

# Your Assignment



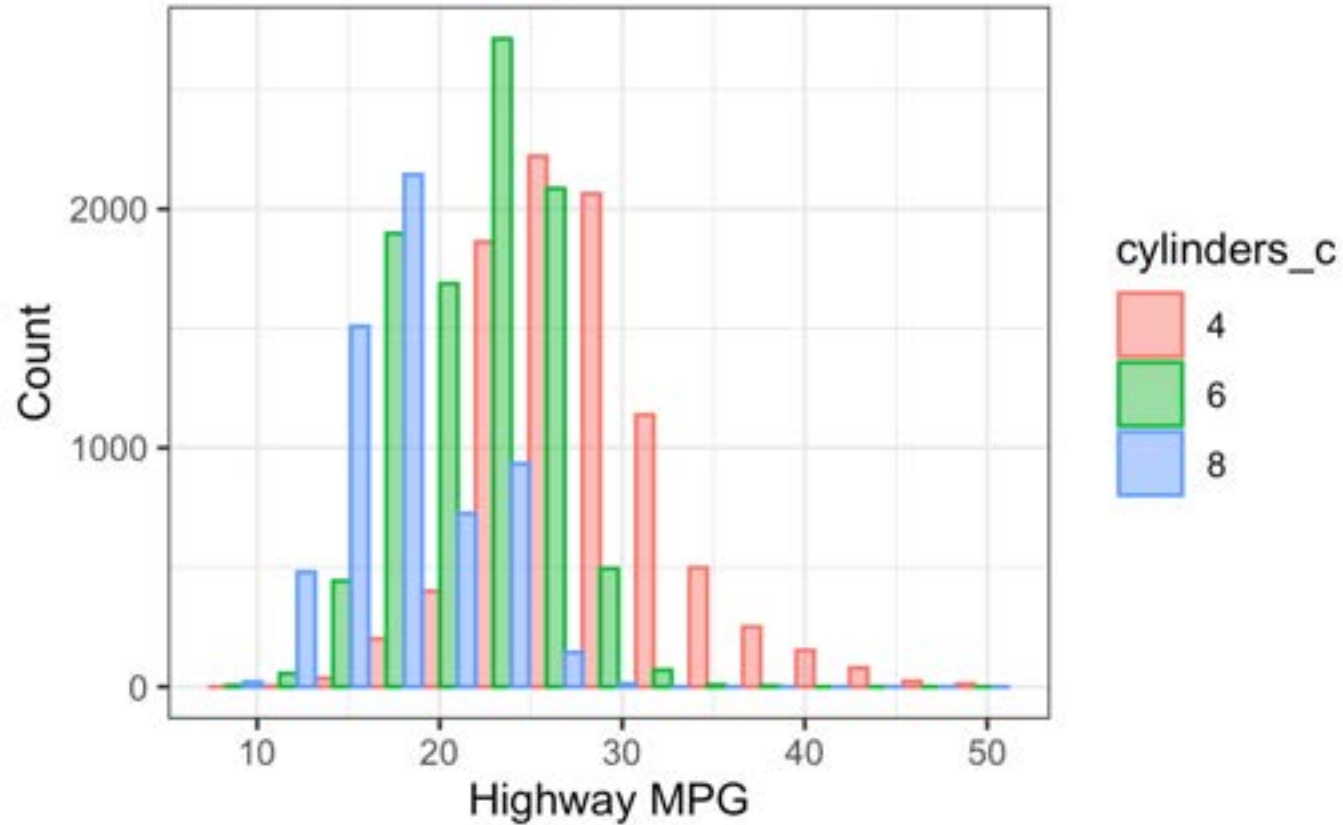
# Data Visualization Assignment

- The International Energy Agency has asked for your help in creating a report on the field efficiency of cars from 1984 to 2015. Your task is to create an r-markdown report based on data I'll give you.
- You are required to create a report with **at least 5 visualizations and narratives** that summarize your key findings from exploring the data.
- Examples of questions you could ask include: how has fuel efficiency changed? How does fuel efficiency differ across different types, models, and characteristics of cars? What recommendations can you make about the future of car production?
- Turn in your report on Ilias.

