Monash University: Assessment Cover Sheet

Student name	Yap		Kok Ban	
School/Campus	IT		Student's I.D. number	32260164
Unit name	FIT3179 Data visualisation - S2 2022 MUM			
Lecturer's name	Dr. Grace		Tutor's name	Dr. Grace
Assignment name	Data Visualisation I Report		Group Assignment: No Note, each student must attach a coversheet	
Lab/Tute Class: 1		Lab/Tute Time: Friday 9am-11am	Word Count: 998	
Due date: 05-09-2022		Submit Date: 05/09/22	Extension granted ☐	

If an extension of work is granted, specify date and provide the signature of the lecturer/tutor. Alternatively, attach an email printout or handwritten and signed notice from your lecturer/tutor verifying an extension has been granted.

Extension granted until (date): ..../......./........... Signature of lecturer/tutor: ....

Late submissions policy	Days late	Penalty applied
Penalties apply to late submissions and may vary between faculties. Please refer to your faculty's late assessment policy for details.		

Patient/client confidentiality: Where a patient/client case study is undertaken a signed Consent Form must be obtained.

Intentional plagiarism or collusion amounts to cheating under Part 7 of the Monash University (Council) Regulations

Plagiarism: Plagiarism means to take and use another person's ideas and or manner of expressing them and to pass these off as one's own by failing to give appropriate acknowledgement. This includes material from any source, staff, students or the Internet - published and unpublished works.

Collusion: Collusion means unauthorised collaboration on assessable written, oral or practical work with another person. Where there are reasonable grounds for believing that intentional plagiarism or collusion has occurred, this will be reported to the Associate Dean (Education) or nominee, who may disallow the work concerned by prohibiting assessment or refer the matter to the Faculty Discipline Panel for a hearing.

Student Statement:

- I have read the university's Student Academic Integrity Policy and Procedures

- I understand the consequences of engaging in plagiarism and collusion as described in Part 7 of the Monash University (Council) Regulations (academic misconduct).

- I have taken proper care to safeguard this work and made all reasonable efforts to ensure it could not be copied.

- No part of this assignment has been previously submitted as part of another unit/course.

- I acknowledge and agree that the assessor of this assignment may, for the purposes of assessment, reproduce the assignment and:

  i. provide it to another member of faculty and any external marker; and/or

  ii. submit to a text matching/originality checking software; and/or

  iii. submit it to a text matching/originality checking software which may then retain a copy of the assignment on its database for the purpose of future plagiarism checking.

- I certify that I have not plagiarised the work of others or participated in unauthorised collaboration or otherwise breached the academic integrity requirements in the Student Academic Integrity Policy.

Date: 05/09/22 Signature:... *

Privacy Statement:

For information about how the University deals with your personal information go to http://privacy.monash.edu.au/guidelines/collection-personal-information.html#enrol

Title: World Happiness Report 2022
URL

- https://public.tableau.com/app/profile/kb.yap/viz/3179_DataVis1_32260164/Dashboard1?publish=yes

Domain / Why? / Who?

The chosen Domain is World Happiness in the year of 2022 according to factors contributing to happiness. The six factors are: GDP per capita, Social support, Healthy life expectancy, Freedom to make life choices, Perceptions of corruption and Generosity. The target audience for this project would be everyone of us in the world, as happiness is the thing we want most. In recent years, the pandemic has brought us pain and suffering. As we battle the ills of disease and war, it is necessary to remember the world's desire for happiness. The reason we chose this domain is to visualize how happy people are today, as well as how satisfied with their lives are people in different societies.

What?

