== 2017) %>%
  filter(! is.na(dim_thickness))
ggplot(data = statt,
       aes(audio_jack, dim_thickness)) +
  geom_boxplot(fill=c("gold","darkturquoise")) +
  ggtitle("Thickness of phones year 2017 based on having audio_jack")
```

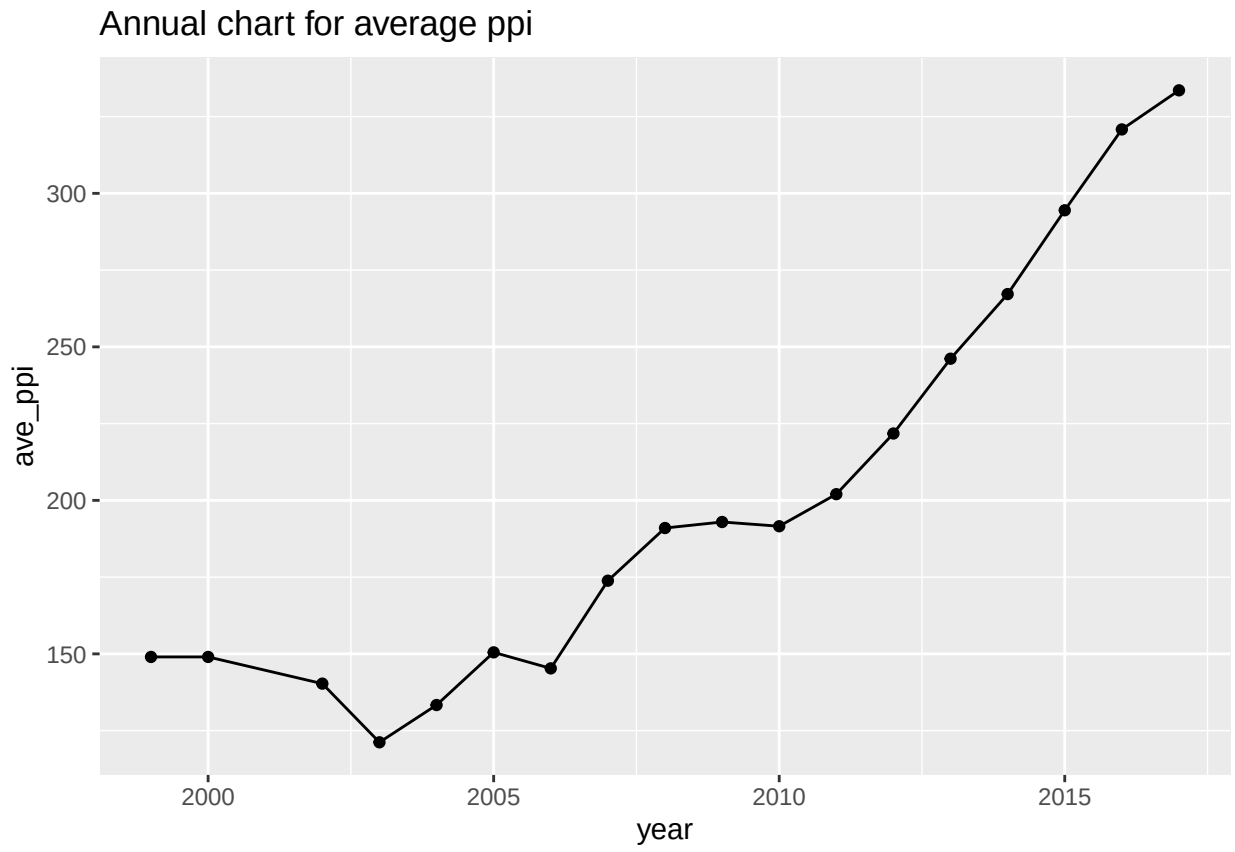


Some analysis based on *ppi*

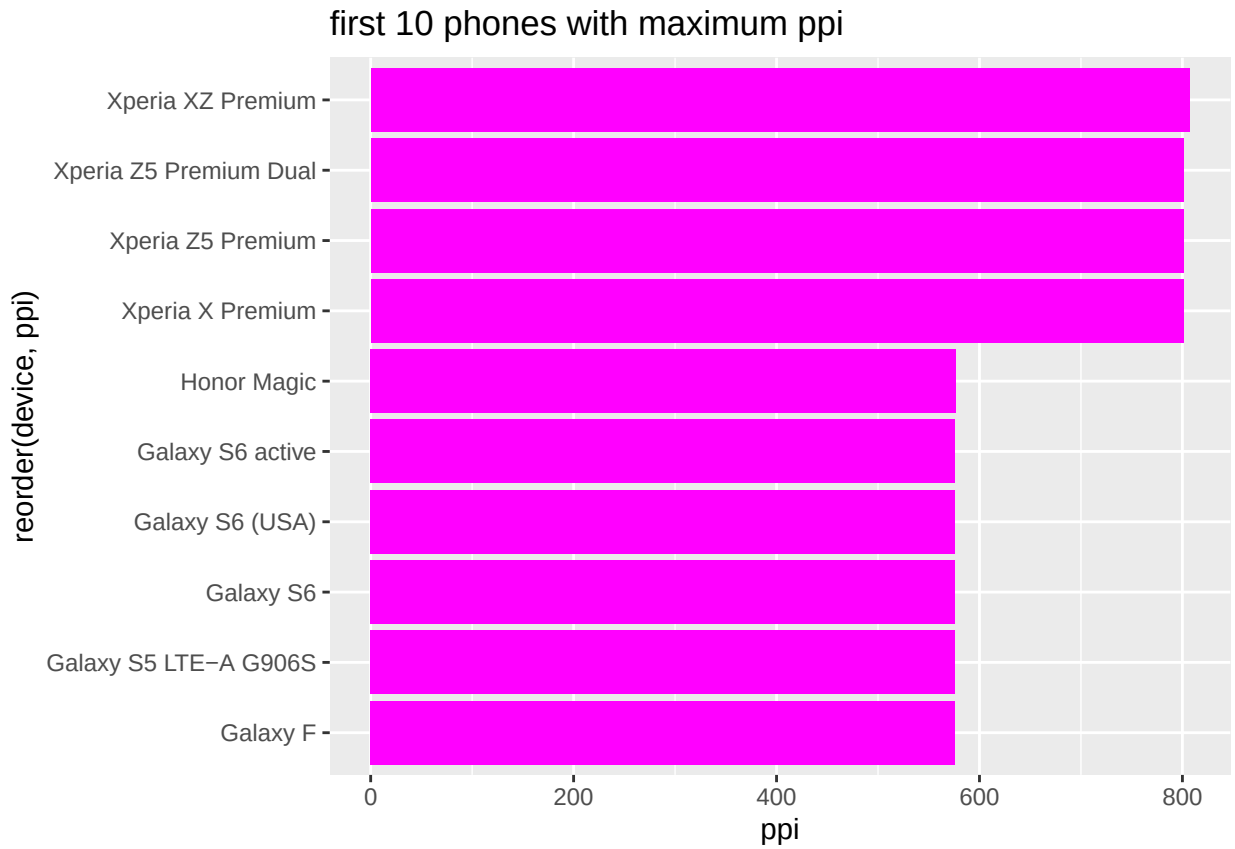
```
staa <- dat %>%
  filter(sim_no >0) %>%
  filter(display_size > 2.4) %>% #remove smart whatches
  filter(display_size < 6.5) %>% # remove tablets
  filter(!is.na(px_row)) %>%
  filter(!is.na(px_col)) %>%
  mutate(ppi = sqrt(px_row^2 + px_col^2)/display_size) %>%
  arrange(ppi)
ggplot(data = staa,
       aes(x = ppi)) +
  geom_histogram(binwidth = 10,
                 linetype = "dashed",
                 color="black",
                fill="red") +
