

Homework data viz

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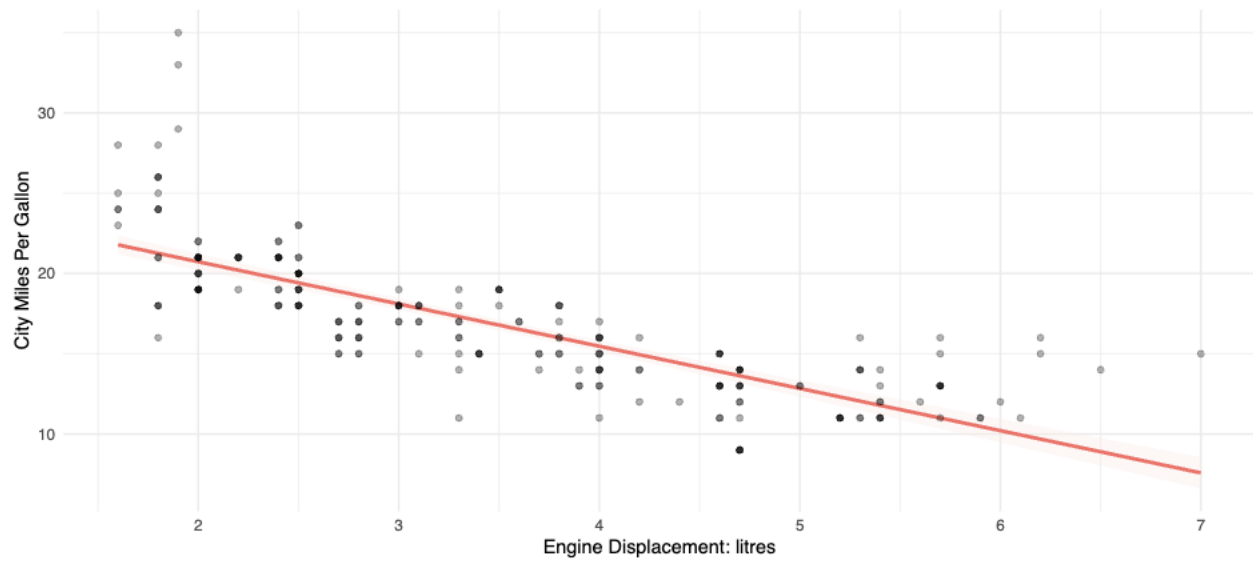
Homework

Explore data

```
## # 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(l5) 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(l5) f      16    26 p   compa~
## 6 audi          a4      2.8  1999     6 manual(m5) f      18    26 p   compa~
```

1. Correlation between engine displacement (litres) and city miles per gallon

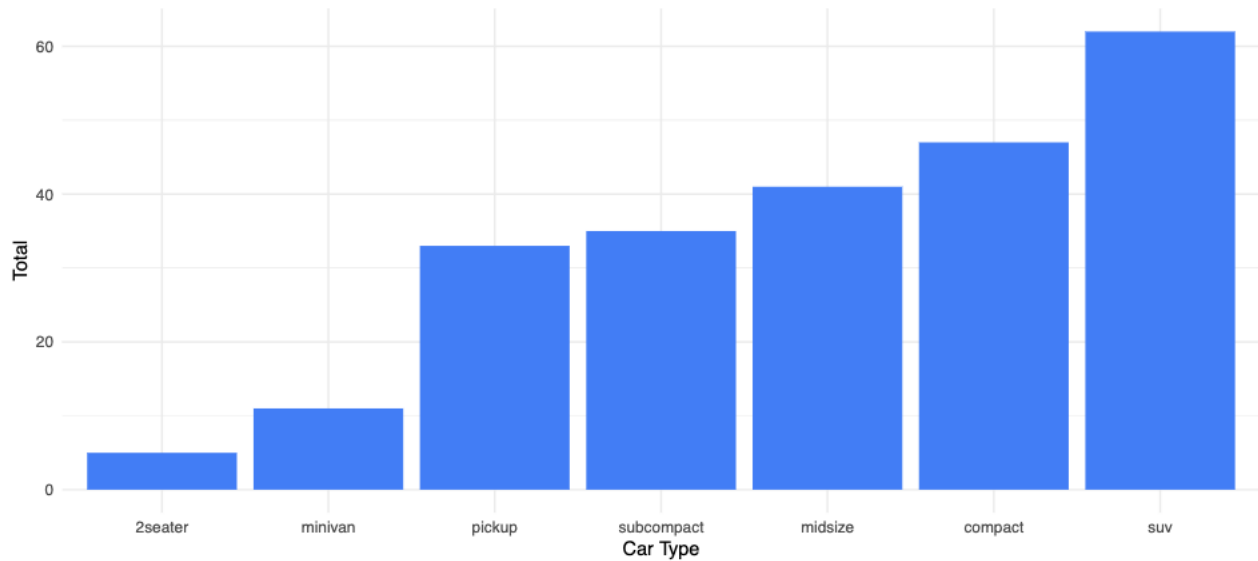
```
ggplot(data = mpg,
       mapping = aes(x = displ, y = cty)) +
  geom_smooth(method = "lm", fill = "#FCEAE6", color = "#EA7369") +
  geom_point(alpha = 0.3) +
  theme_minimal() +
  labs (
    x = "Engine Displacement: litres",
    y = "City Miles Per Gallon"
  )
```



The graph shows a correlation between engine displacement (litres) and city miles per gallon. According to the graph, as engine displacement increases, city miles per gallon decreases which means that the smaller engine displacement consume less fuel in city driving conditions.

