World Happiness Report

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ABSTRACT

World Happiness Report provides a comprehensive assessment of global well-being and ranks countries by happiness levels, offering insights into the reasons for these differences through various factors such as income, freedom, government trust and life expectancy. Therefore, an in-depth analysis is required as the existing dashboards and charts did not provide greater insights into people's happiness levels at the regional and country levels. This is also valuable to policymakers as they can choose whether to intervene through policy implementation to improve the quality of life of their citizens. This report aims to analyse the latest available data to derive greater insights into people's happiness levels.

INTRODUCTION

Happiness is a key element of human life as it can influence our overall quality of life. Its importance cannot be understated. Happiness can result in success as they are shown to have higher productivity and performance. In fact, according to a study done by the University of Warwick [1], being happy can result in an increase in productivity at work. The main reason for this is that happier employees will utilize their time more efficiently without compromising on the quality of their output.

Happiness is proven to be significantly beneficial to physical health. Being optimistic improves a person's well-being. Studies done by the US National Library of Medicine [2] show that being happy can result in a stronger immune system and reduces the risk of heart disease by 13 to 26 percent. This has a direct impact on our physical health and improves our life expectancy. Knowing the benefits that happiness can bring to one's quality of life, our group aims to find out if there are any possible factors behind one's happiness. In the World Happiness Report, we explore if factors such as the country's GDP, one's health and family, freedom and trust in government can have a positive correlation on the happiness score.

MOTIVATION

Our project and research were mainly motivated by a lack of data visualisation that showcases the relationship between Happiness and other factors such as the Cost of Living at the Regional and Country level. Our main objective is to provide users with analytical tools that visualise the trends of World Happiness and the possible factors influencing it. We seek to support the following analysis requirements:

1. Gain overall insight into the trends and patterns of Happiness over the years.
2. Identify the Region or Country with the highest Happiness Score and the factors behind it.
3. Discover the possible reasons why some countries have higher Happiness Score than Singapore.

RELATED WORKS

Although there are existing dashboards and charts discovered online, we believe that there is more to be done to gain deeper insights from the World Happiness data sets.

Mighty Digital: Happiness Calculator

An existing dashboard by Alina [3] can be found on Tableau Public. With reference to Figure 1, we were able to identify the top and bottom five countries ranked based on their happiness scores for a specified year. However, there are some observations that we could not extract from this dashboard. This includes the variation in the rankings of the top and bottom five countries across the span of eight years, whether there is a country that experiences large fluctuations, and if happiness scores were the most affected by the pandemic. As such, we found that the use of animated visualisation would be advantageous in viewing how the happiness scores across all countries have varied with the effect of time.

Figure 1: Top and Bottom 5 Happiest Countries

From Figure 2, we can infer the individual correlation between the happiness score and each of the factors using the dropdown filter. These factors include GDP per capita, social support, healthy life expectancy, freedom to make life choices, generosity and perceptions of corruption. We can also observe, from Figure 3, the distribution of influence each factor has on affecting the happiness score of each country. However, it can be difficult to decipher whether there is a change in such correlations over time. Therefore, we plan to improve upon this using our analysis and visualization.

Figure 2: Happiness Score against Generosity

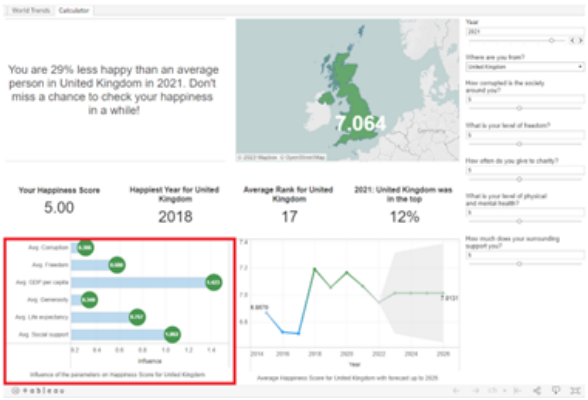

Figure 3: Influence of the Factors on Happiness Score

World Happiness Analysis by Visualisation

Charts generated using Plotly by Yeung [4] can be found on Kaggle. In Figure 4, we can observe a positive relationship between GDP per capita and happiness. Although Yeung has identified Latin America as a country with low GDP yet high happiness score, it is not easily recognisable in the scatter plot. Adding a regression line onto the scatter plot would be beneficial in identifying outliers more easily. As such, we can gain a deeper understanding of the two extreme ends of the spectrum — a country with a low GDP yet a high happiness score and a country with a high GDP yet a low happiness score.