The data used was obtained from two sources. The first source was obtained from Kaggle, which was from World Happiness Report 2022 (World Happiness Report, 2022) based on information from the Gallup World Survey. The world happiness score provided is based on answers to the most life evaluation address inquired within the survey. The creation process is the survey asks respondents to think of a step with the most excellent conceivable life for them and to rate their current lives. The second source was obtained from World Population Prospects 2022 (United Nations, 2022). The extracted data from this source is only used for providing more insights based on the population of countries.
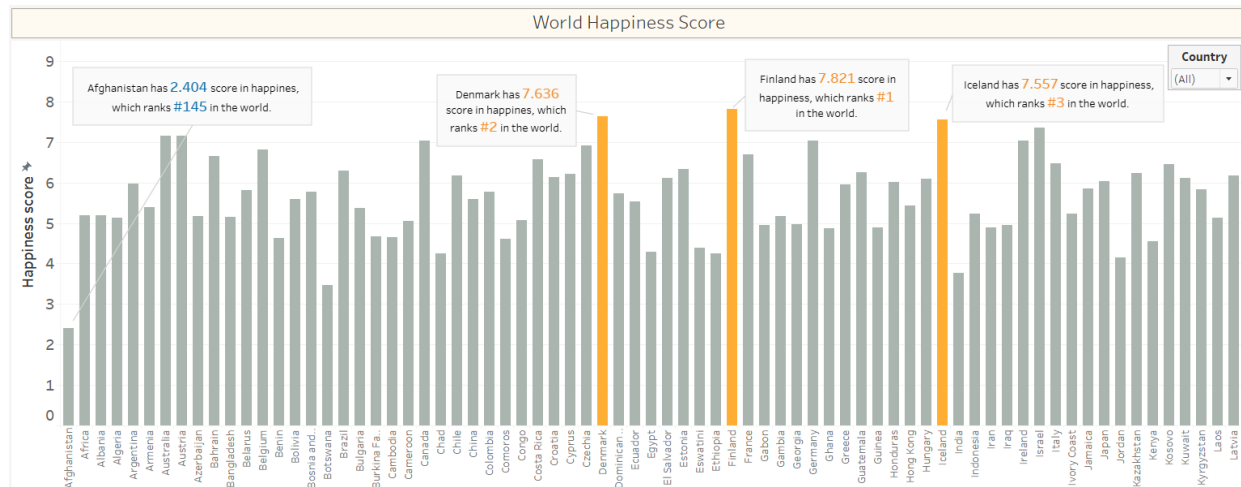
Why? / How?

Figure 1: World Happiness Score

A bar chart was used to present the world happiness score in the world, providing a total of 145 countries from different regions in the year of 2022. This bar chart shows the comparisons of happiness scores from different countries clearly, including annotations for the top three happiest countries, as well as the least happy country. Here, highlight color (light orange) was used for the most important data points (top 3 countries), while gray was used for general context data (other countries) to guide the viewer's eye on the three happiest countries in the world.
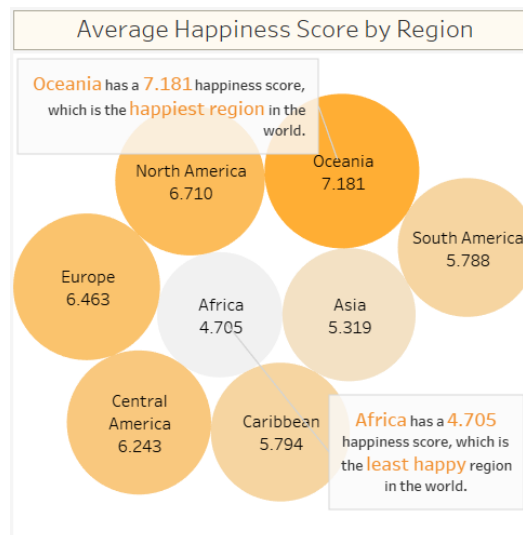

Figure 2: Average Happiness Score by Region

A packed bubble chart was used to show the average happiness score by 8 regions from the world. This chart allows viewers to spot regions easily and compare their happiness score by looking at the size of the bubble. A light color was applied for Africa with the lowest score in happiness, while a relatively darker color was applied for regions with higher score in happiness. This design of chart and color will be more intuitive for most readers in order to visualize the average happiness score by regions.

