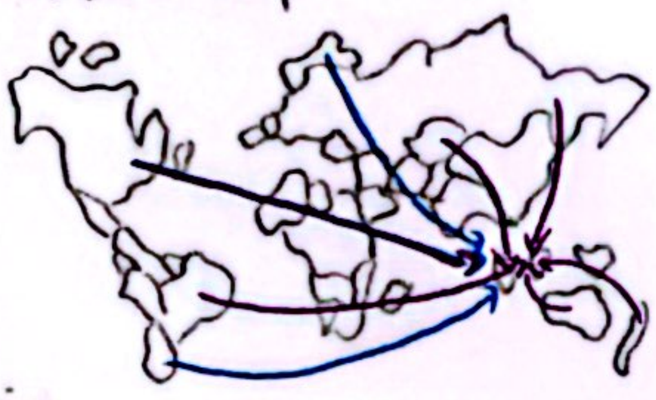
1. Ideas

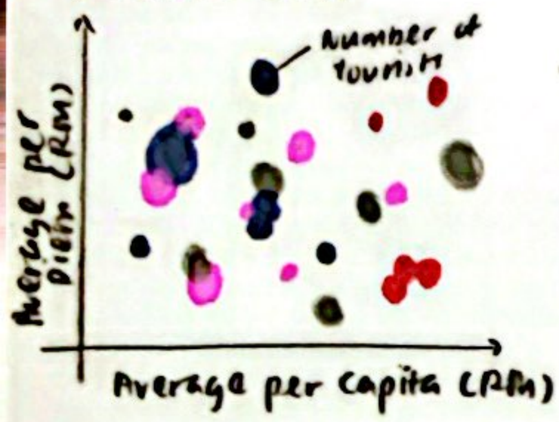
a) Choropleth Map

Tourist Arrivals per 10,000 of population

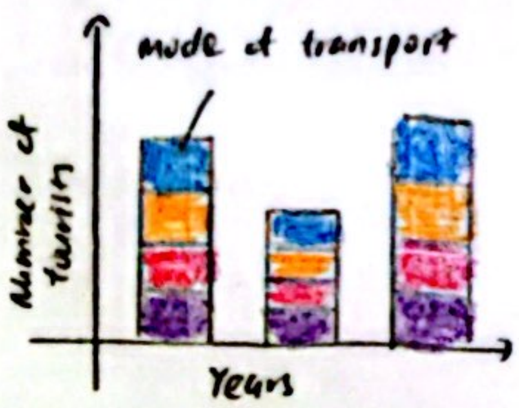
b) Flow Map



c) Bubble Chart

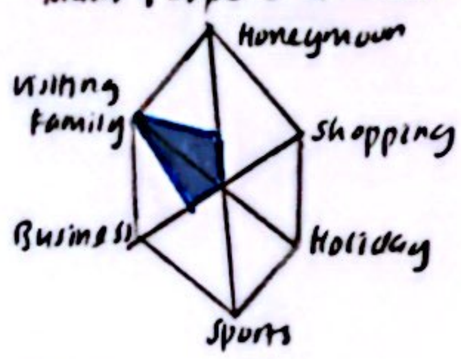


d) Stacked Bar Chart



e) Radar Chart

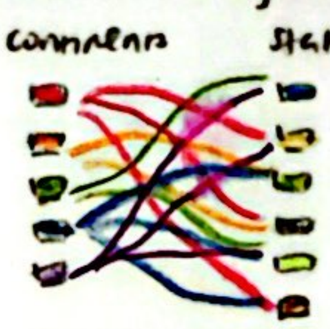
Main Purpose of visit



f) Donut Chart

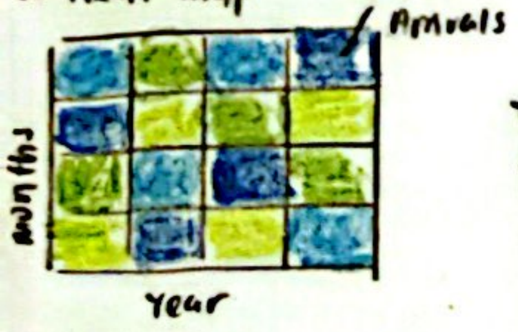
Component of Expenditure
- Accomodation
- Food
- Transportation
- Shopping