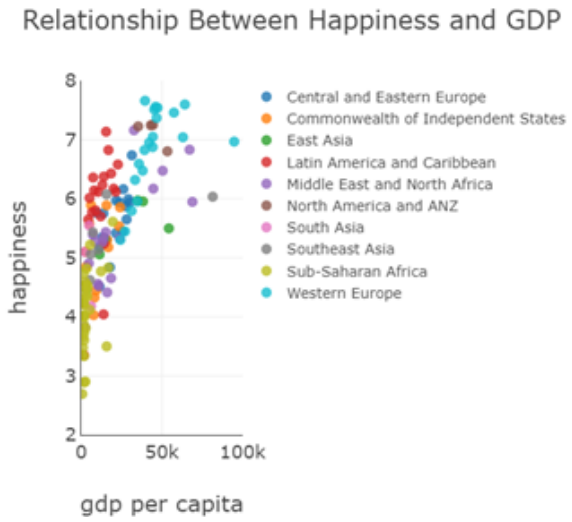

Figure 4: Relationship between Happiness and GDP

Yeung created individual scatter plots to investigate the possible reasons why Latin America has a relatively high happiness score despite its low GDP. Individual associations between factors such as social support, religion, freedom, and life expectancy with happiness were studied. An example can be found in Figure 5. With these scatter plots, it can be difficult to pinpoint the exact data points representing Latin America to determine how much it differs from another country with a similar GDP yet a low happiness score.

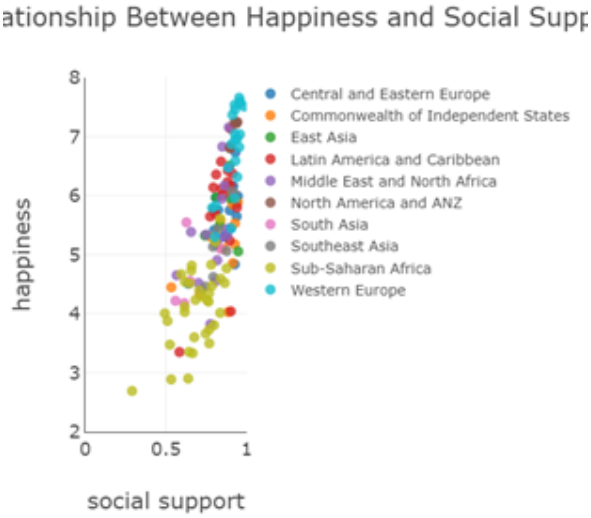

Figure 5: Relationship between Happiness and Social Support

DATASETS

On Kaggle [5], we found 8 datasets in CSV format regarding the world happiness report from the year 2015 to 2022. We will be utilising a total of 11 fields namely, *Year*, *Country*, *Region*, *Happiness Rank*, *Happiness Score*, *Economy (GDP*

per Capita), *Family*, *Health (Life Expectancy)*, *Freedom*, *Trust (Government Corruption)*, and *Generosity*.

We have added additional datasets such as Cost Of Living index from Numbeo [6], Gini coefficient from World Bank [7], Income per Person from Kaggle [8], Human Development index from UNDP [9], GDP per Capita from World Bank [10], Annual Working Hours per Worker from Our World In Data [11], Age Structure for Finland [12] and Singapore [13] from Statista, Employment rate for Finland [14] and Singapore [15] from Statista and Unemployment rate for Finland [16] and Singapore [17] from Statista.

DATA CLEANING AND PRE-PROCESSING

Our team primarily used the Python Pandas library to conduct data pre-processing such as handling duplicates, missing values, inconsistent formatting and the merging of data across the years. We also used Excel functions such as LOOKUP to merge other data sets into existing ones.

The following outlines the details of the efforts made to procure our final data set:

- Main functions: pd.read_csv(), pd.concat(), pd.DataFrame.to_csv()
- rename() to rename column headers to 2018 dataset's naming convention
- Additional column 'Year' created to visualise time series charts in Tableau
  - Example: df_2016['Year'] = '2016'
- Additional column 'Region' added to datasets of years 2017, 2018, 2019, and 2022
- Field mapping of the column 'Region' by looking up the values based on the 2015, 2016, 2020, and 2021 datasets. We standardised the region names for some values due to inconsistencies.
- Additional data cleaning on 2022's dataset
  - Remove '*' in records under country column using replace() to standardise country names
  - Remove the row containing 'xx' in country column using pd.DataFrame.drop()
  - Replaced ',' to '.' for records with decimal points
- Additional data sets such as Gini, Income per person, GDP per capita, Human Development Index, Cost of Living, Annual working hours per worker, Age Structure, Employment Rate and Unemployment Rate were added to expand on the number of analysis factors.
- Normalise the numeric values for Economy, Family, Health, Freedom, Trust, Generosity, Gini, Income Per Person, GDP Per Capita, Human Development Index, Cost of Living, Annual working hours per worker, Age Structure, Employment Rate and Unemployment Rate.

VISUALISATION APPROACH

Our team utilised both Tableau and D3 to showcase various visualisation charts to share purposeful insights derived from the data sets. We leveraged the strengths of both tools and patched up the limitations of existing visualisations as mentioned above.

