Fundamentals of R:Homework 3

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For this homework, we work with a data-set that describes the donations that international organisations have received from 2000 to 2021 from various donors.

Before proceeding further, I first prepare my data-set

```
options(scipen = 999)

io_income <- io_income_rs %>%
  drop_na()
```

Question 1

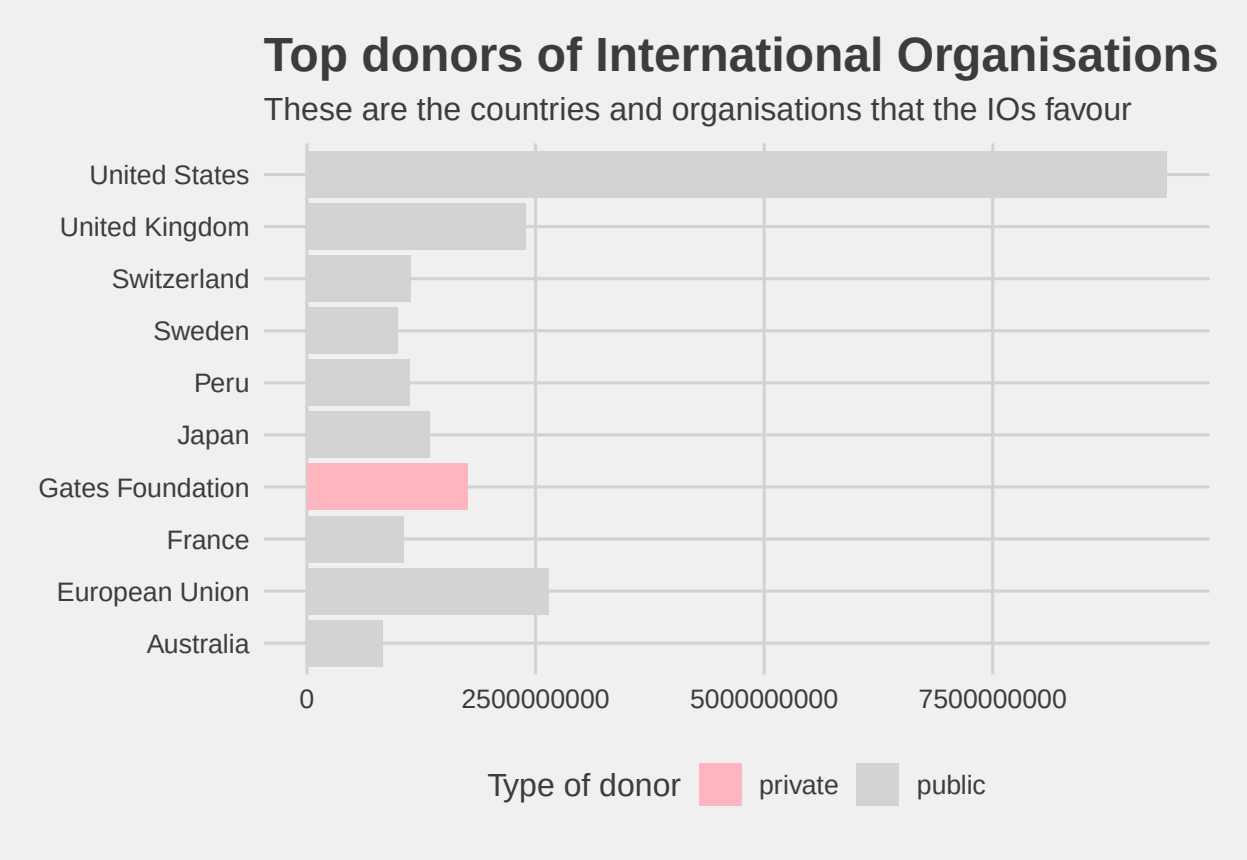
To create a bar-plot displaying the top 10 overall donors and their total donations to all international organisations

To do this, I first wrangle my data

```
io_income_q1 <- io_income %>%
  group_by(donor, type_donor) %>%
  summarise(Total_amount = sum(amount_nominal)) %>%
  arrange(-Total_amount) %>%
  filter(Total_amount > 831140823)
```

Plotting it,

```
io_income_q1 %>%
  ggplot(mapping = aes(x=donor, y=Total_amount, fill=type_donor)) + geom_col() +
  labs(x="Donors", y="Total amount donated", title = "Top donors of International Organisations",
              subtitle = "These are the countries and organisations that the IOs favour", fill="Type of
  scale_fill_manual(values=c("light pink", "light grey")) + theme_fivethirtyeight() + coord_flip()
```