Figure 3: The 20 Happiest Countries

A tree map was used to show the ten happiest countries in the world. The reason we chose to use a tree map is because it allows us to show the composition of the top 20 happiest countries. It is best utilized in an interactive format, so that we can easily look into the various countries and their happiness score. It also allows us to enlarge and reduce the size of the visual display and the amount of detail revealed as desired, so that we can provide a better visualization for the viewer.
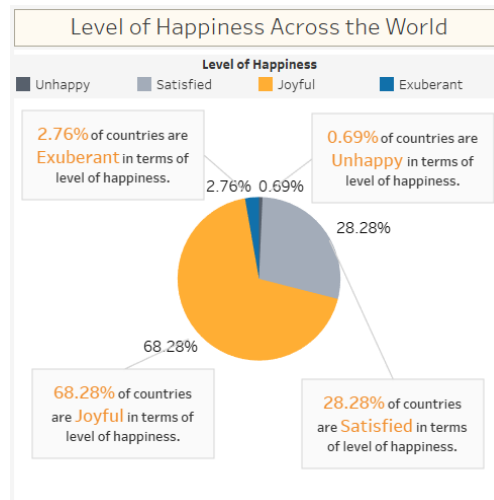

Figure 4: Level of Happiness Across the World

A bar chart is provided in order to show the percentage of 4 levels of happiness across the 145 countries. The four levels are: Unhappy, Satisfied, Joyful, and Exuberant. A bar chart is chosen to represent the data so that it summarizes the happiness levels of all 145 countries and categorizes them to display the percentage of the happiness levels. It is helpful for us to show the relationship of parts to the whole, considering there are only 4 levels of happiness.
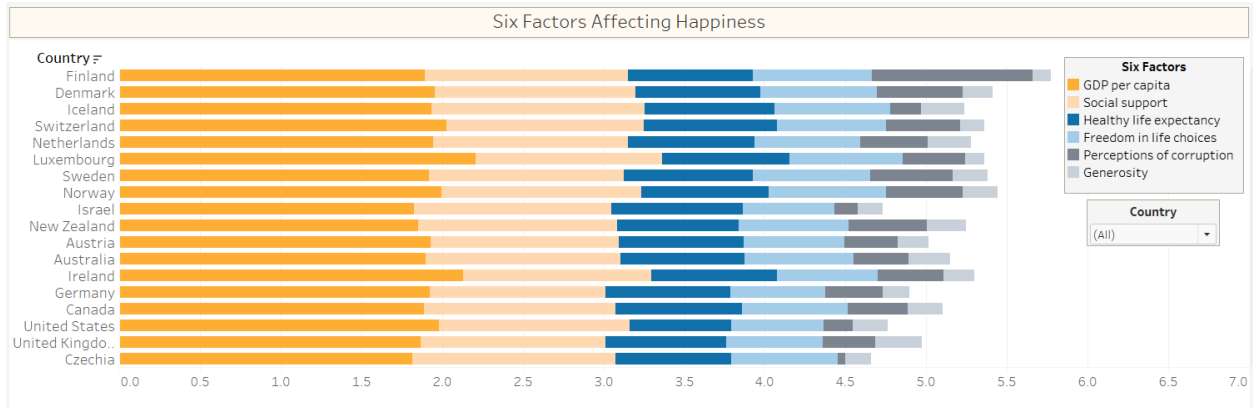
Figure 5: Six Factors Affecting Happiness