Firstly, with regard to the limitations of the charts by Yeung, our team's user-friendly interface on Tableau allowed users to filter and input parameters with ease to generate the charts presented in the dashboard. We have also implemented visual groups to aid comparisons. Furthermore, we utilised Tableau's storytelling feature in integrating the delivery of our narration with informative charts to enhance viewers' understanding and engagement.

Secondly, from the lack of animation in existing works mentioned earlier, our team has incorporated animation in our D3 and Tableau dashboard, as we believe that it can aid in perceiving the rate of change, as well as causality, particularly in the context of the recent pandemic as a global event.

We noted that as Tableau and D3 have strengths that complement each other, we were able to leverage both visual analytics tools to derive the most optimal visualisation outcomes for this project.

VISUAL ANALYSIS RESULTS AND DISCUSSION

5.1 Happiness Score

To visualise the distribution of happiness scores across all geographical locations, we implemented a Choropleth on our D3 Dashboard. Figure 6 illustrates the distribution using a sequential colour of green with varying intensities of the shade to represent the magnitude of the score.

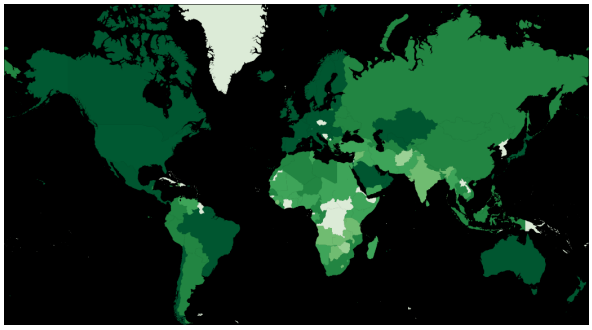

Figure 6: Choropleth of the Happiness Scores in 2022

Animation is applied in the form of a race bar chart to animate the change in happiness scores over time from 2015 to 2022. Figure 7 shows how the happiness scores of countries have changed over the years, and revealed countries that consistently rank higher and those that have increased significantly.

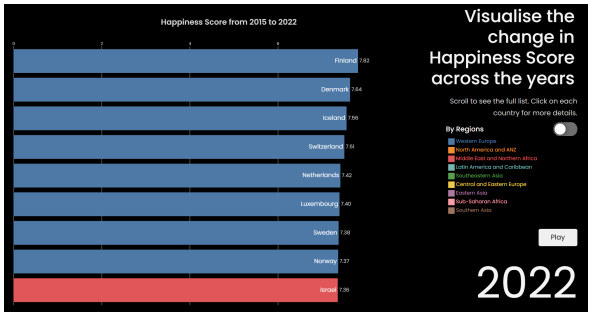

Figure 7: Race Bar Chart across Countries from 2015 to 2022

In addition, we reconfigured the race bar chart to illustrate the change in average happiness scores by region, as seen in Figure 8. This shows the regional trends and revealed consistently higher scores for North America, Australia and New Zealand (ANZ) region, as well as the Western Europe region. Overall, the race bar chart provides an engaging way to understand the change in happiness scores over time easily.

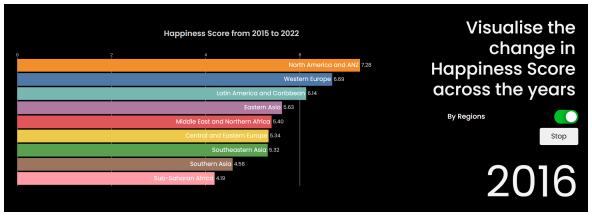

Figure 8: Race Bar Chart across Regions from 2015 to 2022

5.2 How long will the top region maintain its position?

We plotted a line chart to visualise the happiness scores of each region over time. Figure 9 shows that the region that ranked first (North America and ANZ) has seen a steady decrease in happiness scores, while the region that ranked second (Western Europe) has experienced a consistent increase in happiness scores.

To better understand these trends, we conducted a forecast analysis to predict potential changes in rankings in the coming years. Our analysis suggests that the Western Europe region, which is currently ranked second, would potentially overtake the North America and ANZ region by 2026. However, we note that the accuracy of our forecast analysis is not guaranteed, as they are based on historical data and past trends, which do not account for unforeseen world events.

Nonetheless, our analysis could serve as a sign of warning to countries in the top region to focus on the underlying factors driving these trends.

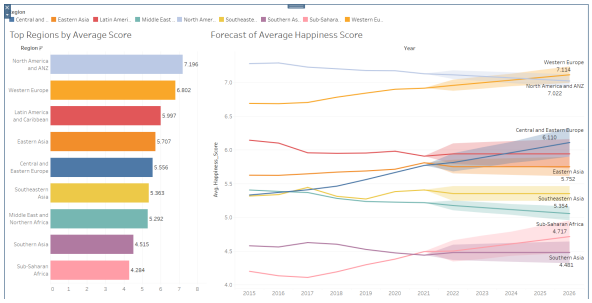

Figure 9: Forecast Analysis on All Regions Over the Years

5.3 Regional Scale

To visualise multivariate data, we implemented a parallel coordinates chart, with an axis for each factor. Figure 9 illustrates the graph that shows the relationship the factors have with happiness scores, where each country is represented with a line that connects the values of each factor for that country. Discrete colours are used to categorise the lines into their respective regions. This chart provides us with a better understanding of how the difference in the factors affects happiness scores and how different regions fare in their factor scores.

