Ideas
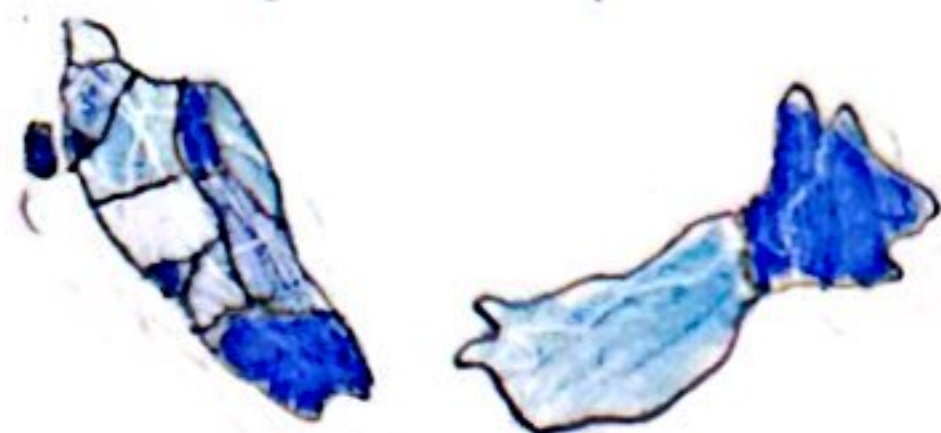
① Chloropleth Map

② Proportional symbol map
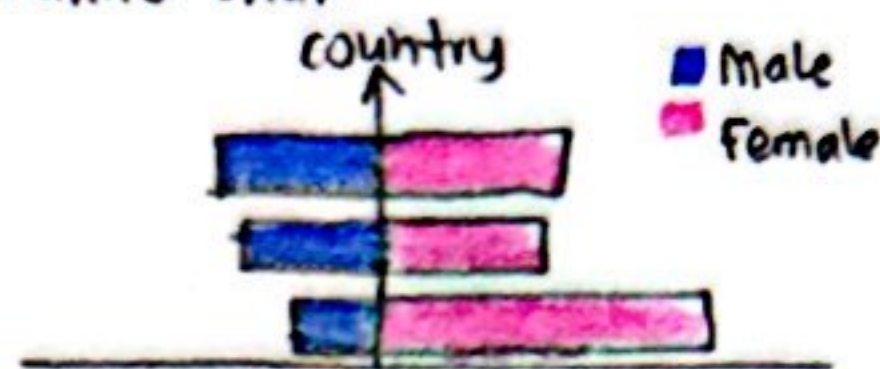
③ Line chart
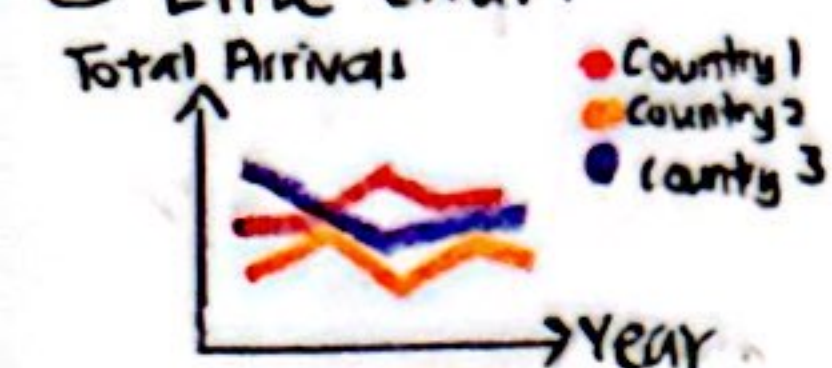
Total Arrivals
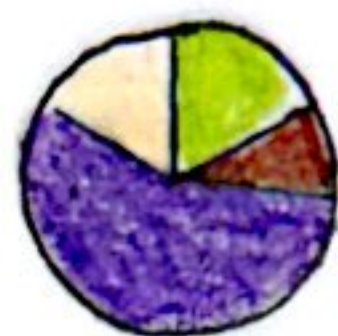- Country 1
- Country 2
- Canty 3
→ Year

④ Bubble Chart

diffent colour for state of entry
size is total arrival

⑤ Pyramid Chart

country
- ■ Male
- ■ Female

⑥ Stacked bar chart

- ■ Country 1
- ■ Country 2
- ■ Country 3
→ Year

⑦ Pie Chart

⑧ Word Cloud

Genting
KLCC Jonker street Sunway
Petaling Kuching

⑨ Tree Map

Purpose 2
Purpose 1
Purpose 3

⑩ Pictogram

Year	Female vs Male
2020	
2021	
2022	
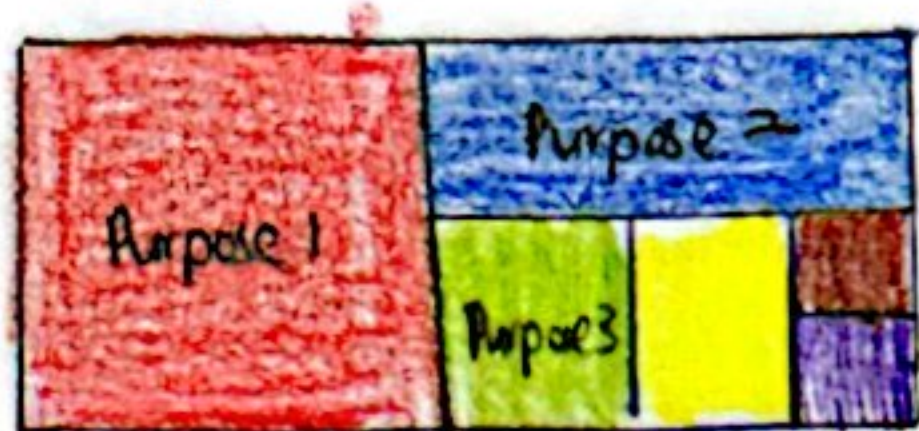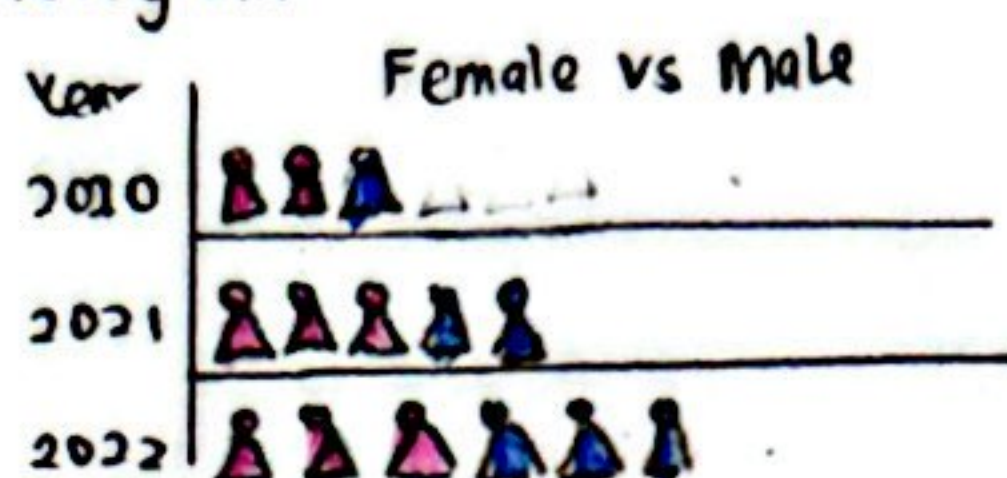
⑪ Donut Chart