g) Alluvial Diagram

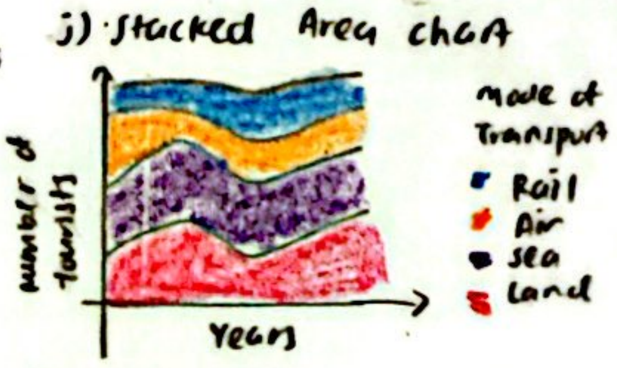


h) Clustered Bubble Chart

i) Heat Map



j) Stacked Area Chart



k) Word Cloud

SABAH KEDAH
KUALA LUMPUR
JOHOR SELANGOR
SARAWAK PENANG

States visited by tourists from different continents

l) Tree Map

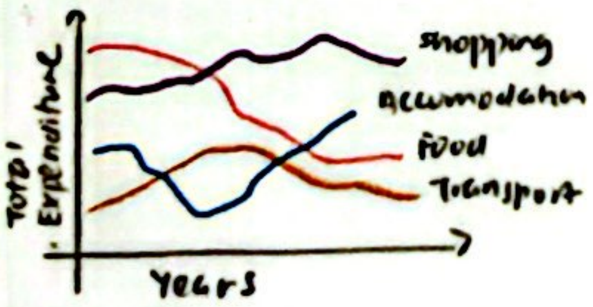
Main purpose of visit

m) Pie Chart

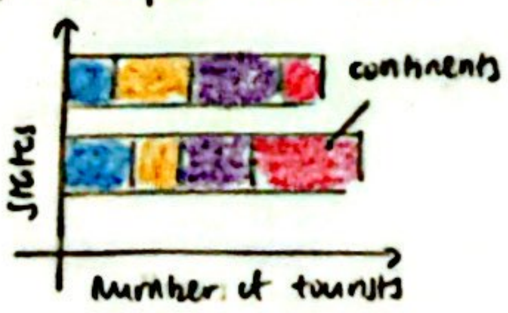
Major Activities Engaged
- Sightseeing
- Nightlife
- Visiting Island
- Cultural Events

n) Radial Bar Chart

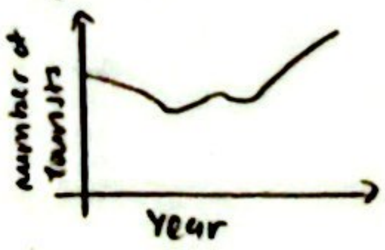
o) Multi-Line Chart



p) Grouped Bar Chart



q) Line Chart



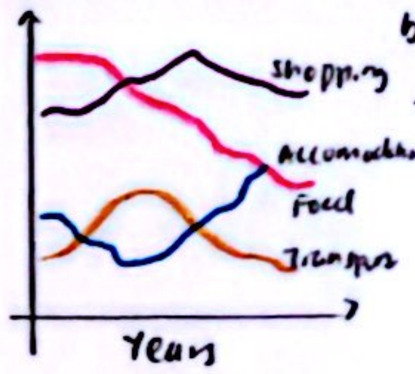
2. Filter

a) Word Cloud

SABAH KEDAH
KUALA LUMPUR
JOHOR SELANGOR
SARAWAK PENANG

- Lacks quantitative details, making it difficult to understand the exact distribution of tourists from different continents visiting each state in Malaysia

b) Multi-Line Chart



- Might unintentionally suggest a relationship between different components of expenditure

c) Tree Map

- The main purposes of tourist visits such as shopping, holiday and business are discrete categories without a natural hierarchy. This lack of subcategories makes the tree map less informative and visually appealing.

3. categorize

Trend of Tourist Arrivals → Line Chart
→ Heat Map

Distribution of Tourist Arrivals To Malaysia → Choropleth Map
→ Flow Map.

Distribution of tourist arrivals by mode of transport entering Malaysia → Stacked Bar Chart
→ Stacked Area Chart

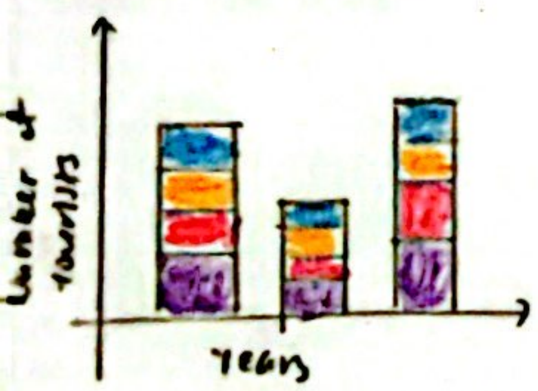
Distribution of tourist arrivals by main purpose of visits and major activities engaged → Radar Chart (purpose & activities)
→ Pie Chart (activities engaged)
→ Clustered Bubble Chart (purpose)

Distribution of tourist Arrivals by states visited → Alluvial Diagram
→ Grouped Bar Chart