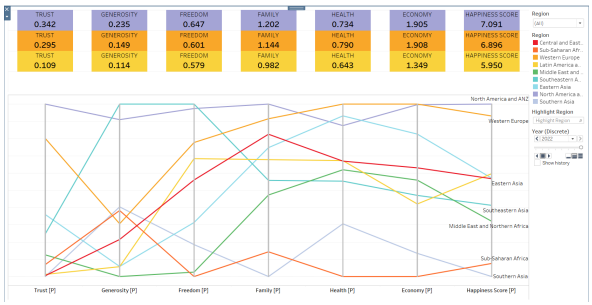

Figure 10: Factors Correlation on All Regions Over the Years

5.4 Understanding the weights of each factor

The factors contributing to Happiness Score are Economy (GDP per Capita), Family, Health (Life Expectancy), Freedom, Trust (Government Corruption) and Generosity.

We conducted an ordinary least squares (OLS) regression analysis for the happiness predictors and observed that each factor holds different weights. From Figure 11, it can be observed in ascending order that Freedom, Health (Life Expectancy) and Trust (Government Corruption) are the three most important factors contributing to happiness.

Even if all the factors are held at equal values, their impact on happiness will differ according to their coefficients. Hence, to determine which factor is more important than another, we used the factor with the lowest coefficient, Generosity, as the basis of our comparison. Referring to the isotype visualisation of these factors in Figure 12, we can say that one value of generosity equates to 0.4633 units of freedom, and so on.

A comparison was done between the first country, Finland, and the fifteenth country, Canada, to reflect the insight that

not all factors were given equal weights. As seen in Figure 12, if we were to discount the score difference between the factors, we may think that their happiness scores would be somewhat similar. However, the actual differences between the happiness scores suggest otherwise, further confirming our analysis.

Factors	
Freedom	1.5651
Health_(Life_Expectancy)	1.3250
Trust_(Government_Corruption)	0.8294
Economy_(GDP_per_Capita)	0.8172
Family	0.7443
Generosity	0.7251

Figure 11: Coefficients of Each Factor

Figure 12: Isotype Visualisation of Factors

To visualise the multivariate data, we implemented a parallel coordinates chart, with an axis for each factor. Additionally, animation was added to show the trends across different years. Figure 13 illustrates the graph that shows the relationship between the factors and the happiness score, where each region is represented with a line that connects the values of each factor for that country. Discrete colours are used to categorise the regions.

This chart provides us with a better understanding of the correlations between the factors, trends, clusters and outliers. At a glance, we can see that the top and bottom region in 2022 each has consistently high and low scores across all six factors respectively. Furthermore, generosity scores for most regions are seen clustered on the lower end implying a lower or negative correlation with the other factors.

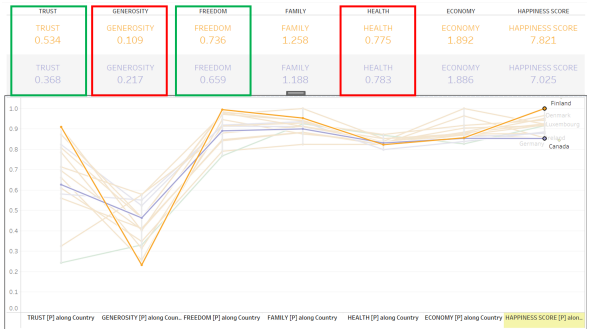

Figure 13: Parallel Coordinates on Year 2022 with Finland (Orange) and Canada (Purple)

5.3 Can Money buy Happiness?

From the evaluation of each factor contributing to happiness, we attributed 'Economy (GDP per capita)' as one of the more prominent attributes.

We conducted further research and incorporated data sets on Income Per Person into our analysis. A heat map in Figure 14 is implemented with sequential colouring, to visualise the distribution of Income Per Person across regions and years. A glance at this graph allows us to easily derive that North America and ANZ and Western Europe are the top two regions that have overall higher income per person, which also happened to show a similar trend in the average regional happiness scores across all years.