2. Number of cars in each car type from 1999 to 2008

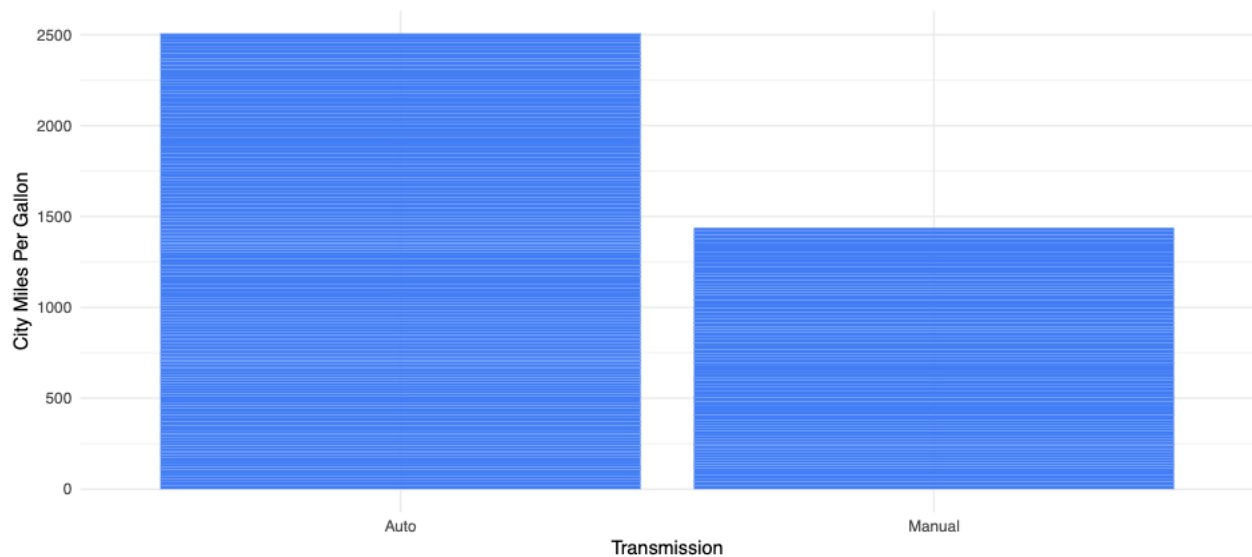
```
mpg %>%
  count(class) %>%
  ggplot(data = ., aes(x = reorder(class, n), y = n)) +
  geom_col(fill = "#427ef5") +
  theme_minimal() +
  labs(
    x = "Car Type",
    y = "Total"
  )
```



The graph shows that the most common car types released between 1999 and 2008 were SUVs, followed by compact, midsize, subcompact, pickup, minivan, and 2-seater cars.

3. City mile per gallon for auto and manual transmission

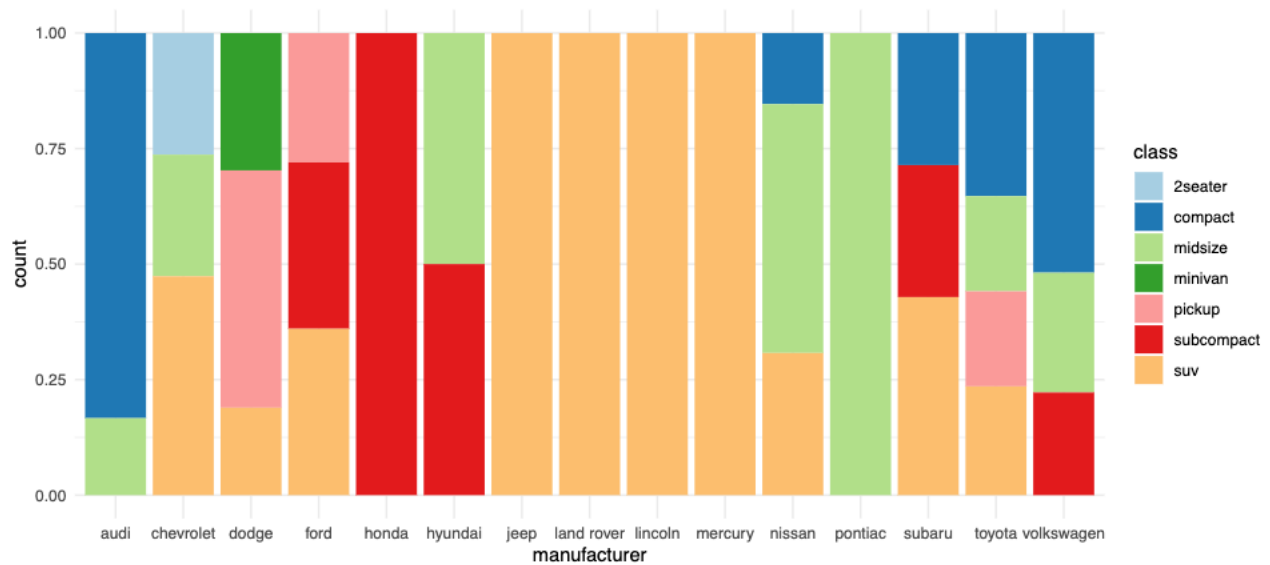
```
mpg %>%  
  mutate(trans2 = if_else(grepl("auto", trans), "Auto", "Manual")) %>%  
  ggplot(data = ., aes(x = trans2, y = cty)) +  
  geom_col(fill = "#427ef5") +  
  theme_minimal() +  
  labs(  
    y = "City Miles Per Gallon",  
    x = "Transmission"  
  )
```