Question 2

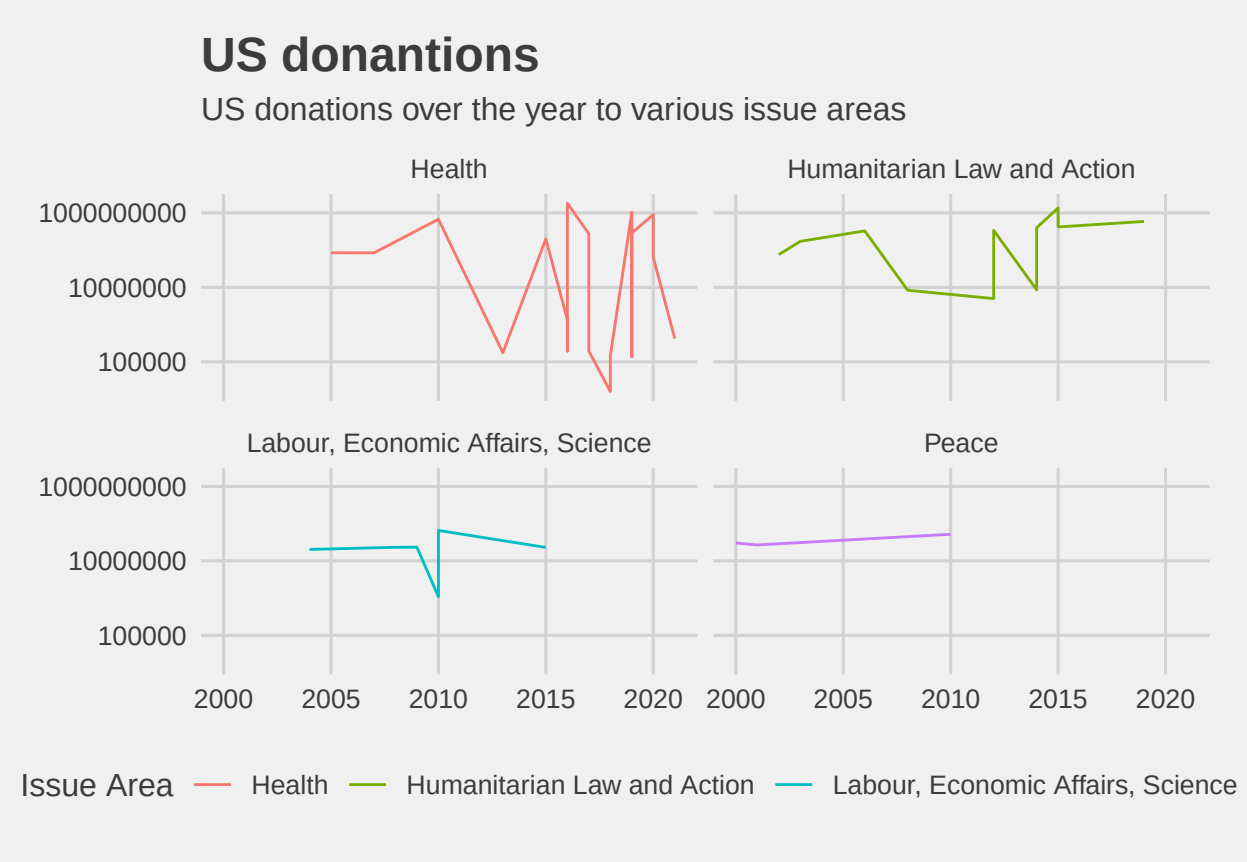
To plot the amount US donated to all issue area.

Wrangling the data,

```
io_income_q2 <- io_income %>%
  filter(donor=="United States") %>%
  group_by() %>%
  rename("Issue Area" =issue_area)
```

Plotting the data,

```
io_income_q2 %>%
  ggplot(aes(x=year, y=amount_nominal)) + geom_line(aes(color=`Issue Area`)) +
  labs(title="US donantions", subtitle = "US donations over the year to various issue areas",
       x="Year", y="Amount donated") +
  theme_fivethirtyeight() + facet_wrap(~`Issue Area`) + scale_y_log10()
```



From the plot, we see that while US donations to Labor, Economics Affairs, Science, Peace and Humanitarian Law and Action has not decreased, it has not increased drastically either. For health the donations have decreased significantly. Concluding that the total donations of the US does not decrease in nominal value. We confirm this result by,

```
io_income__q2_check <- io_income_q2 %>%
  group_by(year) %>%
  summarise(total=sum(amount_nominal)) %>%
  arrange(year)

io_income__q2_check[20,2] - io_income__q2_check[1,2]
```

```
##       total
## 1 933613381
```

We are therefore able to conclude that the total donations of the US have not gone down and has significantly increased, but it is important to note that we have not controlled for inflation.