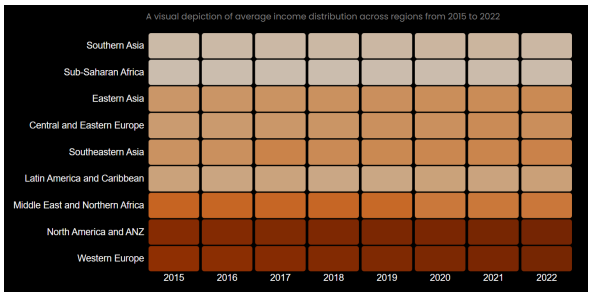

Figure 14: Heat Map of Income Per Person Across Regions Over Time

To determine the extent of this correlation between happiness and wealth, we plotted a scatter plot between Happiness Score and Income Per Person in 2022, shown in Figure 15. We see a general increasing trend with a decreasing gradient as Income Per Person increases. This trend can be attributed to the diminishing marginal utility of income, where the increase in happiness gradually gets smaller as income increases. Overall, we can deduce that income does increase happiness scores.

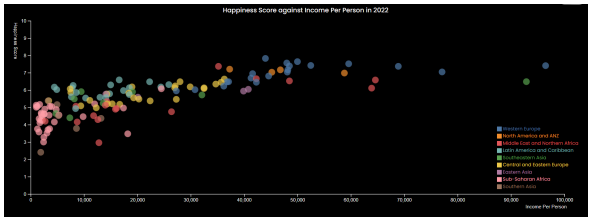

Figure 15: Correlation Analysis between Happiness Scores and Income Per Person

The scatter plot also reveals extreme data points - Outliers. One such point can be found in Figure 16. Singapore, though situated on the upper end of Income Per Person, with an average annual income of $92,900, has a happiness score of 6.48. This score is much lower than countries that are earning twice as less, such as Finland, with an average income of $44,000 and faring a happiness score of 7.82. The next section is dedicated to investigating other potential factors that could have contributed to this anomaly.

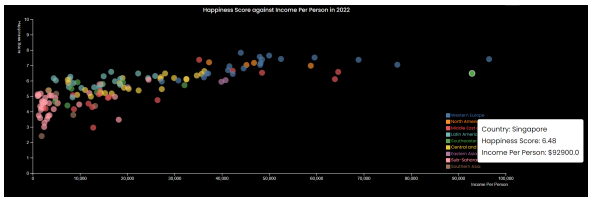

Figure 16: Outlier in the Analysis of Happiness Scores and Income Per Person

5.4 Localise to Singapore

With intentions to investigate the factors that could have resulted in a lower-than-expected happiness score in Singapore, we made comparisons to the country that is ranked at the top for Happiness Score in 2022, Finland. Using the radar chart in Figure 17, we discovered that the only two factors that Singapore was lacking were Family and Freedom.

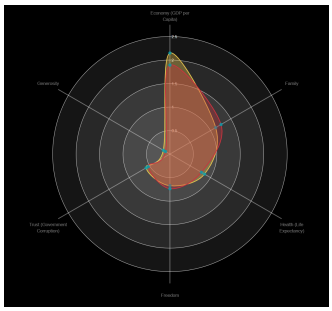

Figure 17: Radar Chart with Singapore 2022 (yellow) and Finland 2022 (red)

5.4.1 Family

Looking into the extent how Family affects Happiness Score, we customised our scatter plot to show the correlation between Happiness Score and Family, as seen in Figure 18. It reveals a strong linear trend, where higher support from family resulted in higher happiness scores. Research has also claimed that positive family relationships can benefit well-being by increasing self-esteem, improving mental health and providing a sense of purpose in life [18].

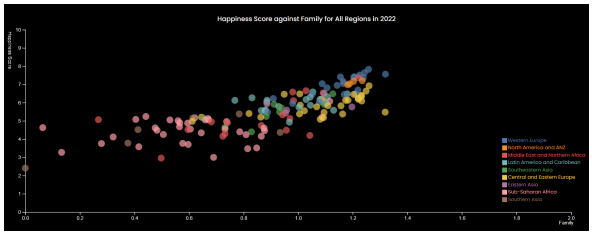

Figure 18: Correlation Analysis between Happiness Score and Family

To further justify the underlying contributor to Family, we looked into the economic condition namely employment since it generally affects families to a large extent.

Using external data from Statista, we did a comparison of the employment and unemployment rates between Finland and Singapore in Figure 19. We noticed a seemingly contradictory pattern of Singapore having low employment and unemployment rates. To explain this phenomenon, we further examined the age structure of both countries. From the pie charts, we could derive that Singapore's ageing population may be a contributing factor to the decrease in the labour force participation rate, which has in turn led to lower employment and unemployment rates.

