

## **Assignment 2**

### **Happiness Score in Southeast Asia**

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**Number of words :** 995 words

**URL :** <https://cngguni.github.io/3179/>

## Description of domain

The domain is mental health mainly focusing on the happiness of countries in Southeast Asia.

## Why and Who

In the backdrop of growing awareness and concern for mental health, there's an increasing need for visualisations to convey the well-being of individuals. To address this with a regional focus, Southeast Asia has been selected for Malaysians to understand its position on a regional and global scale. This helps locals understand their current well-being within their cultural and environmental context and to understand the factors influencing it. In addition to personal insight, this visualisation can also enhance comprehension among government officials and the general public regarding the interplay of social, economic and cultural forces on overall happiness.

## What

The data sources for this analysis were taken from World Happiness Report 2022 official website (Helliwell et al., 2022). This dataset was chosen due to its high relevance to the report's central objective, which is to gain insights into Happiness or also known as Ladder Score. A data cleaning process was executed using the R programming language. This process involved the removal of null values, and the creation of multiple subset containing only the columns essential for the analysis.

## Why and How

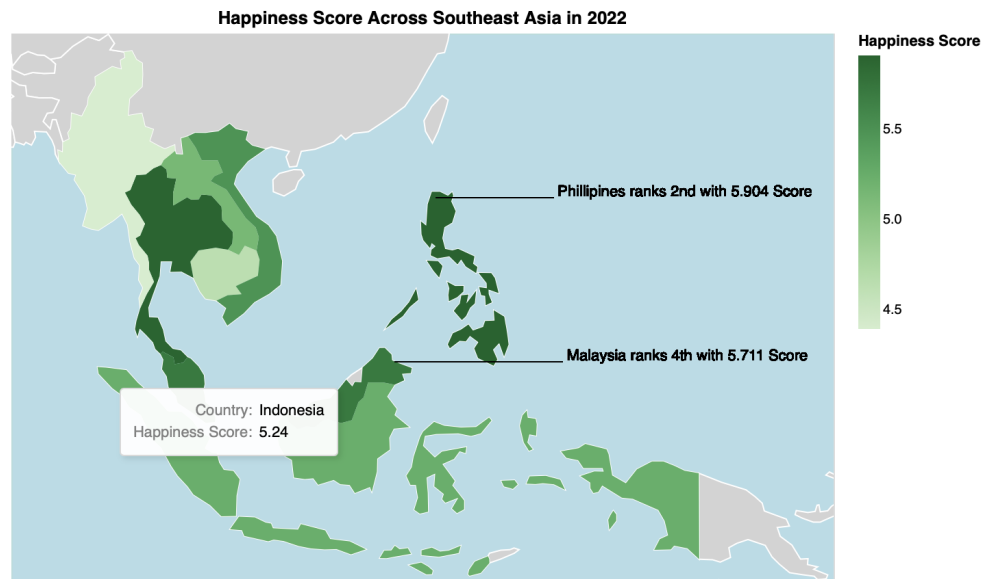


Figure 1.1 : Geographical map showing happiness in Southeast Asia

In Figure 1.1, a choropleth map is used as an idiom to represent the happiness score with a projection focus on Southeast Asia. This design is chosen because it provides an immediate understanding of how happiness levels vary across countries as it becomes evident which areas have higher or lower happiness scores. This allows viewers to quickly discern any clusters of happiness.

