

1st Year Exam Question 10

Isabel Mejia A13671511

I will use `read.csv()` to import the COVID-19 variant data from the California Health and Human Services open data site. The `head()` will help me visualize the first few lines of the csv file to get an idea of what the data looks like

```
variant_data <- read.csv("covid19_variants.csv")
head(variant_data)
```

	date	area	area_type	variant_name	specimens	percentage
1	2021-01-01	California	State	Epsilon	29	48.33
2	2021-01-01	California	State	Other	29	48.33
3	2021-01-01	California	State	Gamma	0	0.00
4	2021-01-01	California	State	Delta	0	0.00
5	2021-01-01	California	State	Beta	0	0.00
6	2021-01-01	California	State	Alpha	1	1.67

	specimens_7d_avg	percentage_7d_avg
1	NA	NA
2	NA	NA
3	NA	NA
4	NA	NA
5	NA	NA
6	NA	NA

In this next chunk, I will load the appropriate packages to help with graphing of the data (Lubridate will help with dealing with dates, dplyr will help with filter and isolating which data to graph, ggplot will help with the actual plotting)

```
library(lubridate)
```

Warning: package 'lubridate' was built under R version 4.2.2

Loading required package: timechange

Warning: package 'timechange' was built under R version 4.2.2

Attaching package: 'lubridate'

The following objects are masked from 'package:base':

date, intersect, setdiff, union

```
library(dplyr)
```

Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

filter, lag

The following objects are masked from 'package:base':

intersect, setdiff, setequal, union

```
library(ggplot2)
```

Warning: package 'ggplot2' was built under R version 4.2.2

Using as.Date to convert the characters representing the date to the class "Date"

```
variant_data$date <- as.Date(variant_data$date)
```

The data in the data table includes the sum of the variants but I do not want that on my plot so I am going to filter those rows out

```
variants_only <- filter(variant_data, percentage<100)  
head(variants_only)
```

	date	area	area_type	variant_name	specimens	percentage
1	2021-01-01	California	State	Epsilon	29	48.33
2	2021-01-01	California	State	Other	29	48.33
3	2021-01-01	California	State	Gamma	0	0.00
4	2021-01-01	California	State	Delta	0	0.00
5	2021-01-01	California	State	Beta	0	0.00
6	2021-01-01	California	State	Alpha	1	1.67

	specimens_7d_avg	percentage_7d_avg
1	NA	NA
2	NA	NA
3	NA	NA
4	NA	NA
5	NA	NA
6	NA	NA

The data has unclassified variants as “Other” but I do not want to plot those so I am going to filter those out as well.

```
variants_name <- filter(variants_only, variant_name != "Other")
head(variants_name)
```

	date	area	area_type	variant_name	specimens	percentage
1	2021-01-01	California	State	Epsilon	29	48.33
2	2021-01-01	California	State	Gamma	0	0.00
3	2021-01-01	California	State	Delta	0	0.00
4	2021-01-01	California	State	Beta	0	0.00
5	2021-01-01	California	State	Alpha	1	1.67
6	2021-01-01	California	State	Omicron	1	1.67

	specimens_7d_avg	percentage_7d_avg
1	NA	NA
2	NA	NA
3	NA	NA
4	NA	NA
5	NA	NA
6	NA	NA

Here I will plot the filtered data using ggplot. I will plot the date and percentage for each variant using `geom_line()` and will color the data by the variant name to be able to distinguish the data for each variant.

```
variant_plot <- ggplot(variants_name)+
  aes(date, percentage, color=variant_name )+
  geom_line()
```

This line of code will edit the x and y labels. Add the title and caption and remove the label for the key

```
variant_plot <- variant_plot+
  labs(x="", y="Percentage of sequenced specimens",
        title="COVID-19 Variants in California",
        caption="Data Source: <https://www.cdph.ca.gov/>",
        color="")
```

This next line of code will change the scale of the x axis and will make it so the x axis ticks are 1 month apart. Additionally, the date_labels= will make it so the format is in Month and Year

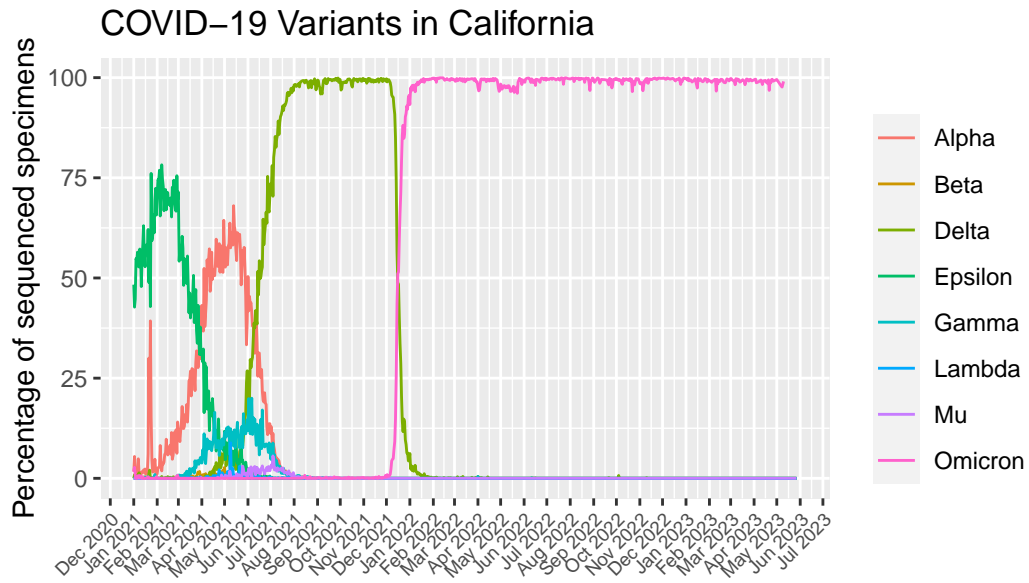
```
variant_plot <- variant_plot+
  scale_x_date(date_breaks = "1 month", date_labels = "%b %Y")
```

This line of code is to help format the axis labels, the angle rotates the text and the hjust will change the horizontal justification so the labels don't overlap the graph

```
variant_plot <- variant_plot+
  theme(axis.text.x = element_text(angle =45, hjust=1, size=7))
```

Now to actually see the plot!!!

```
variant_plot
```



Data Source: <<https://www.cdph.ca.gov/>>