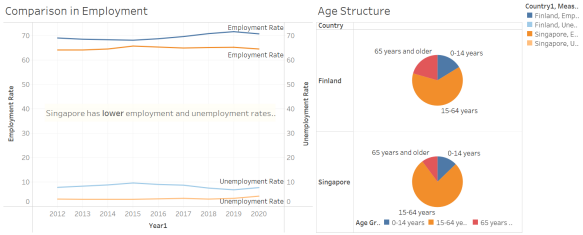

Figure 19: Comparison of Employment and Age Structure between Singapore and Finland

We also compared the average daily working hours between Finland and Singapore. With reference to Figure 20, an average worker in Singapore works approximately 8 hours a day while an average worker in Finland works around 6 hours a day. The 2 hours difference in daily working hours tallies to a total of 1,822 hours a year, with reference to Figure 21, which indicates that workers in Finland potentially spend more quality time with their families thus having more social support as compared to Singapore. Longer working hours, more often than not, lead to a stressful work environment. According to a study by Mercer [19], 1 in 5 Singaporeans feel de-energised at work. This is 6% higher than the global average. A reason

for this is the rise of work-from-home arrangements in recent years that blurs the lines between work and home. Singaporeans have long working hours and a lack of autonomy with usually a hierarchical work culture. This corresponds to the low freedom score that Singapore has compared to Finland which will be discussed in Section 5.4.2.

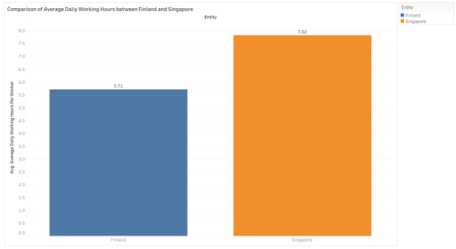

Figure 20: Comparison of Average Daily Working Hours between Singapore and Finland

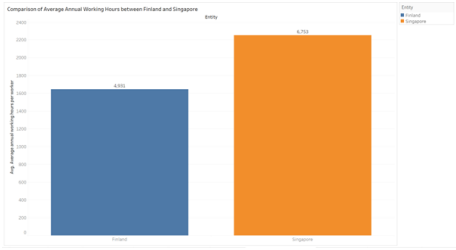

Figure 21: Comparison of Average Annual Working Hours between Singapore and Finland

5.4.2 Freedom

A similar linear trend is also found in the correlation analysis of Freedom and Happiness Scores in Figure 22. Furthermore, some studies highlighted the importance of one's ability in making choices, pursuing goals and living by their values in their contribution to happiness [20].

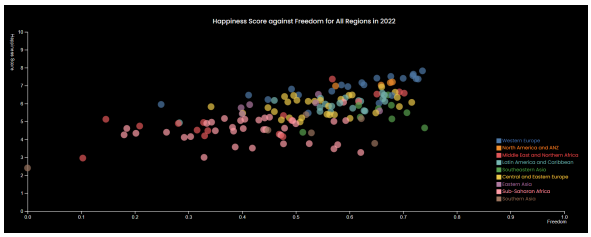

Figure 22: Correlation Analysis between Happiness Score and Freedom

Using external data from Statista, we uncovered the underlying reasons for Freedom namely economic freedom and freedom of expression. In Figure 23, it is evident that Singapore has greater economic freedom than Finland due to its higher GDP per capita (as previously shown in Figure 17).

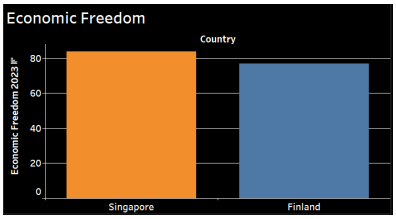

Figure 23: Comparison of Economic Freedom between Singapore and Finland

Although Singapore's income per person is significantly higher than that of Finland (as seen in Figure 24), its cost of living is also relatively higher (as seen in Figure 25). Research has also shown that Singapore is 54% more expensive than Finland [21]. This situation is aggravated by the recent proposed increase in Goods and Services Tax (GST) from 7% to 9% by the Singapore Government. Financial stability is a huge concern for people living in Singapore. This is evident in the Cost of Living index where Singapore fared 84% while Finland fared 73.2% in the year 2022. This implies that the cost of living in Singapore is 16% less expensive, while Finland is 26.8% less expensive, relative to New York City [6].

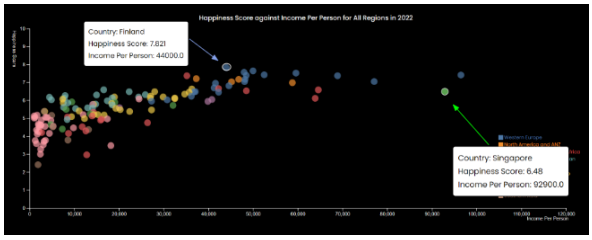

Figure 24: Comparison of Income Per Person between Singapore and Finland

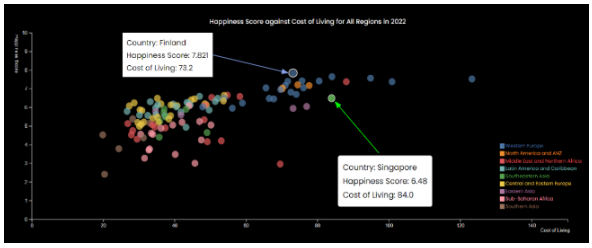

Figure 25: Comparison of Cost of Living between Singapore and Finland

We further explored the freedom of expression between these two countries. It is evident in Figure 26 that Finland has much more freedom of speech compared to Singapore, which may be the major contributing factor which makes Finland a happier country than Singapore.