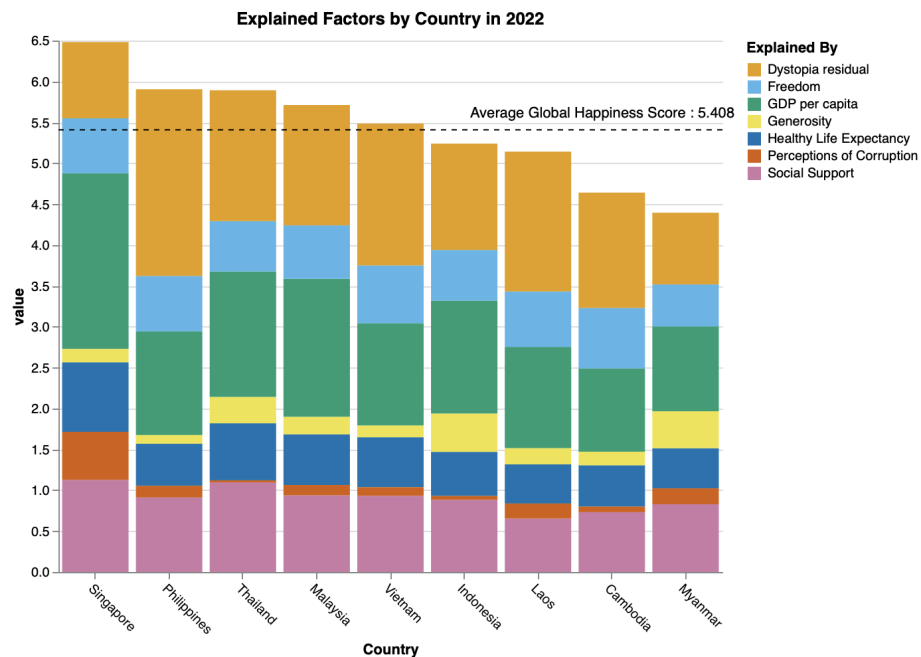


Figure 1.2 : Stacked Bar Chart for Factor Explanation

In Figure 1.2, a stacked bar chart is used to represent the factors contributing to the happiness score. This type of chart is suitable when there are two categorical attributes: 'Country' and 'Explained By,' and one quantitative attribute representing the values of each factor. In this chart, each bar corresponds to a specific country, with the glyphs indicating the contribution of each factor to that country's happiness score. Furthermore, the bars are sorted, enabling users to effectively compare rankings. This allows viewers to easily identify the factors contributing the most to each country's happiness score and ranking in 2022.

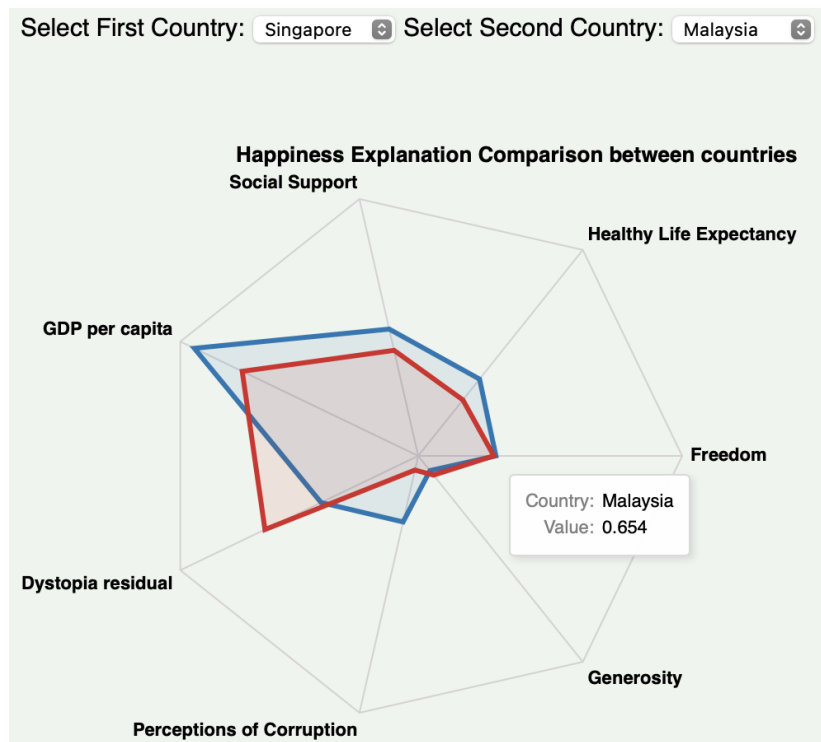


Figure 1.3: Radar Chart Factor Explanation for two country comparison

In Figure 1.3, a radar chart is used as an idiom to facilitate the comparison of values from the previously mentioned graph. This chart enables the simultaneous comparison of all factors between two countries. This is useful as it allows viewers to easily grasp the overall picture of how the two countries compare in terms of explained factors to identify patterns quickly.

