The COVID-19 pandemic has had a significant impact on countries worldwide, and Singapore is no exception. Despite the challenges, Singapore has made significant achievements in various areas, including healthcare, economic and advantageous opportunity.

Achievement 1: Healthcare

Singapore's success in managing the impact of COVID-19 and slowing down disease transmission. They success to the high level of trust in the society, the government's transparency in sharing information, and the collective efforts of Singaporeans in practicing personal and social responsibility. We can also recognize the sacrifices and contributions of individuals and teams in fighting COVID-19 and announce the introduction of a special state award called the COVID-19 Resilience Medal to recognize their service.

Achievement 2: Economic

Before the pandemic, Singapore was about to call a tender to build Terminal5, but they paused it for two years. The pandemic gave them time to reassess their long-term plans, and they redesigned Terminal5 to be more resilient, safer, and more energy efficient. When completed in the mid-2030s, Terminal5 will be a significant contributor to Singapore's position as a leading global player in the aviation space.

Achievement 3: Advantageous opportunity

The success of Singapore's biomedical industry, which has become a major contributor to the country's manufacturing GDP and employs thousands of workers. They are attracting top talent in the fields of science and technology, and Singapore's investment in this area has paid off with significant contributions to the fight against COVID-19. Singapore has a strong investment pipeline and an opportunity to continue attracting talent and businesses, even during the pandemic.

Suggestion 1: Economic Recovery The COVID-19 pandemic has had a significant impact on Singapore's economy, and the government has implemented various measures to support businesses and workers. To cope after COVID-19, Singapore's leaders must continue to prioritize economic recovery and implement policies that promote sustainable growth. The government can also leverage technology and innovation to create new opportunities for businesses and workers.

Suggestion 2: Social Cohesion The COVID-19 pandemic has highlighted the importance of social cohesion, and Singapore's leaders must continue to prioritize this area. The government can promote social cohesion by implementing policies that promote inclusivity, diversity, and equality. The government can also encourage community involvement and support initiatives that promote social cohesion.

Suggestion 3: Sustainability The COVID-19 pandemic has also highlighted the importance of sustainability, and Singapore's leaders must continue to prioritize this area. The government can promote sustainability by implementing policies that promote energy efficiency, waste reduction, and sustainable transportation. The government can also invest in research and development to develop sustainable solutions that can benefit both the country and the region.

In conclusion, Singapore has made significant achievements in healthcare, economic and advantageous opportunity., which have been crucial during the COVID-19 pandemic. To cope after COVID-19, Singapore's leaders must continue to focus on these areas while also prioritizing economic recovery, social cohesion, and sustainability. By doing so, Singapore can emerge from the pandemic stronger and more resilient. (National Day Rally 2022)

Q1

In terms of HICs, the mean value is 8.88 with the standard error of 0.82, showing that the mean value is relatively precise. For LMICs, although it is much lower than that of HICs, the mean value is also nearly precise with the mean value of 2.18 with the standard error of 0.22. Both HICs and LMICs median values are much lower than that of mean values, indicating that the distribution might be skewed to the right. HICS has the standard deviation of 6.23 and sample variance of 38.85, showing that data points are spreading out widely and has a wider variability in the data. For LMICs with standard deviation of 2.53 and sample variance of 6.44, it shows that the data points are not spread out widely and it has a relatively lower variability. Kurtosis of both HICs and LMICs indicates that the distribution is heavily right- tailed. Furthermore, the skewness of both HICs and LMICs confirm that the distribution is right-skewed. The minimum, maximum, sum and count of HICS are relatively higher than those of LMICs.

Q2

The distribution of CO2 emissions per capita in high-income countries (HICs) is presented by a histogram with class interval width of 4 metric tons per capita. The histogram shows first class interval represents countries with CO2 emissions per capita ranging from 1.95 to 5.95 metric tons, which has the lowest frequency in the whole distribution. On the one hand, the intervals of countries with no CO2 emissions per capita are indicated by the zero frequency. This suggests that there are almost no countries with CO2 emissions per capita above 29.95 metric tons. The histogram also shows that there are very few countries with CO2 emissions per capita beyond 21.95 metric tons. In summary, the histogram of HICS shows that the distribution of CO2 emissions per capita is right-skewed, with the concentration of countries in the lower range of emissions. This shows that HICs have made some progress with reducing their CO2 emissions per capita, with many countries falling in the lower range of emissions.

