HW DataViz Batch10

Kim

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```r
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     1.0.2
## -- 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 become errors
```

```r
library(ggplot2)
```

Data Preparation

```r
#Row to column & mutate am
mtcars2 <- mtcars%>%
  rownames_to_column(var = "model")%>%
  mutate(am = ifelse( am == 0, "Auto", "Manual"))%>%
  tibble()

#am to factor
mtcars2$am <- factor(mtcars2$am,
                     levels = c("Auto", "Manual"),
                     labels = c("Auto", "Manual"))
```

Exploring automobiles in 1973-1974

```r
ggplot(mtcars2, aes(am, fill = am))+
  geom_bar(show.legend = FALSE)+
  scale_fill_manual(values = c("#3363ff", "#ff3333"))+
  labs(x = "Transmission",
       y = "Models") +
  theme_minimal()+
  theme(axis.title.y = element_text(angle = 0))+
  geom_text(stat = "count", aes(label = after_stat(count)),
            vjust = 2,
            color = "white")
```
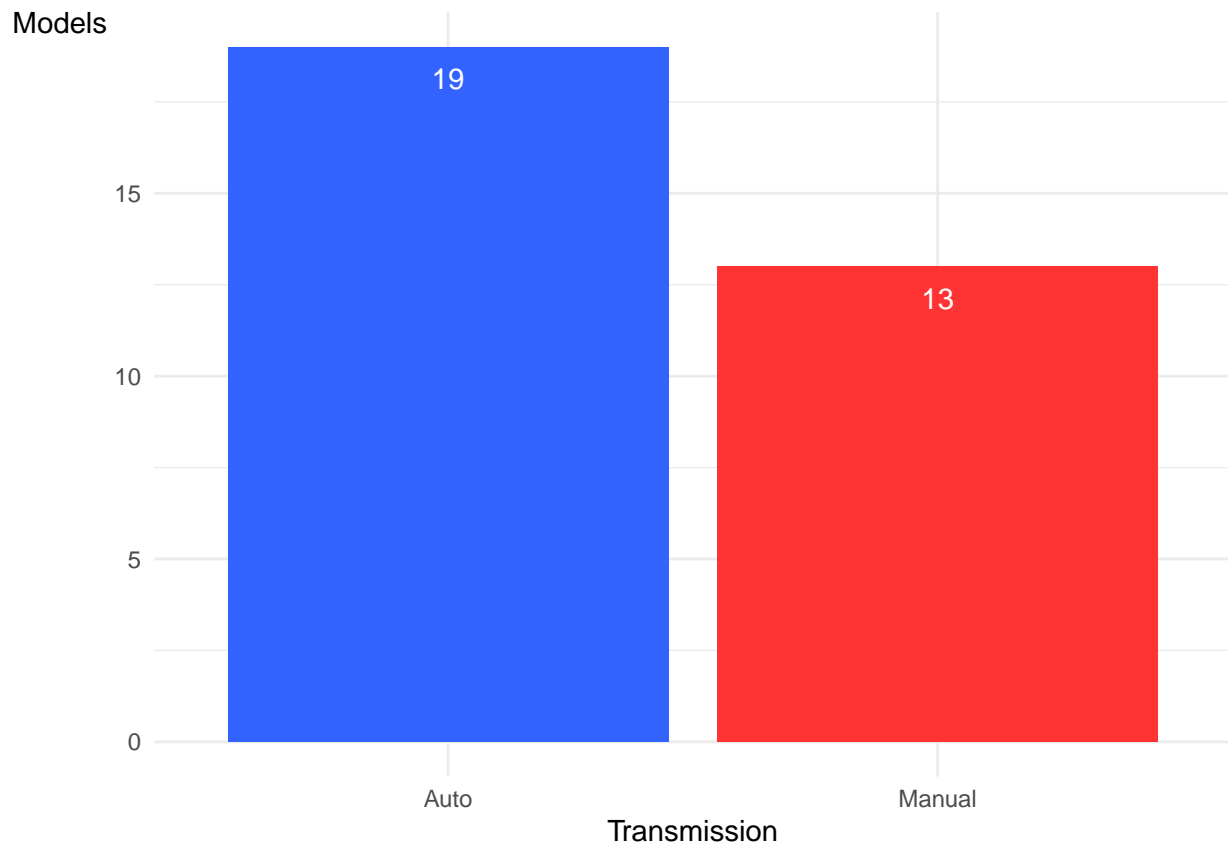
Models

Most of available model in the market is automatic transmission.