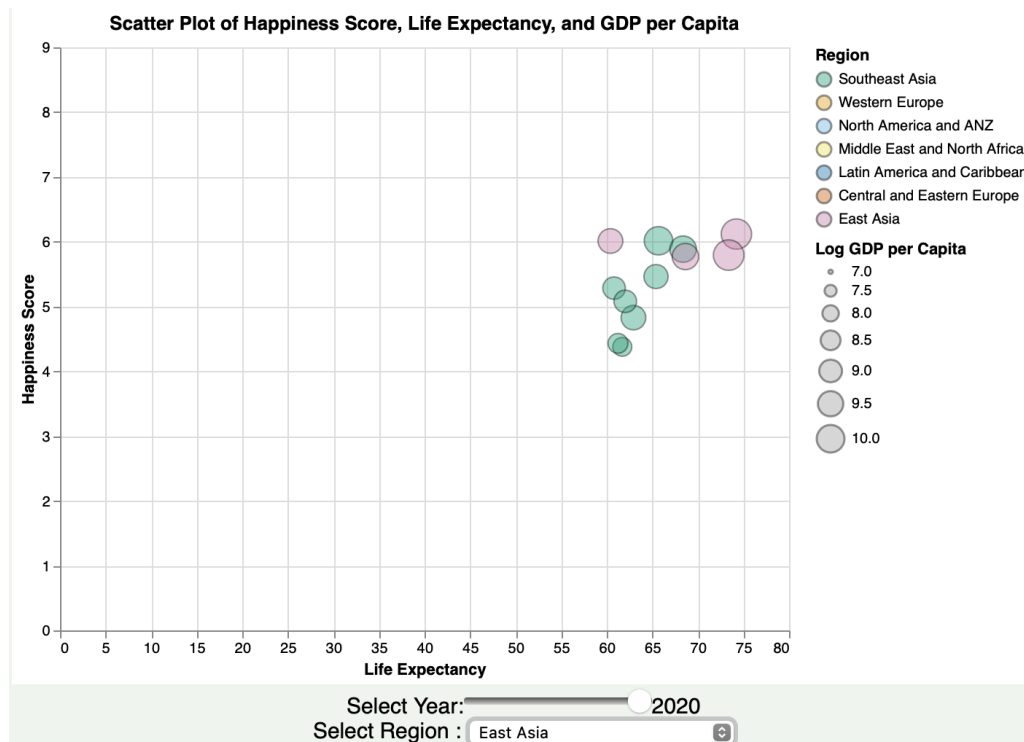


Figure 1.4 : Scatter plot to show correlation

In Figure 1.4, a scatter plot is used to visualise the relationship between two quantitative variables: Happiness score and Life expectancy with an addition of GDP represented by size channel. Each data point signifies a country with an addition of hue to represent each region. Light opacity is chosen for marks due to overlapping marks. Viewers can visualise the relationship and clearly identify trends, outliers and distribution. Additionally, the inclusion of a slider and a dropdown menu allows users to select different regions, facilitating comparisons between Southeast Asia and other regions for specific years.

