Sprint05-HW-Data Viz

Kimiko

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Dataset : mpg This dataset contains a subset of the fuel economy data that the EPA makes available on https://fueleconomy.gov/. It contains only models which had a new release every year between 1999 and 2008.

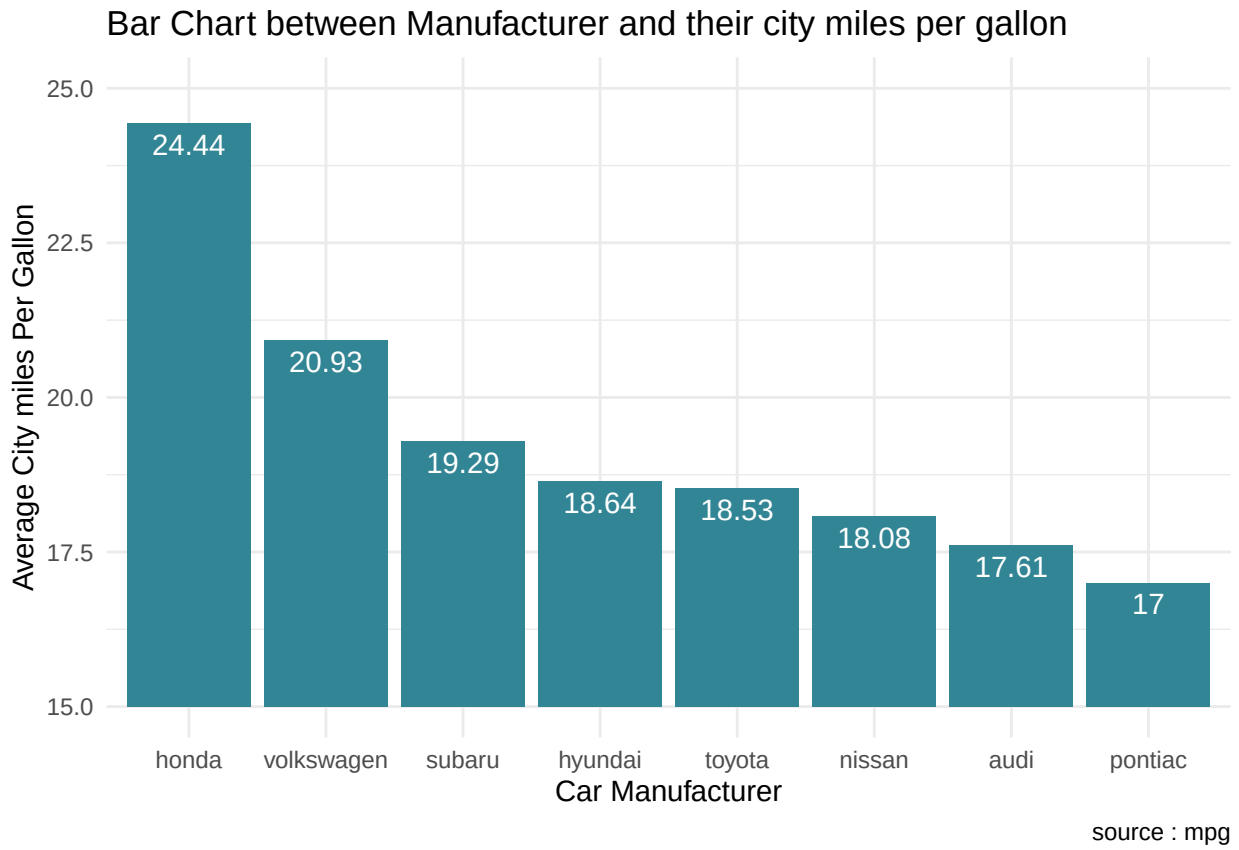
```
## # A tibble: 6 x 11
##   manufacturer model displ  year   cyl trans      drv     cty   hwy fl    class
##   <chr>        <chr> <dbl> <int> <int> <chr>      <chr> <int> <int> <chr> <chr>
## 1 audi         a4      1.8  1999     4 auto(15)   f        18    29 p     compa~
## 2 audi         a4      1.8  1999     4 manual(m5) f        21    29 p     compa~
## 3 audi         a4      2    2008     4 manual(m6) f        20    31 p     compa~
## 4 audi         a4      2    2008     4 auto(av)   f        21    30 p     compa~
## 5 audi         a4      2.8  1999     6 auto(15)   f        16    26 p     compa~
## 6 audi         a4      2.8  1999     6 manual(m5) f        18    26 p     compa~
```

