Visualising Inflation in Singapore Across Various Industries

Chua Joshua, Lim Joshua, Ong Zi Xuan Max, Ray Lim Le Hao, Sherwyn Tan Wee Wen, Tan Jia Wen
(Information and Communication Technologies)

SINGAPORE INSTITUTE OF TECHNOLOGY

Introduction

The infographic published by The Straits Times provides a comprehensive overview of how prices have changed in 2023. Featuring a heat map, it visually represents the monthly inflationary impact on a wide range of key items. This illustration highlights 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.
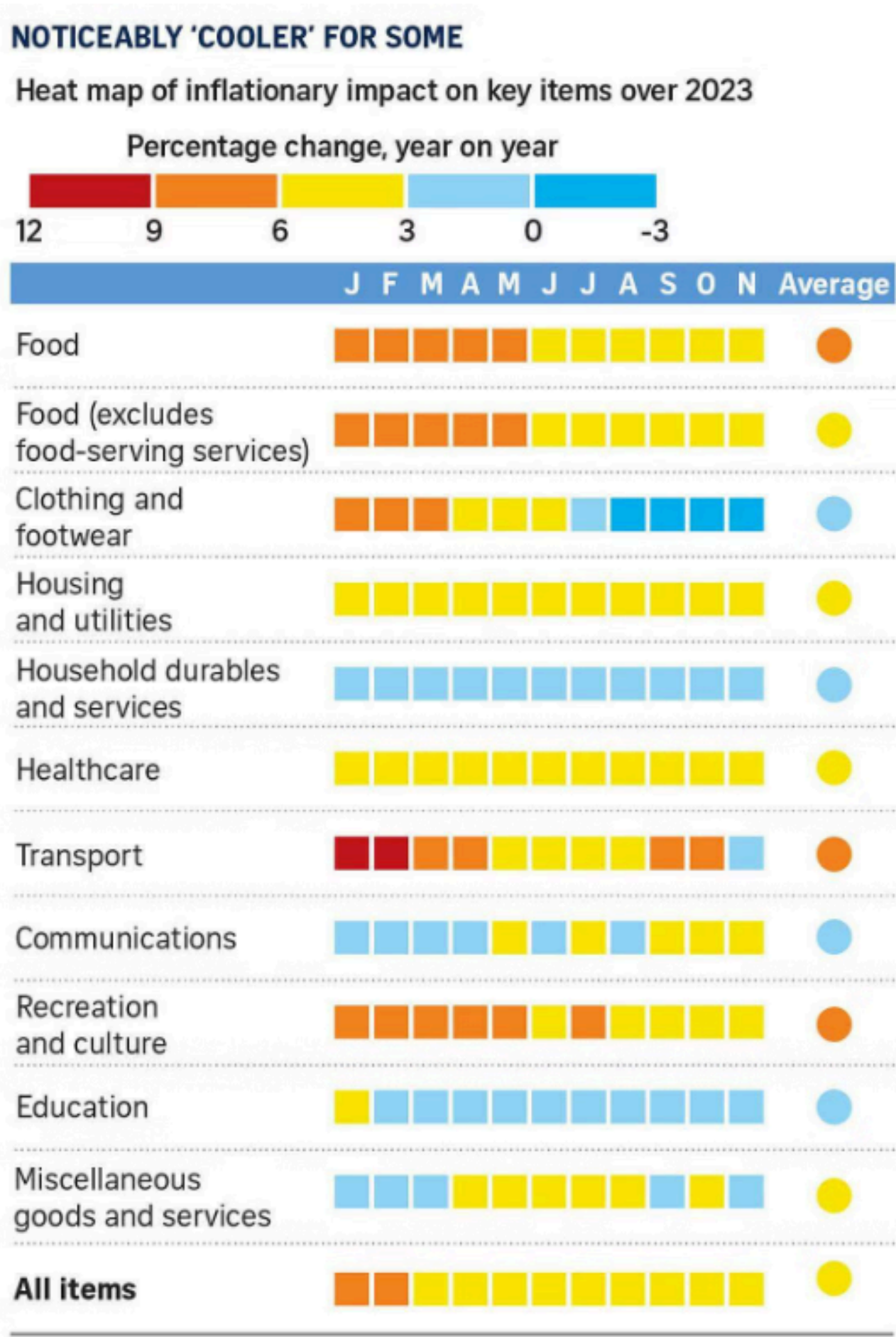
Previous Visualization

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

Strengths

- The use of heatmap design allows the data to be visually intuitive, enabling the users to determine changes in inflation rate more efficiently on a year on year basis.
- The heatmap has organized the information in different categories which allow users to compare the impact of inflation towards different domains over the months from 2022 to 2023.
- 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 category. This eases the visual load of the user which reduces the time needed for the users to understand the heatmap
- The average column calculates the average change between the years which allows the users to see the overall impact of the inflation for the different domains.
- Data source has been credited at the end of the heatmap where the source is from the Singapore Department of Statistics

Suggested Improvements

1. *Better color scheme can be used.* It seems like the current color scheme is using a qualitative palette which is not suitable for the data type. A diverging palette could be used to show the increase or decrease in inflation rate more effectively where there are positive and negative values.