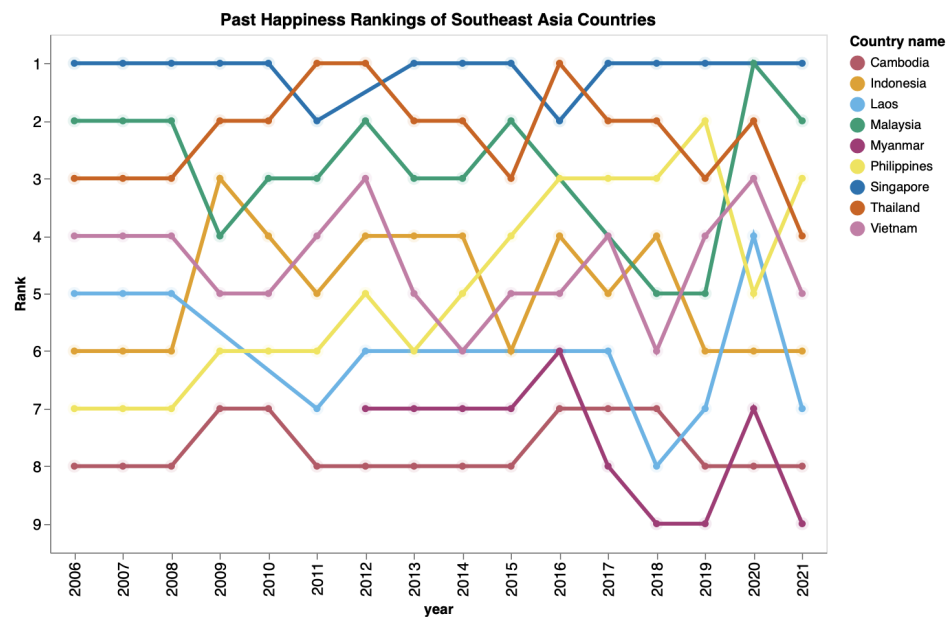


Figure 1.5 : Bump Chart for past happiness ranking

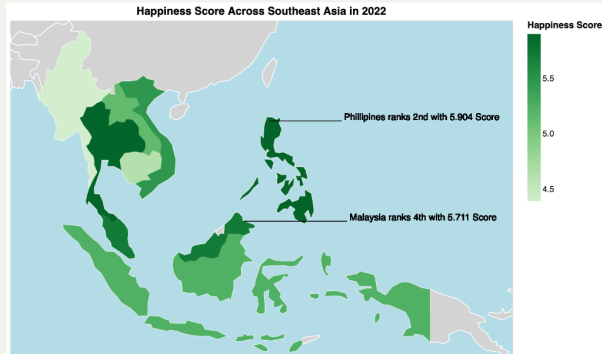
In Figure 1.5, a bump chart is used as an idiom that arranges countries along the years in accordance to their happiness score when compared within Southeast Asia. Each country's path illustrates the evolution of its ranking over time, which is easily viewable by selecting the country from the legend. This design is beneficial for visualising the shifts in happiness rankings over time and for identifying countries that have experienced the most significant changes in their happiness levels.

## Happiness in Southeast Asia

This visualization shows Happiness score in Southeast Asia Countries

### Which country is the happiest?

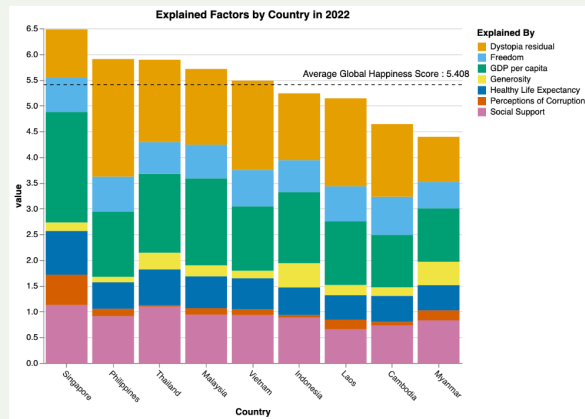
Taken from World Happiness Report, it colours the countries in Southeast Asia based on happiness score where the darker the area, the higher the score, the happier the country.



### So what makes up these numbers?

These are the factors contributing to the users's selection of happiness score

This also serves as a ranking chart for 2022's southeast asia countries.

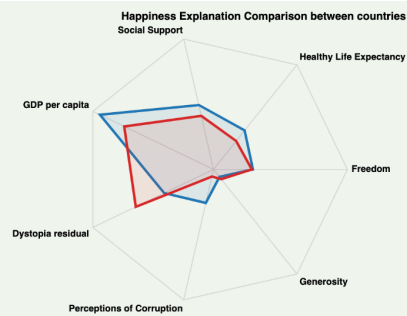


### Country to country comparison

Ever wondered how the countries are like compared to each other?

You can do it here by selecting two countries and observe!

Select First Country:  Select Second Country:



### Factors highly related to Happiness Score

The relationships between happiness score can be influenced by Life Expectancy and GDP.

Additionally, correlations can vary across different populations and regions.



Figure 1.6 : Overview of entire visualisation



## Design

### 1. Layout

In Figure 1.6, all visualisation elements are aligned in a single column to minimise the number of sight lines and reduce disjointedness. The visualisations are also strategically ordered by importance. The map being the most significant is placed at the beginning to make it clear that it's focusing on Southeast Asia.

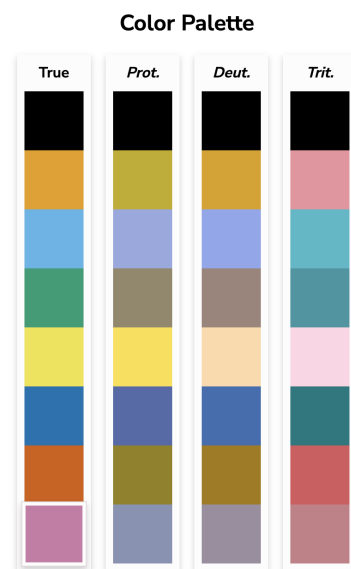


Figure 2.1 : Bang Wong's colour palette

### 2. Colour

The colour palette chosen for charts featuring multiple colours like in Figure 1.2 is selected to accommodate individuals with colour blindness. The colour palette shown in Figure 2.1 is sourced from Bang Wong (Nichols, 2023) who paired it through different views. To enhance accessibility, each factor is also selectable in the legend, which causes remaining factors to fade in brightness allowing viewers to focus their attention on the selected factor, aiding those with colour vision impairments as shown in Figure 3.