A stacked bar chart is used here to show the six factors that affect happiness. Here, the stacked bar chart is designed to help us simultaneously compare totals as well as notice the changes at the factors value which are likely to have specific influence on happiness score in totals. To avoid confusion when comparing values between one specific factor, we have also included a filter to let viewers select on specific factors that affect happiness on interest.
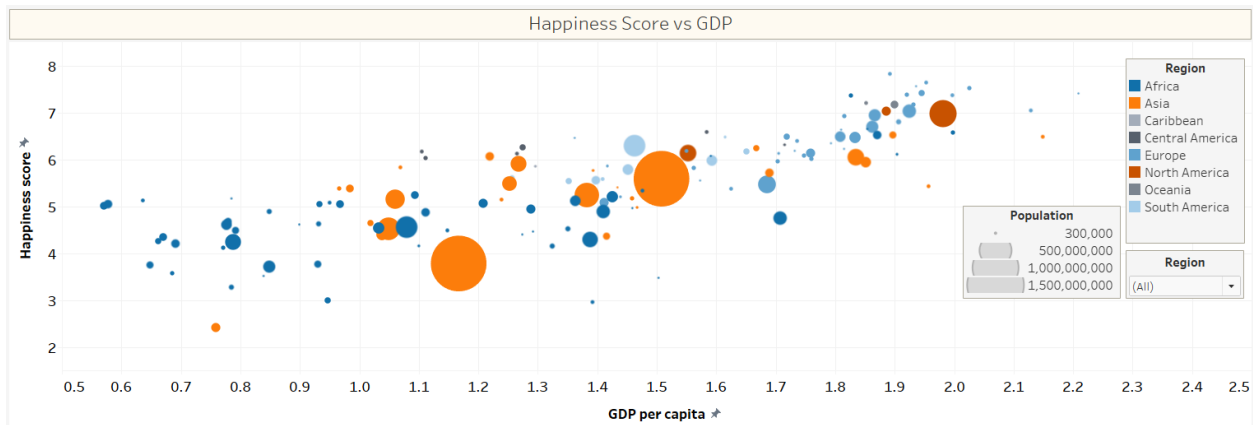

Figure 6: Happiness Score vs GDP

A bubble chart is used here to show the relationship between happiness score and GDP per capita of a country, providing also the population of the country. It is used to determine the three numerical variables, which are happiness score, GDP per capita and population. Here, the size of the bubble indicates the population of a country, while the value of happiness score and GDP per capita is as shown from the plotting of the chart. Considering the color-blind people, a color blind palette is used for different regions.

Design

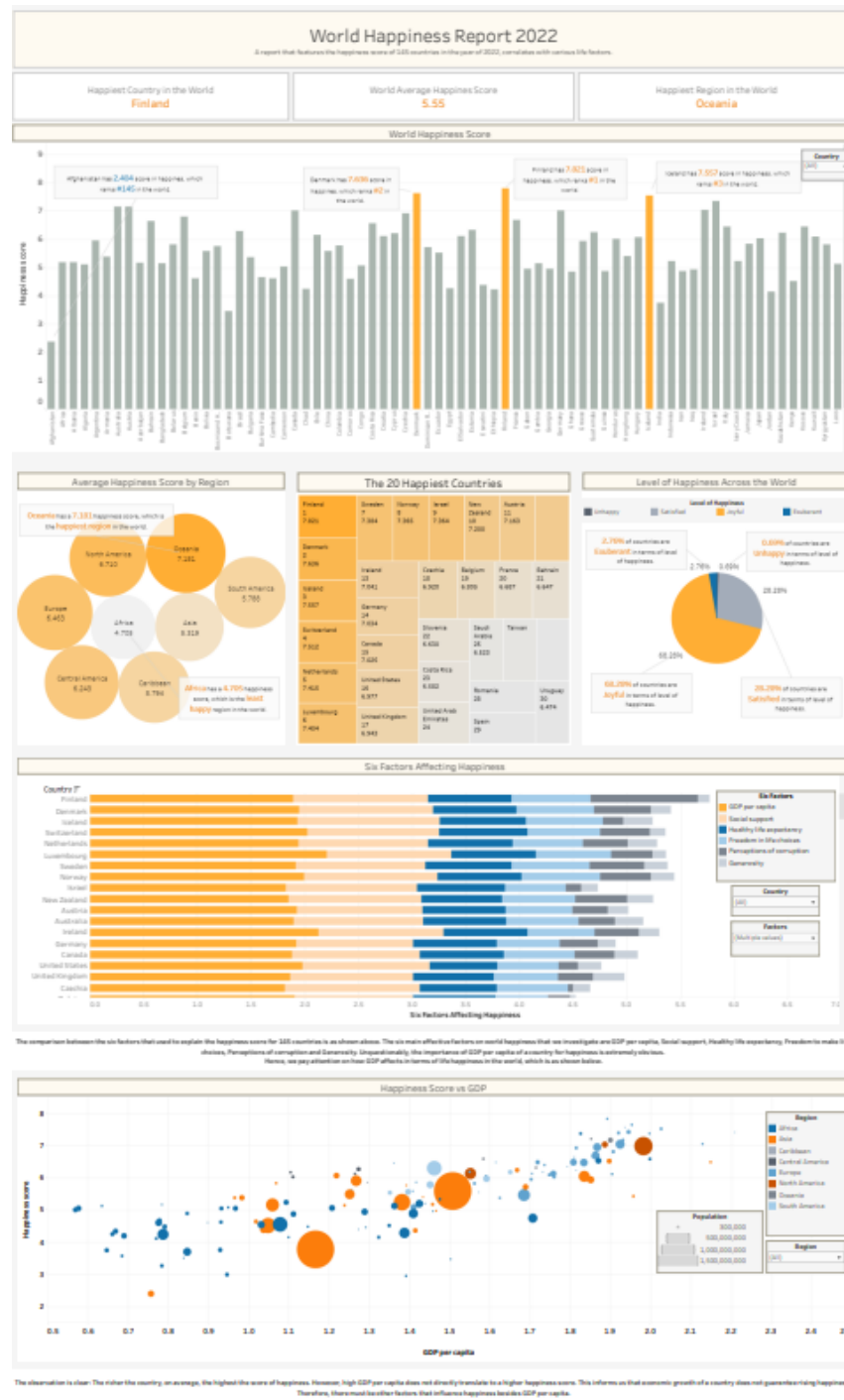**Figure 7: Final Dashboard of World Happiness Report 2022**