# Data Set

- Fuel efficiency data from the Environmental Protection Agency.
- Download from Ilias
- Let's see if we can recreate some visuals

Highway MPG by Cylinders



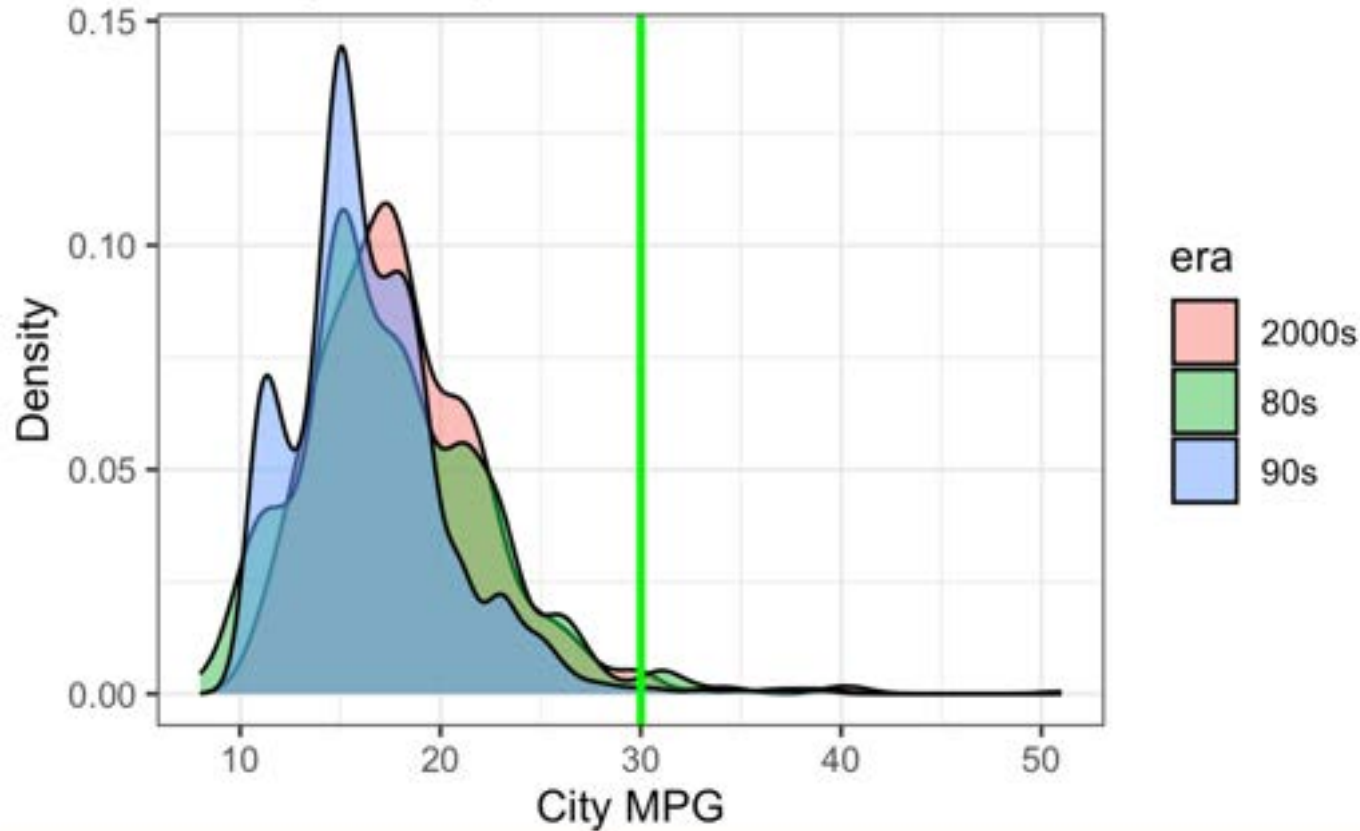
```
data_1_answer <- cars %>%  
  filter(cylinders %in% c(4,6,8)) %>%  
  mutate(cylinders_c = as.factor(cylinders)) %>%  
  select(make, model, mpg_hwy, cylinders_c)
```

Summarizes the distributions of highway gas mileage across 4-, 6-, and 8-cylinder vehicles.