The First chart

```
##Transform data
mpg <- mpg %>%
  mutate(trans_new = if_else(grepl("auto", trans), "auto", "manual"))

mean_cty <- mpg %>%
  group_by(manufacturer) %>%
  summarise(n = n(),
            mean_cty = round(mean(cty),2)) %>%
  filter(mean_cty > 15) %>%
  arrange(desc(mean_cty))

##Plot
ggplot(mean_cty, aes(x = reorder(manufacturer, -mean_cty), mean_cty)) +
  geom_col(fill = "#318594") +
  scale_y_continuous(limits = c(15, 25),
                     oob = scales::squish) +
  labs(
    title = "Bar Chart between Manufacturer and their city miles per gallon",
    x = "Car Manufacturer",
    y = "Average City miles Per Gallon",
    caption = "source : mpg") +
  geom_text(aes(label = mean_cty),
            vjust = 1.5,
            color = "White") +
  theme_minimal()
```

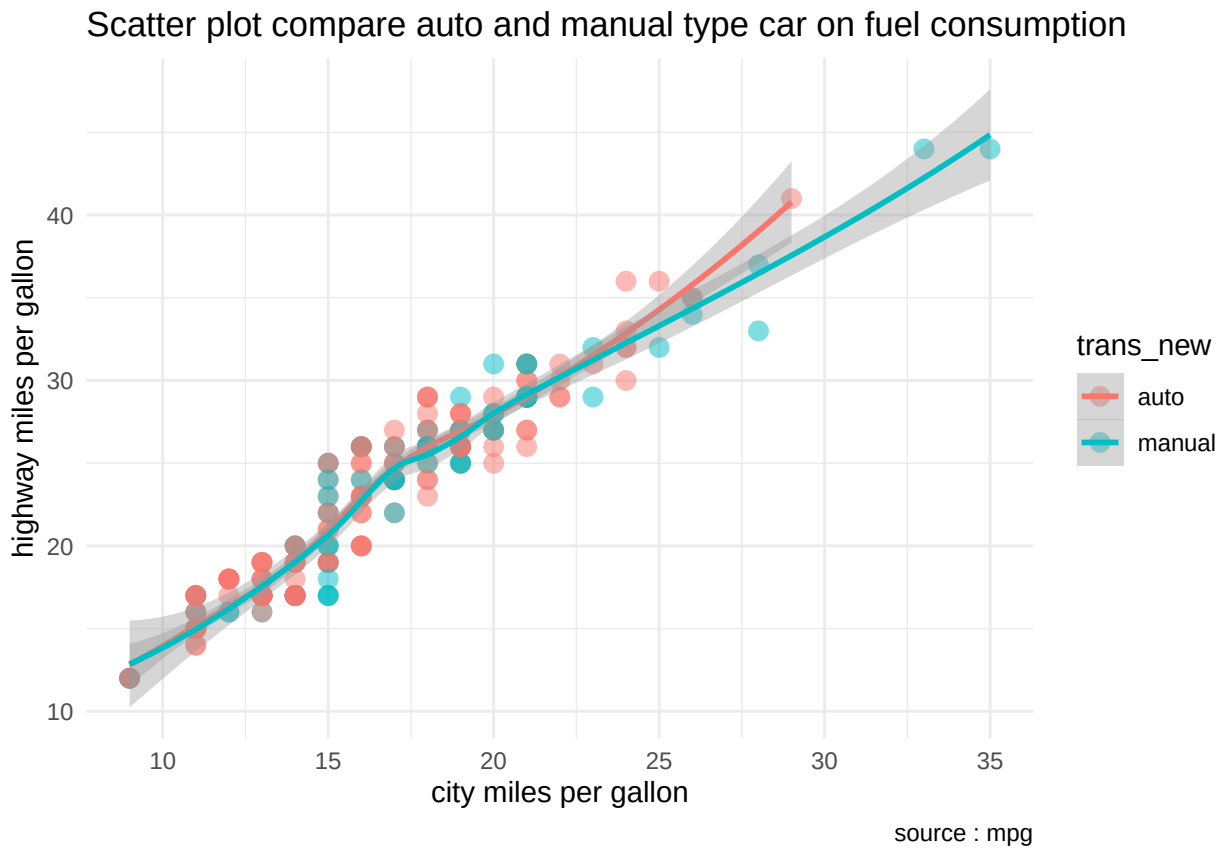


We see Honda has an average city miles per gallon = 24.44, Which is the most compared to others. From this chart, we can conclude that if we are looking for the car to drive in the city, Honda car is one of the best choice.