The layout of my dashboard was structured in columns and rows. Firstly, there are a number of vertical and horizontal containers which are aligned with sight lines. This design was to ensure the layout of the dashboard is balanced and symmetric clearly structured in columns and rows. White space was also applied in this graph to obtain a good data-ink ratio.

Secondly, a consistent color, light orange, was mainly used in this visualization. The reason for selecting it as our main color is because people often describe orange as bright, happy, and uplifting, which is related to our topic. All charts, figures, and text including annotations consistently applied with orange color. Also, gray was treated as an important color to show less important elements, while darker colors such as orange and blue were used to show more important elements.

In order to create a visual hierarchy, the design was improved so that users can highlight specific attributes of interest, only the highlighted country/region will be shown. Size of typefaces as well as color of elements on each chart were also well considered to ensure it emphasizes on important elements and de-emphasizes less important elements.

Lastly, a consistent typeface was applied, as there were only two different typefaces used in this visualization. The reason these two typefaces were selected is to optimize the online readability. The size of title, sub-title, and the content of each element were applied consistently to improve the readability.

Reference List:

World Happiness Report up to 2022 (Kaggle). (2022). 2022.csv [Datafile].
Retrieved from https://www.kaggle.com/datasets/mathurinache/world-happiness-report

World Population Prospects (2019). 2022 World Population by Country.
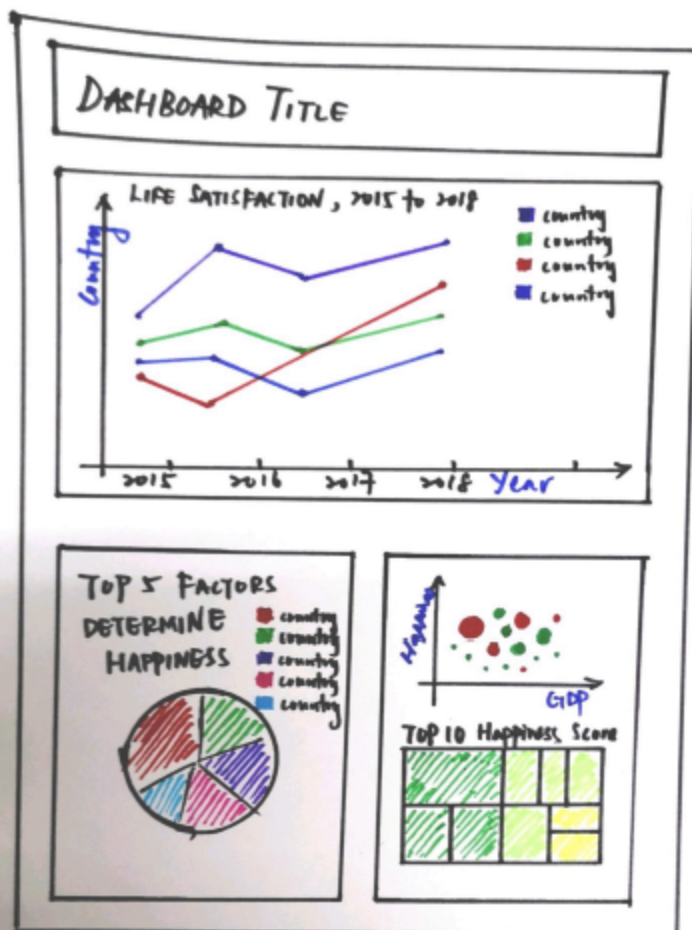Retrieved from https://worldpopulationreview.com/