⑫ Radar Chart

Purpose 7, Purpose 8, Purpose 1, Purpose 6, Purpose 2, Purpose 5, Purpose 3, Purpose 4

⑬ Span Chart

Product 1
Product 2
Product 3
Product 4
→ Value

⑭ Lollipop Chart
→ Year

⑮ Bump Chart

2019   2020   2021   2022
Search 1
Search 2
Search 3
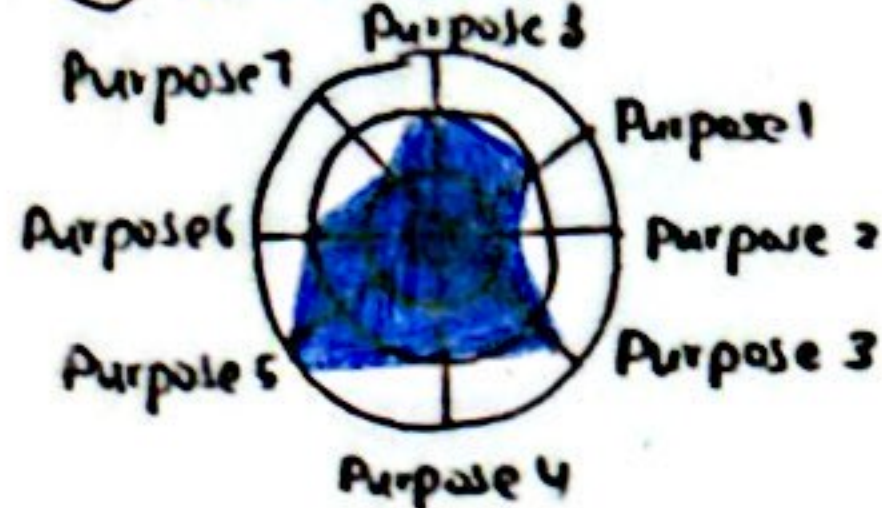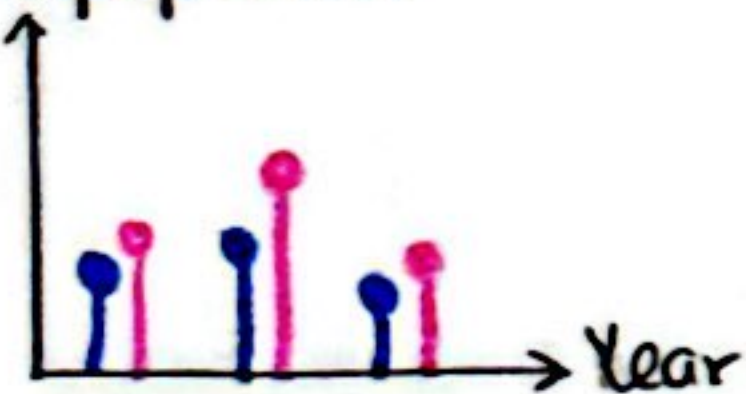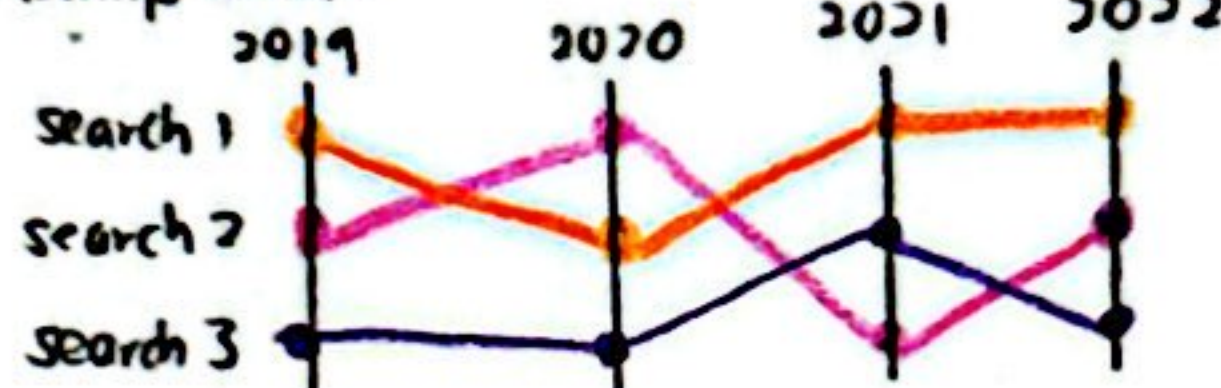
⑯ Radial Chart

⑰ Grouped bar chart

Spending
- ■ Product 1
- ■ Product 2
- ■ Product 3
- ■ Product 4
→ Year

⑱ Heatmap

Search1, Search2, Search3, Search4
Q1 Q2 Q3 Q4

Combine and Refine

Arrival Count
Line chart
→ Year

+

Arrival Count
Stacked bar chart
→ Year

Arrival Count
Both charts represent similar information and can be combined
→ Year

Filter

① Pyramid Chart
- hard to compare two categories
- stacked bar chart is a better option

② Pictogram
- user need to manually count the difference if both category proportion is similar

③ Treemap
- will get overclutter when there are too many categories

④ Radar Chart
- difficult to rank the categories based on their importance
- bump chart is a better option and can visualize changes in rank across years

⑤ Lollipop Chart
- hard to compute yearly total arrivals

⑥ Grouped Bar Chart
- will get overclutter where there are too many categories

Categorise

① Trends in arrival count
- line chart
- stacked bubble chart

② Breakdown of tourist demographic
- stacked bar chart
- bubble chart

③ Comparison of tourist behaviour
- pie chart   - span chart
- word cloud   - bump chart
- donut chart   - radial chart
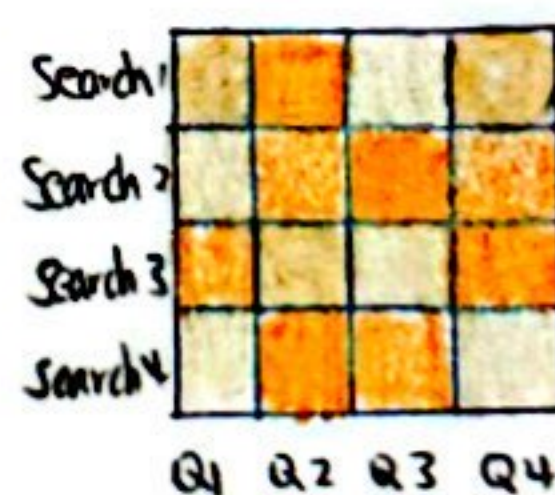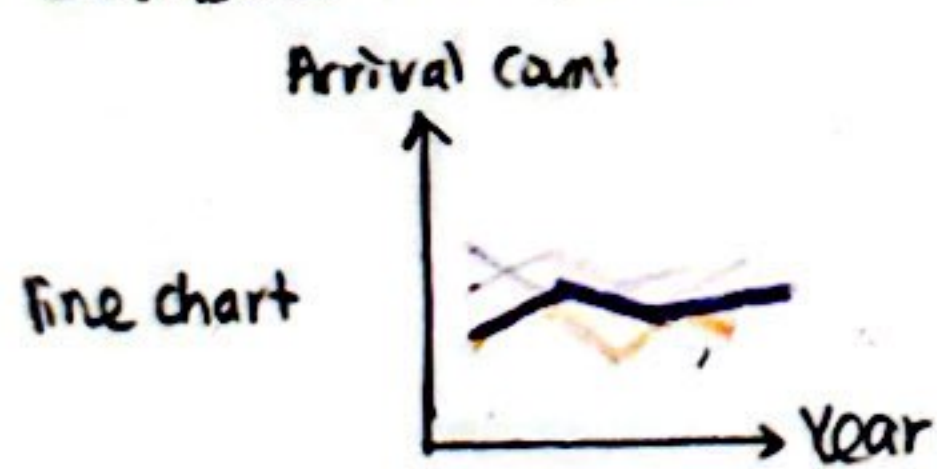- heatmap