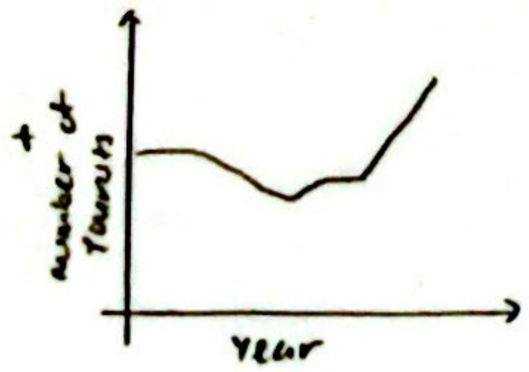
Distribution of total expenditure by components of expenditure and average per capita and per diem
↳ Bubble Chart (average per capita & per diem)
↳ Radial Bar Chart } components of expenditure
↳ Donut Chart }

4. Combine and Refine

Stacked Bar Chart



Line Chart



→

Stacked Bar and Line Chart

Stacked Bar Chart & Line Chart can be combined to compare the trend of tourist arrivals to Malaysia over the years and between various mode of transports entering Malaysia simultaneously.

5. Questions

1. Does this visualisation convey useful information to audience?
2. Is the implementation of flow map doable?
3. Should the clustered bubble chart be using colour saturation instead of colour hue?

Layout

ANALYSING TOURISM IN MALAYSIA

TRACING GLOBAL TOURIST PATHS TO MALAYSIA

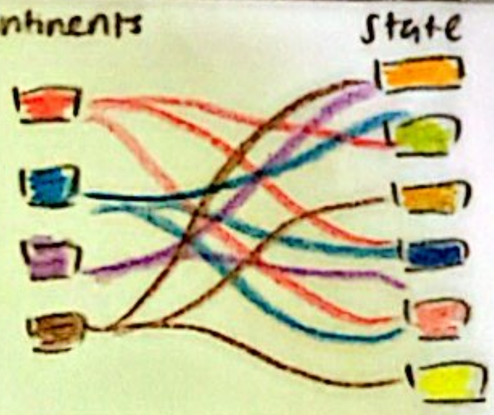
Annotations

Annotations

Legend for flow map

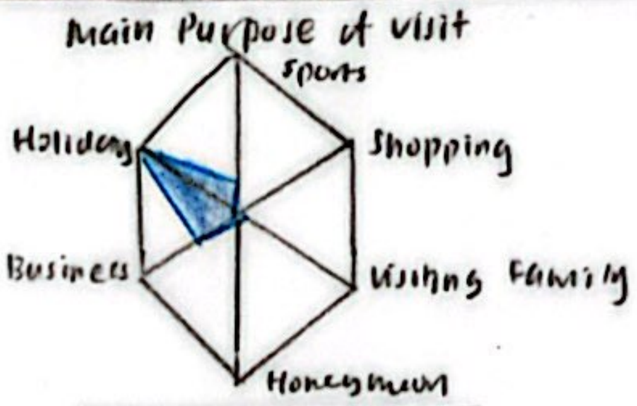
Year : [ ]

WHERE DID TOURISTS VISITED?



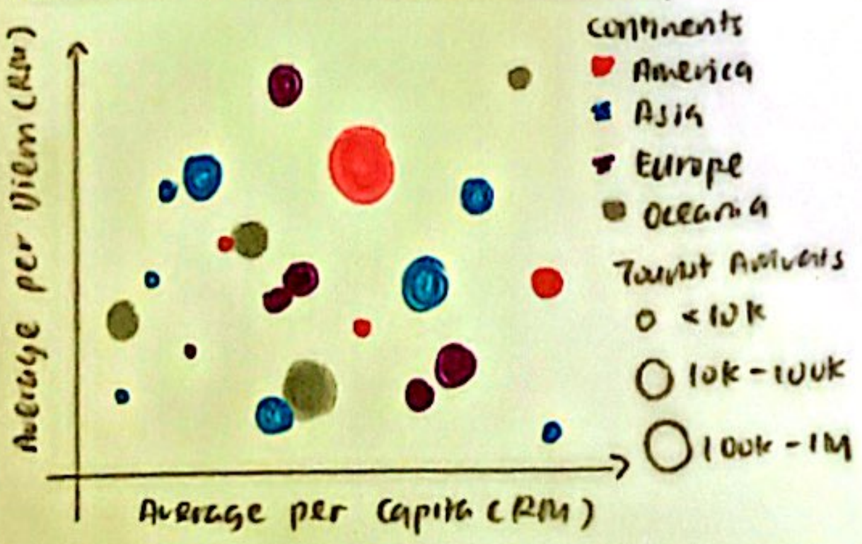
descriptive text

WHY DID TOURISTS VISITED?



descriptive text

WHO SPENDS THE MOST?



