COS30045 Data Visualisation

Sarawak Visitor Arrivals (2017-2021)

GitHub Link:
https://github.com/ChongKaiBo/COS30045_Data_Visualisation

Group 1
Kai Bo CHONG
(102774161)

Chun Wei PANG
(102773142)

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1. Introduction

1.1 Background and Motivation

First of all, this visualisation will be very beneficial for tourism officials and planners as they would be highly interested in the Sarawak visitors' related data. This is because these data can directly impact their decisions and strategies. They might want to analyse visitor demographics, track seasonal variations, identify popular tourist destinations, and assess the economic impact of tourism on the region.

Secondly, tourism businesses for example hotels, restaurants, and tour operators as they would want to understand visitor patterns and preferences to tailor their services. They may want to analyse the geographic origin of visitors, peak booking times, and types of activities that tourists engage in to optimise their offerings and generate the most incomes.

Lastly, Sarawak residents will be interested too as they might want to stay informed about the number of tourists in their area and the potential impact on their community. They are also interested in understanding how tourism affects their daily lives, such as traffic patterns and demand for local services. Thus, it is vital as this will eventually increase the quality and benefit of their living.

1.2 Visualisation Purpose

The purpose of this visualisation is to provide a more informative and effective viewing experience to the users by not only showing them all kinds of numbers. The data is then processed into various types of visualisations for instance bar chart, scatter plot, line chart and so on hence the users can understand more about the summarised data rather than just some messy tables. Besides, users may observe the trend based on the data visualisation provided and use this information to gain benefits for their living.

1.3 Project Schedule

A meeting will be held every week to keep track of the members' progress and also the tasks that need to be completed on that particular week.

Week 3: Completed the Part 1 of the project (Introduction)
Week 4: Done Part 2 of the report (Data) and search for reference.
Week 5: Start Part 3 (Requirement).
Week 6-7: Working on Part 3 (Requirement) and Part 4 (Visualization Design)
Week 8: Done Part 3 (Requirement) and Part 4 (Visualization Design)
Week 9-10: Start coding.
Week 11-12: Finish up everything.

2. Data

2.1 Data Source

The data we are harvesting is from a portal of Sarawak (Link: https://data.sarawak.gov.my/home/data/search/?group=travel-tourism). The data inside record the previous tourist arrival to Sarawak. The data from this website is presented in tabular form. The data type of this table is quantitative. This dataset consists of the following attributes:

Attributes	Description	Type
Citizenship	This attribute contains the name of the countries of the visitors who have visited Sarawak	Categorical (String)
Months	This attribute records the number of visitors of a country in that particular month.	Ordinal (Integer)
Grand Total (Country)	This attribute calculates the grand total of visitors from a specific country in that whole year.	Ordinal (Integer)
Grand Total (Monthly)	This attribute displays the total number of the visitors who have visited Sarawak in a specific month	Ordinal (Integer)
Total Foreigner	This attribute records the total number of visitors from foreign countries.	Ordinal (Integer)
Total Domestic	This attribute records the total number of visitors from domestic countries.	Ordinal (Integer)

Table 1: The details of the number of visitors data from the online source.

2.2 Data Processing

For the visualisation, we will be using only the Grand Total of the visitors of those countries from the year 2017 until 2021. Hence, the monthly number of visitors is not used in our website. So, we decided to exclude it. However, we had faced some trouble when extracting out the data from the .csv file directly into our code. Therefore, we create a new .csv file which only consists of the Grand Total of visitors of those countries based on the data from the year 2017 until 2021. Lastly, we

rename the header from G.Total to Visitor_year. While the year is represent the year 2017 to 2021.

Citizenship	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	G_Total
Singapore	2,835	4,047	4,372	3,425	3,177	4,855	3,491	3,610	3,514	2,909	3,532	3,967	43,734
Australia	1,470	1,365	1,423	1,464	1,052	1,351	1,753	1,188	1,210	1,036	1,290	1,644	16,246

Figure 1: The original header of the data from an online source.

Citizenship	visitor_17	visitor_18	visitor_19	visitor_20	visitor_21
Singapore	42,177	43,734	46,812	7,363	182

Figure 2: The .csv file header after data transforming.

The data in Figure 2 is the data that we use to extract into our code which will be then presented to the users/readers.

3. Requirements

3.1 Must Have Features

The features below are the some of the features in this project must have:

- Users can filter the data based on years.
- Users can interact with the visualisation which when they hover their cursor towards any part of the map, the name of the country and the number of visitors will be shown on the top of the country location.
- Users are allowed to view the number of grand totals of visitor arrivals.