④ Comparison in tourism statistic based on location
- chloropleth map
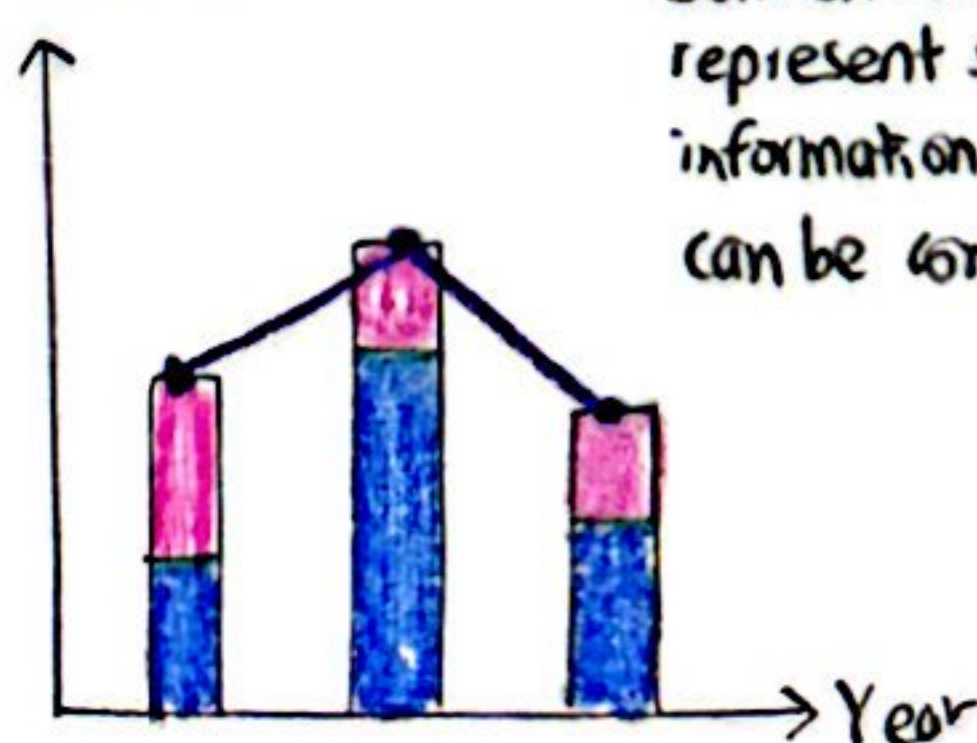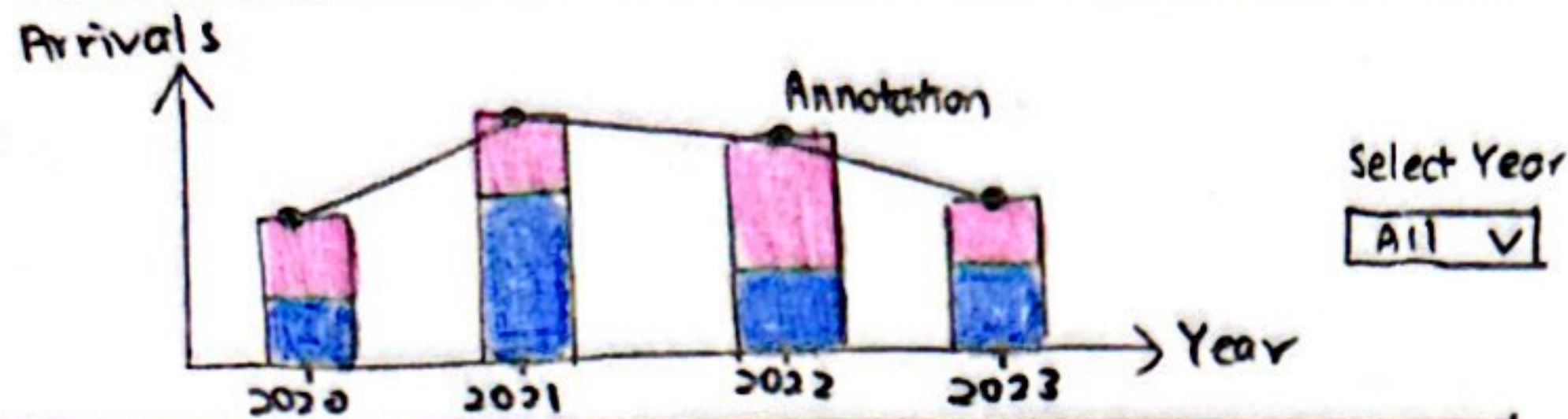- proportional symbol map

Question

① Will it be hard to visualise a category in radial chart if its proportion is very small?

② What if the ranking for all categories does not change across year, will the bump chart be pointless to visualise the data

Layout

Tourism in Malaysia

Tourist State of Entry

Annotation 1   Annotation 2

Arrivals

Annotation

Select Year [All ∨]

→ Year

2020 2021 2022 2023

Pre-Departure

Search Items

text

Purpose of Visit

Genting   Jonker Street
KLCC Sunway
Retailing   Kuching

text

Statistics

Top Shopping Location

2020 2021 2022 2023

location 1
location 2
location 3
location 4

number of location [slider]