```r
ggplot(mtcars2, aes(am, mpg, fill = am))+
  geom_boxplot(show.legend = FALSE)+
    scale_fill_manual(values = c("#3363ff", "#ff3333"))+
    labs(x = "Transmission",
       y = "Models") +
    theme_minimal()+
    theme(axis.title.y = element_text(angle = 0))
```
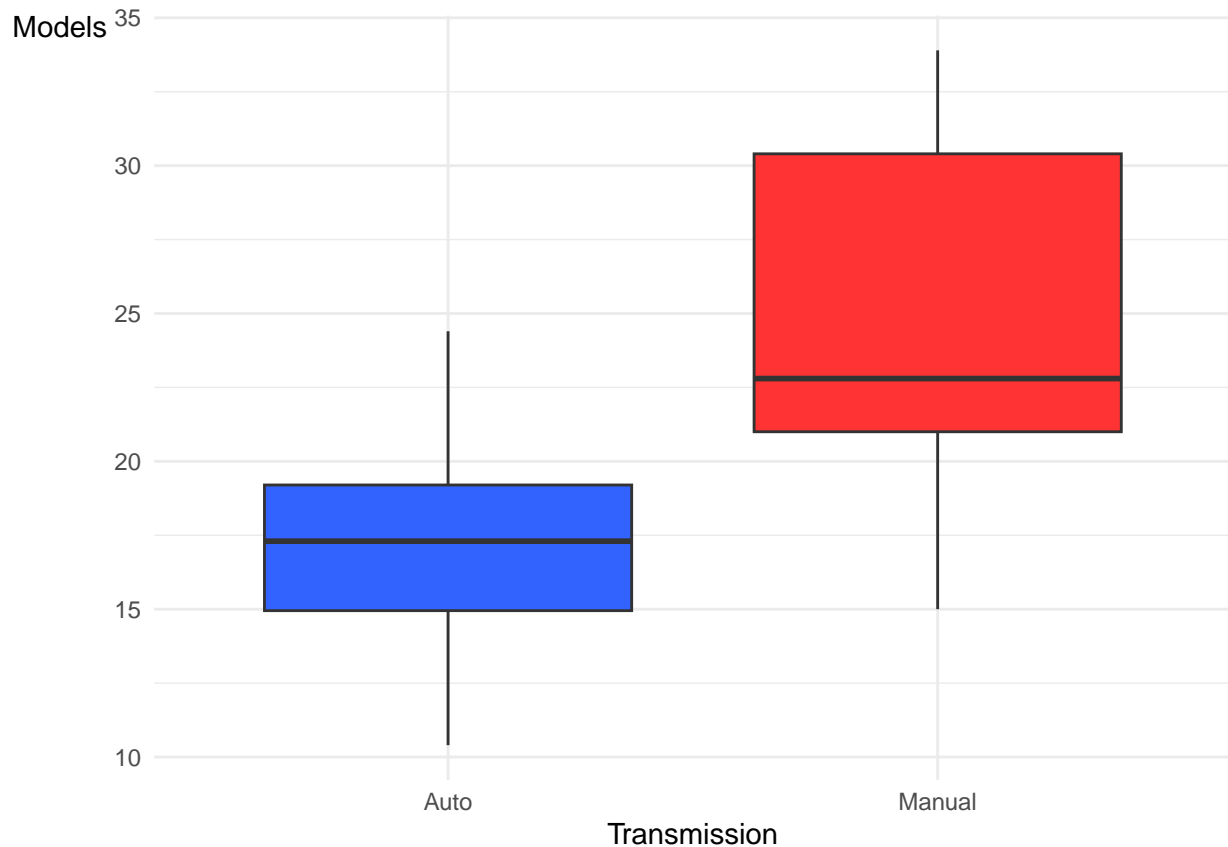
Even though, manual transmission have more fuel efficiency (higher mpg), it might be because manufacturer had manufactured based on urban lifestyle which convenience of driving is one of the top priorities.