Question 3

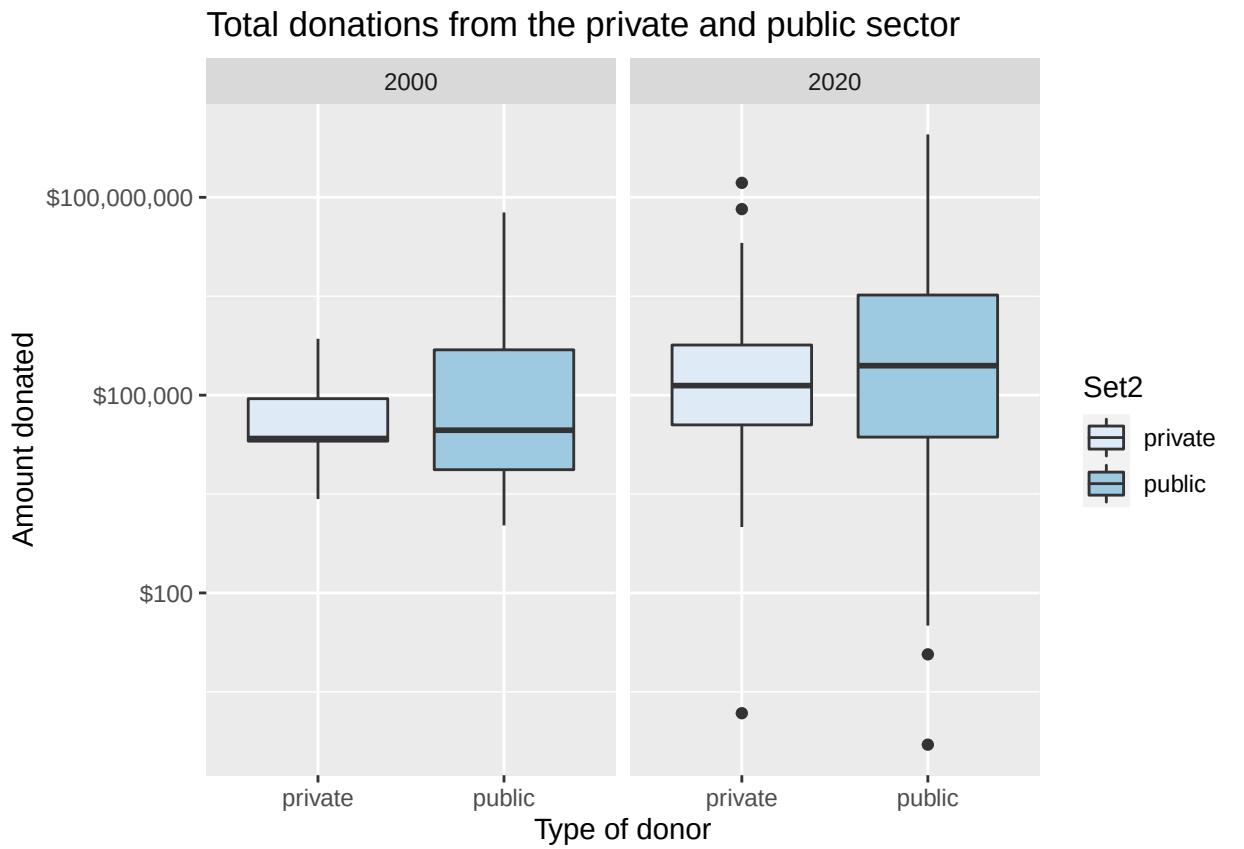
To compare private and public distributions for the year 2000 and 2020.