Figure 26: Correlation Analysis between Happiness Score and Cost of Living

Freedom of speech is a fundamental human right that enables people to express their thoughts and ideas without fear of persecution. As mentioned by Brooks, in the United States, the nationwide General Social Survey (GSS) revealed that correspondents who felt that they had freedom were twice as likely to be happy when holding other variables such as income, sex and education as constant [20]. Being able to express thoughts and ideas freely is an important cornerstone of one's happiness. Freedom of the press is also an important right that correlates with happiness level. The more press freedom a country has, the higher level of happiness level the citizens have [22]. Hence, freedom of speech positively correlates to one's happiness level.

5.5 Other Analysis

To facilitate future analysis, we created a custom scatter plot seen in Figure 27. Users can select the factor, year, and region of their choice to conduct their analysis against Happiness Scores.

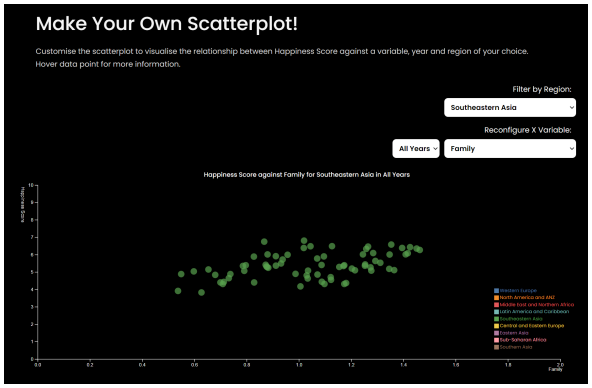

Figure 27: Custom Scatter Plot for Future Analysis

CONCLUSION

This study conducted an in-depth review of the World Happiness Report over the years, explored new ways to visualise the factors that contribute to an individual country's happiness scores and explained the analysis results in the context of Singapore. Some challenges we faced were with the data cleaning and pre-processing process and deciding on the best charts to display the data insights.

As a team, we believe that the current user interface of the visualisations can be improved. In future studies, our team can explore some areas:

- Draw more insights on how the COVID-19 pandemic has impacted the happiness scores
- Integrate the D3 visualisations with the Tableau visualisations and publish them to Tableau Public

We explore why Singapore is not among the top five happiest countries below.

Due to societal differences and differences in priorities for each individual, we may not be able to attribute Family and Freedom as the main two reasons why Singaporeans may be less happy. Even so, these are possible areas that Singapore could work on to improve happiness scores. Other possible attributes could also be derived from more localised investigations into workplace culture, the education systems and the effects of the COVID-19 pandemic.

6.1 Pace of Life

Countries that ranked high in happiness scores, such as Denmark and Finland are known to have a slower pace of life. This is characterised by the popular Danish Hygge lifestyle. In the Oxford Advanced Learner's Dictionary [23], hygge is defined as the quality of being warm and comfortable that gives a feeling of happiness. Happiness is part and parcel of the top countries' culture. However, if we look at Singapore, the urban city lifestyle brings with it a much faster pace of life. As a country, Singapore prioritises economic growth which can be at the expense of happiness and well-being.

6.2 Inequality

Income and wealth inequality plays a role in the happiness level of a country. In Singapore, we have a culture of comparing our circumstances with others in fear of losing out, also known as the "Kiasu" culture. This breeds a sense of envy and unfairness which thereby lowers our happiness. As Mark Twain says, "Comparison is the death of joy." Despite Singapore having a higher income per person than Finland, it does not show the full picture. The gap between low, middle and high-income individuals is widening and social mobility has slowed down. Based on the Social Mobility Index for 2020 [24], Finland ranked 3rd with one of the highest social mobility indexes, while Singapore is ranked at 20.

6.3 Social Construct

Apart from material wealth, other factors such as social interaction can also greatly influence happiness levels. According to Maslow's Hierarchy of Needs, when lower-level needs such as safety and daily necessities are met, it is crucial to strengthen individual and social capital for pursuing higher-level needs. This can come in the form of positive social connections between people. There is a positive relationship between prosocial behaviour and well-being [25]. Compared to Finland, Singapore scored lower for the Family factor. For Singapore to be among the top 5 happiest countries, there is a need to increase social interaction and show acts of kindness, especially with the ongoing pandemic.

REFERENCES

[1] Oswald A. "happiness and productivity". Warwick, 2009. Retrieved February 21, 2023 from https://warwick.ac.uk/newsandevents/pressreleases/new_study_shows.

[2] Chopra A. "here's how being happy can actually make you healthier". Healthshots, 2020. Retrieved February 21, 2023 from https://www.healthshots.com/mind/happiness-hacks/heres-how-being-happy-can-actually-make-you-healthier/.