text

Expenditure Pattern

☐ Product 1
☐ Product 2
☐ Product 3
☐ Product 4
☐ Product 5
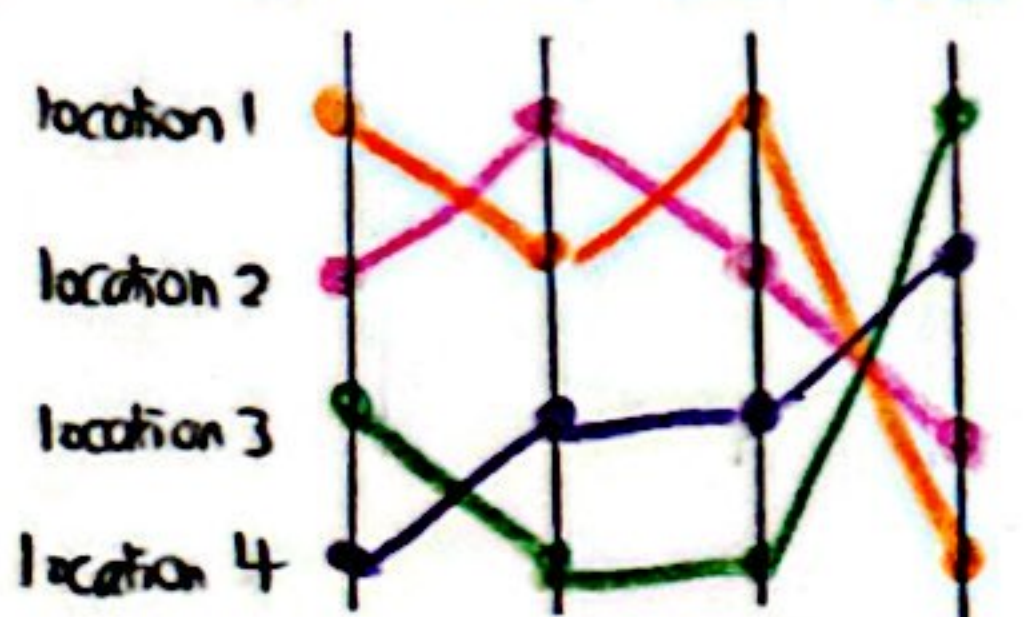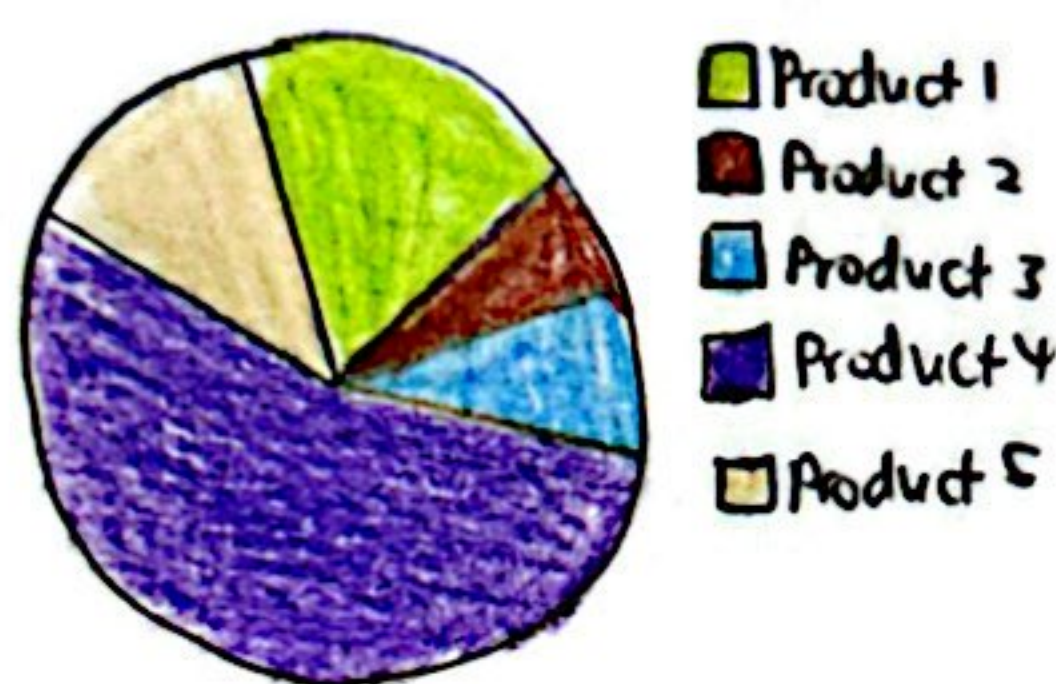
text

Operation

Select Year [All ∨]

This allows users to filter the data according to Year. Once a year is selected, the corresponding data will be displayed with the categories

number of location [slider] 4

This slider controls the amount of data being displayed and

Products
☐ Product 1
☐ Product 2
☐ Product 3
☐ Product 4
☐ Product 5

The legend has a function that allows the user to select on a specific category and the colour will be highlighted to focus, while other category will be desaturated

Tooltips are enabled for all charts to display comprehensive information

Example of tooltip for map:

State : Johor
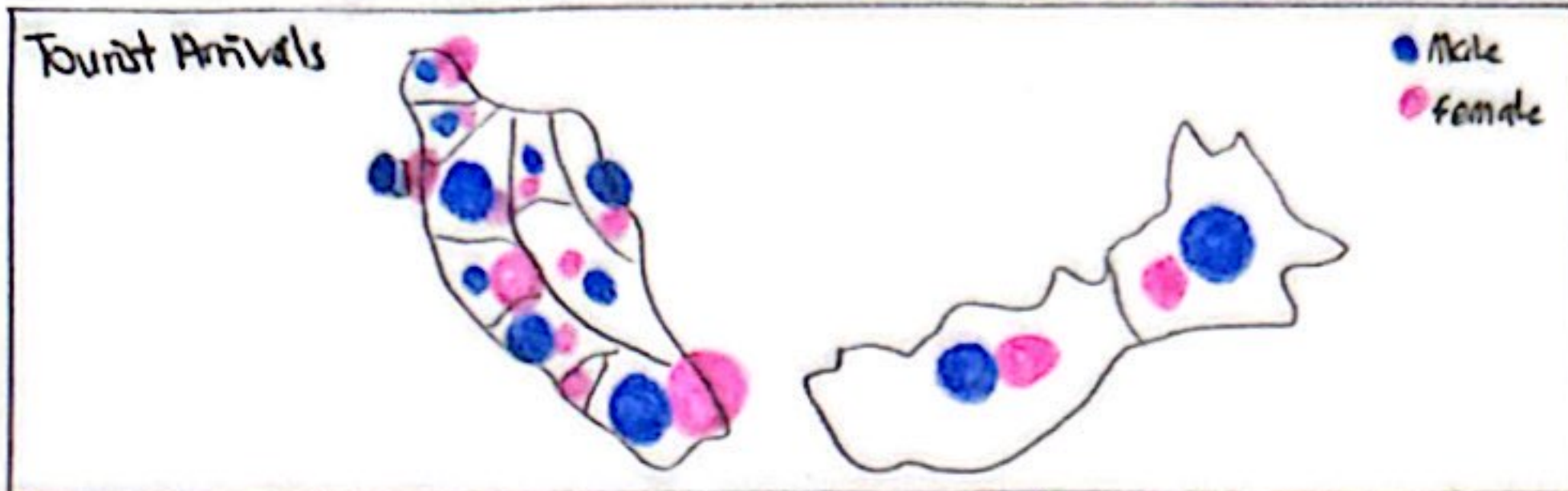Tourist Arrivals (million) : 5.8

Discussion

- Advantage:

  ① Chart that display information which belong to a focus section are grouped together

  ② Annotations or text descriptions are provided for viewer to gain better insights on the charts

- Disadvantage

  ① Hard to identify centre of visualisation as all chart seemed to be equally important

  ② Annotations on chart might cause visual clutter

Focus

- All charts are equally important in displaying information related to the tourism industry in Malaysia

- All charts under the Pre-Departure and Statistic have a text description to describe the analysis on the visualized information

- The chloropleth map and combined line stacked bar chart will have annotation overlay directly on the chart

Layout

Tourism in Malaysia

Tourist Arrivals

● Male
● Female

What they usually search for?

