Final Project Submission - Week 12

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Week 9

1. The topic that I have chosen for this project will be "Inflation". For this project, I will be investigating inflation rates worldwide and most importantly Singapore, analysing its global trends and the factors contributing to its rise or fall.

2. The data sources that I have curated so far are Inflation data by International Monetary Fund and Core Inflation of Singapore by Monetary Authority of Singapore.

Week 10

1. Why is inflation happening in Singapore?

2.

- According to Monetary Authority Singapore,inflation affects many areas of the economy hence there is a need to understand inflation to secure a low and stable inflation in the Singapore economy over time.
- Singapore has the second highest inflation rate in 2023 among the ASEAN 5 countries according to the data provided by International Monetary Fund.
- Inflation in Singapore has been persistently growing according to data from Monetary Authority Singapore.

3. For the dataset "Inflation_world", I will be using the columns of 'region' and 'Inflation_rate'.

```
## Warning: package 'tidyverse' was built under R version 4.2.3
```

```
## Warning: package 'ggplot2' was built under R version 4.2.3
```

```
## Warning: package 'tibble' was built under R version 4.2.3
```

```
## Warning: package 'tidyr' was built under R version 4.2.3
```

```
## Warning: package 'readr' was built under R version 4.2.3
```

```
## Warning: package 'purrr' was built under R version 4.2.2
```

```
## Warning: package 'dplyr' was built under R version 4.2.3
```

```
## Warning: package 'stringr' was built under R version 4.2.2
```

```
## Warning: package 'forcats' was built under R version 4.2.3
```

```
## Warning: package 'lubridate' was built under R version 4.2.3
```

```
## ── Attaching core tidyverse packages ───────────────────── tidyverse 2.0.0 ──
## ✓ dplyr     1.1.2     ✓ readr     2.1.4
## ✓ forcats   1.0.0     ✓ stringr   1.5.0
## ✓ ggplot2   3.4.3     ✓ tibble    3.2.1
## ✓ lubridate 1.9.2     ✓ tidyr     1.3.0
## ✓ purrr     1.0.1
## ── Conflicts ──────────────────────────────────── tidyverse_conflicts() ──
## ✗ dplyr::filter() masks stats::filter()
## ✗ dplyr::lag()    masks stats::lag()
## ℹ Use the ]8;;http://conflicted.r-lib.org/conflicted package]8;; to force all conflict
s to become errors
## Rows: 229 Columns: 2
## ── Column specification ─────────────────────────────────────────────
## Delimiter: ","
## chr (1): region
## dbl (1): Inflation_rate
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
## # A tibble: 229 × 2
##    region              Inflation_rate
##    <chr>                        <dbl>
##  1 Afghanistan                     NA
##  2 Albania                        4.8
##  3 Algeria                          9
##  4 Andorra                        5.2
##  5 Angola                        13.1
##  6 Antigua and Barbuda              5
##  7 Argentina                     122.
##  8 Armenia                        3.5
##  9 Aruba                          4.5
## 10 Australia                      5.8
## # ℹ 219 more rows
```

For the dataset "ASEAN_5_IMF", I will be using the columns of 'Year', 'Inflation_rate' and 'Country'.

```
## Rows: 115 Columns: 3
## ── Column specification ─────────────────────────────────────────────
## Delimiter: ","
## chr (1): Country
## dbl (2): Year, Inflation_Rate
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
## # A tibble: 115 × 3
##      Year Inflation_Rate Country
##     <dbl>          <dbl> <chr>
##  1  2001           11.5 Indonesia
##  2  2002           11.9 Indonesia
##  3  2003            6.8 Indonesia
##  4  2004            6.1 Indonesia
##  5  2005           10.5 Indonesia
##  6  2006           13.1 Indonesia
##  7  2007            6.3 Indonesia
##  8  2008            9.9 Indonesia
##  9  2009            4.8 Indonesia
## 10  2010            5.1 Indonesia
## # i 105 more rows
```

For the dataset "Inflation_SG", I will be using the columns of 'Year' and 'Inflation_rate'.

```
## Rows: 44 Columns: 2
## ── Column specification ──────────────────────────────────────────────────
## Delimiter: ","
## dbl (2): Year, Inflation_rate
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
## # A tibble: 44 × 2
##     Year Inflation_rate
##    <dbl>          <dbl>
##  1  1980            8.5
##  2  1981            8.2
##  3  1982            3.9
##  4  1983            1
##  5  1984            2.6
##  6  1985            0.5
##  7  1986           -1.4
##  8  1987            0.5
##  9  1988            1.5
## 10  1989            2.3
## # i 34 more rows
```