The second chart

```
##Plot
ggplot(mpg, aes(x = cty, y= hwy,col = trans_new)) +
  geom_point(size = 3, alpha = 0.5) +
  geom_smooth() +
  theme_minimal() +
  labs(
    title = "Scatter plot compare auto and manual type car on fuel consumption",
    x = "city miles per gallon",
    y = "highway miles per gallon",
    caption = "source : mpg"
  )
```

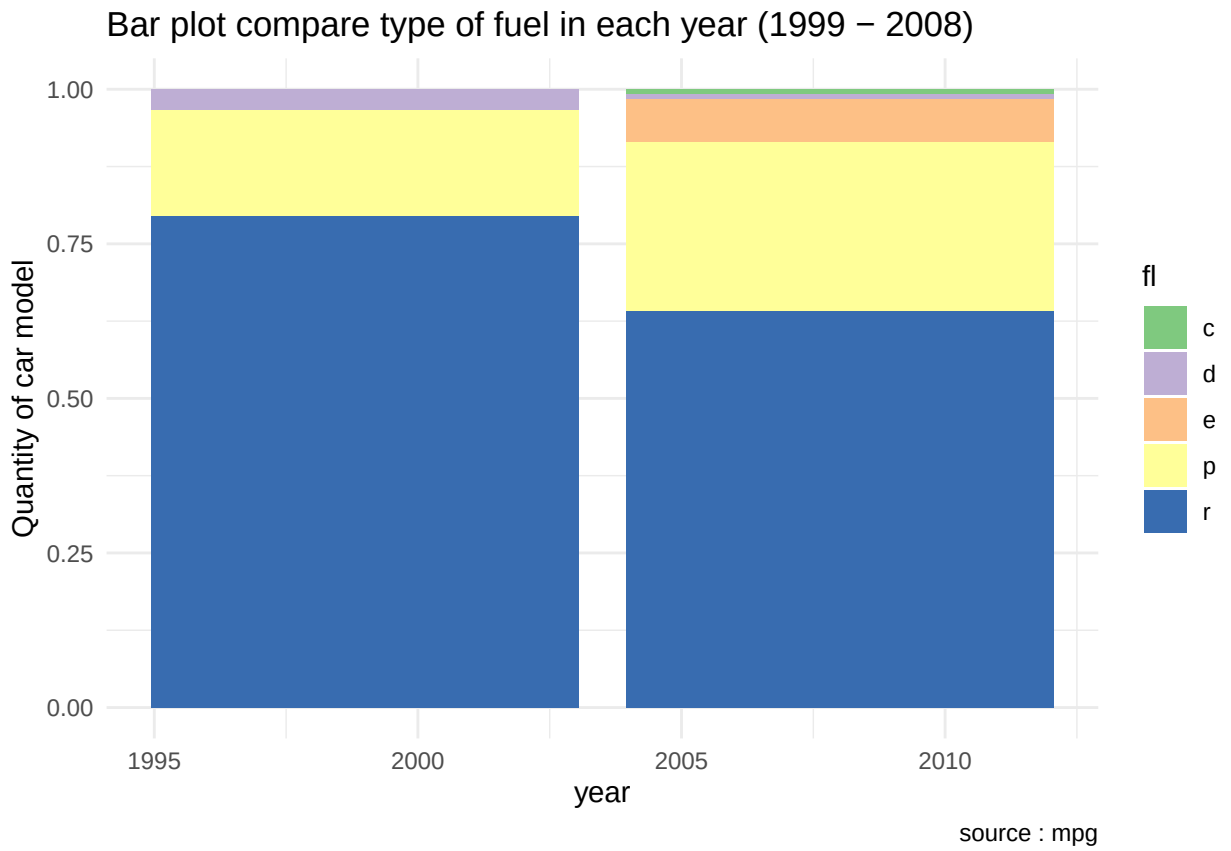
```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```



From the chart, the blue line is longer and higher than the red line. It means the fuel consumption of the manual car type is better than auto car type in both on highway and city. Type of transmission really effect fuel consumption!

The third chart