2020　2021　2022　2023

item 1
item 2
item 3

number of items
3

text
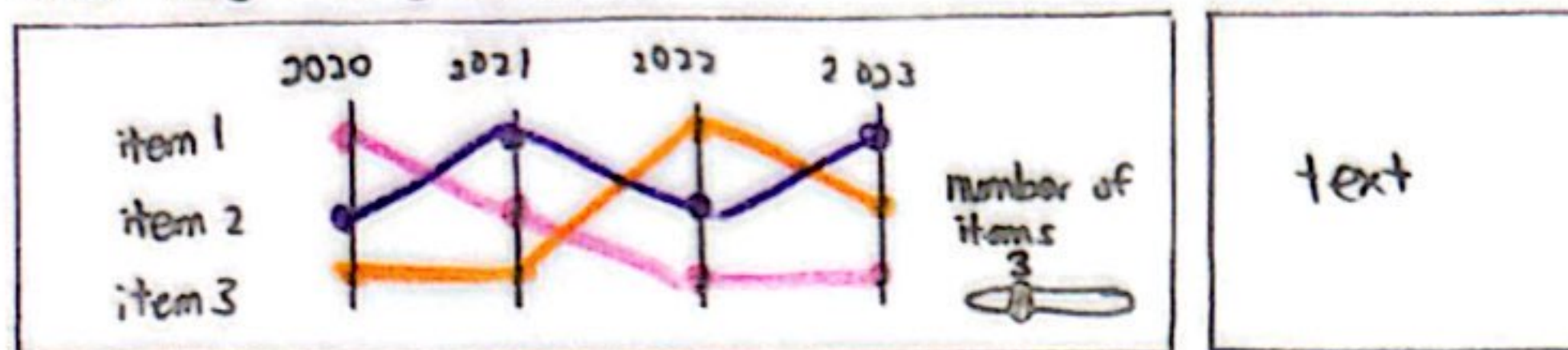
What is their purpose of visit?

2020
2021
2022
2023

Region 1　Region 2　Region 3　Region 4　Region 5

text

Where do they usually visit?

■ Location 1
■ Location 2
■ Location 3
■ Location 4
■ Location 5

text

What is their expenditure pattern?

Product

Product 1
Product 2
Product 3
Product 4

Select Country
All ▼

→ Value

text

Focus

- All charts are displaying the breakdown of tourist demographic and their behaviour patterns, providing insights to identify common patterns

- Text descriptions are placed next to each chart to allow viewer easily reference the chart while reading the analysis

- Interactive features are included for viewers to explore more data by applying the filter

Operation

number of item
3

The slider controls the amount of data being displayed

Top Shopping Location
■ Location 1
■ Location 2
■ Location 3
■ Location 4
■ Location 5

This interactive legend allow viewer to focus on a specific category while other categories are deactivated

Select country
All ▼

The dropdown filter allows viewer to filter data based on country

Tooltips are enabled for all charts to provide more information

Example of tooltip for pie chart:

Location: Bukit Bintang
Tourist Count (Million): 0.88

Discussion

- Advantage:

① Text descriptions are provided for each chart for viewer to gain better understanding

