Data Visualization Project 2

A. Numerical Contribution

SID	Name	Contribution
57887115	KOJONGIAN Gracelynn	33.3%
57889286	KURNIAWAN Erica Cleodora	33.3%
57884567	YOLANDA Valeryn	33.3%

B. Attending Sharing Session

Yes, our group has decided to attend the sharing session, where we will share our story that we have constructed using visualization.

C. What story are you trying to tell?

The story that we have created is entitled **"Exploring Employment and Well-Being in Hong Kong"**. Our story consists of 5 important parts. We begin by examining Hong Kong's GDP over the past 10 years, from 2014 to 2023. This exploration is driven by the clear correlation we observe between economic growth and employment.

In the second part, as we delve into understanding the economic growth of Hong Kong, our aim with a chapter entitled **"Key Industries in Hong Kong"** is to shed light on the top four industries that exert a significant impact on the region's economic prosperity. We are eager to inform individuals about the pivotal sectors that drive and shape the economic landscape of Hong Kong.

In the third part, entitled **"Job Market Dynamics"**, our focus will be on job vacancies, job competition, and the population density in Hong Kong. We aim to provide insights on whether the job industry in Hong Kong is competitive using the data of Job Vacancies.

In the upcoming fourth part, entitled **"Education and Skills towards Job Industry"** we will delve into the factors that influence employment chances, with a specific focus on education as the primary factor. We will present a graph that provides valuable insights into the relationship between educational attainment and wage levels, highlighting the impact of education on employment prospects and earning potential.

In the final part, entitled **"Health and Well-Being in Hong Kong"**, we aim to provide a comprehensive understanding of the employment landscape in Hong Kong. We will explore the average working hours per industry and correlate it with the number of incidents related to well-being in Hong Kong.

D. Sources of Datasets

The dataset is taken from DATA.GOV.HK and Census and Statistics Department. We chose two dataset as it has complete and deep information about GDP, key industries, job vacancies, population, and employment in Hong Kong from Census and Statistics Department as well as other necessary data regarding working hours and number of incidents in Hong Kong taken from DATA.GOV.HK.
Data set(s) link collection: https://docs.google.com/document/d/1k9nY4AuyW4QK9GFcoWMlvZ6qcJWNhld_uwyttgqN_fk/edit?usp=sharing

E. Any preprocessing steps?

At first, we discussed the data we wanted to use. We changed the data several times because there was insufficient information about the year or the title of the data does not match with our favor. After finding all the data sources, we realized that all of the data had a very complex layout and a lot of sheets with different kinds of information, especially regarding the GDP and economy in Hong Kong. Lastly, we moved the chosen data into a new Excel file and cleaned the data and converted it into mostly a 2x2 dimension matrix table.

F. How do you design your visualization?

While doing the preprocessing steps, we discussed the type of story we wanted to tell and the kind of graph we wanted to make. At this stage, we made some sketches for the chart and layout of the story and even a storyboard to make sure there is a flow on the story. The color palette of our design is blue which remains consistent until the end of the story.

In the first sheet, we combined the economic growth data from the GDP over the past 10 years (2014-2022) with the percentage of industries impacting the economy of Hong Kong. The design style we employed to depict the increase or decrease in economic activity in Hong Kong was through the use of line graphs. This choice was made because line graphs can clearly illustrate the rise and fall of economic indicators, making it easier for the audience to understand. In addition, we have included the GDP of Hong Kong in 2023 and the growth compared to previous years.

However, we have not included data for 2024 as the year has not concluded yet. As for the contribution by each industry, we decided to use a pie chart. The reason is that the data are in percentage format, making the pie chart the most suitable visualization method. We also added a legend to complete the pie chart. This allows the audience to clearly identify which industry each color represents. In conclusion, we inserted the top 4 industries that contribute the most to the economy of Hong Kong.

In the second sheet, we have chosen to represent the job vacancies in each sector from 2014 to 2023, focusing on the top 4 key industries that have the most significant impact on Hong Kong's economy. To ensure clarity and ease of analysis, we have adopted a circle-shaped visualization style due to several advantages. First, clear rate identification where the circular shape allows for a straightforward representation of vacancy rates in each sector. By varying the size of the circles, we can accurately depict the relative magnitude of job vacancies. Larger circles indicate higher vacancy rates, while smaller circles represent lower rates. This visual distinction enables the audience to quickly grasp and compare the levels of job vacancies across sectors. Second, the circle-shaped visualization allows for the tracking of changes in job vacancies within each sector. By examining the variations in circle sizes over time, the audience can discern trends such as increasing or decreasing job vacancies over the years. This temporal analysis provides valuable insights into the dynamics of the job market, enabling proactive responses to evolving conditions.

In the third sheet, we began by illustrating the population density of Hong Kong alongside employment. We chose to use a bar graph for the population density to clearly show the number of people in Hong Kong. Additionally, we utilized an area chart to indicate the number of employed people, allowing readers to understand the proportion of those who are not employed with the help of the legend too.In addition to the Population density vs employment graph, we utilized a **circle graph** to represent the unemployment rate. In this visualization, the darker the color, the higher the unemployment rate, as indicated in the legend. The circle graph is divided into segments for each year from 2014 to 2022. Lastly for this sheet, we also made a statement emphasizing the pivotal role of education in the job industry. We highlighted that higher levels of education correspond to greater salary/wage potential, and each year we aimed to demonstrate an increase in wage value for all education levels, from primary to tertiary. Additionally, we included a legend where the darker the color, the greater the wage value. To visualize this, we used a horizontal bar graph to clearly represent the progression of wage values for different education levels.

In the fourth sheet, The regression model was chosen to illustrate the positive correlation between the number of working hours and the number of incidents of injuries because it is one of the best models for demonstrating such a correlation. Regression analysis is a powerful tool that helps to quantify and understand the relationship between variables, making it ideal for showcasing the correlation between working hours and incidents of injuries. To complete the model, we also added a legend where it has 3 important pieces of information. Firstly, it presents the calculation of R-squared to show the result of strong correlation. Secondly, it indicates the formula for the regression model, providing the audience with an understanding of where the graph originates.The inclusion of the regression model formula and the interpretation of the graph helps to provide transparency and clarity to the audience, allowing them to understand the basis and implications of the visualization.

G. Any things in your work you want to specifically highlight?

In our project, the first thing we want to highlight is how there is a drop of GDP in Hong Kong during 2020. The impact of the COVID-19 pandemic on Hong Kong's GDP was significant, leading to a drop in economic activity, similar to the experience of many developed countries. That’s also why we wanted to emphasize the significant impact of the top 4 industries on Hong Kong's GDP and economy because the pandemic halted all jobs and activities that contribute to it, particularly affecting the top 4 industries: Finance and Insurance, Tourism, Trading and Logistics, and Professional Services. Notably, the tourism industry suffered greatly during the pandemic due to global lockdowns and closed borders, severely impacting its operations and contribution to the economy.

Additionally, we seek to raise awareness about the highly competitive job market in Hong Kong, characterized by a small rate of vacancies under 3%. Interestingly, despite the competitive nature of the job market, the unemployment rate remains relatively low, indicating a healthy employment landscape in Hong Kong. This balance between job availability and unemployment underscores the dynamic nature of the job market in the region.

Moreover, we also intend to highlight the pivotal role of education in the job industry and the strong work ethic prevalent among the people of Hong Kong, as evidenced by the number of working hours. Lastly, we aim to underscore the importance of balancing hard work with attention to their health and well-being. Our studies and visualizations reveal a positive correlation between the number of accidents and an individual's working hours, indicating that longer working hours are associated with a higher incidence of accidents.