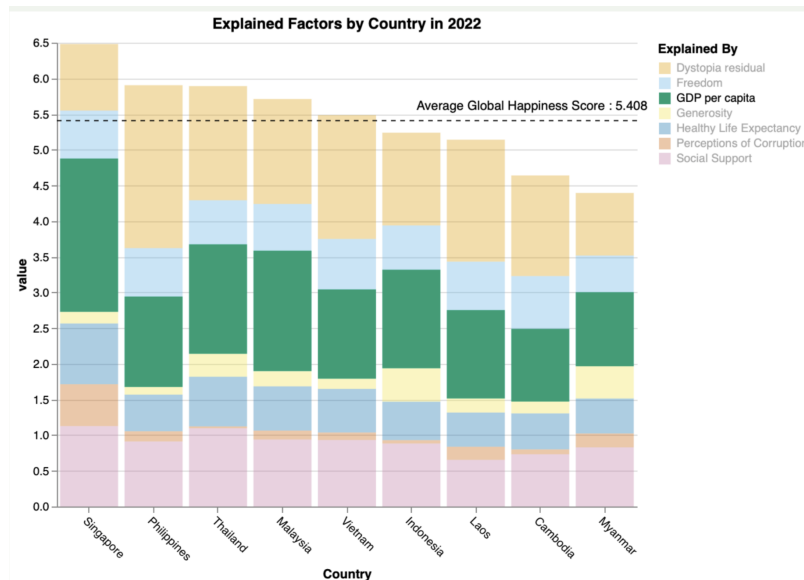


Figure 3 : Chart 2 when GDP per capita selected

### 3. Figure-ground

In Figure 3, Figure-ground contrast is achieved here by adjusting the saliency of visual channels when a specific factor is selected. This modification, such as adjusting brightness, directs the viewer's attention to the primary focus, for instance "Explained by GDP per capita" as demonstrated. Additionally, critical details in descriptions and annotations are highlighted with increased weight, creating a visual hierarchy that helps key information stand out distinctly amidst other content.



Figure 4 : Title, description and sub-heading of visualisation

### 4. Typography

Consistency in typography is maintained with the use of the 'Happy Monkey' font for Title and headings throughout the visualisation, aligning with the central theme of happiness in the document. To establish a visual hierarchy, the main title and banner headings are emphasised with bold formatting in Figure 4.

### 5. Storytelling

The visualisation guides readers in a top-to-bottom order, enabled by a scrolling format, as illustrated in Figure 1.6. It commences with a clear title and introduction, followed by distinct section banners that act as a roadmap for the narrative. By

applying gestalt's principle of similarity, once a factor is clicked, only colours of the specific "explained by" factor are displayed as shown in Figure 3.

## Citations

Helliwell, J. F., Layard, R., Sachs, J. D., Jan-Emmanuel De Neve, Aknin, L. B., & Wang, S. (2022, March 18). World Happiness Report 2022. Retrieved October 12, 2023, from Worldhappiness.report website:

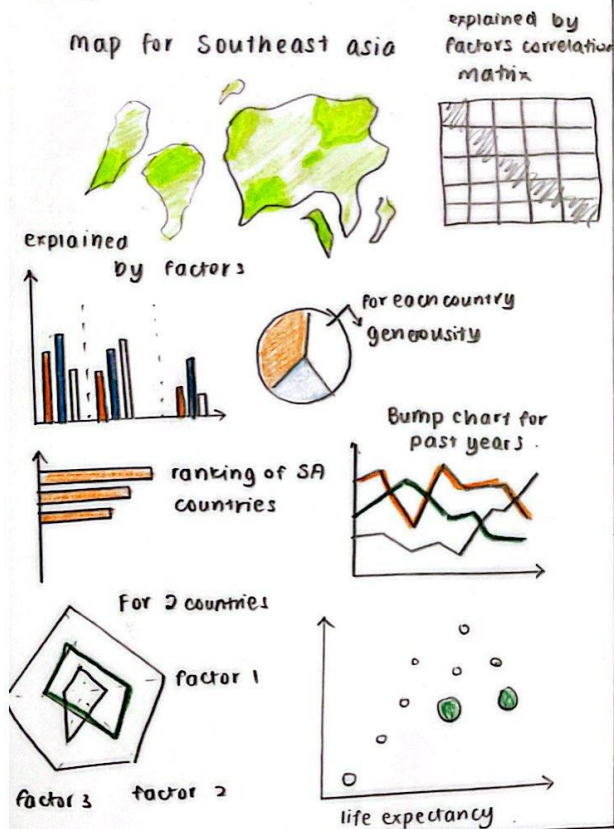
<https://worldhappiness.report/ed/2022/#appendices-and-data>

Nichols, D. (2023). Coloring for Colorblindness. Retrieved October 15, 2023, from Davidmathlogic.com website:

<https://davidmathlogic.com/colorblind/#%23000000-%23E69F00-%2356B4E9-%23009E73-%23F0E442-%230072B2-%23D55E00-%23CC79A7>

# Appendix

## ideas



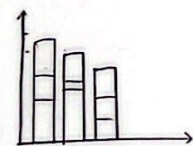
## Combine and refine

# All charts here are used in design 2, 3, 4, 5

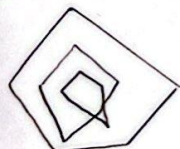
① geographic map



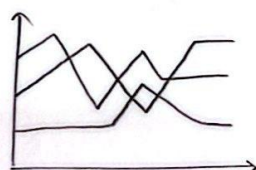
② combined rank and distribution by sorting



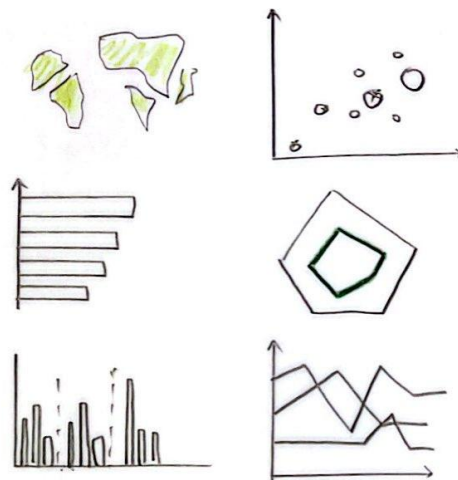
② radar chart as alternative



③ Bump chart



## Filter



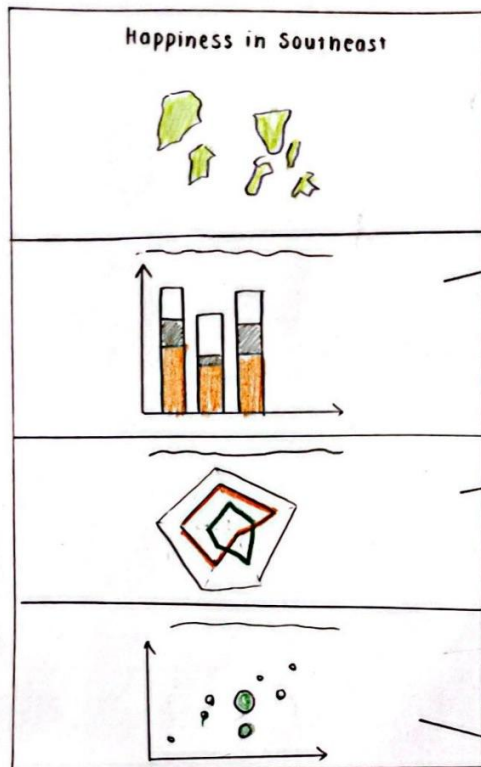
## Categories

- ① Geographical map overview of southeast asia's happiness
- ② Distribution of top 5 happiest in southeast asia
- ③ comparison of 2 countries
- ④ correlation of GDP, life expectancy and happiness
- ⑤ Southeast asia compared to other regions

## Questions

- ① Do these ideas provide solution to visualisation on where each country in southeast asia stand in their own region in terms of happiness?
- ② Do these concepts align with assignment goals and effectively communicate insights to different users?

## Layout



Title : Narrative view

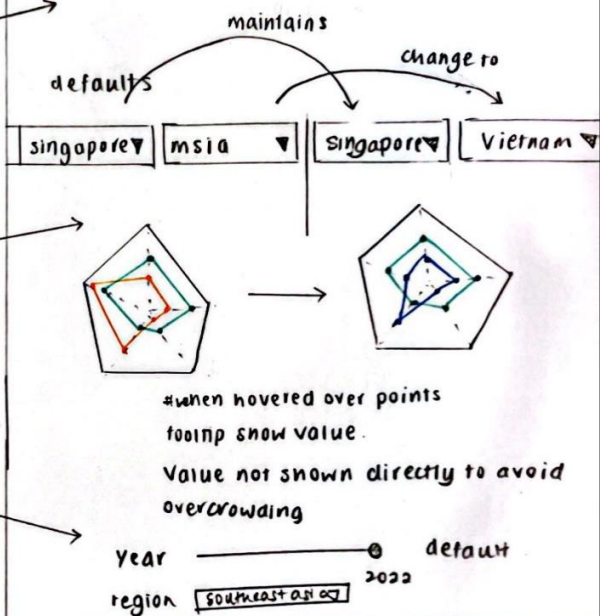
Author : Ng Chen Ting

Date : 11 / 10 / 2023

Sheet : 2

Task : An informative layout

## Operations



## Focus

section by section focus .