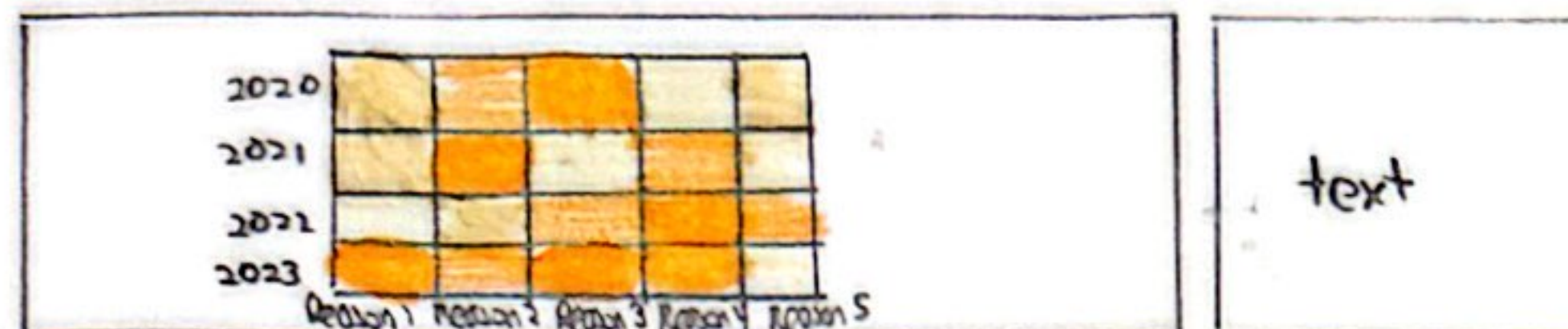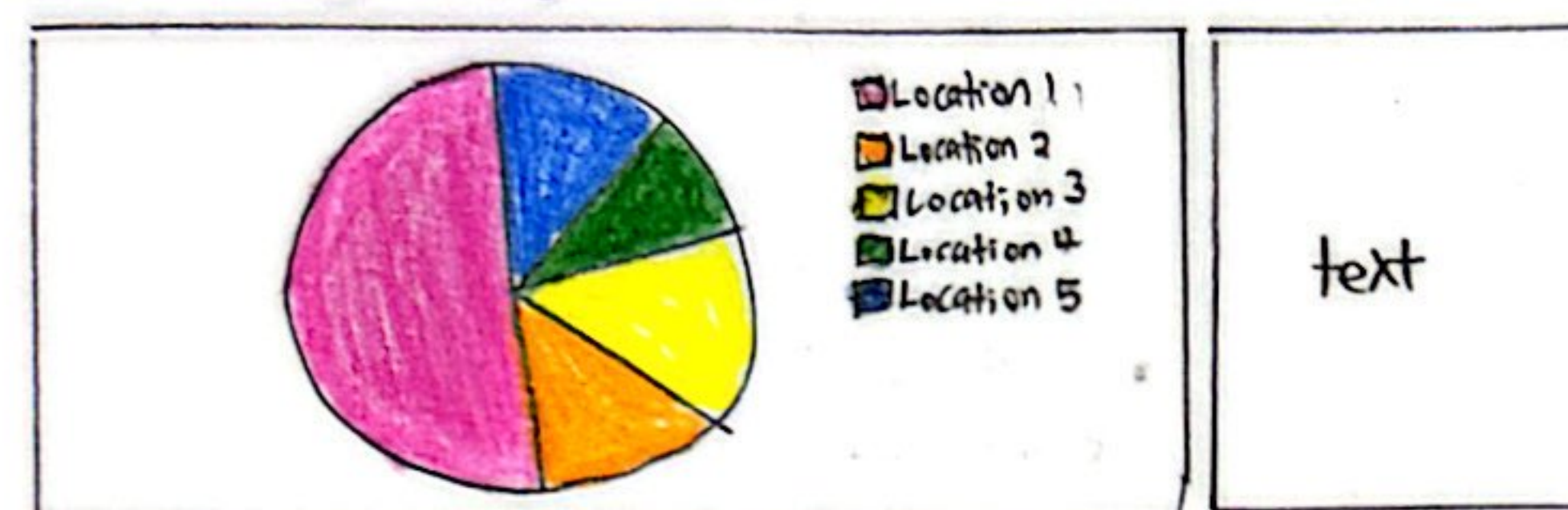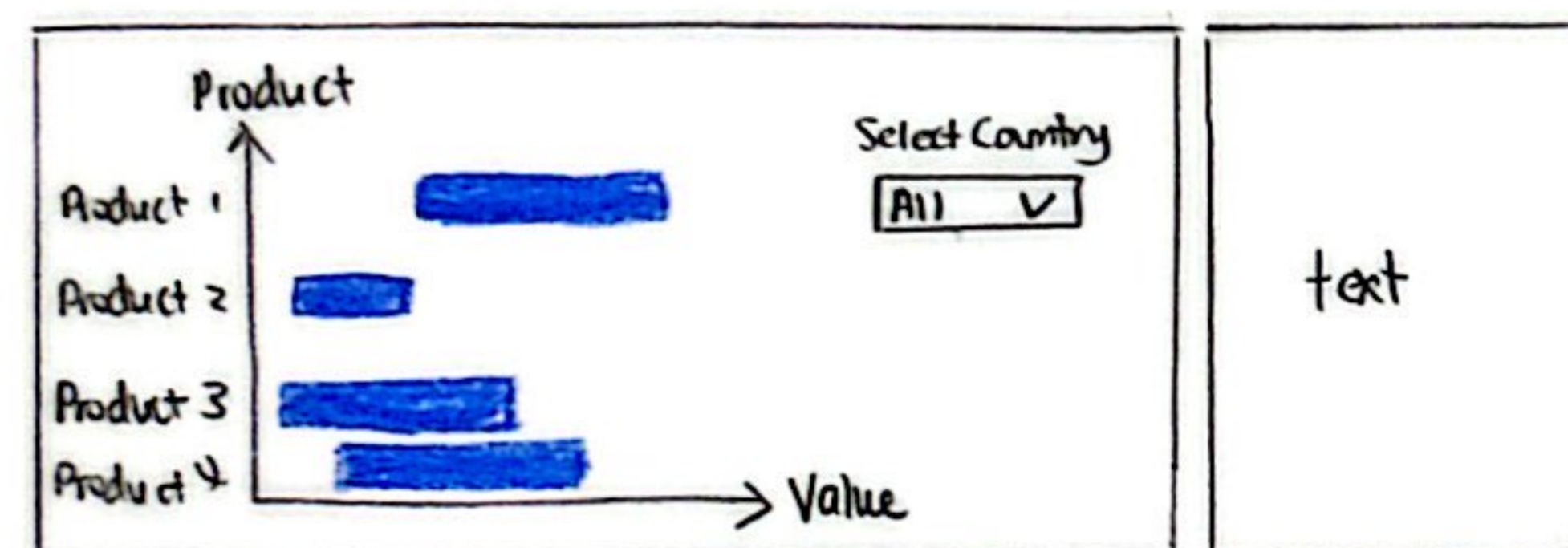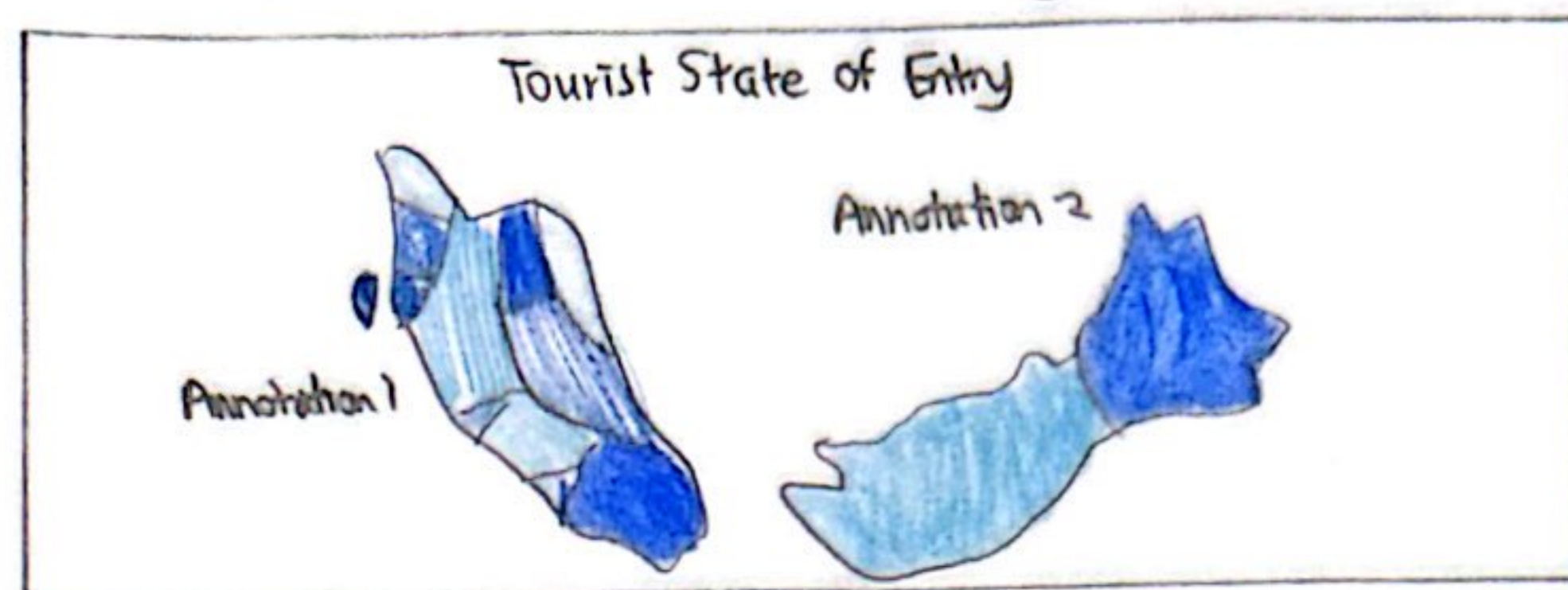② Interactive filters are available for viewer to filter information based on their needs

- Disadvantage:

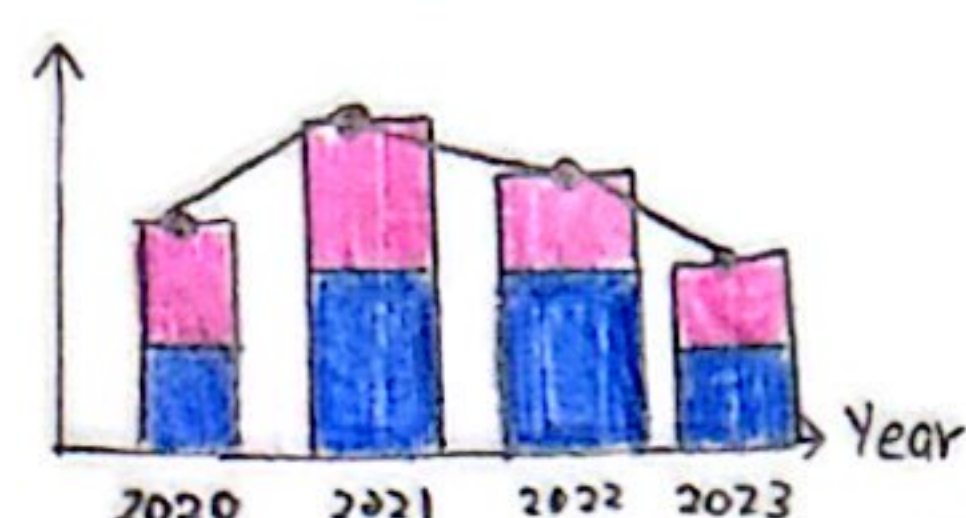① Hard to identify centre of visualisation as all chart looked equally important