  ggtitle("Histogram of phones based on ppi")
```




```
sta <- dat %>%
  filter(sim_no >0) %>%
  filter(display_size > 2.4) %>% #remove smart whatches
  filter(display_size < 6.5) %>% # remove tablets
  filter(!is.na(px_row)) %>%
  filter(!is.na(px_col)) %>%
  filter(! is.na(year)) %>%
  group_by(year) %>%
  mutate(ppi = sqrt(px_row^2 + px_col^2) / display_size) %>%
  summarise(ave_ppi = mean(ppi)) %>%
  arrange(year)
ggplot(data = sta,
       aes( x= year,
            y = ave_ppi)) +
  geom_line()+geom_point() +
  ggtitle("Annual chart for average ppi")
```

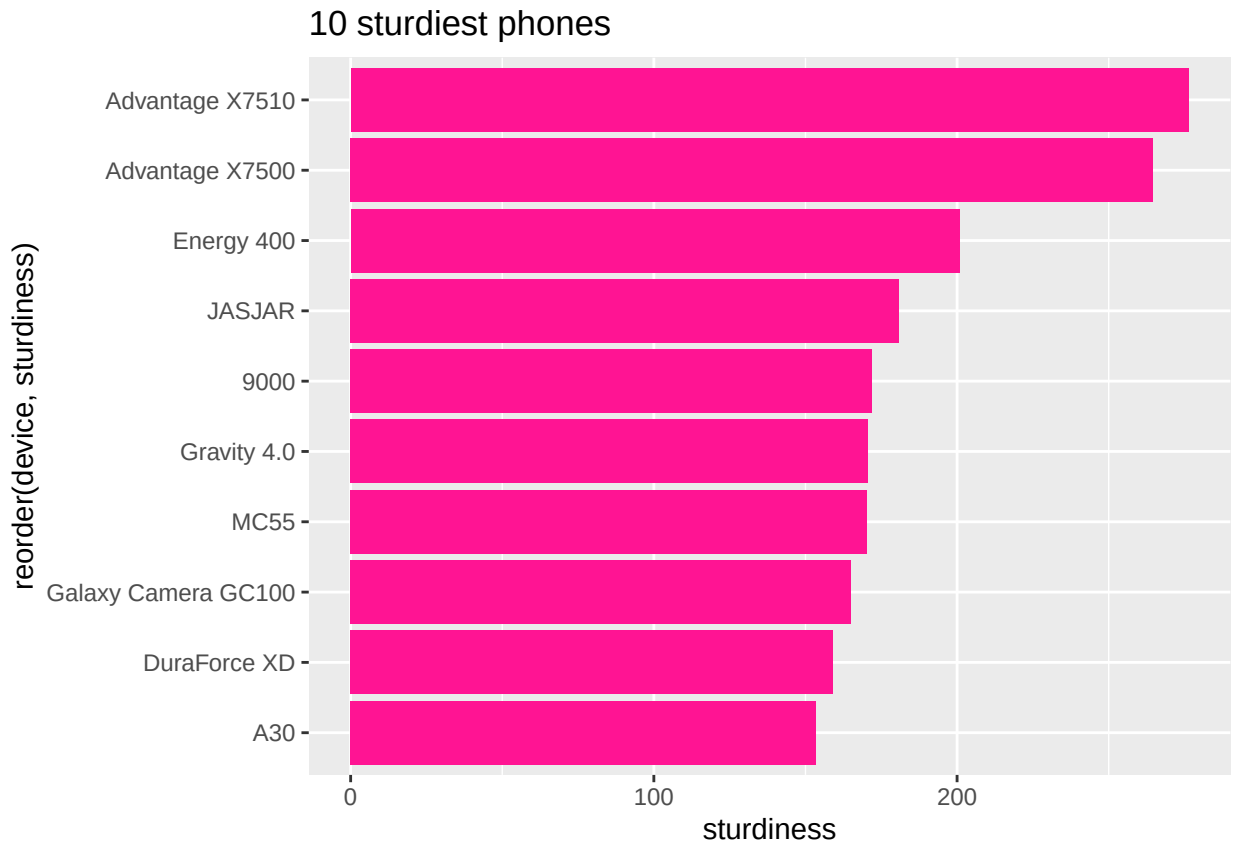



```
staaa <- dat %>%
  filter(sim_no >0) %>%
  filter(display_size > 2.4) %>% #remove smart whatches
  filter(display_size < 6.5) %>% # remove tablets
  filter(!is.na(px_row)) %>%