[3] Alina. "mighty digital: Happiness calculator". Tableau Public, December 2022. Retrieved February 21, 2023 from https://public.tableau.com/app/profile/alina1178/viz/MightyDigitalHappinessCalculator/WorldTrends.

[4] Yeung A. "world happiness analysis by visualization". Kaggle, 2018. Retrieved February 21, 2023 from https://www.kaggle.com/code/arielyeung/world-happiness-analysis-by-visualization.

[5] Ache M. "world happiness report up to 2022". Kaggle, 2022. Retrieved February 21, 2023 from https://www.kaggle.com/datasets/mathurinache/world-happiness-report.

[6] Numbeo. "cost of living index by country 2022", 2022. Retrieved April 7, 2023 from https://www.numbeo.com/cost-of-living/rankings_by_country.jsp?title=2022.

[7] The World Bank. "gini coefficient 2021", 2021. Retrieved April 7, 2023 from https://data.worldbank.org/indicator/SI.POV.GINI?end=2021&start=1968&view=chart.

[8] Kaggle. "income per person 2021", 2021. Retrieved April 7, 2023 from https://www.kaggle.com/datasets/psterk/income-inequality?select=income_per_person_gdppercapita_ppp_inflation_adjusted.csv.

[9] Human Development Reports. "human development index", 2022. Retrieved April 7, 2023 from https://hdr.undp.org/data-center/human-development-index#/indicies/HDI.

[10] The World Bank. "gdp per capita 2021", 2021. Retrieved April 7, 2023 from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD.

[11] Our World In Data. "working hours", 2020. Retrieved April 7, 2023 from https://ourworldindata.org/working-hours.

[12] Statista. "finland: Age structure from 2011 to 2021", 2021. Retrieved April 7, 2023 from https://www-statista-com.libproxy.smu.edu.sg/statistics/327491/age-structure-in-finland/?locale=en.

[13] Statista. "singapore: Age structure from 2011 to 2021", 2021. Retrieved April 7, 2023 from https://www-statista-com.libproxy.smu.edu.sg/statistics/378566/age-structure-in-singapore/?locale=en.

[14] Statista. "employment rate in finland from 2012 to 2022", 2022. Retrieved April 7, 2023 from https://www-statista-com.libproxy.smu.edu.sg/statistics/524751/employment-rate-in-finland/.

[15] Statista. "employment rate for residents aged 15 years and above in singapore from 2011 to 2020", 2020. Retrieved April 7, 2023 from https://www-statista-com.libproxy.smu.edu.sg/statistics/1009276/employment-rate-residents-15-years-old-and-above-singapore/.

[16] Statista. "unemployment rate in finland from 2012 to 2022", 2022. Retrieved April 7, 2023 from https://www-statista-com.libproxy.smu.edu.sg/statistics/523809/finland-unemployment-rate/.

[17] Statista. "unemployment rate for individuals aged 15 to 24 years in singapore from 2012 to 2021", 2021. Retrieved April 7, 2023 from https://www-statista-com.libproxy.smu.edu.sg/statistics/708329/singapore-youth-unemployment-rate/.

[18] Liu H. & Umberson D. Thomas, P. A. "family relationships and well-being". Innovation in aging, 2017. Retrieved April 6, 2023 from https://doi.org/10.1093/geroni/igx025.

[19] Olano G. "singapore employees most de-energised in asia – mercer report". Insurance Business, 2022. Retrieved April 1, 2023 from https://www.insurancebusinessmag.com/asia/news/breaking-news/singapore-employees-most-deenergised-in-asia–mercer-report-407871.aspx.

[20] A. C. Brooks. "free people are happy people". city-journal.org, 2008. Retrieved April 6, 2023 from https://www.city-journal.org/html/free-people-are-happy-people-13080.html.

[21] Livingcost.org. "finland vs singapore - cost of living comparison", 2023. Retrieved April 1, 2023 from https://livingcost.org/cost/finland/singapore.

[22] N. Hurst. "press freedom leads to happiness, environmental quality, study finds", 2012. Retrieved April 7, 2023 from https://journalism.missouri.edu/2012/08/press-freedom-leads-to-happiness-environmental-quality-study-finds/.

[23] Oxford Advanced Learner's Dictionary. "hygge. in oxfordlearnersdictionaries.com dictionary.", 2023. Retrieved April 1, 2023 from https://www.oxfordlearnersdictionaries.com/us/definition/english/hygge.

[24] World Economic Forum. "global social mobility index 2020: why economies benefit from fixing inequality.", 2020. Retrieved April 2, 2023 from https://www.weforum.org/reports/global-social-mobility-index-2020-why-economies-benefit-from-fixing-inequality/.

[25] Tay M. & Mathews M. "commentary: Don't go looking for happiness in the wrong places". The Straits Times, 2022. Retrieved April 1, 2023 from https://livingcost.org/cost/finland/singapore.