uses narrative storytelling from top to bottom

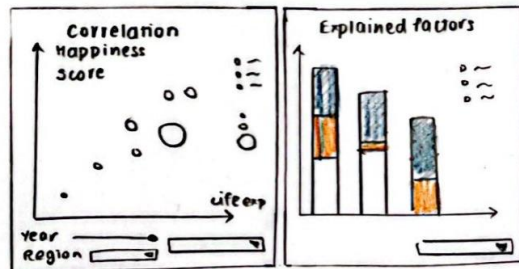
- ① map of southeast asia .
- ② stacked bar chart explaining factors contributed to score .
- ③ radix chart allowing comparison of 2 countries simultaneously
- ④ scatterplot to show correlation between GDP , life expectancy and happiness .

## Discussion

- ① may have risk of information overload since it's all in one long page
- ② not confusing to navigate
- ③ easy to implement



## Layout



geometry map
Scatter plot
explained by

a selection changes the entire visualisation view

## Focus

By pages selected through drop down  
inspired by books

Page 1 : map overview of SA

Page 2 : correlation between life expectancy  
GDP, happiness score

Page 3 : Explained by stacked bar  
chart

Page 2 allows observation over years to  
comparison with other regions.

Title : Multiple paged dashboard

Author : ng chen ting

Date : 11 / 10 / 2023

Sheet 3 :

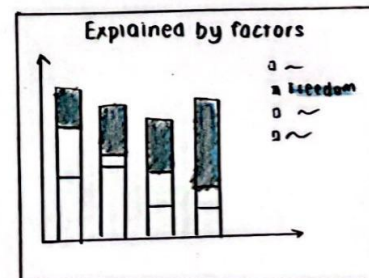
Task : create a compact design

## Operations

original view

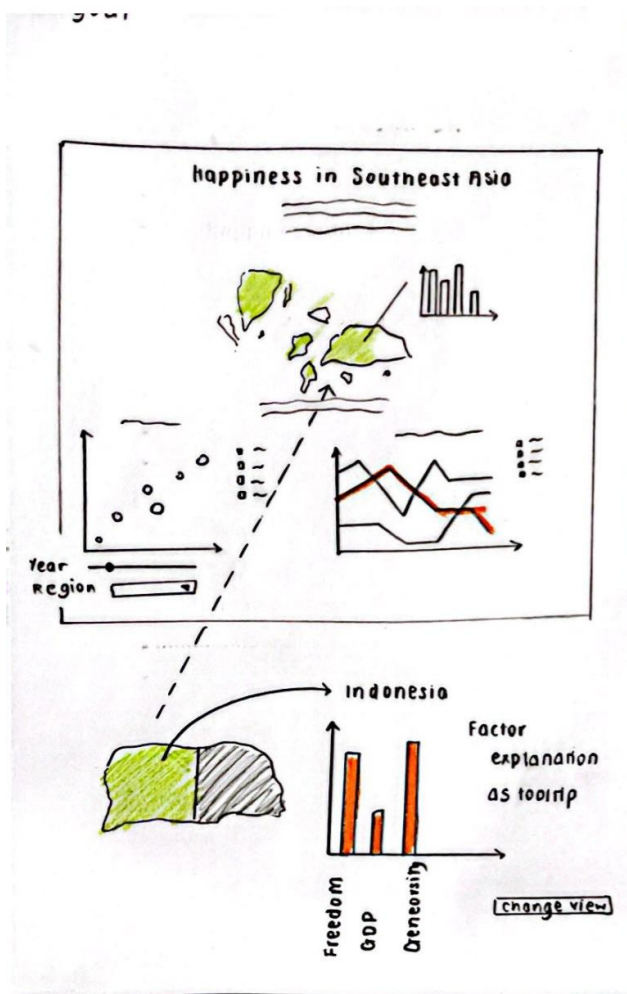


[ When Explained By selected ] Explained by  
[ When "Freedom" factor clicked from legend

