**Introduction (1.5min)**

**[Speaker: Damian]**

Good afternoon, everyone, I’m Damian, and I am here with my team, “Smells like team spirit” to present our findings on whether Singapore is a good place to live in, in regards to the hypothesis.

One of the most insightful moments in our research process came from the question, "If you could create a country, what kind of country would you want it to be?" This open-ended question created a space for our respondents to share their dreams and desires, and as a result, we were able to gather perspectives and insights that we might have missed otherwise.

Today, we'll be sharing the results of our analysis of four key factors: education, healthcare, housing, and safety. We believe that the data and analysis we've gathered will be an insightful resource for young adults as they navigate their own decisions about the quality of life in Singapore.

We made our report look consistent in terms of the texts, colours and chose a common year range for our data, the years 2011 – 2021.

Without further ado, I will now pass the to Natelie.

**Education (8min)**

**[Speaker: Natelie]**

Thank you, Damian.

I have chosen to do the problem statement of “Singapore has a good education system” as I feel that it is one of the common factors considered for determining the quality of life in Singapore.

**[Quality of Education]**

The quality of education in Singapore is crucial for the future of its citizens, economy, and society. However, my data may be impacted by COVID-19 pandemic in 2020-2021.

**[Average Government Expenditure Per Student]**

Government expenditure per student has increased over time, showing the government's commitment to improve education. Despite the drop in 2019-2020 maybe due to COVID-19, the government increased expenditure in 2021, demonstrating their commitment to maintaining quality. High expenditure allows for better educational outcomes, such as low student-teacher ratio and access to basic services.

**[Student Teacher Ratio]**

The drops in the student teacher ratio over the years shows that generally, a lower student to teacher ratio is considered beneficial in educational settings. A lower ratio means that there are fewer students per teacher, which can allow teachers to provide more personalized attention and support to each student.

With a lower ratio, teachers can better identify and address individual student needs, and provide more targeted feedback to help students improve. Additionally, a lower student to teacher ratio can lead to more effective classroom management, as teachers have more time and resources to manage individual student behaviour and keep the classroom running smoothly.

The government's commitment to maintaining a low student-teacher ratio, shows their commitment to providing students with a high-quality education.

**[Proportion of Schools with Access to Basic Services]**

Access to basic services like clean water, electricity, and sanitation is important for creating a safe and healthy learning environment. The value 100 for Computer and Internet states that all school institutions have it while for infrastructure, the value of 92.3 as of 2020 states that most school institutions have it. The data shows that the proportion of schools in Singapore with access to these services has consistently increased over time, showing the high quality of Singapore’s education system.

**[Grade & Literacy]**

Now, I will discuss the grades and literacy rates in Singapore which provides insight into student performance and the effectiveness of the education system.

**[Average PISA Score]**

PISA (Programme for International Student Assessment) is an international study which began in the year 2000. It aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students in participating countries/economies. Since the year 2000 over 70 countries and economies have participated in PISA.

Singapore ranks within the top 3 in the overall total, the average PISA score for Math, Reading, and Science, demonstrating the country's strength in preparing students for the modern world.

**[Total Literacy Rate (15 years & over) by Gender]**

The total literacy rate has been consistently increasing from 96.2 to 97.6 from 2011 to 2021. This highlights the government and educators' commitment to promoting literacy and education. The high average literacy rate shows that the education system is preparing students with the necessary skills and knowledge to succeed.

**[Graduate & Employment]**

Now, I will take about the graduate and employment rate which shows students who complete their education in Singapore are able to find work and succeed in the workforce.

**[Total Intake & Total Graduates]**

The trend of increasing Total Intake and Total Graduates in Singapore indicates a high demand for education and a growing number of individuals who are seeking higher education to improve their job prospects and future career opportunities. This demand is met by Singapore's education system, which has been consistently producing highly skilled and qualified graduates.

Therefore, the increasing trend of Total Intake and Total Graduates in Singapore demonstrates the country's strong commitment to education and the effectiveness of its education system in producing a highly skilled and knowledgeable workforce. This, in turn, contributes to Singapore's economic success, which supports the idea that Singapore has a good education system.