We do this by wrangling and plotting our data

```
io_income_q3 <- io_income %>%
  filter(year==2000|year==2020)

io_income_q3 %>%
  ggplot(aes(x=type_donor, y=amount_nominal, fill=type_donor)) +
```

```
  geom_boxplot() +labs(title = "Total donations from the private and public sector",
                       x="Type of donor", y="Amount donated" , fill = "Type of donor") +
  facet_wrap(~year) + scale_y_log10(labels = scales::dollar) + scale_fill_brewer("Set2")
```



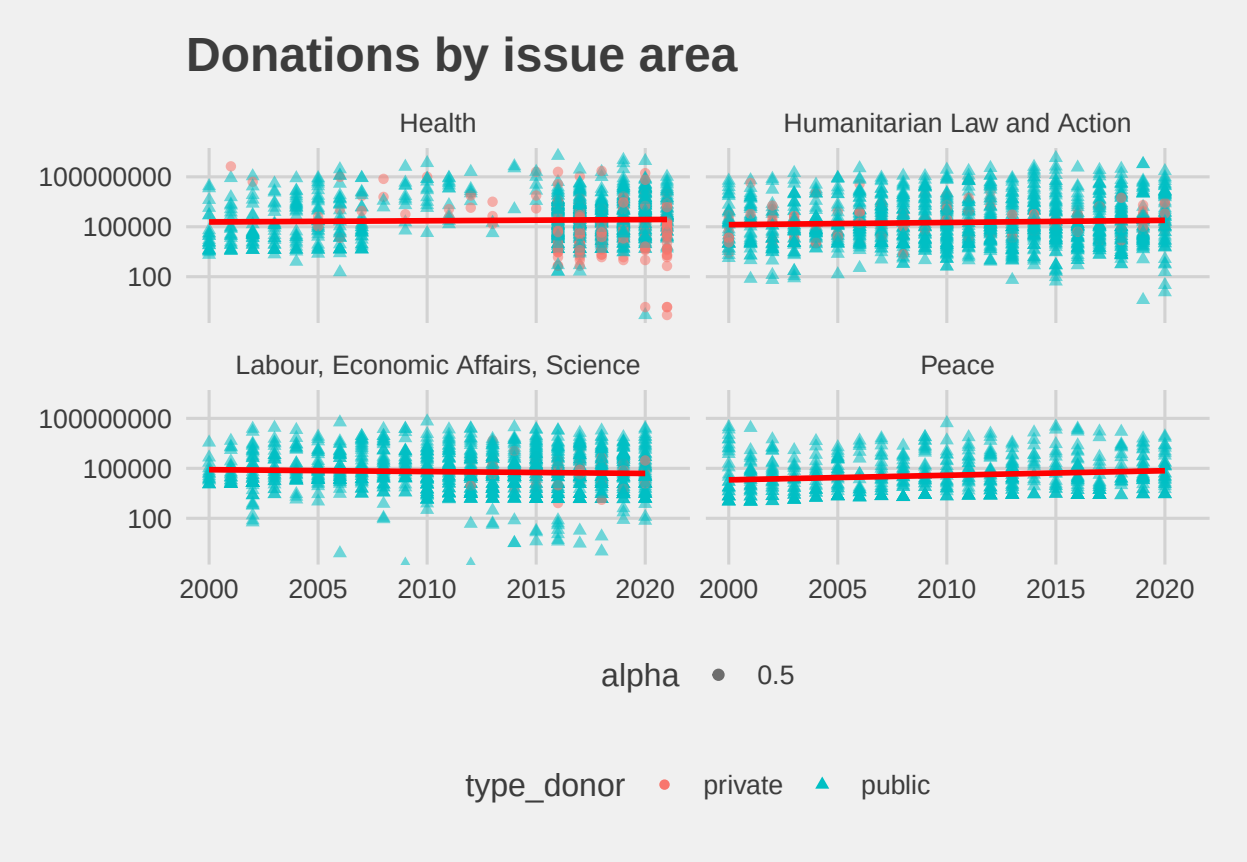
From the plot, we note that there are no outliers in the year 2000. We also note that there are outliers in 2020 for both private and public donors.

Question 4

To create scatter plots for all the issue areas.

Wrangling and plotting the data acordingly,

```
io_income %>%
  ggplot(aes(x=year, y=amount_nominal)) + geom_point(aes(shape = type_donor, color= type_donor, alpha=.5
  facet_wrap(~issue_area) + geom_smooth(method = "lm", color="red" ) + labs(title = "Donations by issue
```


Donations by issue area
Health
Humanitarian Law and Action
Labour, Economic Affairs, Science
Peace
100000000
100000
100
2000
2005
2010
2015
2020
alpha
0.5
type_donor
private
public