Continent selection : [ ]

descriptive text

WHAT DID TOURISTS SPEND ON?

descriptive text

Title : Tourism in Malaysia

Author : How Yew Wai

Date : 16-10-2024

Shelf : 2

Task : Design an interactive visualisation

Operation

→ drop-down menu to filter tourist arrivals to Malaysia by year

2015 ▽
2015
2016
2017
2018
2019

↳ width of the marks indicating tourist arrivals will change accordingly to the year chosen.

→ drop-down menu to filter average per capita versus average per diem by continent

Show All ▽
Show All
America
Asia
Europe
Oceania

↳ chart will change accordingly to continents selected

Tooltip

- Display relevant value for distribution of tourist arrivals based on various categories : states visited, main purpose of visit & components of expenditure
- Hover mouse over each area/points in each chart for tooltip to show, for example,

↳ Main Purpose : xx
Percentage : xx %

Annotations

Annotate key insights and highlight interesting facts, e.g. most visited state

Focus

- The main focus is the flow map at the top of the visualisation which displays the tourist arrivals to Malaysia from their countries of origin.
  ↳ This map is slightly larger in size compared to other charts, allowing readers to observe patterns of inbound tourism and analyse the volume and flow of tourists across different continents
- Annotations are placed alongside the map to highlight the top 5 countries visiting Malaysia.
- A legend provides information linking tourist arrivals from different countries to their respective continents

Asia
America
Europe
Oceania

Discussion

Advantages

- clearly segmented into distinct sections
- utilizes a diverse range of charts, enriching visual experience
- user-friendly design allows the reader to navigate easily and explore interactive elements within the charts

Disadvantages

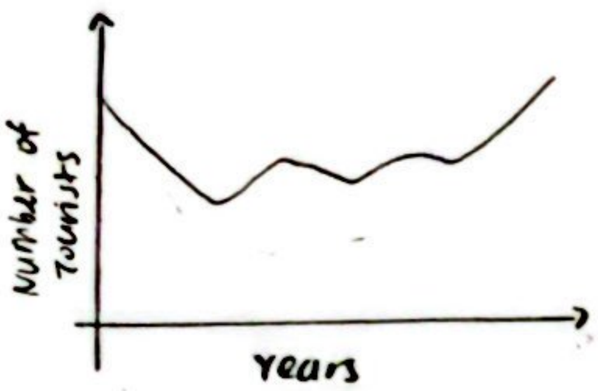
- potential for information overload due to the volume of content
- implenting a flow map may be challenging
- The use of similar colour hues across different charts might lead to confusion.

Layout

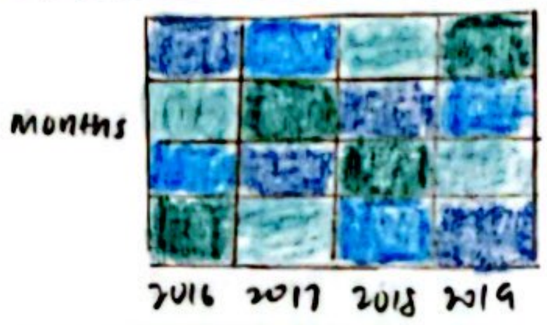
image representing Malaysia's tourism

ANALYSING TOURISM IN MALAYSIA

TRENDS OF TOURIST ARRIVALS



descriptive text and explanation to link to the heatmap below

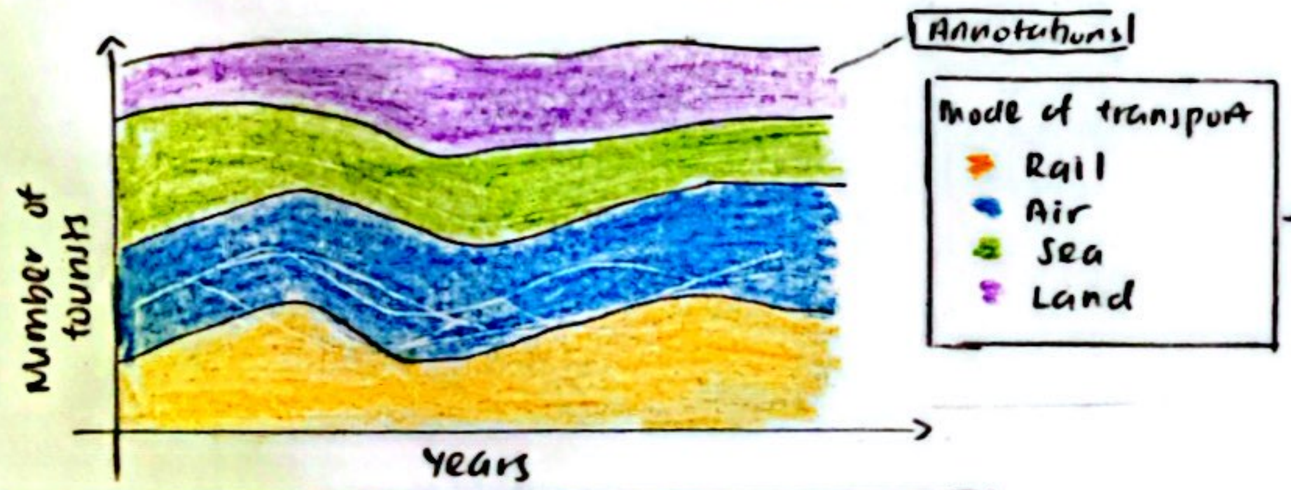


conclusive description based on 2 charts above

GLOBAL TOURIST ARRIVALS TO MALAYSIA

descriptive text highlighting the density of tourist visits to Malaysia from various countries, adjusted for each country's population size.