## Hints

- Use a `geom_histogram` (customized the bins = 15, alpha = .5, and position = dodge properties)
- This uses a `theme_bw()`
- Customize the labels

Density of City MPG for the 80s, 90s, and 2000s

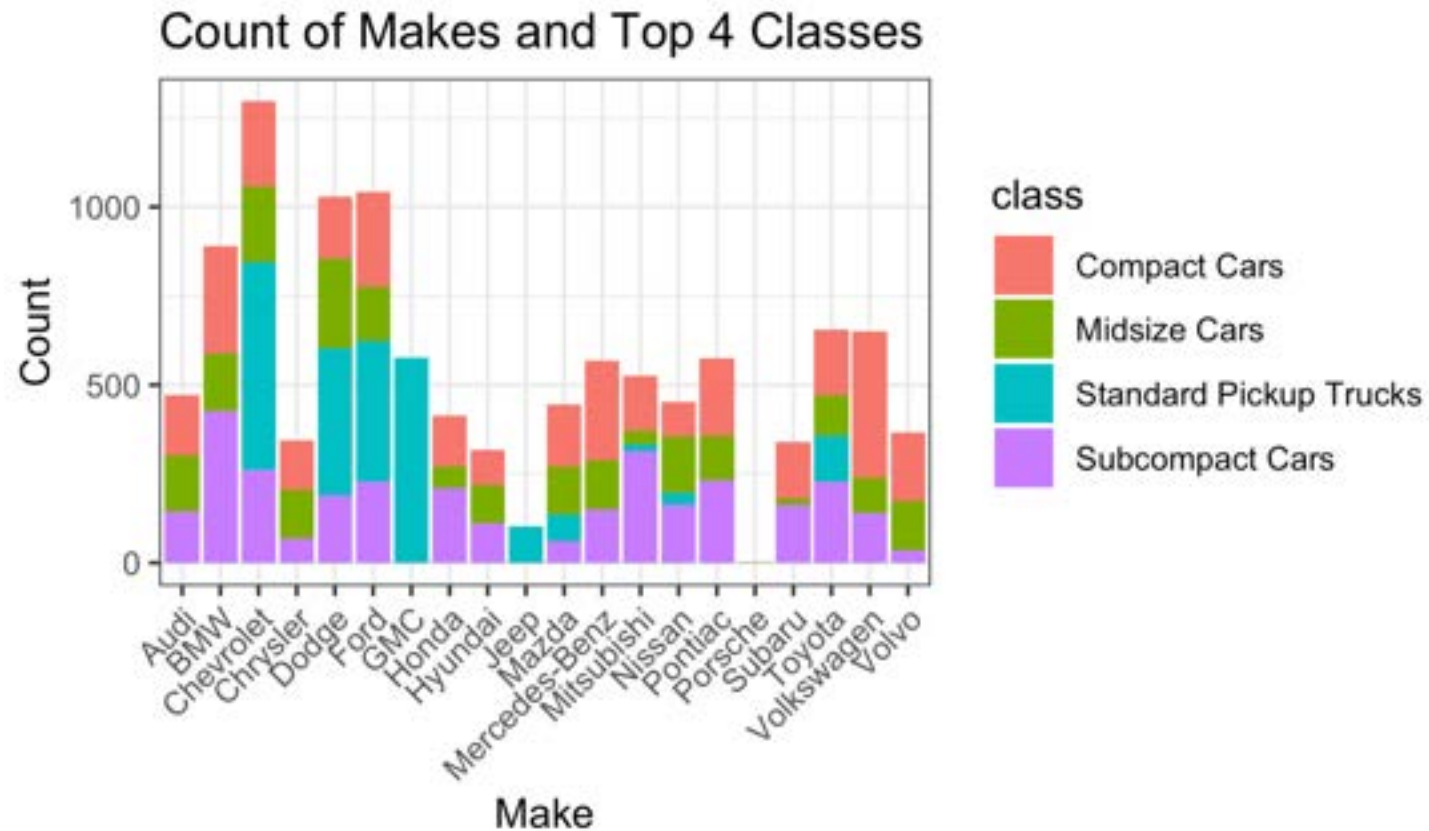


See if gas mileage shows any signs of improving over time. Filter data to years 1985, 1995, and 2010 only.