  filter(!is.na(px_col)) %>%
  group_by(device) %>%
  summarise(ppi = sqrt(px_row ^2 + px_col^2) / display_size) %>%
  arrange(desc(ppi)) %>%
  head(10)
ggplot(data = staaa,
       aes(x = reorder(device,ppi),
       y = ppi)) +
  coord_flip() +
  geom_bar(stat = "identity",fill="magenta") +
  ggtitle("first 10 phones with maximum ppi")
```



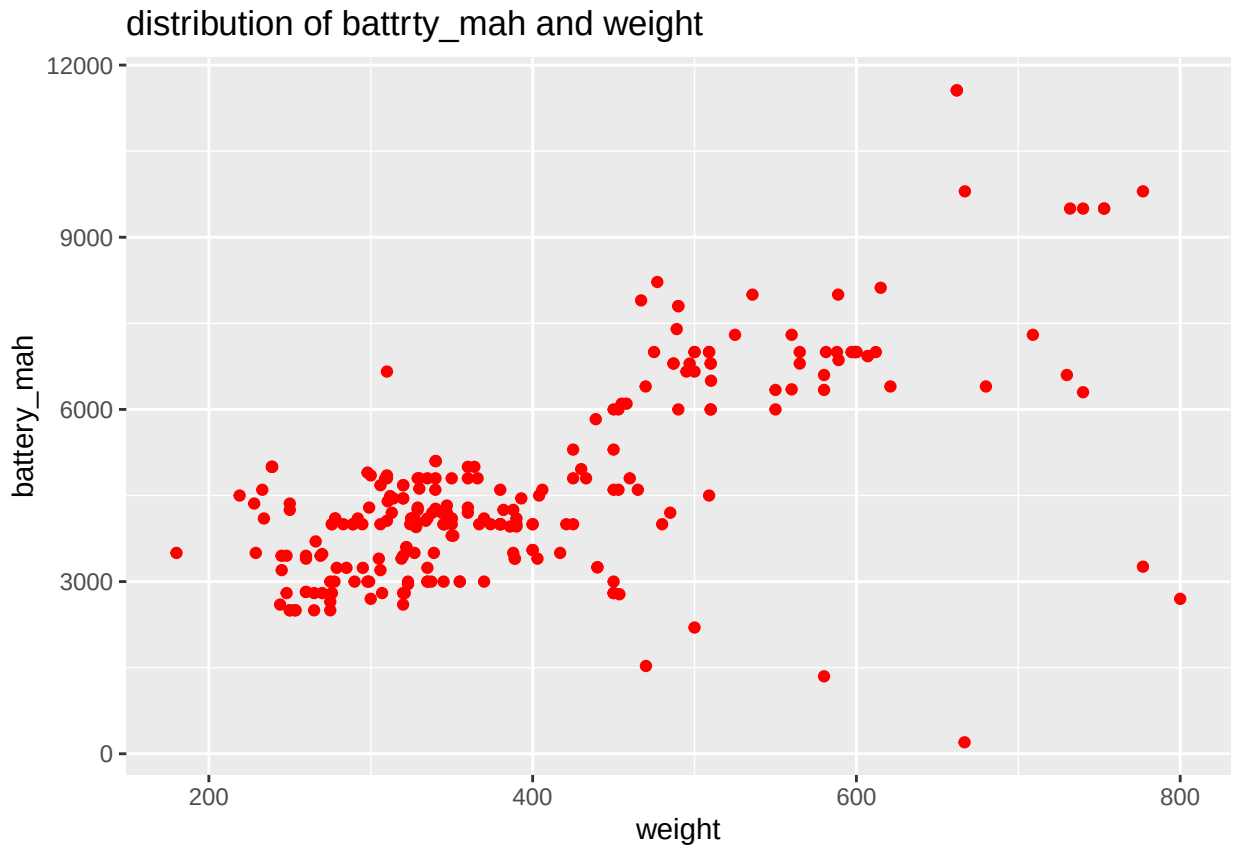
Finding 10 *sturdiest* phones:
We will consider **sturdiness** as follows: $sturdiness = \frac{weight}{display.size}$

```
st <-  dat %>%
  filter(! grepl('Tablet',dat$device)) %>%
  filter(sim_no >0) %>% #all mobiles at least have 1 sim_card
  filter(display_size > 2.4) %>% #filter smart watches
  filter(display_size < 6.5) %>% #filter tablets
  group_by(device) %>%
  summarise(sturdiness = weight / dim_length * dim_breadth) %>%
  arrange(desc(sturdiness)) %>%
  head(10)
ggplot(data = st,
       aes(x = reorder(device,sturdiness),
           y = sturdiness)) +
  coord_flip() +
  geom_bar(stat = "identity",fill="deeppink") +
  ggtitle("10 sturdiest phones")
```



Correlation between *battery_mah* and *weight*

```
st <-  dat %>%
  filter(! grepl('Tablet',dat$device)) %>%
  filter(sim_no >0) %>%
  filter(display_size >2.4) %>% #smart watch
  filter(display_size > 6.5) %>% #tablet
  filter(!is.na(battery_mah)) %>%
  filter(!is.na(weight))
ggplot(st,
       aes(x = weight , y = battery_mah)) +
  geom_point(color = 'red') +
  ggtitle("distribution of battrty_mah and weight")
```




```
correlation <- cor(st$weight,st$battery_mah,method = 'pearson')
correlation
```

```
## [1] 0.6801458
```