2. *Spelling out the months instead of just letters* could provide better understanding of the graph rather than letters which result in the reader needing to interpret it on the graph, increasing the cognitive load of the reader.

3. *Simply using a heatmap doesn't explicitly show the changes.* A line chart could be used to show the increase or decrease in inflation rate, the heatmap does not show this change really well.

4. *Clarify or remove vague sections* such as "Food (excludes food-serving services)" and "Miscellaneous goods and services".

Implementation

Data

- Weekly counts of measles cases by state were obtained from Project Tycho.[1] The data have missing weeks, which were treated as zero in **?@fig-wsj-on-poster**, potentially underestimating the annual total. Instead, we calculated the weekly mean case count on the basis of non-missing data only.
- Decennial U.S. census data for each state.[2]

Software

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

- *readxl* for data import
- *tidyverse* for data transformation, including *ggplot2* for visualization based on the grammar of graphics
- *knitr* for dynamic document generation
- *zoo* for interpolating annual population data from the decennial U.S. census

Improved Visualization

[1]https://doi.org/10.25337/T7/ptycho.v2.0/US.14189004
[2]https://www.stats.indiana.edu/population/PopTotals/historic_counts_states.asp
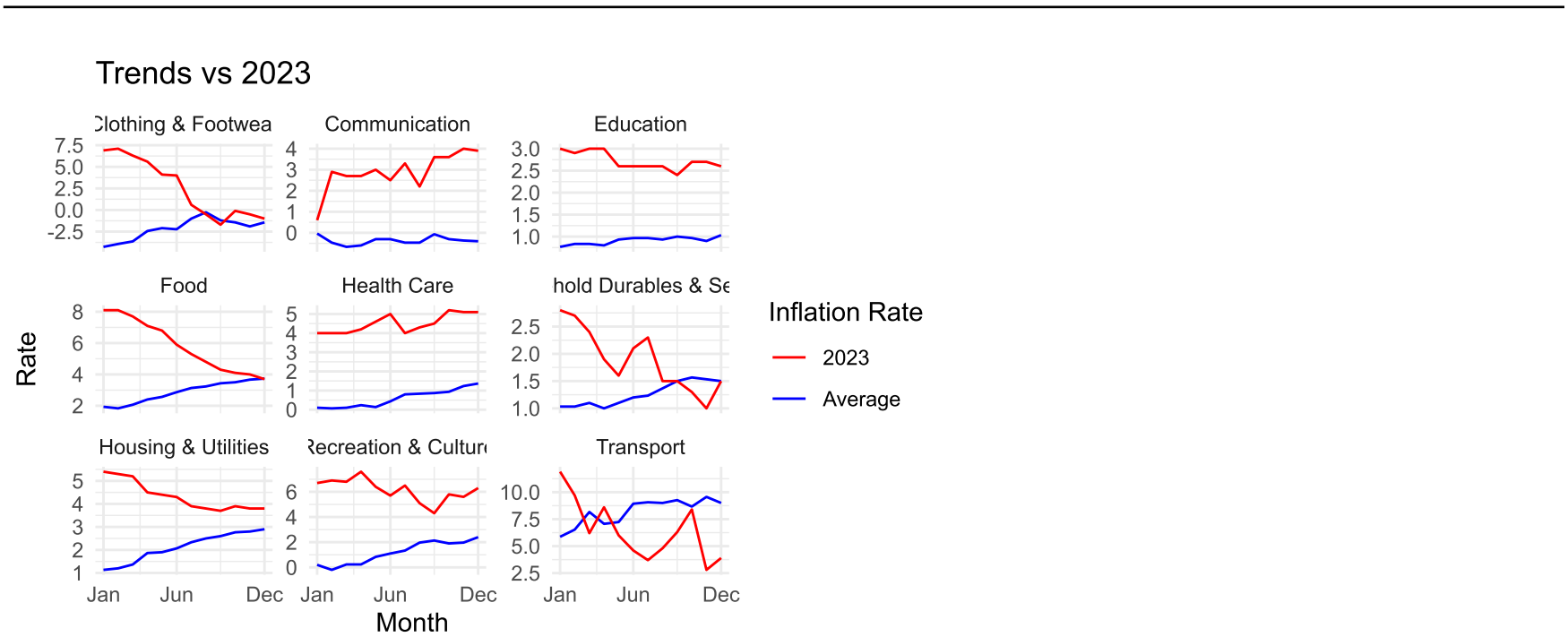
Further Suggestions for Interactivity

As our visualisation was to be non-interactive for a poster, we did not implement any interactive features. However, if the visualization were to be interactive, a few features would be considered. They are as follows:

1. *Interactive plots* for the users to potentially 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. *A dashboard* for users to interact with various elements of our chart to 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 to help with interactivity would be *highcharter* which makes use of the Highcharts JavaScript library to provide a simple interface to generate sophisticated and highly customizable charts.

Conclusion

We successfully implemented all suggested improvements for the non-interactive visualization. By labeling every state and choosing a colorblind-friendly palette, the revised plot is more accessible. The logarithmic color scale makes the decrease in incidence after the introduction of the vaccine less striking but enables readers to detect patterns in the low-incidence range more easily.