3.2 Optional Features

The following features are the optional features that will be implemented to make the visualisation more useful:

- A button that allows the user to toggle the data of comparison between the foreign and domestic visitors.
- Users are able to use a feature that allows them to compare the number of visitors from two or more countries.

4. Visualisation Design

World Map (Index page)

Figure 3: The World Map in the index page of the website.

For this visualisation, the first feature for visualising the Sarawak visitors will be when users hover their mouse towards a specific country on the world map, the country name and also the total number of the visitors who had visited Sarawak from this country will be displayed as a tooltip. Meanwhile, the country that is hovered by the users will change its colour to orange on the map.

Final Design

Figure 4: The final design of the World Map for this website.

For the final design, there is another feature included for users to use when visualising this visualisation which is the filtering functionality of years. Users can use this functionality to choose the specific year that they intend to visualise for this visualisation by either clicking the “Previous” or “Next” button. Meanwhile, users are able to hover towards the country they interested in visualising. When hovering, the tooltip will appear on the country and display the hovered country name and total number of visitors who had visited Sarawak from that country. The country on the map will change its colour to orange for specifying that it is being hovered.

5. Conclusion

From this project, we have learnt how to code a website out by using the datasets from an online source. From there, we understand how important the selection of the colour is for the visualisation to provide the best visual presentation for the users/readers. As of that, the visualisation is very much beneficial and vital to them by presenting the data visually in a more interesting and more informative way rather than just raw data from any other online source.

Reference

McClintock, M, 2023, *Designing an Interactive Map using JavaScript*, Solodev CMS, viewed 20 November 2023, <https://www.solodev.com/blog/web-design/designing-an-interactive-map-using-javascript.stml>.

Appendix

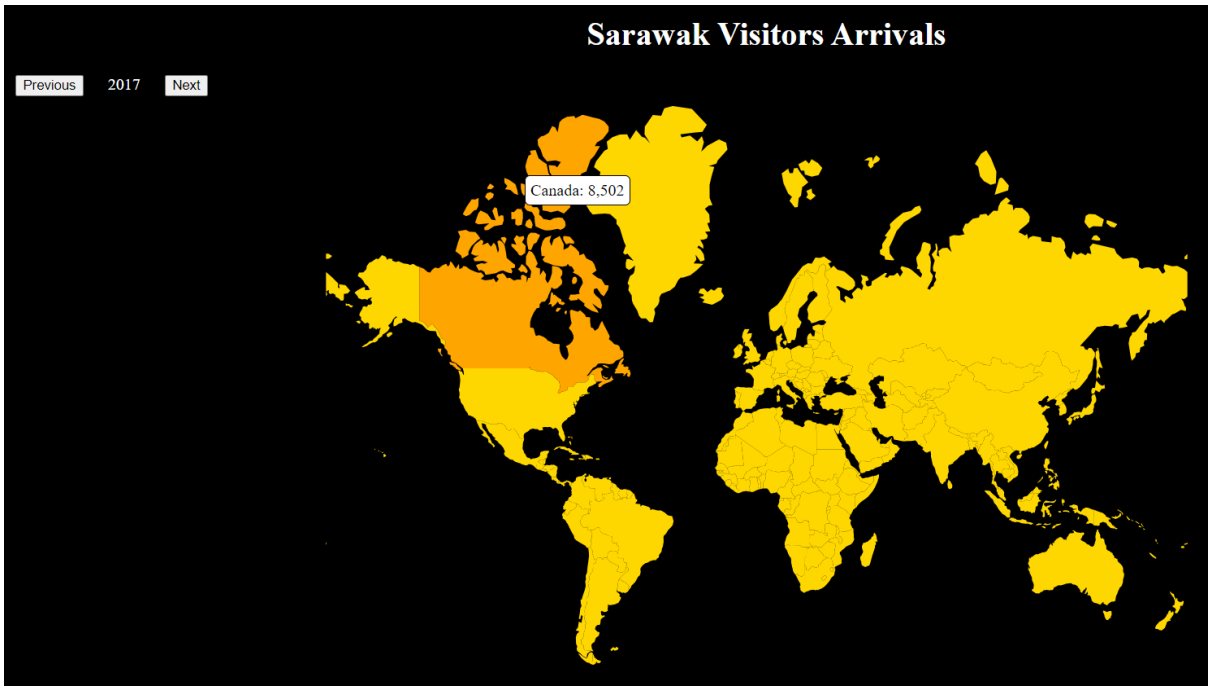

Figure 5: The final design of our website.