**[Average of Overall Employment Rate]**

Graduates of the education system in Singapore have a high rate of employment, as seen by a stable trend of increasing employment over the years. This suggests that the education system prepares students well for the workforce.

**[Total GDP Growth]**

The importance of having a well-educated workforce that is employed and able to drive economic activity and growth, can be evidenced by the increase in the Total GDP Growth in 2021 when the enrolment and graduate rate is increasing, and the overall employment rate is high.

Furthermore, while there have been fluctuations in the Total GDP Growth over the years, the trend has generally been positive and that the drop in the year 2020 was likely a result of the economic impact of the COVID-19 pandemic. However, the increase in the Total GDP Growth in 2021 indicates that the economy is recovering, supported by the well-educated and employed workforce in Singapore.

The strong relationship between the quality of education and economic success demonstrates the importance of investing in education for a prosperous future.

**[Statistical Modelling]**

I used forecasting for 5 years and regression charts to identify patterns, trends, and correlations in the data.

**[Total Literacy Rate (15 Years & Over) by Year]**

I used a forecast visual, to predict future values into the data of the total literacy rate (15-year-olds and over) across the next 5 years. The results provided an increase in the total literacy rate in the next 5 years, showing a positive trend. We can, not worry and be relieve that our literacy rate will continue increasing over the next 5 years.

**[Total Graduates by Year]**

I used a forecast visual, to predict future values into the data of the total graduates across the next 5 years. The results provided an increase in the total graduates in the next 5 years, showing a positive trend. This visual will be used to support the next visual on the average literacy rate (15-year-olds and over) and the average graduates.

**[Average Literacy Rate (15 Years & Over) & Average Graduates by Year]**

I used the linear regression chart visual, to see the relationship between the 2 variables. The high correlation between the average literacy rate and the average number of graduates in Singapore indicates a strong positive relationship between these two variables. This means that as the average literacy rate increases, there is a corresponding increase in the number of graduates. This is a strong indication of the effectiveness of the education system in Singapore, as a higher literacy rate reflects a higher level of education, and a higher number of graduates reflects the effectiveness of the education system in producing qualified graduates.

**[End]**

To conclude, the data presented in this report supports the assertion that Singapore has a good education system. The country's consistently high rankings in international education assessments, such as the PISA scores, demonstrate the quality of education in Singapore. The increasing trend of literacy rates among both genders and the steady growth of total enrolment and graduate rates indicate a strong and thriving education system. Additionally, the high overall employment rate of graduates can be seen as indicators of the successful outcomes of the education system and its impact on the economy. These findings provide strong evidence to support the conclusion that Singapore has a good education system.

Now, I will pass the time to Amber.

**Healthcare (8min)**

**[Speaker: Amber]**

Thank you, Natelie, I have chosen to do the problem statement of “Singapore has a good healthcare system”

A good healthcare system defined by the world health organisation is one that ensures timely access to the highest attainable standard of care to all its citizens; one that has the right programs managed by competent professionals where clinics provide preventive and curative care for the most common conditions.

As our target group of young adults step into adulthood, they have added worries/concerns about healthcare. They would need to know more about financial subsidies, about the efficiency when they bring their parents or future children for doctor visits, and also want to be assured about the quality of healthcare that they are relying upon is available good and effective. Similarly, our interviewees brought up similar concerns and how they are not very sure about the subsidies provided. So my report on healthcare will help bring awareness using visuals and statistics that will help them be prepared for future events. I’ll be covering 3 main topics, quality, cost and efficiency.

**[Quality]**

Starting off with quality: I used the government health expenditure as a measure of quality because increasing expenditure means that more money can be used to improve the system like increasing healthcare subsidies or investing in more technologically advanced medical equipment. Then the trust level was used as it is directly proportional to the quality and effectiveness of healthcare so the higher the trust level the better the quality. I’ve highlighted Singapore in red so it is easier to identify singapore. Additionally, I've included life expectancy as a measure of quality as a good healthcare system would be able to extend their patient’s life expectancy by providing curative care. From this comparative line graph, we can see a drastic difference between Singapore’s and the world average’s life expectancy which implies that Singapore’s healthcare quality is above average. Next, in this forecast, we can see that there is an increasing trend for life expectancy in Singapore suggesting that the effectiveness and quality of healthcare would also increase over time.