```
##Plot
ggplot(mpg, aes(x= year, fill = fl)) +
  geom_bar(position = "fill") +
  guides(color = guide_colorbar()) +
  theme_minimal()+
  scale_fill_brewer(palette = "Accent")+
  labs(title = "Bar plot compare type of fuel in each year (1999 - 2008)",
       x = "year",
       y = "Quantity of car model",
       caption = "source : mpg")
```



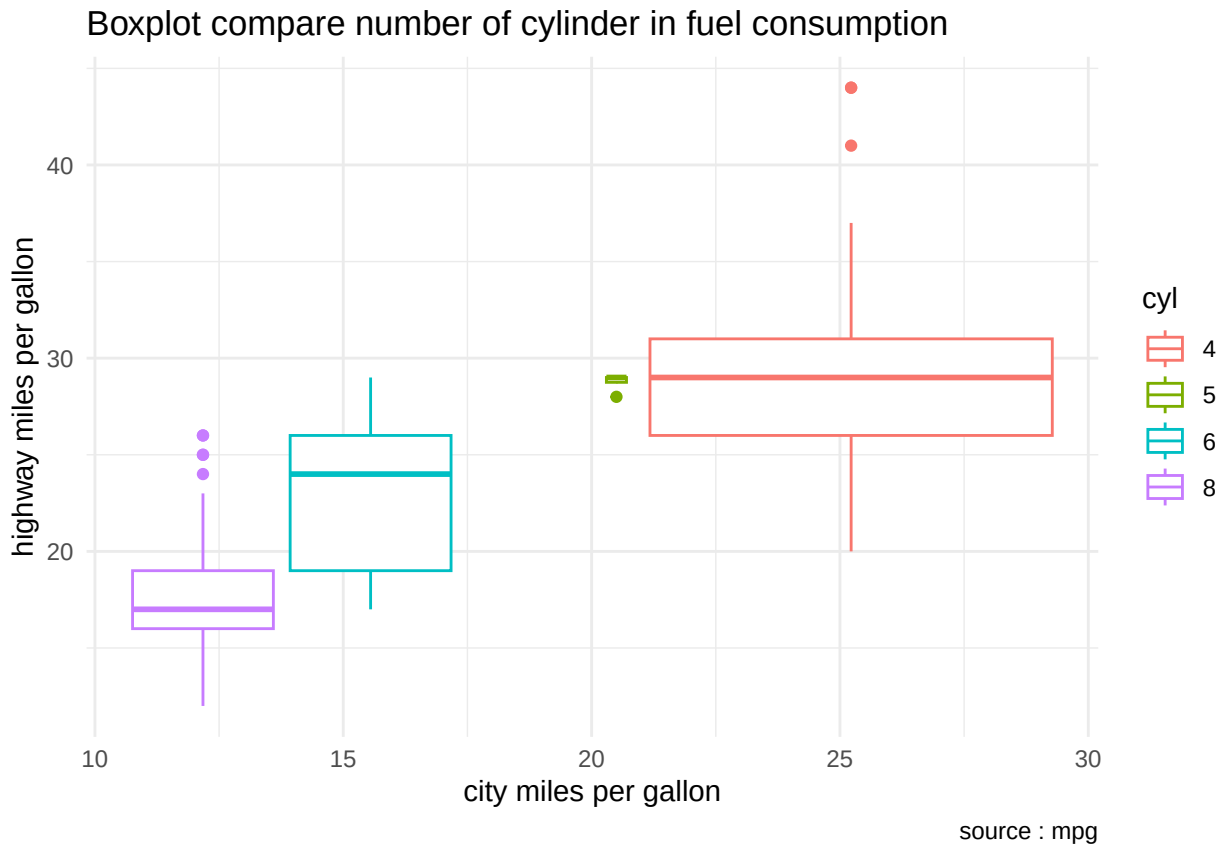
Comparision between year 1999 - 2008, the graph show that in the lasted year car industrial add new type of fuel (type c) and increse type e , p fuel.

The fourth chart