Helliwell, J. F., Layard, R., Sachs, J. D., De Neve, J.-E., Aknin, L. B., & Wang, S. (Eds.). (2022).
World Happiness Report 2022.
Retrieved from https://worldhappiness.report/ed/2022/foreword/

Appendix

IDEAS

① Happiness / Country (bar chart)

② Happiness in SEA — country / color hue (map)

③ Happiness / Country (Factors)

FILTER

④ Country / Year (line chart)

⑤ Country / Year (Factors) (area chart)

⑥ Happiness / GDP (Country) (line chart)

⑦ Happiness percentage / Factors (pie chart)

⑦ what determines happiness — Health, economy, Freedom, Trust, Knowledge — Percent / Factors (pie chart)

⑧ Factors / Country (Happiness) (bar chart)

⑨ Factors / Happiness (Country) (scatter)

⑩ Happiness / GDP (scatter)

⑩ Happiness vs GDP — Country / Happiness / GDP (scatter)

⑪ Happiness / Factors (scatter with trend line)

⑫ Happiness / Country (tree map)

⑫ Happiness / Country (tree map)

CATEGORIZE

- Happiness vs Country — 1, 2, 12
- Happiness vs the Factors — 7, 9, 11
- Happiness vs Year — 4, 5
- Happiness vs GDP — 6, 10

QUESTION

→ Is showing map necessary for the visualization?

→ Is it better to combine all factors into one graph?

→ Is the economy factor important?

→ what are the Top 10 countries with highest happiness score?

COMBINE & REFINE

→ 1, 2, 12 can be combined into a tree map to deliver the same message. (Refer to 12.)

→ 7, 9, 11 can be combined into a pie chart to show the most important factors on happiness. (Refer to 7.)

→ 1, 3, 4, 6, 8 can be combined into a bar-line chart.

→ 6, 10 can be combined together to show the importance of GDP.

LAYOUT

Dashboard Layout

DASHBOARD TITLE

LIFE SATISFACTION, 2015 to 2018
- country
- country
- country
- country

(Y-axis: Country, X-axis: Year — 2015, 2016, 2017, 2018)

TOP 5 FACTORS DETERMINE HAPPINESS
- country
- country
- country
- country
- country

(Axes: Happiness vs GDP)

TOP 10 Happiness Score

OPERATION

TITLE

← Click

change / Change / Change

Pie: → showing the most important factor

Bubble: → show only the country

Tree map:

FOCUS

In the dashboard,

→ the line graph shows the life satisfaction of all country from 2015 to 2018.

→ the bar chart shows the TOP 5 factors that determine happiness.

→ the bubble chart shows how GDP affects happiness of a country.