**[Cost]**

Moving on to cost, I've included the monthly household expenditure, Consumer price index CPI or better known as the inflation rate, subsidy rates, and cost comparison with other countries and different ward types. These give a better understanding of the cost of healthcare in Singapore. For example, from this table showing the CPI, the prices have been increasing until 2019 which is the benchmark year. The CPI has dropped for 2020 and 2021 meaning the cost of healthcare decreased during these 2 years. Next, this visual is a comparative bar graph (**Subsidy rates based on monthly per capita household income (PCHI) for B2/C wards**) that shows the subsidy given by the government to lessen the financial burden of lower-income residents. With this data, our users can use it and know more about the subsidies provided and be more prepared about finances in the future. Additionally, from this horizontal bar graph visual: **Median Total Bill based on Ward type for Stroke Patients,** we can tell that there are many options in Singapore’s healthcare, which contributes to the different healthcare costs. (This was based on the median of actual transacted bill amounts across the medical institutions, from 1 July 2019 to 31 December 2020.) Since the ward type does not affect the quality of service and only affects the level of privacy provided, the bill for stroke patients is relatively affordable using the cost of ward C bed. Furthermore, stroke is one of the top critical illnesses in Singapore, so this can give users a rough estimate of how much it would cost.

**[Efficiency]**

Lastly, we have efficiency. I've used the number of healthcare professionals, facilities, beds and wait time as a measure of efficiency because it shows the growing capacity of Singapore’s healthcare over time. For example, this decomposition tree displays the total number of facilities each year in descending order, as we see that the most recent year is on the top, suggesting that the number of facilities is increasing over time, this makes it more accessible to people and lowers the possibility of overcrowding in healthcare facilities, which increases its efficiency. Additionally, the number of beds is increasing meaning that hospitals would be able to admit more patients and the waiting time would decrease. Next, this is a forecast line graph that shows the number of people per healthcare staffs over the years. I’ve used the Singapore’s population and number of medical staffs to derive this value. So I created a calculated column and divided the Singapore population value by the number of staffs each year. The results show the available manpower in healthcare. For this visual, the lower the value, the better the efficiency as the medical staff can devote their attention to a smaller group of people. Since the trend is decreasing and forecasted to decrease, there will be sufficient manpower to handle the workload in healthcare facilities and provide medical attention to patients efficiently and timely.

Now, we will tap into view wait times, where we can see the spread of polyclinics around Singapore and its respective wait time. The polyclinics are well spread and if we hover over the wait times we can see that the wait times are not that long and with the longest consultation wait time being 28 mins. If we take a look at that qna turned card visual at the top right, we can see that the average total wait time, inclusive of registration and consultation wait time was only 15 mins which is a very short waiting time albeit the best is if there were no waiting needed at all.

**[Statistical Modelling]**

Moving on to the statistical modelling, this is a linear regression model and the information above gives a better understanding of the visual. (The first information is the ***regression equation*** that can be used to find an estimated value for a specific year, next R2, the ***coefficient determination*** used to measure how well the statistical model predicts an outcome and finally Corr which is the ***correlation coefficient*** used to determine the relationship between the variables.) For R2 and Corr, the closer it is to 1 the better the prediction and relationship respectively. Overall, this means that the model shows a strong relationship between the government health expenditure and Singapore population per medical staff, so the higher the government health expenditure, lower the Singapore population per medical staff. This means that the increased expenditure was possibly used to invest in hiring and attracting more healthcare workers. And since we know the government healthcare spending has been on an upward trend, and this means that the healthcare manpower would be able to expand, providing more attentive and quality care to its patients.

