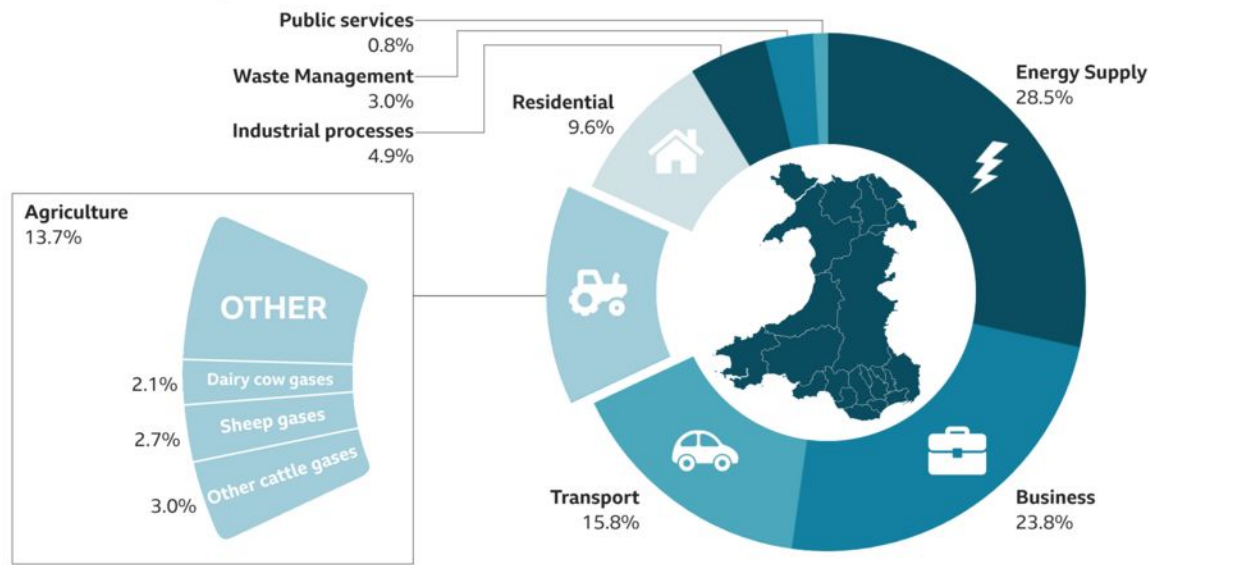# Homework 2

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The original visualization

The original plot is a pie chart created to present the distribution of greenhouse gases between different economic sectors and the sectors' percentage contribution to total emissions. It can be found on the page *bbc.com*. The data used to create the visualization belongs to UK National Atmospheric Emissions Inventory (*source*)

Figure 1: Where are the emissions coming from? (bbc.com)

Code and visualization

Since the dataset containing the data i needed for the visualization was difficult to work with, my decision was to extract the values needed and create new csv files. The plots I created are a flipped barplot, sorted by the amount of emitted gases by sector, and a regular barplot for the agriculture sector, as i wanted to separate this part of the plot from the rest.

Where are the emissions coming from?