→ the tree map shows the TOP 10 highest happiness score country.
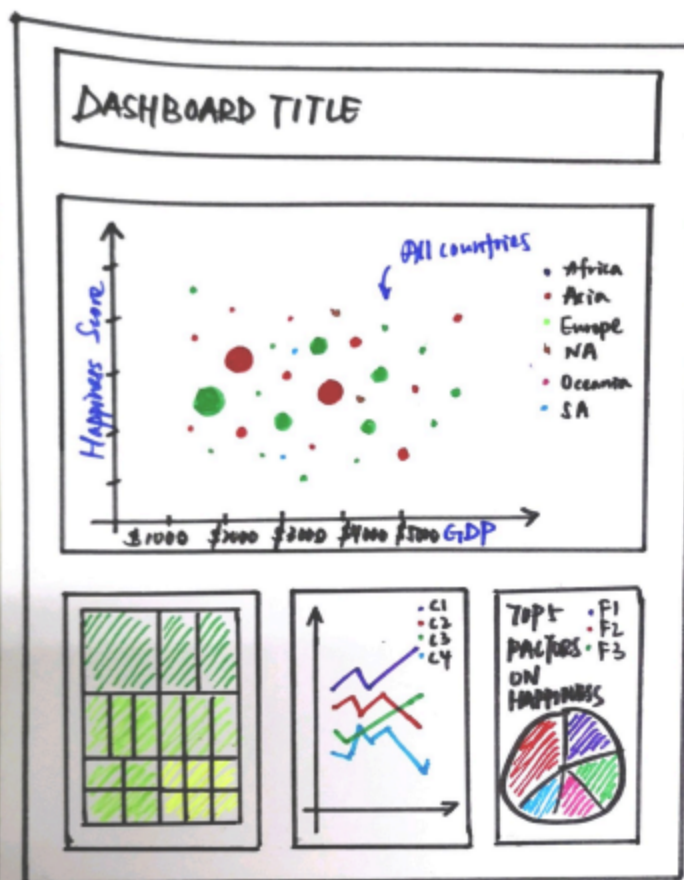

DISCUSSION

+ve
- Clean and clear environment of visualisation
- Neat & won't be too much information

-ve
- Too less data as we have filtered to show only TOP 5 & TOP 10.

LAYOUT

OPERATION

→ Moving the cursor to one of the bubble from bubble chart,
(● ← place cursor here)

→ It will show a text box (which is know as tooltip),

→

Country Name: Japan
Happiness Score: 67
GDP: 48,000

FOCUS

→ In this dashboard, the main focus is on the bubble chart, which gives information on all countries and their happiness score.

→ Viewer can easily get information of each and every country from the chart.

→ By clicking on one of the bubble from the chart, the other 3 charts will be filtered by showing only the country details.
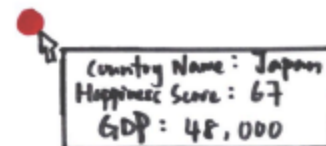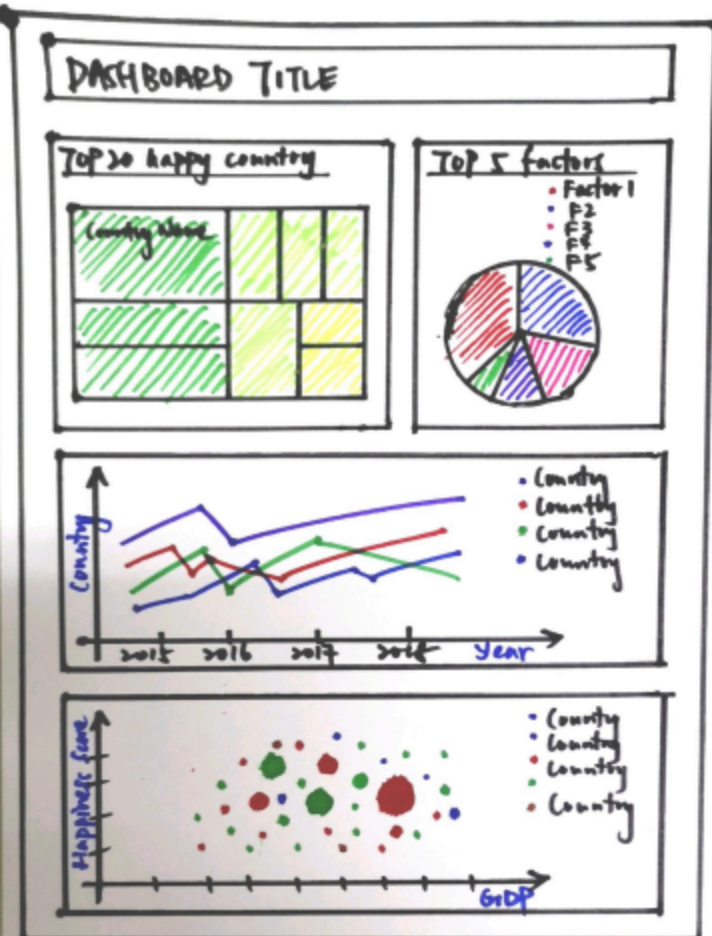
DISCUSSIONS