**[Conclusion]**

In conclusion, Singapore's healthcare visuals suggest that the healthcare system has established itself by ensuring it was equitable, efficient and ever improving, making it better than other countries. It's variety of healthcare options and subsidies ensures that everyone regardless of income can get medical attention. Therefore, I support that Singapore has a good healthcare system.

Thank you and I will be passing the time to Javerine.

**Housing: (10min)**

**[Speaker: Javerine]**

Thank you amber. I have chosen to do the problem statement “Singapore has a good housing infrastructure ”

With Singapore ranking as one of the most expensive countries to live in, our target audience has expressed concerns about the high cost of housing in Singapore. After conducting 8 in-depth interviews and analysing responses from a survey, we have found that many young adults have worries about factors such as housing grants, location, and other area-specific factors that may affect the prices of housing. To address these concerns, my report aims to provide a better understanding of the various factors that contribute to the cost of housing in Singapore. I will go into the impact of housing grants, location, and factors affecting housing prices in Singapore.

**[Housing Grants]**

For the first report, I decided to cover housing grants in Singapore.

Our stakeholders have highlighted the need for a better understanding of the various housing grants available to the citizens. To provide a comprehensive overview of the different types of housing grants, I have utilized a pie chart, a slicer, a line graph, and a forecast line chart. The slicer allows the users to interact with the data and select the Housing Grant Scheme they want to learn more about.

Let's say the user wants to know more about the CPF Housing Grant Scheme. They can select it, and choose their preferred flat type, for example, a 4-room flat. The graphs and pie charts will then change according to the user's selection.

From here, the users can see the estimated prices they would pay with the grants provided. We can observe that the general trend for housing prices after the grant has been provided is a decrease. Additionally, the selling prices before the subsidies seem to be consistent with slight fluctuations. Base the forecast selling price, it is predicted that housing grants would help continue allowing housing to be more affordable as the selling price of it continues to decrease with grants provided.

Therefore, the housing grants in Singapore play a crucial role in helping citizens attain their dream of owning a home. With more subsidies provided, these grants are increasingly accessible and beneficial to the citizens of Singapore.

**[Resale Prices]**

Next, I decided to cover on the Resale Prices by location and Area

I choose this as because location and are are top priority for users, as stated by 90% of those interviewed. Using a heat map, I showed the median price per area square, with the most expensive housing in Punggol-Sengkang, West, and Central.

The use of median helps to avoid anomalies and provide a more accurate depiction of the typical prices in each region.

I then used a line graph to show the impact of MRT distance on housing prices and added buttons for viewing the effect of school and hawker distance. These factors are important considerations for young families who value location and access to schools.

To provide a better understanding of cost, I included a pie chart to estimate the cost of houses based on flat type.

To allow for more detailed information, I created a Town slicer where users can search for specific locations and view prices and heat map data.

**[Storey Range & lease]**

Moving on, I will cover the factors of Storey Range and Remaining lease, which are the factors most brought up by users interviewed.

Storey range and Remaining Lease as I heard that higher storey and longer lease are more expensive, so I wanted to see if it was true with the help of linear regression.

Using Linear Regression, I found a high correlation between the Storey Range and Resale Price for 3-ROOM, 4-ROOM, and 5-ROOM flats, with correlation values of 0.35, 0.46, and 0.39 respectively, this highlights the importance of considering storey range for those looking to purchase these types of flats. The analysis provides valuable insights for target users, allowing them to understand how storey range can impact the resale price of different types of flats.

However, for the remaining lease, the data showed a weak positive relationship with a resulting R2 value of 0.24, suggesting a limited impact on resale price and other factors have a greater influence on determining the price. It is important for potential buyers to understand that while a longer remaining lease may result in a slightly higher resale price, it is not the most significant factor affecting the price

Therefore, the analysis provides valuable insights into the impact of Storey Range and Remaining Lease on Resale Price in Singapore, allowing potential buyers to make informed decisions when considering these factors. While a higher storey range and longer remaining lease may result in a slightly higher resale price, other factors such as location and proximity to amenities have a greater impact on determining the price.

**[Resale Price Analysis]**

Based on all these data on resale prices, I decided to give a more in-depth analysis to allow users to be able to know more.