The graph shows that cars with auto transmissions achieve higher city miles per gallon compared to cars with manual transmissions. This implies that a car with an auto transmission can travel farther on the same amount of fuel or consume less fuel in city driving conditions.

4. Proportion of each car type in each manufacturer

```
ggplot(data = mpg, aes(x=manufacturer, fill = class)) +  
  geom_bar(position = "fill") +  
  scale_fill_brewer(palette = "Paired") +  
  theme_minimal()
```



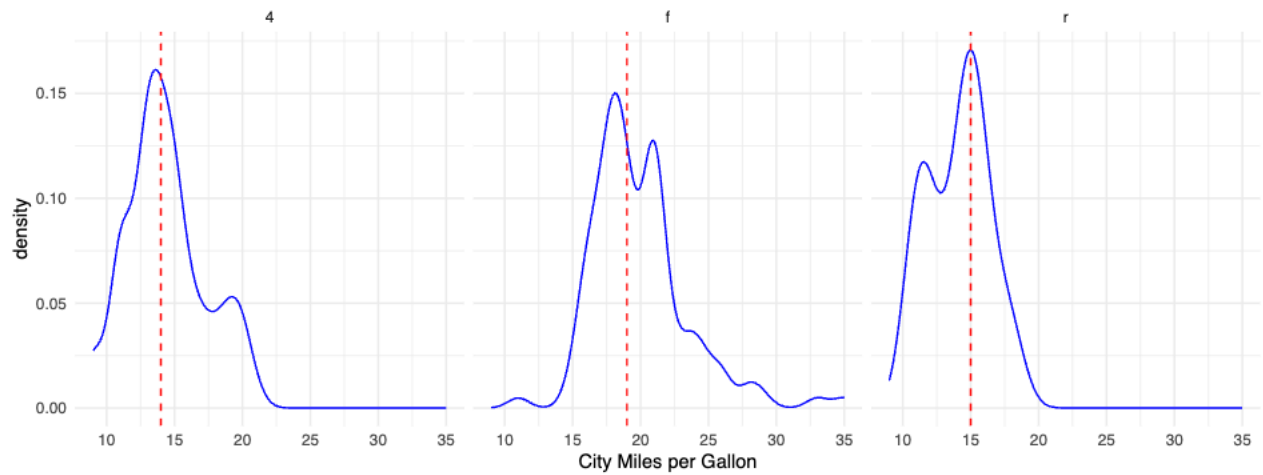
Six manufacturers, including Jeep, Land Rover, Lincoln, Mercury, Pontiac, and Honda, only offered one car type in their lineup. This sole offering was an SUV for the first four brands, a midsize car for Pontiac, and a subcompact car for Honda. The remaining nine manufacturers offered a more diverse range, producing multiple car types.

5. Distribution of city miles per gallon for each car type of drive train

```
medians <- mpg %>%
  group_by(drv) %>%
  summarise(median_cty = median(cty))

ggplot(data = mpg, aes(x = cty)) +
  geom_density(color = "blue") +
  geom_vline(data = medians, aes(xintercept = median_cty),
    linetype = "dashed", color = "red") +
  theme_minimal() +
  facet_wrap(~drv, ncol = 4) +
  labs(
    x = "City Miles per Gallon",
    title = "Distribution of city miles per gallon for each car type",
    subtitle = "Description of car type: 4 = 4-wheel drive, f = front-wheel drive,
      r = rear-wheel drive"
  )
```

Distribution of city miles per gallon for each car type
 Description of car type: 4 = 4-wheel drive, f = front-wheel drive,
 r = rear-wheel drive



According to the graph, the distribution of city miles per gallon varies across car types. Front-wheel drive vehicles achieve the highest median city miles per gallon, followed by rear-wheel drive and then four-wheel drive.