HOW TOURIST ENTER MALAYSIA ?



conclusive description

Title : Tourism in Malaysia
Author : How Yew Wai
Date : 16-10-2024
Sheet : 3
Task : Design an interactive visualisation

Operation

- a slider that lets users zoom in on countries contributing most to the relative density of tourist arrivals to Malaysia

Tooltip

- Hover mouse over stacked area chart

Mode of Transport : xx
Year : xx
Percentage of tourist arrivals : xx %

- Hover mouse over line chart / Heat Map

Year : xx
Month : xx
Tourist Arrivals : xx

Year : xx
Tourist Arrivals : xx

- Hover mouse over choropleth map

Country : xx
Tourist Arrivals : xx
Tourist per 10,000 of population : xx

Annotations

- Annotate key insights and highlight facts concluded

→ Interactive legend
↳ clicking on one of the mode of transports in the legend highlights specific area associated with the selected mode of transport

Focus

- There are 3 focus in the visualisation : one for each section of trends of tourist arrivals, distribution of tourist arrivals to Malaysia and by mode of transport entering Malaysia

① a) Line chart
- x-axis represents year, y-axis represents number of tourists

b) Heat map
- x-axis represents year, y-axis represents months
- saturation levels of colours in the chart corresponds to the number of tourists for a specific month and year with higher saturation indicating a greater number of tourist arrivals

② Choropleth map
- use of colour saturation to represent the number of tourists per 10,000 of their population

③ Stacked Area chart
- x-axis represents year, y-axis represents percentage of tourist arrivals over sample size
- use of colour hue to represent different mode of transports

Discussion

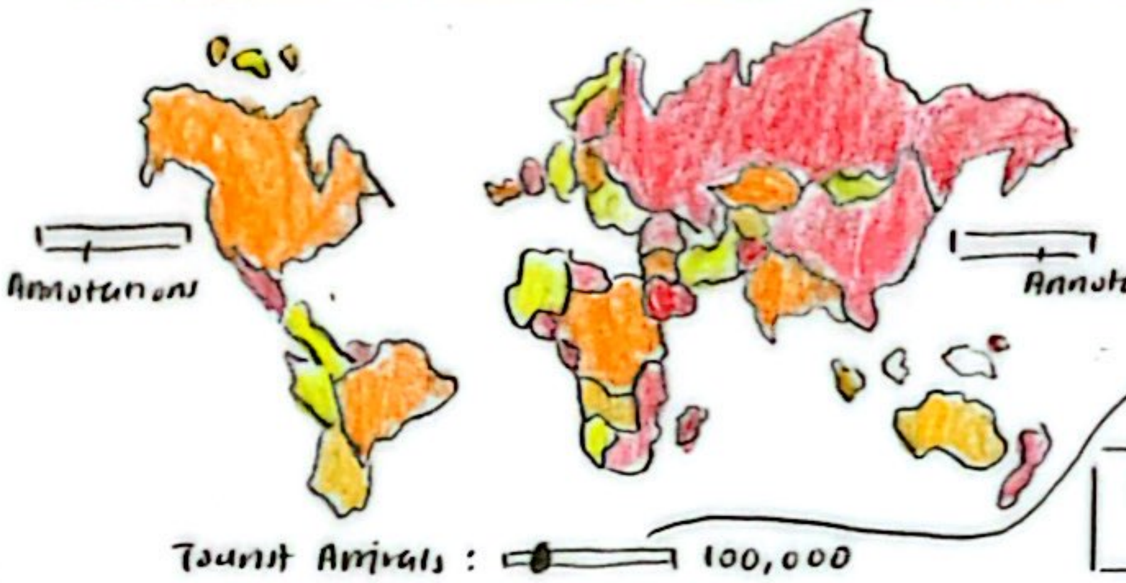
Advantages
- Effectively create a cohesive narrative with well-defined sections
- The trends section is particularly detailed, offering users deeper insights
- Enhanced user interaction across nearly all charts including tooltips, filtering and annotations

Disadvantages
- Difficult to observe trends of tourist arrivals over the years in the line chart if the number of tourists visiting Malaysia has remained too similar in recent years
- The conclusive description for the two charts in the top section feel cluttered due to limited white space, making them harder to read.

