Visualising Inflation in Singapore Across Various Industries

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Introduction

The infographic published by The Straits Times features a heat map which visually represents the monthly inflationary impact on a wide range of key items, highlighting the varying rates of price changes across different categories of goods and services (e.g. food, healthcare, transportation, etc.) throughout the year. Through this visual tool, readers can gain a deeper understanding of the broader economic landscape and discern inflation trends and their impacts on essential goods and services in Singapore. In addition, this information allows readers to assess whether their personal experiences with inflation align with the actual data collected, offering a clearer picture of the economic environment.

Our team believes that several aspects can be improved to enhance readers' experience and understanding of the data. In this document, we outlined the strengths and weaknesses of the original heat map, suggested improvements, and provided an improved visualization. We also proposed interactive features that could be implemented to further enhance the visualization.
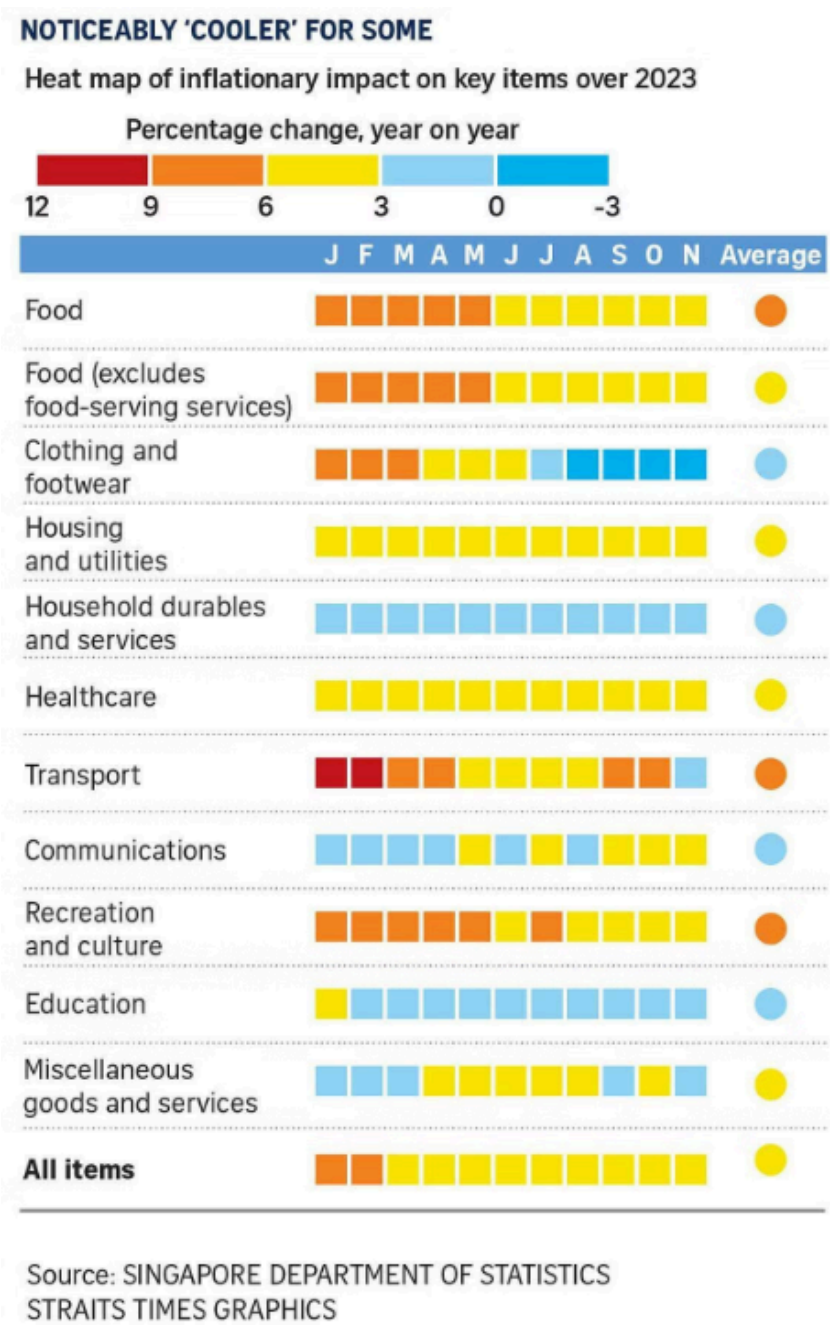
Previous Visualization

Figure 1: Heat map of inflationary impact on key items over 2023.

Strengths

1. The heat map has organized the information in different categories which allow users to see the impact of inflation towards different domains over the months from 2022 to 2023.

2. Each category is clearly labelled while being separated with padding and a line to ensure users can focus on one category at a time without accidentally reading information from another cat-

egory. This eases the visual load of the user and reduces the time needed for the users to understand the heat map.

3. The average column calculates the average change in the inflation rate between the years which allows the users to see the overall inflationary impact for the different domains.

4. The data source (from the Singapore Department of Statistics) has been credited at the end of the heat map.

Suggested Improvements

1. **Spelling out the months instead of just letters** provides a clearer understanding of the graph. Representing months with initials (e.g., JFMAMJJASON) can be ambiguous and not immediately recognizable, which increases the cognitive load for the reader. This makes the graph harder to interpret quickly.

2. **Including the change in the inflation rate from the past few years** allows readers to compare the trend of the inflation rate changes over the past years with the changes from 2023. This portrays the message of the poster more clearly as it shows the impact of inflation in 2023 compared to past years.

3. **Implementing a line chart instead of the heat map** allows readers to see trends more clearly as they do not have to refer to the color legend to understand the graph.