```
ggplot(subset(mtcars2, hp < 300), aes(hp, mpg, color = am))+
  geom_point()+
  geom_smooth(method = "lm", se = FALSE)+
  scale_color_manual(values = c("#3363ff", "#ff3333"))+
  theme(legend.position = "Right")+
  theme_minimal()+
  theme(axis.title.y = element_text(angle = 0))
```
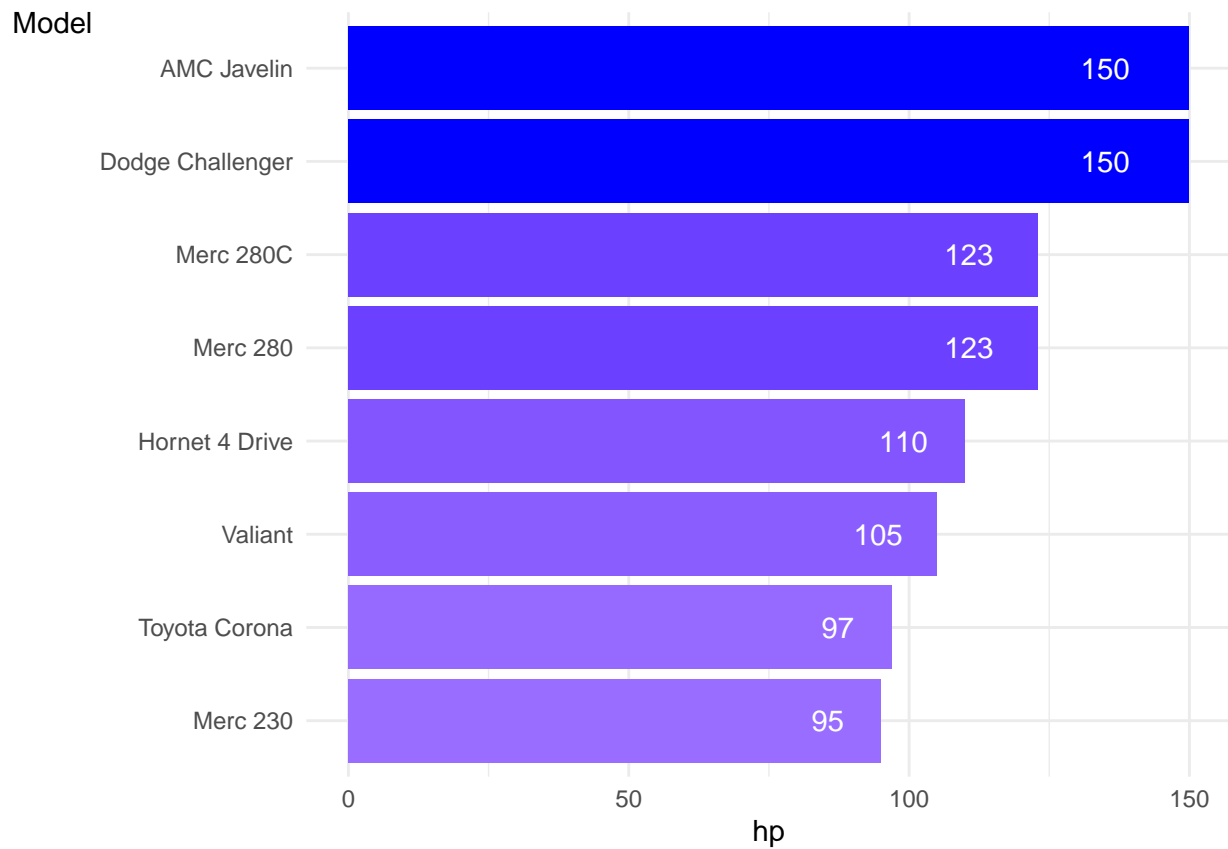
```