I have displayed visuals showing maximum, average and minimum trends. This would likely mean to users that even though resale prices may seem like its is increasing but compared to the maximum, the average and minimum have been relatively constant.

Then, I forecasted resale price trends for 2023 to see if there is an increase, which allows target users to decide when it’s most suitable to get a house in 2023.

I made use of the analysis of the key influence to see which are the key influences towards housing price that I might have missed out on. For example, Bukit Timah has the largest impact on resale prices, followed by Bishan and then Central Area, resulting in an average resale price of $443,238.35.

This information suggests that prospective homebuyers in these areas should expect higher prices when looking for housing

Lastly, I found the best way to display the information was with a decomposition tree which allows users to see which types of units tend to be more expensive and for those types of units, which town would be more expensive.

**[Resale Price Analysis]**

Lastly, I decided to compare housing markets globally.

The button for viewing data by country provides a broader perspective, giving users an overall understanding of the market trends across different countries. The button for viewing data by city offers a more detailed view, allowing users to see how the market is performing in specific cities

This flexibility in viewing options provides users with a more personalized experience and helps them make more informed decisions based on their specific requirements

I use the KPI visuals to show the exact ranking of Singapore among the 482 cities and 112 countries which shows that Singapore is not affordable overall. However, different countries have different standards of living, environments, and many other factors.

Hence i have decided to let users to choose the countries they want to compare to. Using the city or country slicer they can compare cities they want in terms of Price to Income Ratio and affordability index which is also formatted to show less affordable markets to be darker.

For example, here where these countries are selected, target users will get a better idea of how Singapore market compares to these countries that they want to compete to. From what we see here, Singapore housing market is satisfactory in terms of affordability compared to other First world countries like United States, Germany , Canada and so on

**[Conclusion]**

In conclusion, Singapore provides a high-quality and accessible housing environment for its residents, with about 90% of the population being accommodated. The government has implemented various initiatives, such as the Enhance CPF Housing Grant (EHG), to help citizens afford homes. Ultimately, it is up to the individual to determine their own criteria for comparison to other countries.

**Safety: (10min)**

**[Speaker: Damian]**

Thank you Javerine, I have chosen to focus on safety as I believe it plays a huge role in determining if a country is good place to live in. I divided it into five difference sections into which we will look.

**[Overview]**

Firstly, we will explore overall safety of Singapore, immediately, you can see that government expenditure on Security and external relations is on the rise with 21% of the of the total expenditure spent on security and external relations in 2020.

This indicates that the government is willing to invest heavily in the security of the nation. As with the chart below comparing the fragile state index or FSI, of countries shows that Singapore is ranked fifteen and if we see the overall trend, the FSI of singapore is getting lower over the years.

FSI is an indication of the overall stability of a nation. Stability can affect the safety of a country as an unstable country is often plagued by conflict, corruption, and poverty, which can lead to a breakdown of law and order and the potential for civil unrest.

**[Police Force]**

Next, we look into the Singapore Police Force, as they are important in safekeeping Singapore.

We can see the expenditures of the SPF in on the rise over the years which can indicate that they are spending more for better equipment’s or infrastructures, I do a deeper analysis of the rising expenditure later.

As shown on the chart on the top right, we can see that singapore has one of the highest Police-to-population ratios compared to other countries which indicates a strong level of law enforcement with a stable police workforce with 44k Active service men in 2021 and 128 police stations distributed evenly across the island in 2022.

**[Crimes]**

Next, is crimes in Singapore. The chart at the top right shows the number of Crime free days for theft, Housebreaking and Robbery is on the rise which is a strong indication to the safety level in Singapore as these crimes are often common in countries and has a strong effect on the people’s perception of safety in a country.

At the same time, the Crime rate is decreasing over the years to a 0.17 per 100k population in 2020 and compared to other countries, Singapore ranked second in 2020.

Commercial crimes are the most common crime in 2021 which involves frauds or scams within companies. In contrast, the least common crimes in Singapore in 2021 were House breaking, Violent and Serious property crimes, and crimes against person. This is a good indication that majority of the common crimes do not involve in physical or violent harm of a person.