In terms of LMICs, the distribution of CO2 emissions per capita in low-or middle-income countries (LMICs) is presented by a histogram with class interval width of 1.5 metric tons per capita. The histogram shows that the majority of LMICs have CO2 emissions per capita in the range of 1.54 and 3.04 metric tons with the frequency of 67, having the highest frequency in the distribution. The third class interval represents countries with CO2 emissions per capita ranging from 3.04 to 4.54 metric tons, which has the second highest frequency in the whole distribution. The histogram of LMICs shows that there are few countries with CO2 emissions per capita beyond 6.04 metric tons. In conclusion, the histogram of LMICs shows that the distribution of CO2 emissions per capita is right skewed like HICs, with the concentration of countries in the higher range of emissions. This indicates that LMICs also have some improvements with reducing their CO2 emissions per capita, with the majority of countries occurring in the lower range of emissions.

Q3

a(i) In terms of HICs, the calculated average CO2 emissions for highly urbanized countries were 10.44 metric tons per capita while the average CO2 emissions for not highly urbanized countries were 6 metric tons per capita. This shows that highly urbanized countries have a higher average rate of CO2 emissions than not highly urbanized counties in HICs.

(ii) In terms of HICs, the calculated average CO2 emissions for densely populated countries were 10.49 metric tons per capita while the average CO2 emissions for not densely populated countries were 7.94 metric tons per capita. This shows that densely populated countries have a higher average rate of CO2 emissions than not densely populated counties in HICs.

In conclusion, highly urbanized and densely populated countries have more CO2 emissions than not highly urbanized and less densely populated countries in HICs.

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b(i) In terms of LMICs, the calculated average CO2 emissions for highly urbanized countries were 4.41 metric tons per capita while the average CO2 emissions for not highly urbanized countries were 1.68 metric tons per capita. Like HICs, this shows that highly urbanized countries have a higher average rate of CO2 emissions than not highly urbanized counties in LMICs.

b(ii) In terms of LMICs, the calculated average CO2 emissions for densely populated countries were 1.55 metric tons per capita while the average CO2 emissions for not densely populated countries were 2.33 metric tons per capita. Unlike other data, this shows that less densely populated countries have a higher average rate of CO2 emissions than densely populated counties in HICs.

In conclusion, unlike HICs, highly urbanized and not densely populated counties in LMICs have more CO2 emissions per capita than not highly urbanized and densely populated countries.

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Q4(i)

Null hypothesis: The average carbon emissions in HICs is 8 metric tons per capita.

H0: μ = 8

Alternative hypothesis: The average carbon emissions in HICs is not 8 metric tons per capita.

H1: μ ≠ 8

Since our calculated t-value (1.068) is less than the critical t-value (2.003), we do not reject H0. This means that there is not enough evidence to conclude that the average carbon emissions in HICs is different from 8 metric tons per capita. Therefore, type II error occurs.

(ii)

Null hypothesis: The average carbon emissions in LMICs is 3 metric tons per capita.

H0: μ = 3

Alternative hypothesis: The average carbon emissions in LMICs is not 3 metric tons per capita.

H1: μ ≠ 3

Since our calculated t-value (-3.67) is less than the critical t-value (-1.98), we reject H0. This means that there is enough evidence to conclude that the average carbon emissions in LMICs is from 3 metric tons per capita. Therefore, type I error occurs.

Q5

To construct the multiple linear regression model of Zulu, we use the following method.

The predicted CO2 emissions for Zulu using the regression equation are y = 1.469 + 3.396(urban) + 0.474 (dense) + 5.034(group). However, since Zulu is not urbanized (urban = 0), not densely populated (dense = 0), and not a member of the specified group (group = 0), the predicted CO2 emissions for Zulu is ŷ = 1.469.

CO2 emissions of Zulu(ŷ) = β0 + β1(urbanization) + β2(density) + β3(group)

CO2 emission for Zulu(ŷ) = 1.469122 + 3.396(0) + 0.474(0.0) + 5.034(0) = 1.469

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