## Hints

- Use a `geom_density` (customized the alpha property)
- Add a `geom_line` (`xintercept = 30`, `size=1`, `color=green`)
- This uses a `theme_bw()`
- Customize the labels

```
data_2_answer <- cars %>%  
  filter(year %in% c(1985, 1995, 2010)) %>%  
  mutate(era = ifelse(year == 1985, '80s',  
                      ifelse(year == 1995, '90s', '2000s')))  
  select(make, model, mpg_city, era)
```

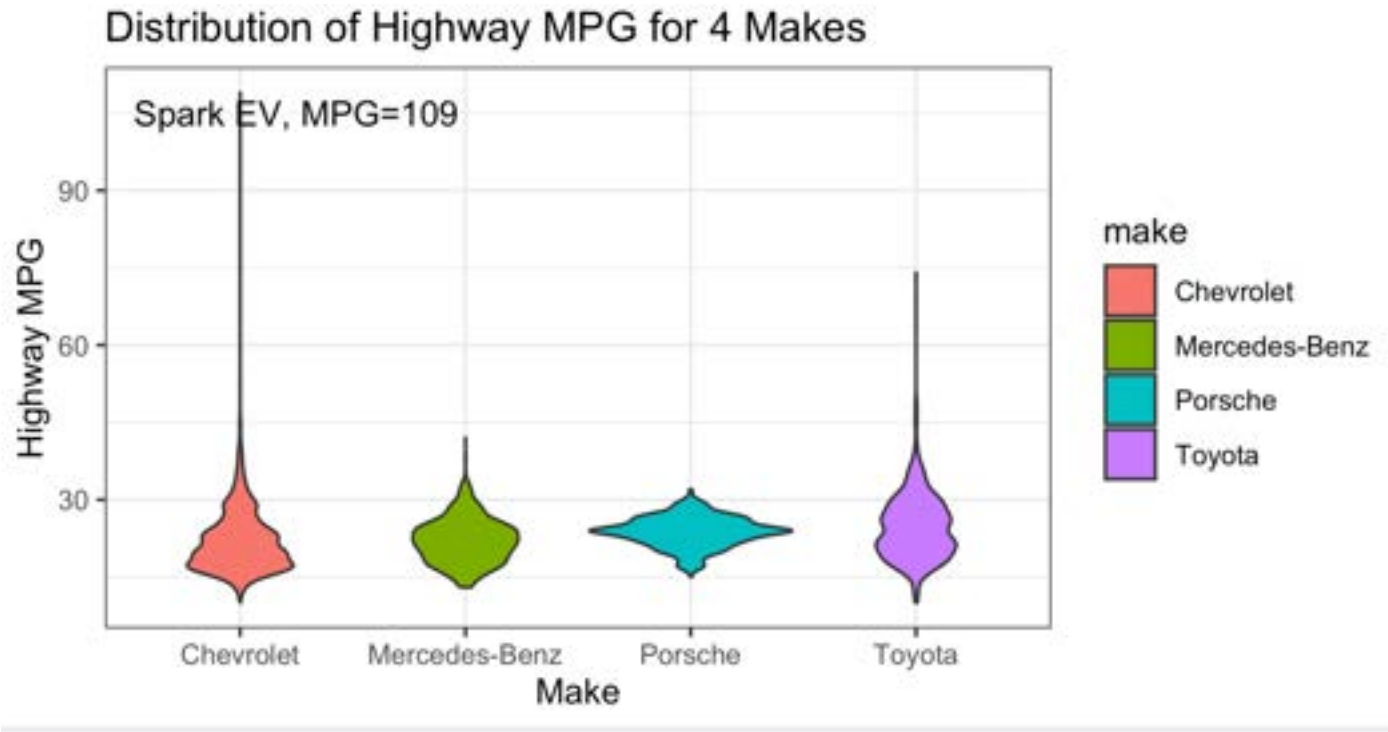


## Count and Make of Top 4 Classes for Makes

### Hints

- Use `geo_bar` (uses counts, not the values)
- This uses a `theme_bw()`
- Customize the labels
- Theme element `axis.text.x = element_text(angle = 45, vjust = 1, hjust=1)`

```
data_3_answer <- cars %>%
  filter(class %in% c('Compact Cars', 'Subcompact Cars',
                     'Standard Pickup Trucks', 'Midsize Cars')) %>%
  select(make, class)
```



```
data_4_answer <- cars %>%  
  filter(make %in% c('Chevrolet', 'Porsche', 'Mercedes-Benz', 'Toyota')) %>%  
  select(make, mpg_hwy)
```

Filter the data to include only data from the following 4 makes: Chevrolet, Porsche, Mercedes-Benz, Toyota. Show the distribution of the mpg\_hwy by the make.

## Hints

- Use `geom_violin`.
- This uses a `theme_bw()`
- Customize the labels
- Add text via `annotate`