Layout

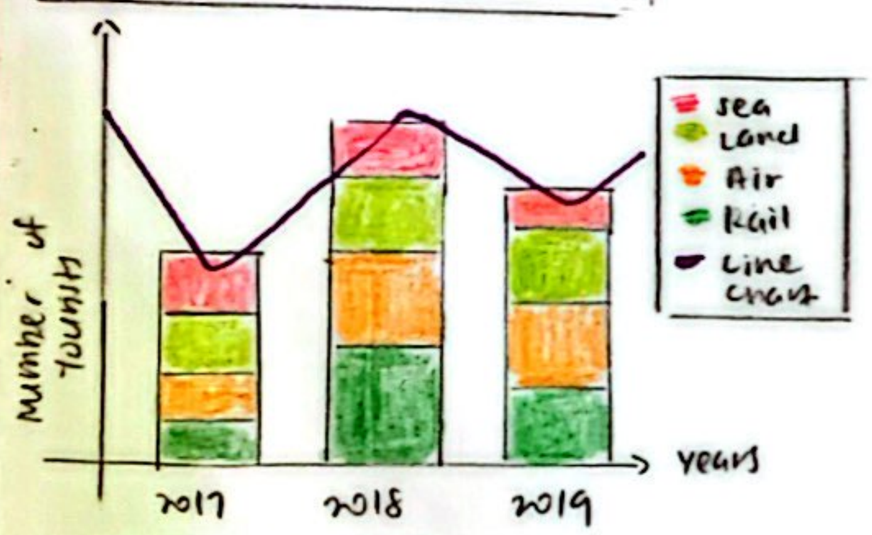
ANALYSING TOURISM IN MALAYSIA | Introduction

GLOBAL TOURIST ARRIVALS TO MALAYSIA



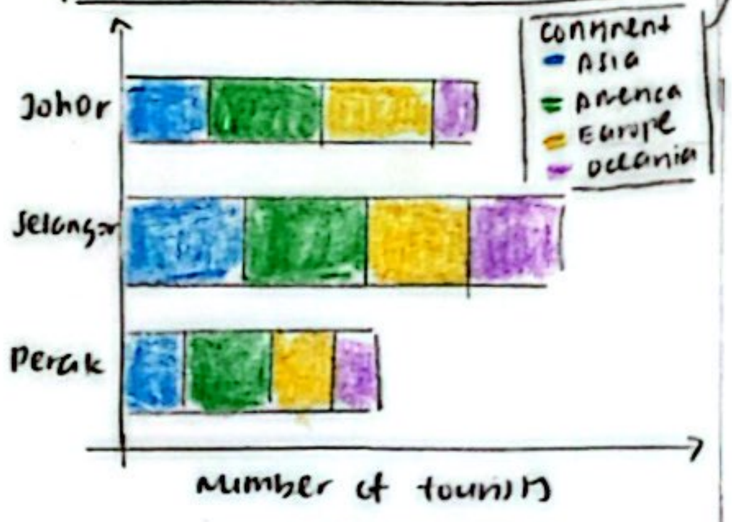
Conclusive description

MODE OF TRANSPORT



descriptive text

STATES VISITED

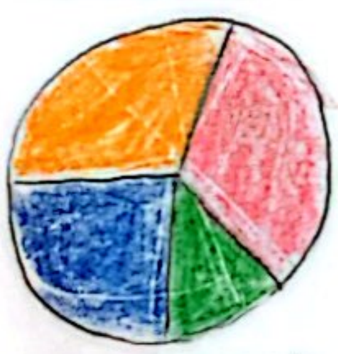


descriptive text

MAIN PURPOSE OF VISIT

descriptive text

MAJOR ACTIVITIES



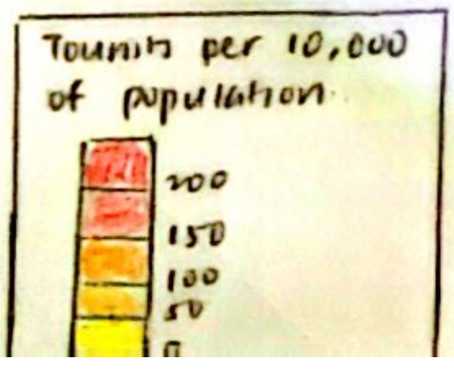
descriptive text

Components of Expenditure

descriptive text

FOCUS

- The main focus is the choropleth map at the top section of the visualisation which displays the number of tourists per 10,000 of population.
- A conclusive description is positioned on the bottom-right of the map, offering clear insight about the relative density of tourist arrivals to Malaysia. Therefore, allowing readers to draw meaningful conclusions
- A legend containing information for tourist arrivals normalised by their respective country's population is place alongside the chart.



