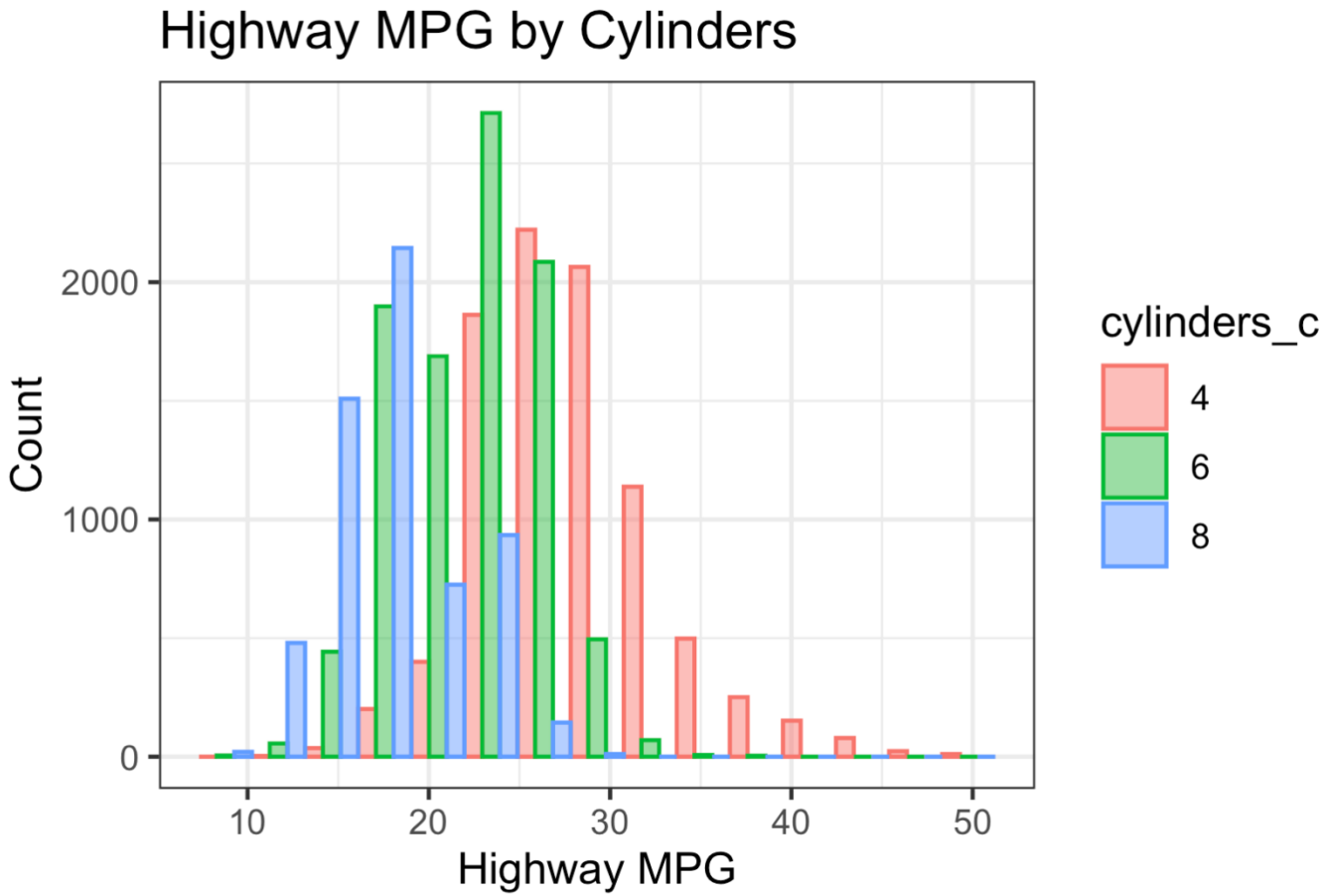
Your Assignment

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

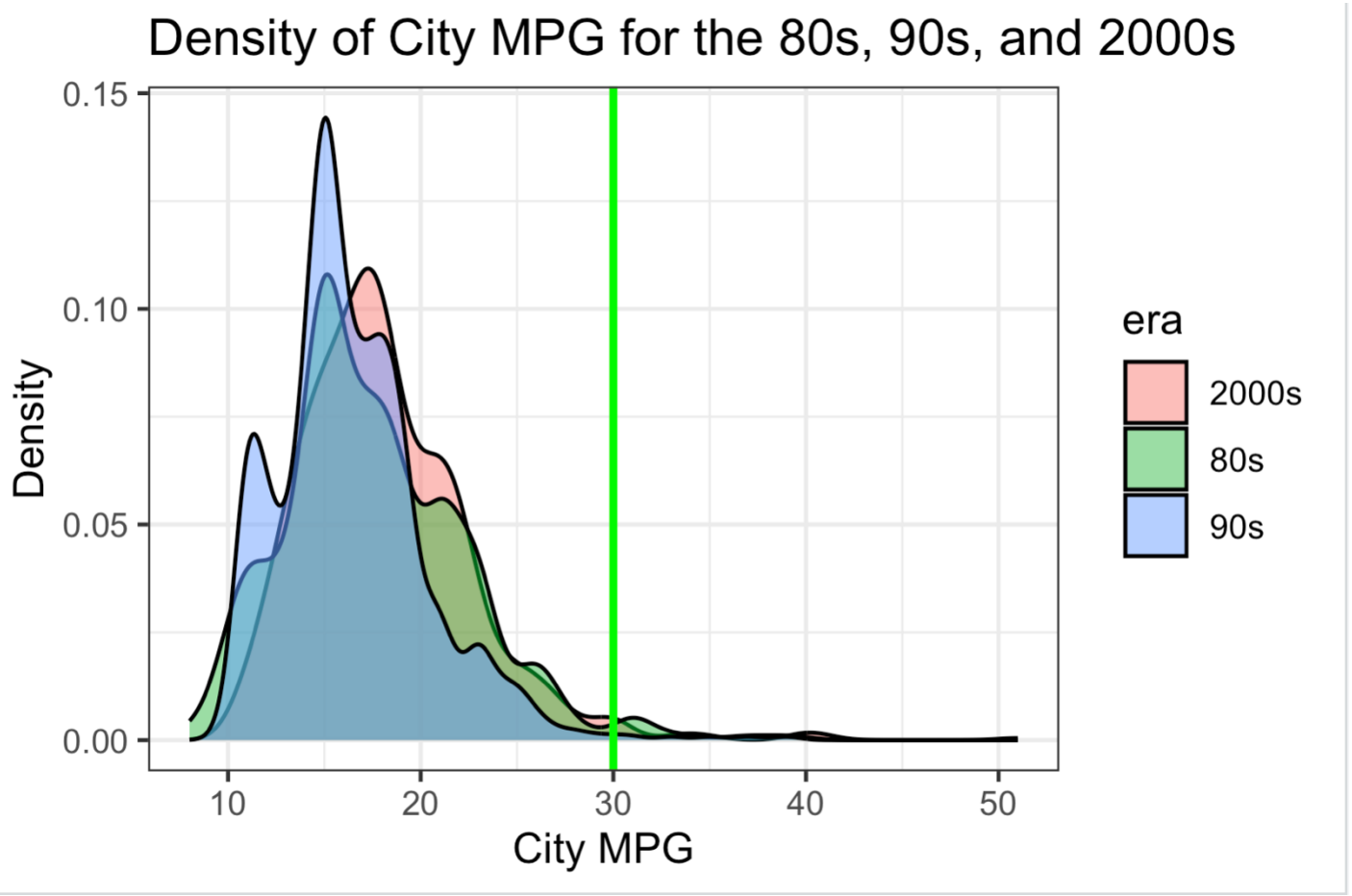



```
data_1_answer <- cars %>%
  filter(cylinders %in% c(4,6,8)) %>%
  mutate(cylinders_c = as.factor(cylinders)) %>%
  select(make, model, mpg_hwy, cylinders_c)
```