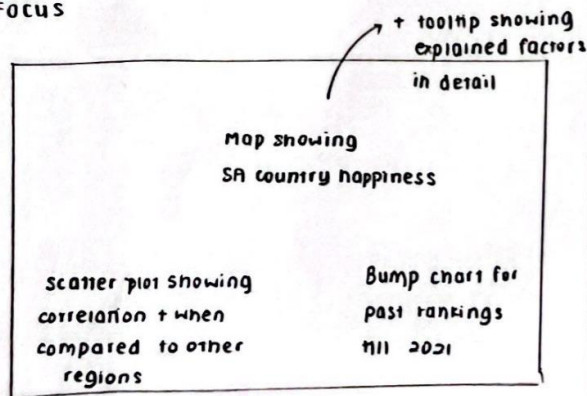


## Details

- ① minimalistic design
- ② may relay heavily on memory
- ③ needs navigation, hard to compare  
Idioms
- ④ have a clear one page view, more details  
can be added per page
- ⑤ Allows viewers to focus at one chart at a time



### Focus



Title : Single page overview

Author : ng chen ting

Date : 11 / 10 / 2023

Sheet : 4

Task : Compact dashboard with single view

### [operations]

Chart 1 has graphs in tooltip explaining factors that made the score

• change view button

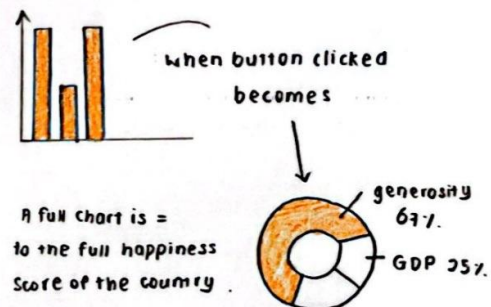


Chart 2 :

- year slider
- region selector

Chart 3 :

- legend clickable
- # refer to sheet 2

Year: [slider] 2020

Region: [Western Eur]

adds on new region in addition to South East Asia

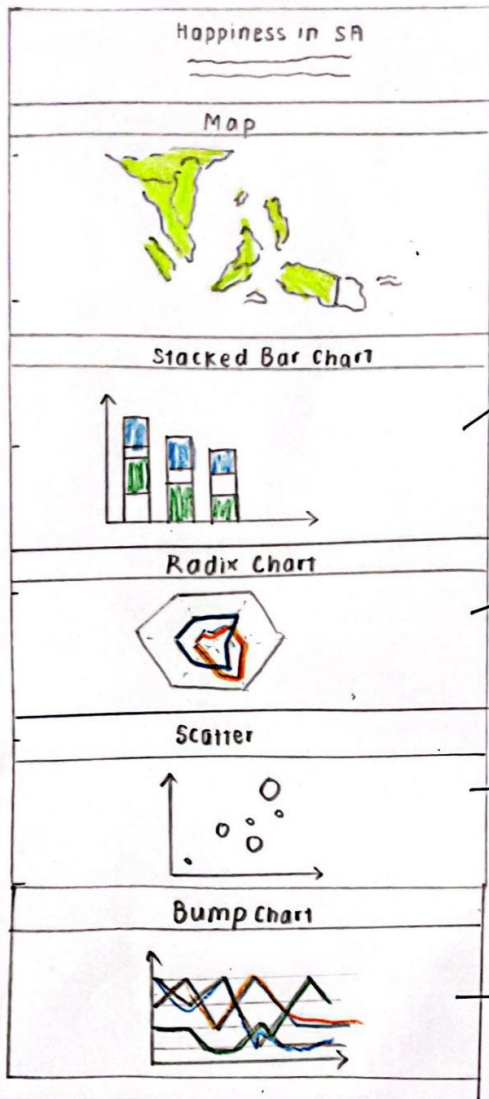
### Details

① compact design allowing users to see overview at a glance

② Easy to understand + interactive

③ May be cramped when implemented due to small space + complicated charts





Focus

[ category focused ]

- main component separating category is BANNERS

• country focus
• factors
• factors with 2 countries
• correlation
• ranking

File : Final Design sheet

Author : Ng Chen Ting

Date : 17/10/2023

Sheet 5 :

Task : Final Implementation Design

Operations

Chart 2 : clickable legend



Chart 3 : 2 country selection

Singapore Malaysia



- if same country chosen only one chart shown

Chart 4 : • has slider for year  
• drop down for other regions

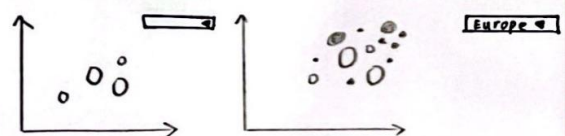
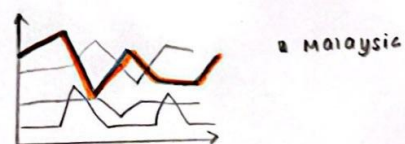


Chart 5 : clickable legend



Details

- # Allows viewers to effectively understand southeast asia countries' ranking
- # simple and straightforward design