Title : Tourism in Malaysia
Author : How Yew Wai
Date : 16-10-2024
Sheet : 4
Task : Design an interactive visualisation

Operation

- a slider that allows users to filter the map based on the number of tourists visiting Malaysia
- Interactive legend
  - clicking on one of the continents in the legend, highlights specific parts of all the bars associated with the selected continent

Tooltip

- Hover mouse over grouped bar chart / stacked bar chart

Continent : XX
State : XX
Tourist Arrivals : XX

Mode of transport : XX
Year : XX
Tourist Arrivals : XX

- Hover mouse over choropleth map

Country : XX
Tourist Arrivals : X
Tourist per : XX
10,000 of population

- Hover mouse over clustered bubble chart / donut chart / pie chart

Components of Expenditure : XX
Percentage : XX %

Major Activities : XX
Percentage : XX %

Main Purpose of Visit : XX
Number of Tourists : XX

Annotation

- Annotate key insights and highlight interesting facts based on trends / comparisons

Discussion

Advantages

- Incorporate complex visualisations such as combinations of stacked bar chart and line chart, adding depth to analysis
- Provides strong level of user interaction
- visually appealing with effective use of colour hue

Disadvantages

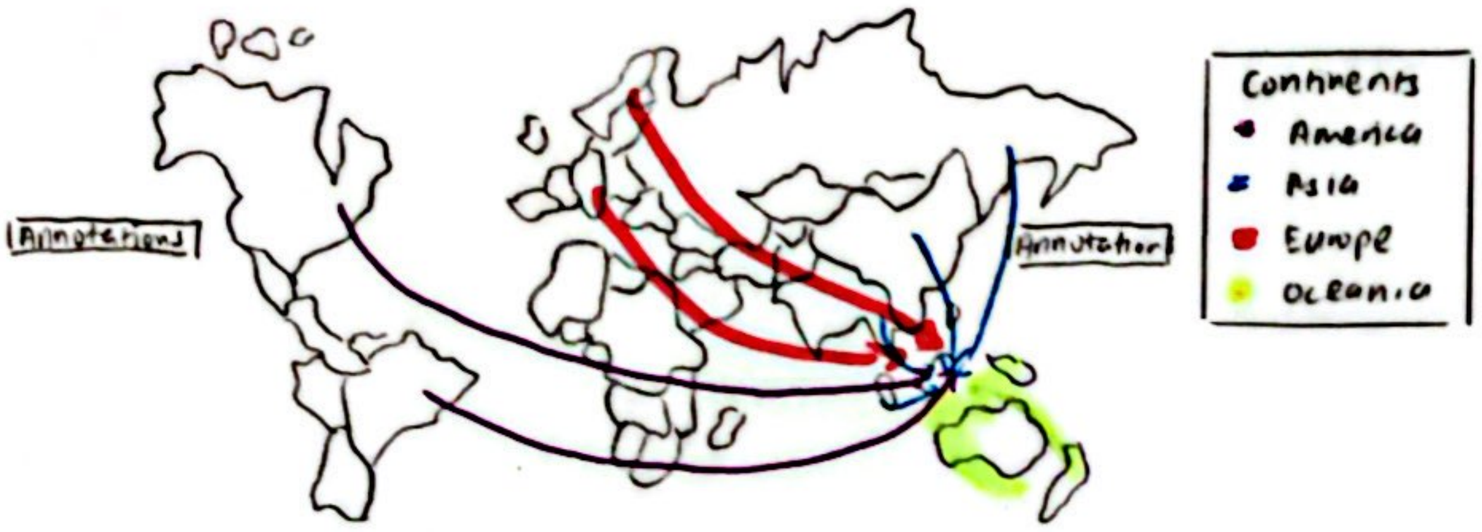
- The bottom section of visualisation consists of 3 charts, which seems clustered
- The pie chart and donut chart appear too similar and could easily be mistaken for same type of chart when viewed from a distance

Layout (based on sheet 2)

image representing Malaysia's tourism

ANALYSING TOURISM IN MALAYSIA

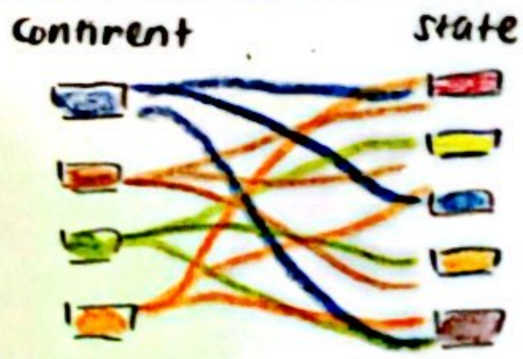
TRACING GLOBAL TOURIST PATHS TO MALAYSIA



Year :

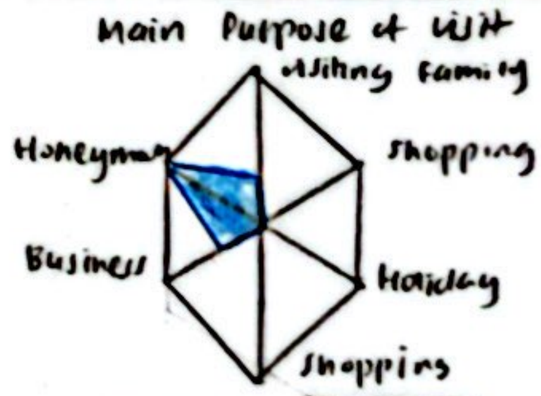
Zoom : 250

WHERE DID TOURISTS VISITED?