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

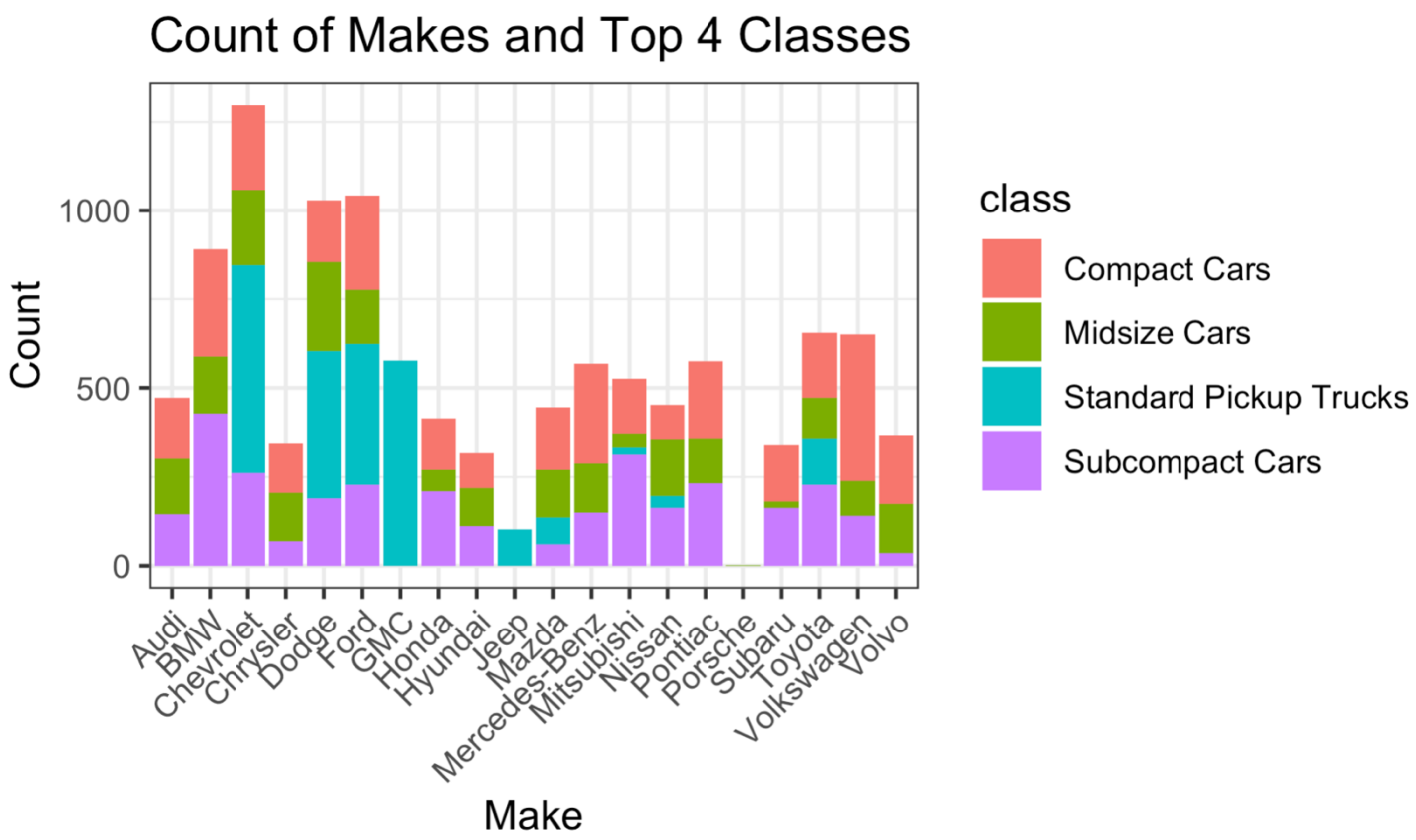


See if gas mileage shows any signs of improving over time. Filter data to years 1985, 1995, and 2010 only.

```
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)
```