+ve
- The bubble chart is very informative
- User can have interaction by clicking on bubbles to show county information

-ve
- The information does not really related for all the charts above.
- Bar graph is fixed, nothing to be filtered.

LAYOUT

DASHBOARD TITLE

TOP 10 happy country

TOP 5 factors
- Factor 1
- F2
- F3
- F4
- F5

(line chart: Country vs Year — 2015, 2016, 2017, 2018)
- Country
- Country
- Country
- Country

(bubble chart: Happiness score vs GDP)
- Country
- Country
- Country
- Country

OPERATION

→ Here, when we click on either the line chart or bubble chart (click on one line or one bubble.)

→ The outcome shows as below:

FOCUS

→ The main focus is that we have organize the layout and the graphs so that both tree map and pie chart are on top of the visualization since they are both fixed and could not apply filter.

→ Both the line chart and bubble chart are moved to next of each other to provide a better visualization

→ viewer can now visualize these two charts and have interaction by clicking on them which provides more details and information.

DISCUSSIONS

+ve
- A better visualization with a well-structed layout.
- very informative on all countries and their details (GDP, happiness).

-ve
- Only both live and bubble chart are linked and have filter applied.
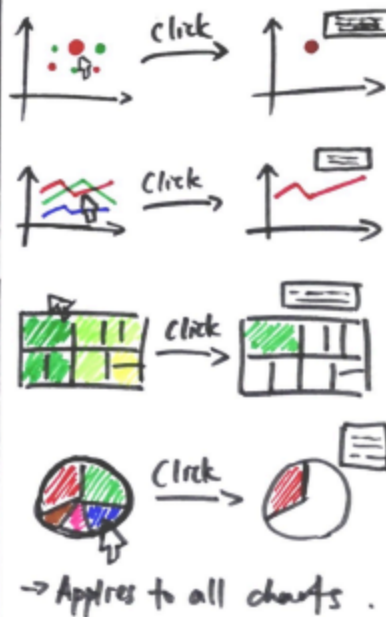
LAYOUT

Life Satisfaction and Happiness

SUB-TITLE
some content here ... include details and provide
insights on the topic to tell story to viewers.

SUB-TITLE

Happiness Score / GDP
- Asia
- Europe
- South Africa
- North Africa

SUB-TITLE
- Country
- Country
- Country

SUB-TITLE

SUB-TITLE
- Factor
- Factor
- Factor
- Factor
- Factor

OPERATION

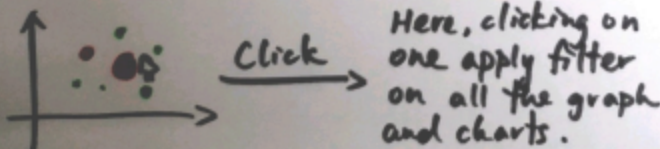

Click

Click

Click

Click

→ Applies to all charts.

FOCUS

This dashboard is an improved version of
sheet 4.
   → Mainly focus on, better layout,
   every chart starts with a sub-title,
   and have included a short summary
   on top of the dashboard.

Click

Here, clicking on
one apply filter
on all the graph
and charts.

DISCUSSIONS
→ Database will be
  implemented from
  the csv files according
  year
→ Update data and filter
  according user interaction
→ Time to build/implement:
  2 weeks.
→ Must fullfil most devices
  with an appropriate layout
→ Update data using SQL.