Data for Wales, 2019 (bbc.com)
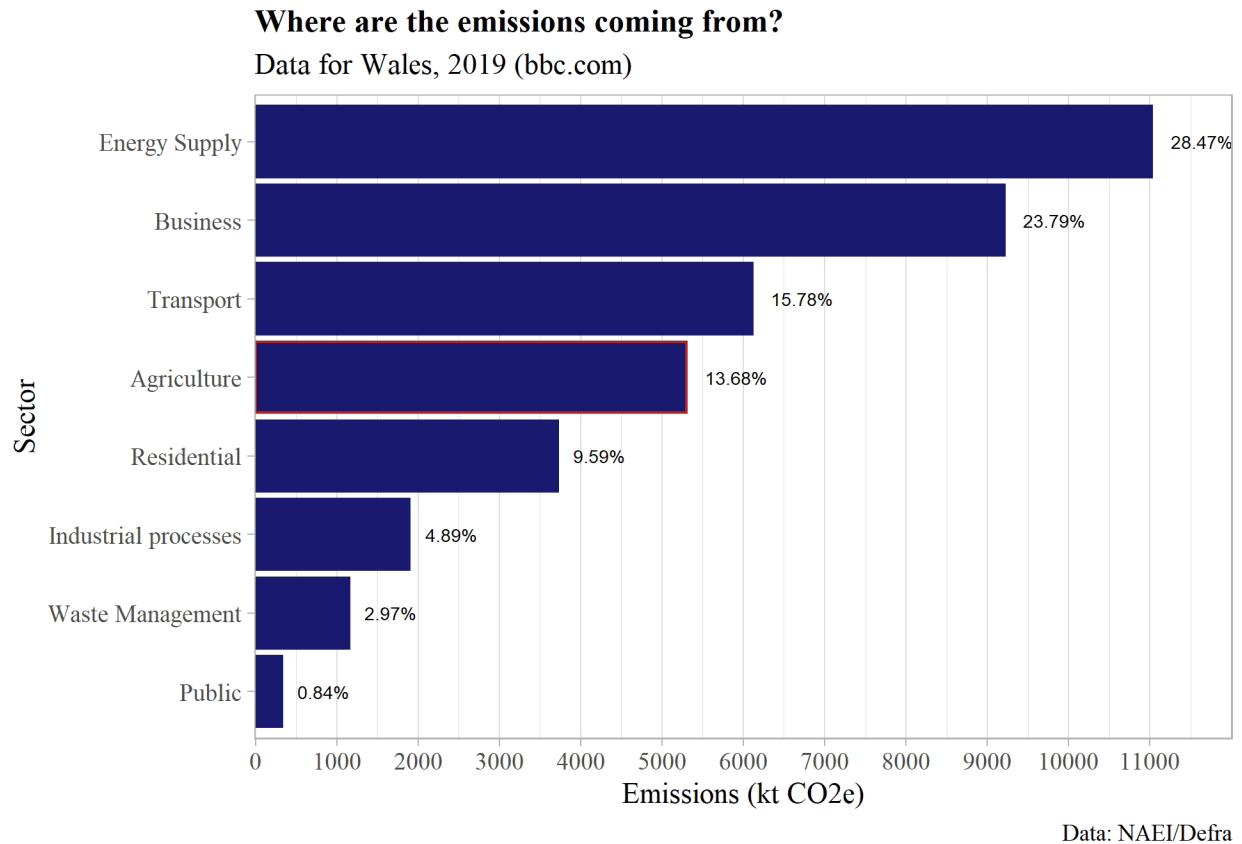
Data: NAEI/Defra

Are cows to blame?
Emissions in Agriculture sector

(% of total emissions in Wales, 2019)
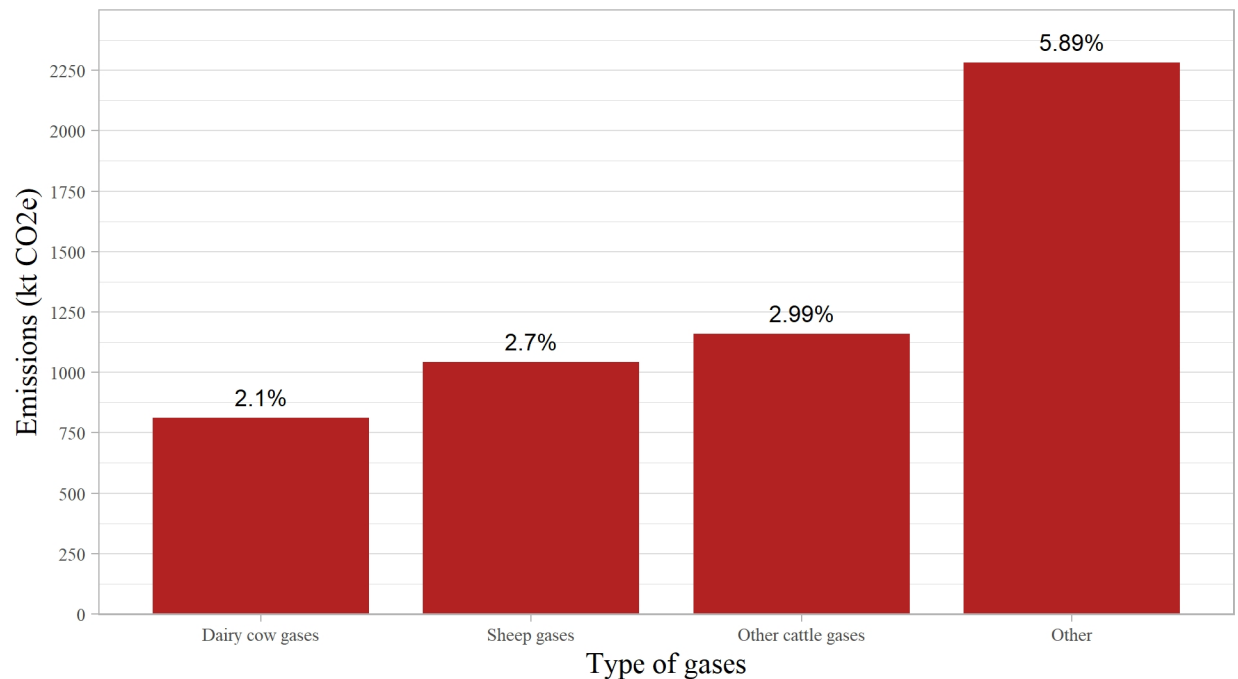
Data: NAEI/Defra