```
##Transform Data
mpg$cyl <- as.character(mpg$cyl)
class(mpg$cyl)
```

```
## [1] "character"
```

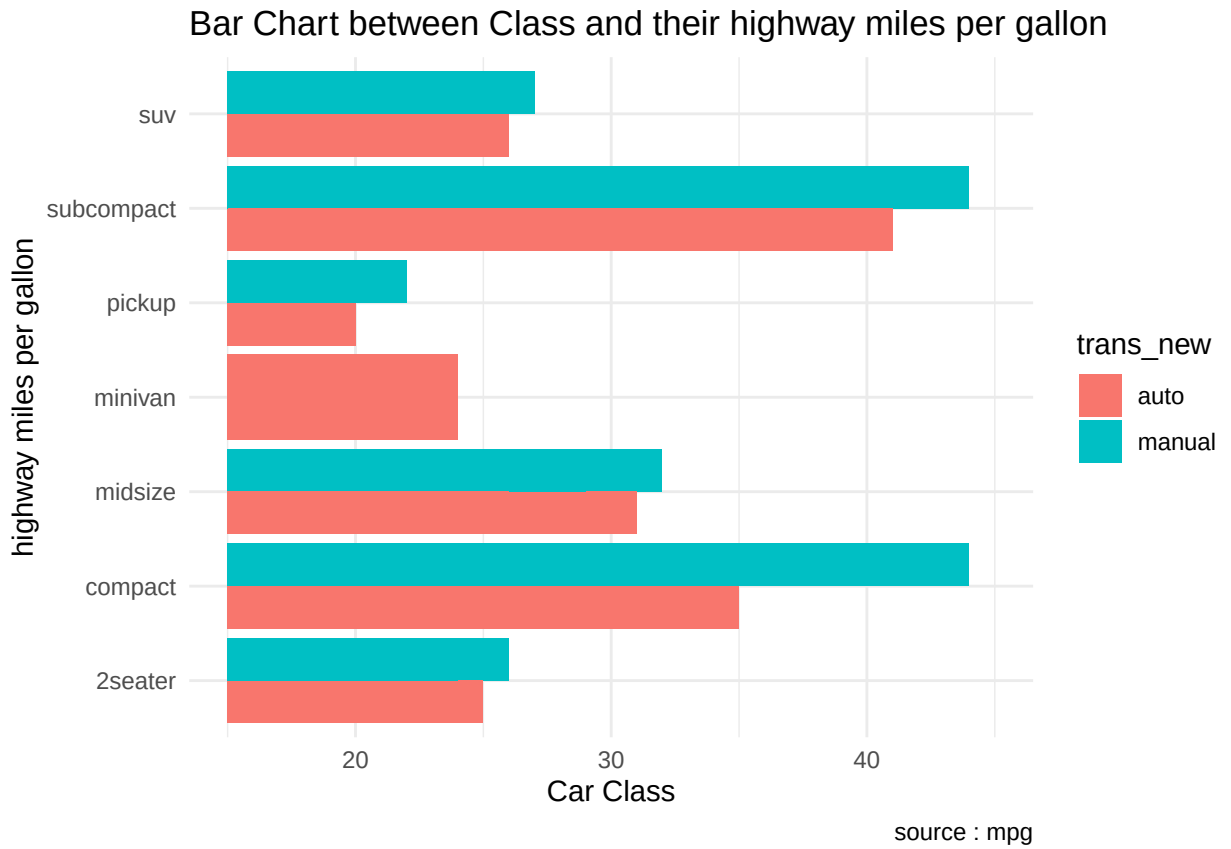
```
##Plot
mpg %>%
ggplot() +
  geom_boxplot(aes(cty, hwy, col = cyl)) +
  theme_minimal()+
  labs(title = "Boxplot compare number of cylinder in fuel consumption",
       x = "city miles per gallon",
       y = "highway miles per gallon",
       caption = "source : mpg")
```



From the boxplot, the number of cylinder = 4 is the best in fuel consumption on both highway and city.

The fifth chart

```
ggplot(mpg, aes(hwy, class, fill = trans_new)) +
  geom_col(position = "dodge") +
  scale_x_continuous(limits = c(15, 45),
                     oob = scales::squish) +
  labs(
    title = "Bar Chart between Class and their highway miles per gallon",
    x = "Car Class",
    y = "highway miles per gallon",
    caption = "source : mpg") +
  theme_minimal()
```



The Bar chart shows all of manual type have better than auto type car on fuel consumption (on highway) and especially in Compact class. So if you have to drive on hihgway or long distance the class compact and subcompact in manual type are the interesting choices.