## `geom_smooth()` using formula = 'y ~ x'
```
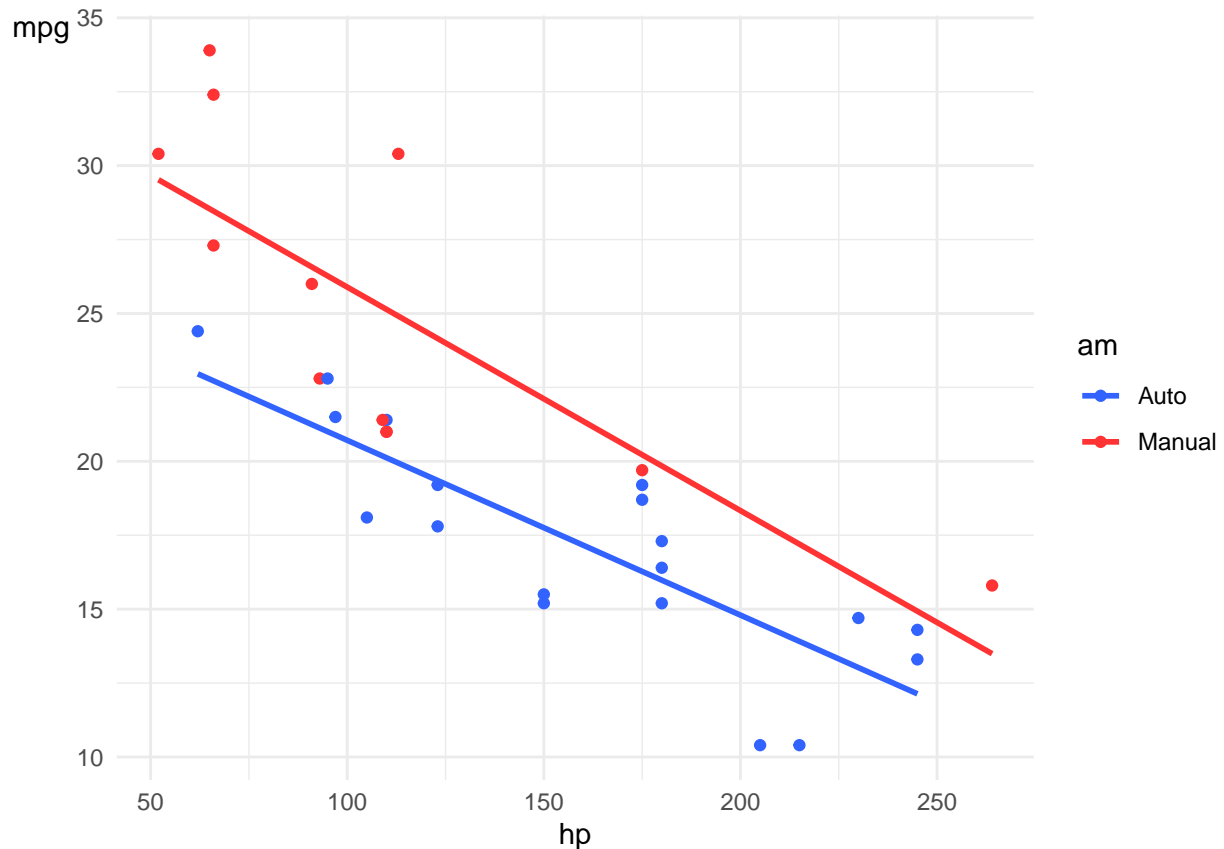
Cars with higher horsepower(hp) have higher fuel consumption (lower mpg). In 1974, considering buying a car in terms of city driving and fuel efficiency, automatic transmission car with a horsepower in a range of 70-150 might not be a bad idea.