4. **Clarify or remove vague categories** such as:

   - *Food (excludes food-serving services).*
     This category requires more clarification on what services are being excluded.

   - *Miscellaneous goods and services.*
     This category is too generic and lacks context.

Implementation

Data

- The change in inflation rate from the past few years since 1962 from different domains were obtained from the SingStat website.[1] As the CSV file does contain missing data, we were able to remove the missing data from our table after filtering and selecting the relevant years needed for our plot.

Software

We used the Quarto publication framework and the R programming language, along with the following third-party packages:

- *readxl* for data import
- *tidyverse* which includes:
  - *ggplot2* for data visualization
  - *dplyr* for data transformation
- *knitr* for dynamic document generation
- *patchwork* to combine plots together

Improved Visualization

[1]https://www.singstat.gov.sg/-/media/files/publications/economy/cpiapr24.ashx
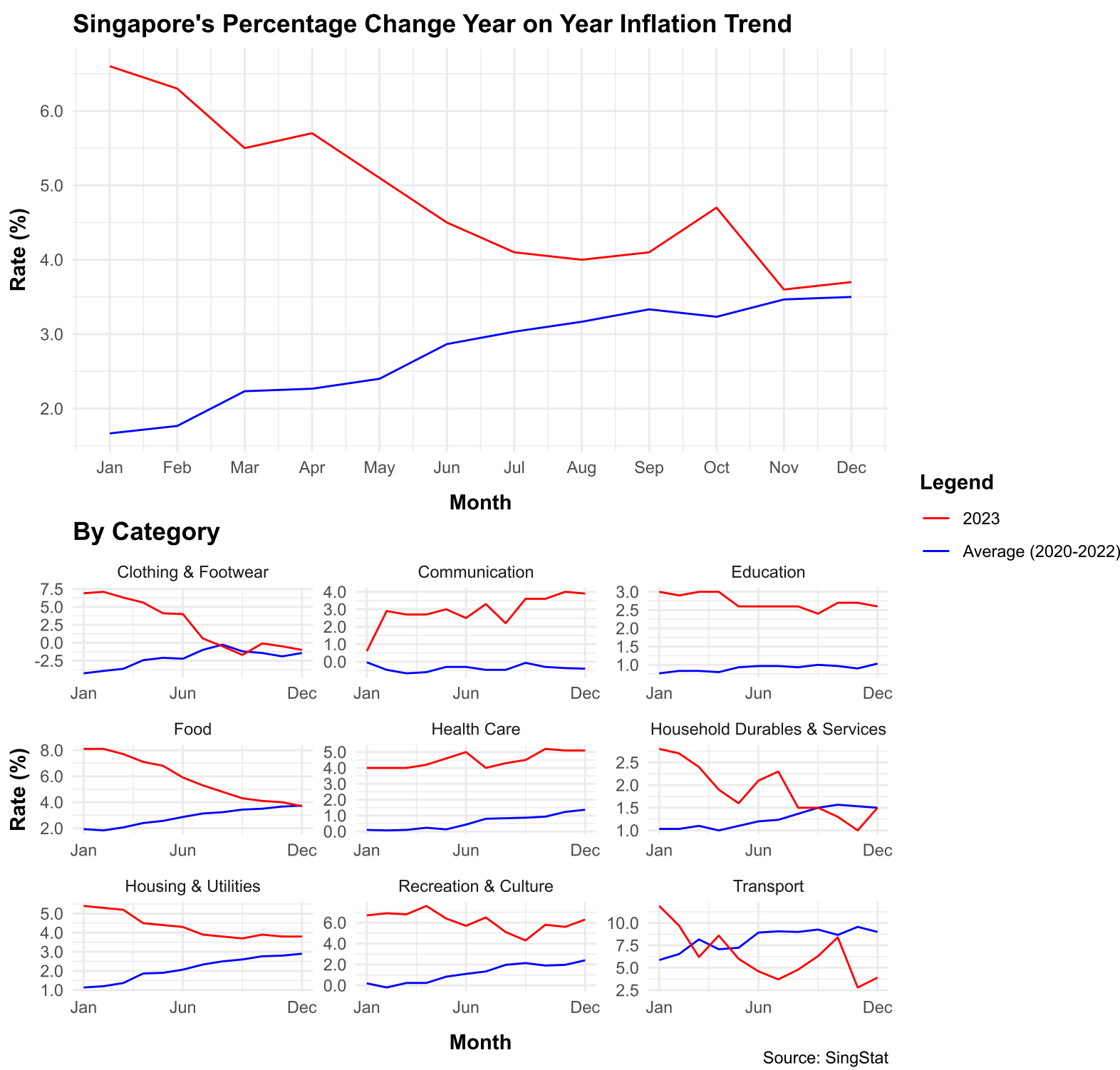
Further Suggestions for Interactivity

As the rubrics required our visualization to be non-interactive for a poster, we did not implement any interactive features. However, if the visualization were to be interactive, we would consider the following features:

1. **Interactive plots** for the users to dynamically select the number of years they would like to view for the inflation rate over the past few years. This can be achieved with the *plotly* library in R which helps to embed interactivity into web applications.

2. **Construct a dashboard** for users to interact with various elements of our chart and display the data that they want to see. This can be accomplished with the *shiny* library in R which helps to build complex dashboards and applications that display interactive plots, tables and other UI elements.

3. Another library that could help with interactivity is the *highcharter* library, which provides a simple interface for generating sophisticated and highly customizable charts.

Conclusion

We have successfully implemented all the suggested improvements for the non-interactive visualization. Adding additional past year's data allows users to compare trends of the change in inflation rate between 2023 and the average of the past few years, providing them with more valuable insights through means of comparison. Moreover, implementing a line chart further enhances the visualization of the trends in the plot.