The code I used is presented below:

```
library(ggplot2)
library(readr)
library(cowplot)

# recreating the data

sectors <- read.csv("total.csv")
agriculture  <- read.csv("agri.csv")
sectors$Emissions_percentage <- round(sectors$Emissions / sum(sectors$Emissions) * 100,
                                      digits = 2)
agriculture$Emissions_percentage <- round(agriculture$Emissions / sum(sectors$Emissions) * 100,
                                      digits = 2)

# creating the plots

ggplot(sectors, aes(x = reorder(NCFormat, Emissions), y = Emissions)) +
  geom_col( fill = "midnightblue", color = rep(c("firebrick", 'midnightblue'),
                                              c(1, 7))) +
  geom_text(stat='identity',
          aes(label = paste(Emissions_percentage, "%", sep = "")),
          hjust = -0.3, size = 2.4) +
  coord_flip() +
  theme_light() +
  labs(title = "Where are the emissions coming from?",
```

```
      subtitle = "Data for Wales, 2019 (bbc.com)",
      caption = "Data: NAEI/Defra",
      x = "Sector",
      y = "Emissions (kt CO2e)") +
  scale_y_continuous(expand = c(0.001,0),
                     breaks = seq(0,11500,1000),
                     limits = c(0,12000)) +
  theme(panel.grid.major.y = element_blank(),
        text = element_text(family = "serif"),
        axis.text = element_text(size = 9),
        plot.title =  element_text(face = "bold", size = 12)) -> sectors_plot
ggsave("emissions.jpeg", quality = 100)


ggplot(agriculture, aes(x = reorder(Type, Emissions), y = Emissions)) +
  geom_col(width = 0.8, fill = "firebrick") +
  geom_text(stat='identity',
            aes(label = paste(Emissions_percentage, "%", sep = "")),
            vjust = -0.7, size = 3) +
  theme_light() +
  labs(title = "Are cows to blame? \nEmissions in Agriculture sector",
       subtitle = "(% of total emissions in Wales, 2019)",
       caption = "Data: NAEI/Defra",
       x = "Type of gases",
       y = "Emissions (kt CO2e)") +
  scale_y_continuous(expand = c(0.001,0),
                     breaks = seq(0,2250, 250),
                     limits = c(0,2500)) +
  theme(panel.grid.major.x = element_blank(),
        text = element_text(family = "serif"),
        axis.text = element_text(size = 7),
        plot.title =  element_text(face = "bold", size = 14)) -> agri_plot
ggsave("agriculture.jpeg", quality = 100)
```

Explanation

The original plot was not only difficult to read due to the palette it used, the given chart itself is difficult
for humans to take in because of inability to read the angles correctly. Moreover, we deal with a doughnut
chart, which makes us question if the areas or the angles of the figure are to be compared.
The barplot allows to read and compare the values much easier.Additionally, the grid and the colors used
make the plot visually pleasant, and the font theme used is one of those we are used to seeing in everyday
life. The fact that the columns are sorted is also worth mentioning since it lets you focus on the important
details and is more intuitive. Separating two plots helps to focus on the topic of each, whereas on the original
plot we had two points of focus, which could easily distract the reader.