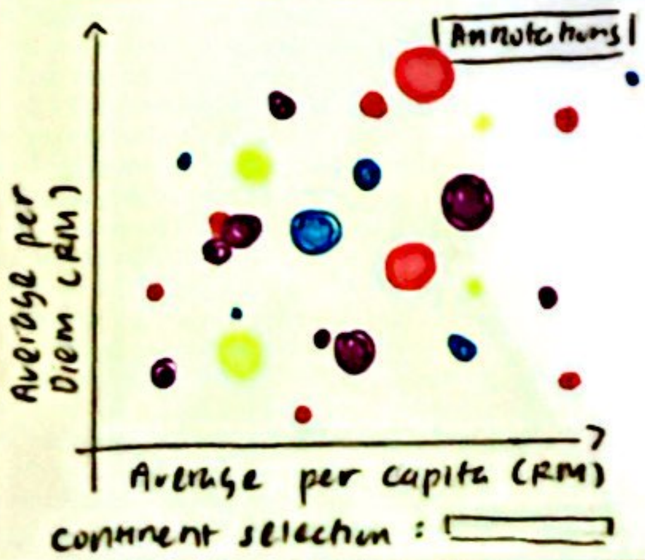
descriptive text

WHY & WHAT DID THEY DO ?



Main Purpose | Activities Engaged

WHO SPENDS THE MOST ?



Continent selection :

descriptive text

WHAT DID THEY SPEND ON?

TITLE : Tourism in Malaysia
Author : How Yew Wai
Date : 16-10-2024
Sheet : 5
Task : Design a final layout for interactive visualisation

Operation

- Alternate between radar charts visualising main purpose of tourists' visit to Malaysia and the major activities Engaged
  - ↳ using the buttons placed below the chart
- Zoom in function within
  - ① Flow map
    - ↳ using a slider to zoom in on countries with the highest tourist arrivals
  - ② Bubble chart
    - ↳ using trackpad to zoom in to observe data points better

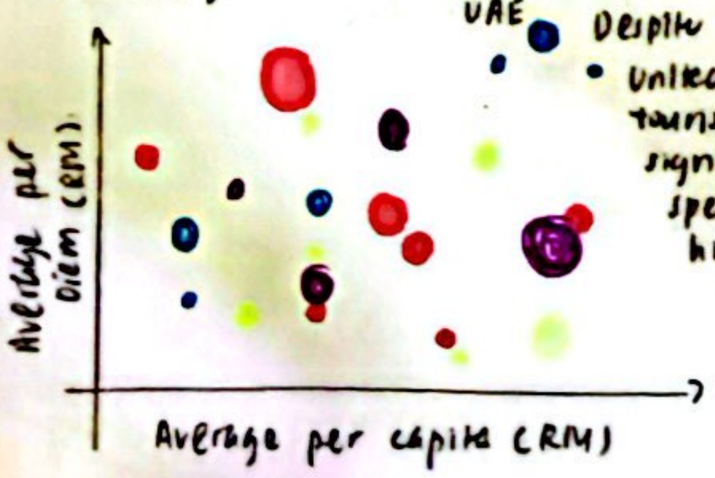
Tooltips

- use for all graphs
- include colour for keywords such as Asia, Food, Penang and match colour with the ones used in legend if legend exists
  - ↳ e.g.

> Food
> % of expenditure : 40%

Focus

- No main chart focus as all graphs are equally important
- Main focus is on storytelling, seamlessly connecting all idioms to create a narrative flow that illustrates how they relate to tourism in Malaysia while maintaining interactive elements within the charts
- Emphasis on annotations to guide the users in understanding the in-depth details, for example the interactive bubble chart,



Despite low numbers, United Arab Emirates tourists contribute significantly to Malaysia's spending through high spending.

Consistent colour in text

E.g.
Tourists from Asia tends to spend a lot compared to tourists from other continents

Details

Dependencies

- R for data cleaning, Microsoft Excel for data scraping & visual studio code for building charts and webpage

Estimated time & Effort

- at least 4 days to build all idioms & 4 days to do webpage
  - ↳ 1 day for flow map
  - ↳ 1 day for alluvial diagram
  - ↳ 1 day for bubble chart
  - ↳ 1 day for donut chart and 2x radar chart
  - ↳ around 1-2 days for research