Layout

Tourism in Malaysia

Tourist State of Entry

Annotation 1   Annotation 2

Arrivals Demographic

2020 2021 2022 2023   Year

text

Pre-Departure

Searches by Tourists

item 1
item 2
item 3
item 4

Q1 Q2 Q3 Q4

text

Purpose of Visit

☐ Reason 1
☐ Reason 2
☑ Reason 3
☐ Reason 4
☐ Reason 5
☐ Reason 6

Select country
All ∨

text

Tourist Behavior

Top Shopping Location

location 1
location 2
location 3
location 4
location 5

Country 1 Country 2 Country 3 Country 4 Country 5

Number of country
5

Expenditure Pattern

☐ Product 1
☐ Product 2
☐ Product 3
☐ Product 4
☐ Product 5
☐ Product 6

text

Focus

- The chloropleth map and bubble chart are the main focus in this dashboard due to their size and amount of information displayed

- Interactive filters are available for the charts to allow viewer filter information based on their needs

- Annotations and text descriptions are included to provide more insights into the displayed statistics on Malaysia's tourism landscape

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Operation

Purpose of Visit
☐ Reason 1
☐ Reason 2
☐ Reason 3
☐ Reason 4

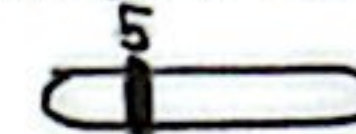| Expenditure Products |
|---|
| ☐ Product 1 |
| ☐ Product 2 |
| ☐ Product 3 |
| ☐ Product 4 |

These interactive legend allows user to filter information based on their needs

Select Country
All ∨

The dropdown selection allows user to view distinct information for each country

number of country
5

The slider controls the amount of information being displayed

Tooltips are enabled for all charts to display comprehensive information

Example of tooltip for heatmap

Quarter: Q1
Search Item: Item 3
Number of searches: 833

Discussion

- Advantage:
  1. The sections segregates type of information being displayed which guide viewer on the flow to read the chart
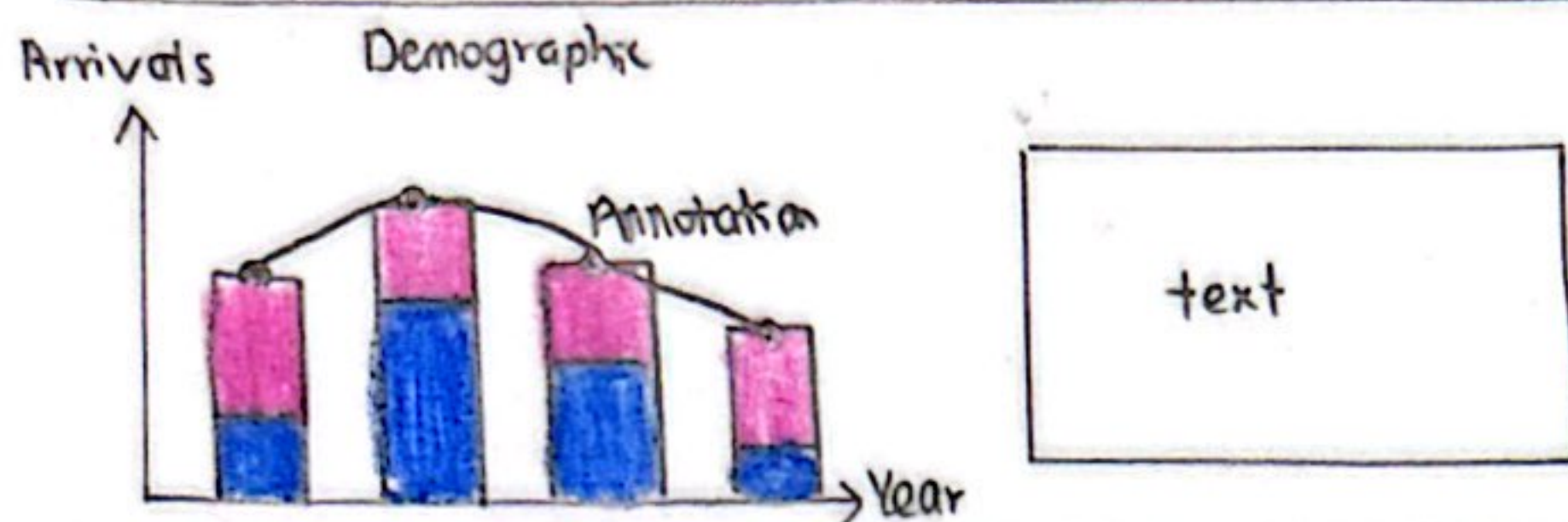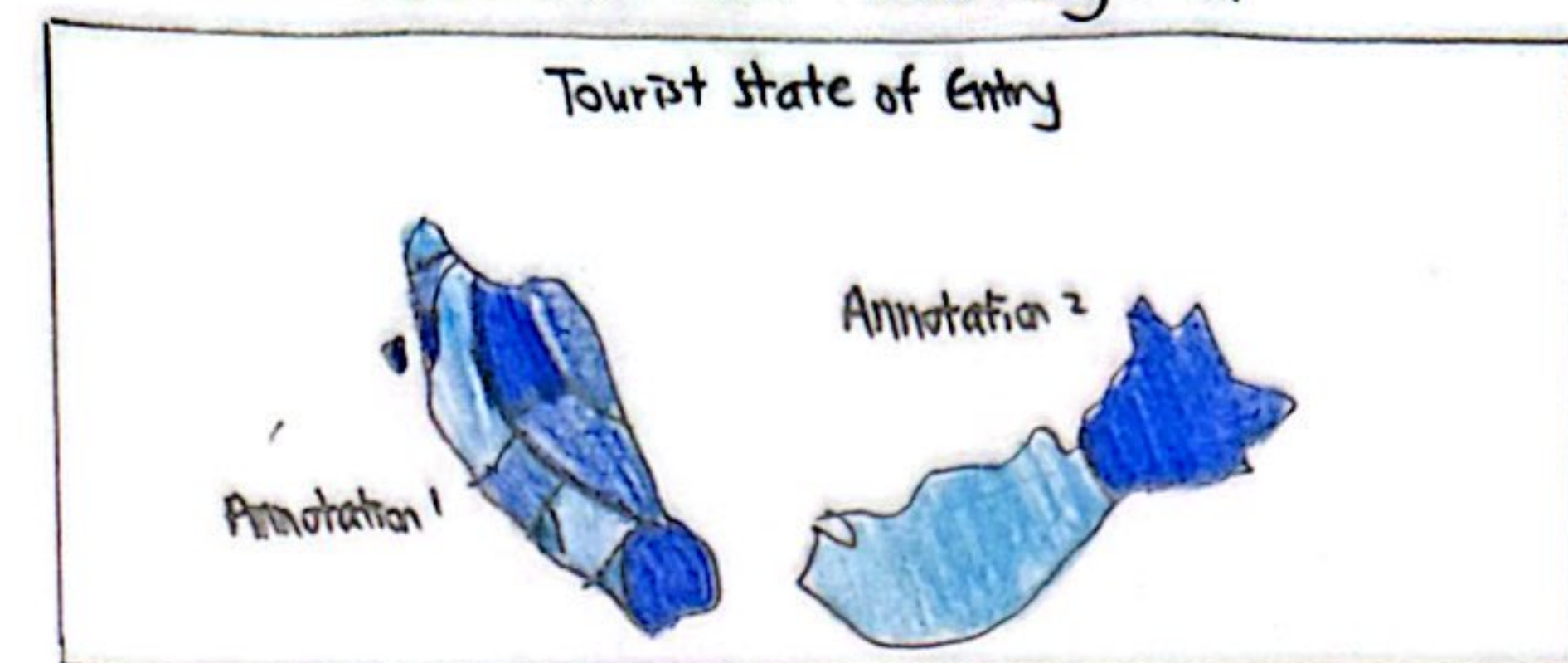 2. Text descriptions are included to provide extra information

