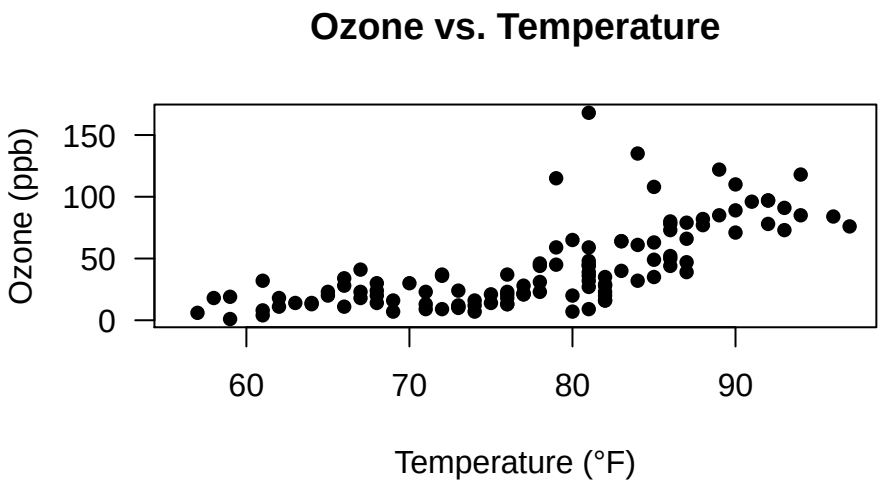
Exercise 5

Data visualisation

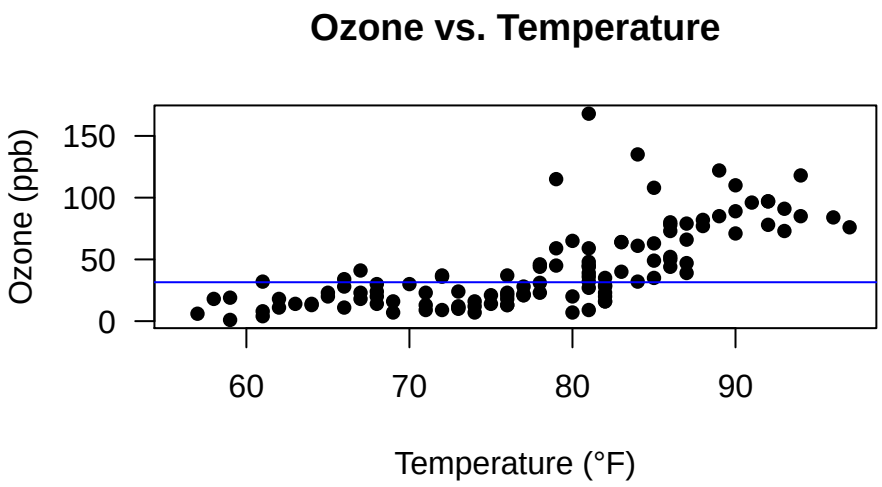
Visualise the `airquality` dataset

i) Load the internal dataset `airquality`

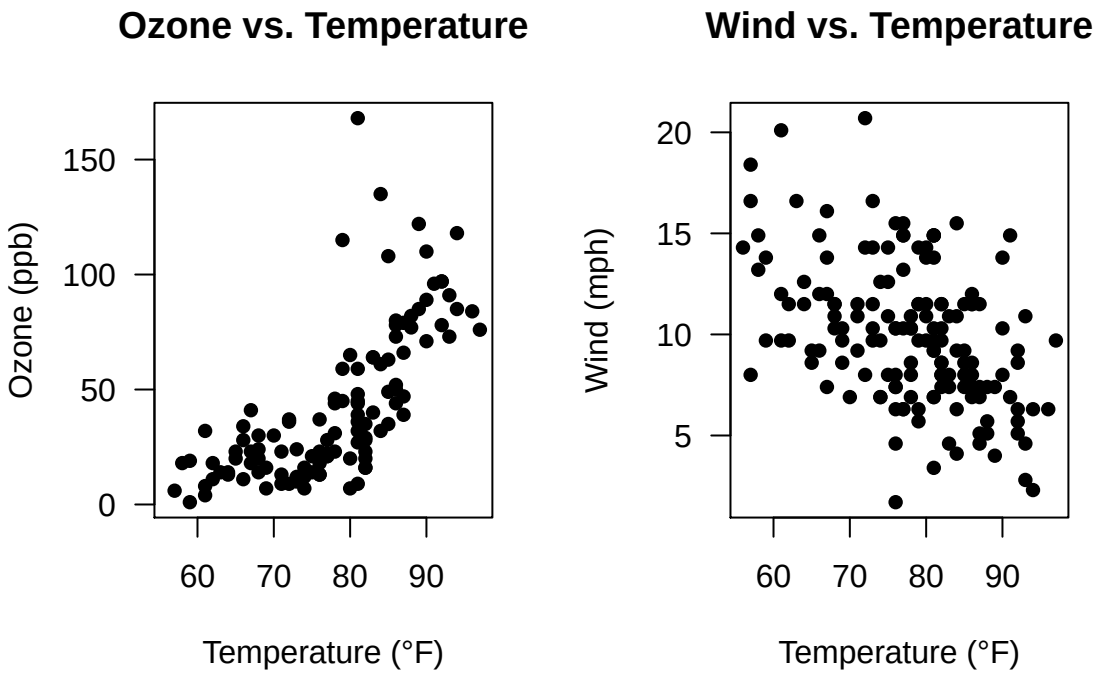
ii) Try to reproduce the plot shown below with `Temperature` on the x-axis and `Ozone` on the y-axis



iii) Calculate the median ozone concentration and add it to the plot as a line


Ozone vs. Temperature
Ozone (ppb)
150
100
50
0
60
70
80
90
Temperature (°F)

iv) Add a second plot on the right with `Temperature` on the x-axis and `Wind` on the y-axis



v) Save these plots as a PDF

For those who have time left:

vi) Calculate a linear regression between wind and temperature and add the regression line to the respective plot

Hints

i) Load the `airquality` dataset

- Use the command `data(airquality)` to load the dataset.

ii) Try to reproduce the plot shown below with `Temperature` on the x-axis and `Ozone` on the y-axis

- Axis labels: Check the arguments `xlab` and `ylab` (`?xlab, ?ylab`)
- Title: Check the argument `main` (`?main`)
- Horizontal axis numbering: Check the argument `las` (`?las`)

iii) Calculate the median ozone concentration and add it to the plot as a line

- Use the command `median` to calculate the median
  → Do not forget to remove `NA` values with `na.rm = TRUE`
- Use the function `abline` (`?abline`) to add a line to an existing plot

iv) Add a second plot on the right with `Temperature` on the x-axis and `Wind` on the y-axis

- Use the command `par(mfrow = c(1, 2))` to create two plot windows (`c(1, 2)` means 1 row and 2 columns).

v) Save these plots as a PDF
Use the following structure:

1. `pdf(file = "path_to_file/file_name.pdf")`
2. Code to produce the plots (as many lines of code as needed)
3. `dev.off()`

vi) Calculate a linear regression between wind and temperature and add the regression line to the respective plot

- Use the function `lm` (`?lm`) to calculate a linear regression
- Use the function `abline` (`?abline`) to add the regression line to the plot