```r
mtcars2_cit <- mtcars2%>%
  filter(between(hp, 70, 150) & am == "Auto")%>%
  select(model, hp, mpg)%>%
  arrange(hp)%>%
  mutate(model = factor(model, levels=model))

ggplot(mtcars2_cit, aes(hp, model, fill = hp))+
  geom_col(show.legend = FALSE)+
  scale_fill_gradient2(mid = "white" ,high = "blue")+
  labs(y = "Model")+
  theme_minimal()+
  theme(axis.title.y = element_text(angle = 0))+
  geom_text(aes(label = hp),
            position = position_stack(vjust = 0.9),
            color = "white")
```

Model

Model	hp
AMC Javelin	150
Dodge Challenger	150
Merc 280C	123
Merc 280	123
Hornet 4 Drive	110
Valiant	105
Toyota Corona	97
Merc 230	95

hp

Here's the List of cars with horsepower in a range of 70-150

```
ggplot(mtcars2_cit, aes(hp, mpg, fill = model))+
  geom_text(aes(label = model))+
  theme_minimal()
```
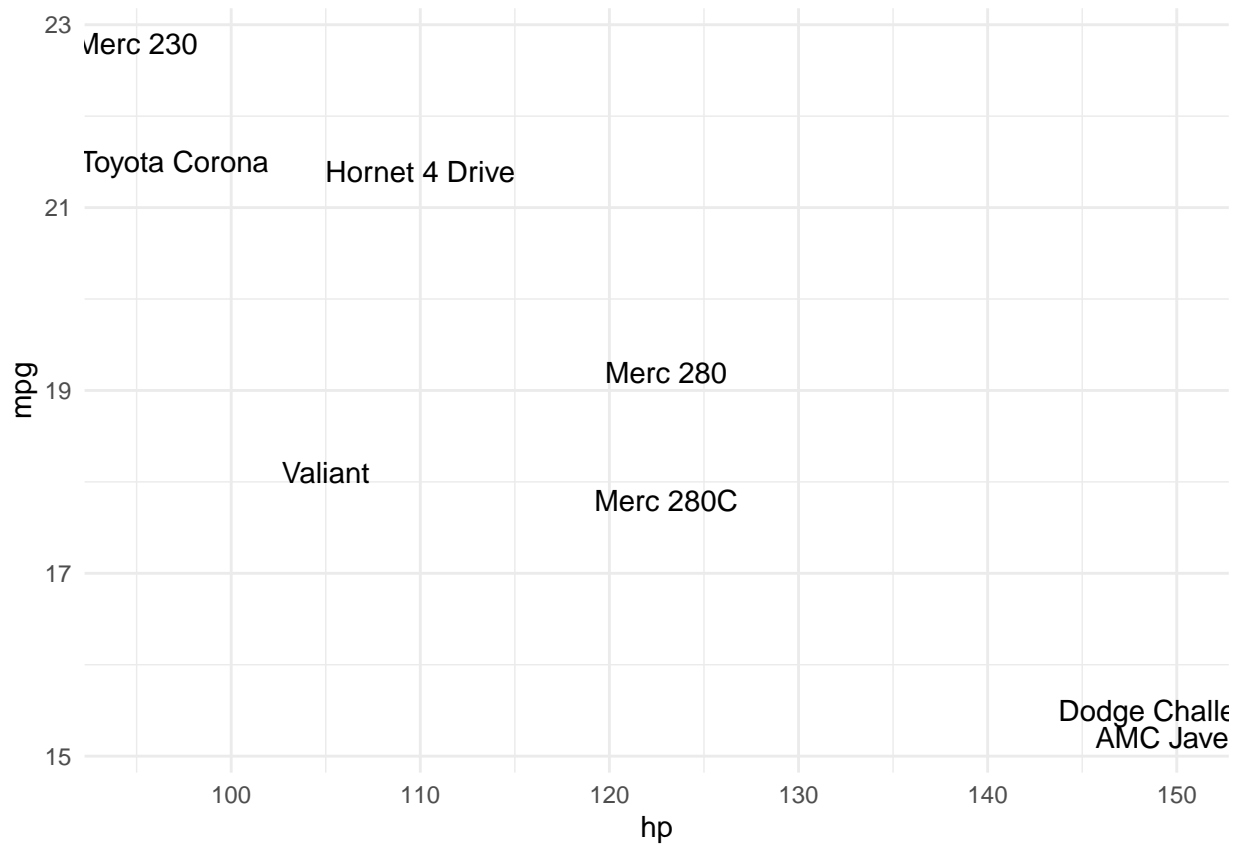
Considering with fuel efficiency would be easier to decide.