- Disadvantage:
  1. There may be visual clutter at bubble chart when it is displaying 40 countries information
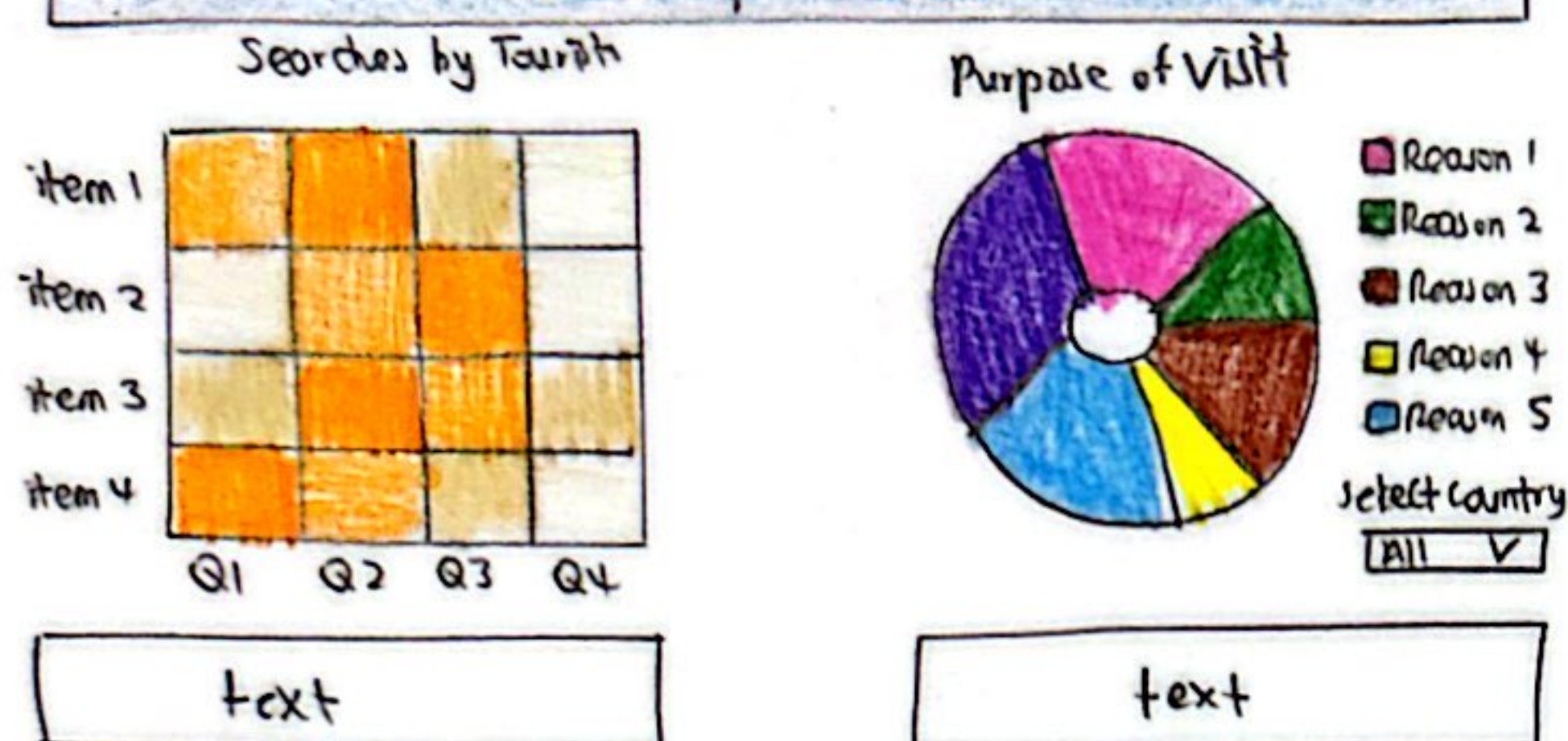
Layout

Tourism in Malaysia

Tourist State of Entry

Annotation 2

Annotation 1

Arrivals

Demographic

Annotation

text

Year

Pre-Departure

Searches by Tourist

item 1

item 2

item 3

item 4

Q1   Q2   Q3   Q4

text

Purpose of Visit

- Reason 1
- Reason 2
- Reason 3
- Reason 4
- Reason 5

Select Country
[All ▽]

text

Tourist Behaviour

Top Shopping location

location 1

location 2

location 3

Country 1 Country 2 Country 3 Country 4 Country 5

number of country

5

Expenditure Pattern

- Product 1
- Product 2
- Product 3

text

Focus

- Viewing Flow: Map → Tourist Demographic → Top Web Searches
  → Purpose of Visit → Top Shopping Location → Expenditure

- Comprehensive information on the analysis of each chart is displayed using text or annotation

- Use darker colour for section header, reasonable colour scheme for distinct categories

- Consistent font for texts

- Place legends near to charts

- Ensure annotations do not overlapped with the point marks

Operation

- Include legends for all possible charts to allow viewer filter information
- Include tooltips for all charts to display more information on the data

- Each text description should provide additional context on the information visualized by the chart

- Include filtering options such as drop-down selection or slider to control the amount and type of data being displayed

Detail

- Resources
  1. Use HTML, CSS to format the style of user interface
  2. Use vega lite to create the chart
  3. Topojson file containing map details
  4. Five datasets from reliable online portals

- Estimated time: 7 days
  - 5 days to create visualization
  - 1 day for writing text descriptions
  - 1 day for improving UI

- Requirements:
  1. Include interactive features
  2. Use appropriate colours which is visually friendly for colour blind viewer

Scanned with CamScanner