**[Emergencies Services]**

Next, we have the emergencies services which are crucial in maintaining the safety and responding to emergencies. Here we will focus on Singapore’s Civil Defence Force or SCDF.

We can see that the Number of fire occurrence is declining along with the Fatality rate from Fire incidents. At the same time, SCDF conducted 13 thousand safety enforcement checks across the island in 2020 which can be a contributing factor the declining fire occurrence and fatality rate.

We can also see that the 21 Fire stations in 2019 are equally distributed across the island which can positively affect the efficiency and ability of the SCDF to respond to emergencies.

**[Traffic Safety]**

The last factor is the Traffic & Road Safety in Singapore, as millions of citizens commute daily, maintaining a safe environment for commuters is important.

We can see that over the years, Road traffic accidents casualties including pedestrian is on a decline, in contrast, the number of traffic lights and pedestrian infrastructure built is on a rise which can be an contributing factor to the declining casualty rate as having a good road infrastructure such as traffic lights, walkways and overhead bridge improves the overall convenience and safety of pedestrians and drivers.

We also have a map to show the distribution of speed cameras in Singapore in 2022, as those are important in maintaining the speed of the traffic as speeding drivers can pose a danger to other road users. We can see that it distributed evenly which can contribute to the declining in road casualties. Lastly, comparing the Traffic accidents fatality we can see that Singapore has one of the lowest traffic fatality rates.

**[Statistical Modelling]**

Lastly, we will utilize statistical modelling techniques to analyse the data and uncover patterns, relationships, and trends in the data to provide a deeper insights.

Firstly, by using forecasting, we can expect that the Government expenditure for Security and External relations is expected to increase over the next 3 years to approximately, $20 billion dollars compared to 19 billion dollars in 2020.

Next, we used key influencers to find out which factors has the largest influence of the overall Fragile State Index (FSI) and we can see that State Legitimacy has the biggest influence on the overall FSI of a country. State legitimacy refers to the population’s recognition of their government having the right to rule and make decisions. A legitimate state has the authority to enforce laws and regulations, and its citizens have a duty to obey them which is crucial in maintaining order and stability in a society.

Using scatter chart, we can identify the relationship between the two variables to see how closely related they are to one another.

The first one compares the Crime rate to the expenditure of SPF; we can see that they are again closely related which can implies that more funding to the Police Force will help in reducing the crime rates. Possible reasons are that more spending on training, better equipment, better technology, etc. can improve the overall efficiency and effectiveness in combating and preventing crimes.

Last one compares the relation between Traffic casualties to the no of traffic lights built. Which shows to be closely related. This can signify that Traffic lights are important in regulating the traffic that can help reducing the number of road traffic accidents.

**[Conclusion]**

In conclusion, Singapore is one of the safest and politically stable country, making it a desirable place to live, work and visit. The country's low crime rates, combined with its robust emergency services, ensure a safe and secure environment. The government's ongoing investment in safety measures further reinforces the commitment in creating a safe nation.

**Conclusion: (1min)**

**[Speaker: Amber]**

So, this is just a recap of our individual conclusions just now, and now we will move on to our overall conclusion regarding our hypothesis that Singapore is a good place to live in.

Singapore has devoted a lot of resources, to establish Singapore in many aspects. It has ensured that facilities and services are accessible, affordable, and reliable for everyone to use and this creates a united support system where it is inclusive to everyone. Its high cost of living is parallel to the quality provided. The government has also ensured that there are sufficient subsidies to help relieve the financial burden. As result, we have come to the conclusion that Singapore is a good place to live and work, supporting our overarching hypothesis.

**[End] (30 seconds)**

**[Speaker: Javerine]**

With that, we have come to the end of our presentation. We hope that this information has been valuable and informative, providing young adults with a comprehensive overview of the quality of life in Singapore. We believe that our findings will not only benefit the young adults in Singapore, but also those from around the world who are considering making a move to Garden City for education, work, or personal reasons.

Thank you for your time and attention, and we hope that you have a great day ahead.

All: thank you