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

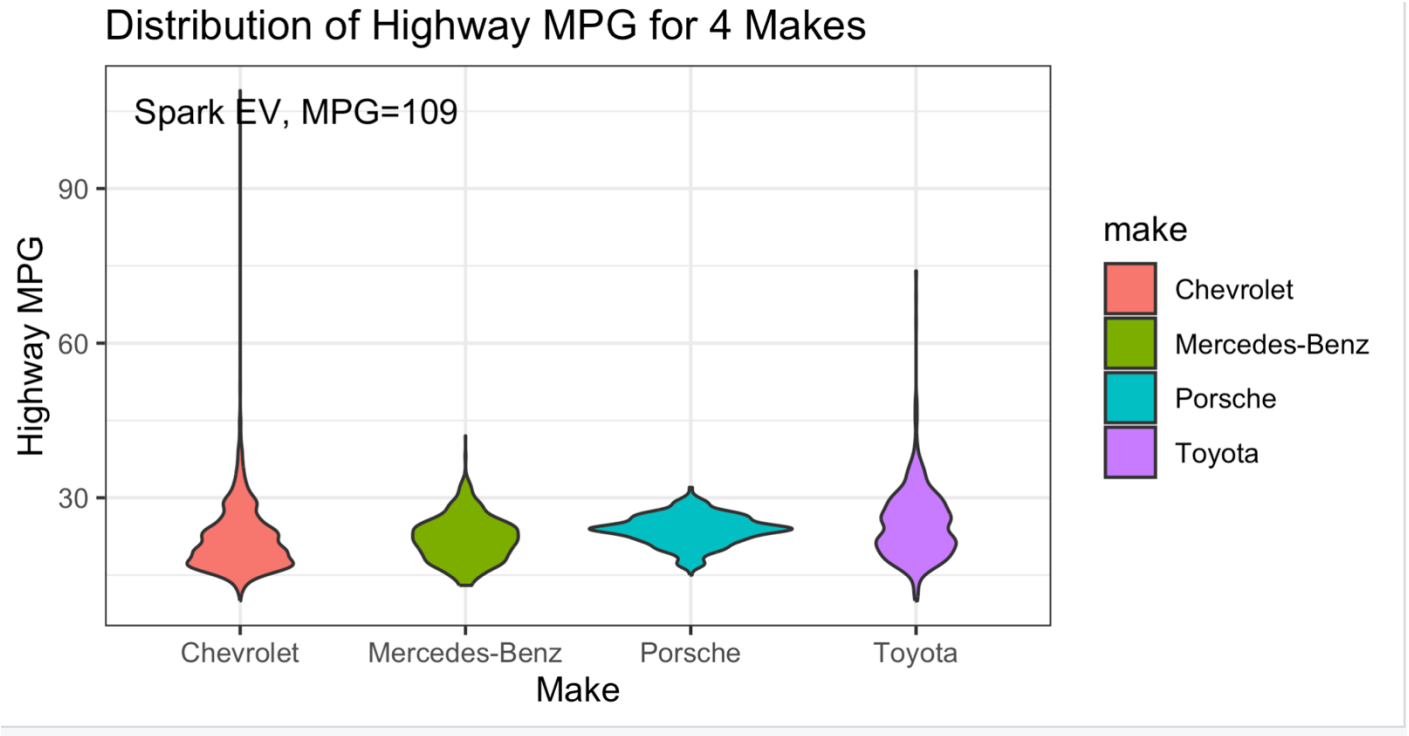


Count and Make of Top 4 Classes for Makes

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

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)



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

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