For the dataset "CPI_goods", I will be using the columns of 'Goods' and 'Weights'.

```
## New names:
## Rows: 15 Columns: 15
## ── Column specification
## ──────────────────────────────────────────────── Delimiter: "," chr
## (1): Goods dbl (13): 2019, 2020, 2021, 2022, 2021Q2...7, 2021Q3, 2021Q4,
## 2022Q1, 2022Q2... num (1): Weights1
## i Use `spec()` to retrieve the full column specification for this data. i
## Specify the column types or set `show_col_types = FALSE` to quiet this message.
## • `2021Q2` -> `2021Q2...7`
## • `2021Q2` -> `2021Q2...15`
```

```
## # A tibble: 15 × 15
##    Goods      Weights1 `2019` `2020` `2021` `2022` `2021Q2...7` `2021Q3` `2021Q4`
##    <chr>         <dbl>  <dbl>  <dbl>  <dbl>  <dbl>        <dbl>    <dbl>    <dbl>
##  1 "ALL ITE…     10000    100   99.8   102.   108.         102.     102.     104.
##  2 "Food"         2110    100  102.   103.    109.         103      104.     104.
##  3 "Food ex…       682    100  103.   104.    110.         104      105.     106.
##  4 "Food Se…      1428    100  101.   103.    108.         102.     103.     103.
##  5 "Clothin…       212    100   96.2   90.8    93.4         90.8     89.3     89.6
##  6 "Housing…      2484    100   99.7  101.    106.         100.     101.     103.
##  7 "Househo…       493    100  100.   102.    104.         102.     102      102.
##  8 "Health …       655    100   98.5   99.6   102.          99.4    100      100
##  9 "Transpo…      1707    100   99.3  108.    126.         107.     108.     114.
## 10 "Communi…       411    100  101.   100.     98.9         99.8     99.4     99.7
## 11 "Recreat…       789    100   98.2   99.2   104.          98.7     99.4    100.
## 12 "Educati…       663    100   99.4  101.    103.         100.     101.     101.
## 13 "Miscell…       476    100   98.8   98.3    98.7         98.4     98.1     98.2
## 14 "All Ite…      8250    100   99.7  102.    109.         102.     102.     104.
## 15 "All Ite…      7803    100   99.7  102.    109          102.     102.     104
## # ℹ 6 more variables: `2022Q1` <dbl>, `2022Q2` <dbl>, `2022Q3` <dbl>,
## #   `2022Q4` <dbl>, `2023Q1` <dbl>, `2021Q2...15` <dbl>
```

One challenge I faced was to clean and format the dataset such that R can read my data. For example, in the dataset "ASEAN_5_IMF", 'country' and 'year' were initally in rows instead of columns and hence R was not able to read and produce the result that I want. It took me a very long time trying to figure out the problem and find the best way to edit the Excel to get the end result. Another challenge I faced was to think of the question that I want to answer. The question cannot be too broad or too narrow as it will affect the rest of my data story. Therefore, to think of one, I need to exercise forward thinking and plan how the rest of my project will turn out so that I can achieve an organised data story that make sense.

Week 11

Question 1:

1. Choropleth Map (Inflation Rate of every country) - To illustrate that inflation rate is a worldwide issue and hence shows the importance for inflation to be tackled.
2. Multiple Line graph to compare the trend between the ASEAN 5 countries (X: Year, Y: Inflation Rate) - To show how Singapore has the second highest inflation rate in 2023 among the ASEAN 5 countries
3. Pie Chart (Consumer Price Inflation (CPI) Weights of each goods or service) - To show the relative importance of each good or service in the basket.
4. Multiple Line graph to compare the trend of CPI between the different type of goods in Singapore (X: Year, Y: CPI) - Compare the average price changes of a goods and services over time and determine which goods or services fluctuate the most.

Question 2:

1. Choropleth Map: Shiny & Leaflet

- A world map that shows and compare the inflation rates of every country for each year using different degree of colours and a slider that allow user to change the year.

2. Multiple Line graph: Shiny

- Select input menu that allow users to choose the countries that they want to plot.
- Slider to allow the user to choose the year interval

3. Pie Chart: Shiny

- Slider to allow the user to choose the year that they want to visualise

4. Multiple Line graph: Shiny

- Select input menu that allow users to choose the type of goods that they want to plot.
- Slider to allow the user to choose the year interval

Question 3:

```
## # A tibble: 5 × 2
##   Concepts          Week
##   <chr>             <chr>
## 1 Choropleth map    NA
## 2 Slider            8
## 3 Select input menu NA
## 4 Line graph        NA
## 5 Pie-chart         NA
```

Challenges:

As I was planning on how my datasets can come together to form a data story, I realised that it is very difficult to answer the question that i have set last week as my datasets are too specific for that question. Hence, I have decided to change my question to: Which type of goods contribute the most to the inflation in Singapore.

When I was considering how interactive I want my data to be, I found it challenging to envision the ideal format for my data visualisations. Striking the right balance was difficult, as it cannot be too simple and at the same time too complex for me to code. In light of this situation, I decided to explore various data visualisations and interactive options available on the internet. Eventually, I identified the most suitable ones that aligned with my specific needs and preferences.

Week 12

The main challenge that I faced this week was when I made modifications to my Shiny app and attempted to re-publish it, an error unexpectedly occurred. Despite multiple attempts, both on my own and with the assistance of TAs, the cause of the problem became clear only after some time. It was determined that the error was due to my wrong placement of the data files, rendering them undetectable by Shiny.