

# IS SINGAPORE A GOOD COUNTRY TO LIVE IN ?

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## Abstract

This report presents research and findings on five main aspects of Singapore: Education, Healthcare, Cost of Living, Safety and Lifestyle, to ultimately determine if Singapore is a good country to live in. This serves as a brief update to Singaporeans on the current living condition in Singapore. We chose these five aspects as they are of utmost importance to assess the quality of a country. (Quality of Life in Singapore, n.d.) In a perfect country, residents should be able to receive the best education and healthcare and live a safe, low-cost, stress-free life.

We conveniently surveyed 120 Singaporeans over a period of 6 days on Google Forms, and our results suggest Singaporeans reflect positively on Singapore, especially on the healthcare and safety aspects. We also resorted to using some other data (secondary), namely from Statista, Singstat and Data.gov.sg, to conduct our statistical testing.

However, after testing our data, we are unable to support the claim that "Singapore is a good country to live in" due to the limited amount of data we collected, and varying data collection methods and domains of our secondary data. Moreover, our claim on whether "Singapore is a good country to live in" is subjective, it varies from person to person, as everyone's thoughts on a perfect country are different. Our report standardizes a country to be good if it excels in all the five aspects mentioned, but it might not be the case for everyone. Therefore, we do not have enough evidence to support the claim that "Singapore is a good country to live in".

\*\*We could extend our project by informing residents that Singapore might not be a good country to live in, even though it is widely known to be.\*\* It really depends on personal preference and the research methods used to collect the data. Therefore, we should not always trust the sources we read, and should evaluate their credibility by looking into their research methods and domains.

## Keywords

Highest Qualification Attained, Literacy Rate, Life Expectancy, General Practitioner, Consumption Price Index, Percentage Index, Inflation, Deflation, Crime Rate, Physical Crime Records, Online Crime records, Singapore Police Force, Online Scandals, Work-Life Balance, Mental Health, Healthy Lifestyle, Fast-paced Lifestyle, Competitiveness, Always-on Culture

## Introduction

More often than not, people possess the stereotype that Singapore is the "perfect" country to call home. Hence, the purpose of this report is to assess the current living conditions of Singaporeans in the aspects of healthcare, education, security, cost of living and lifestyle. This will in turn allow us to understand the 'real' Singapore, how its people are coping, and answer the question "Is Singapore really a good country to live in?"

Singapore has never lost its status as a country of prestige, but in recent years, several factors have become rather noticeable, evident, and have been the topic of many conversations. Statements such as "Singapore is so expensive", "Singapore is so fast and stressful", these are all phrases we have heard, but they hold a lot more weight than mere passing remarks. A study on Data.gov.sg showed that Singapore is the 2nd most expensive city to stay in, along with Paris, France. With the constant need to maintain a high monetary income to live comfortably and thrive in this cosmopolitan society, adults work tirelessly in hopes of achieving that. Singapore is also known to be a stress-saturated country, with 92% of its working citizens reported to be stressed or anxious. There is no denying that Singapore isn't for the faint-hearted, but why do people still call this place home despite the clear mental and financial hardships it poses?

This is because Singapore has an abundance of reasons to stay as well. Singapore offers top-tier education with world-recognised certificates to ensure well-paying jobs, to have access to world-class healthcare at the fraction of its price, and a safe and secure country where its citizens can go about their day with peace of mind. In 2021, Singapore was ranked the 3rd safest city in the world, falling behind Tokyo and Copenhagen.

There are a fair share of reasons to answer "Why Singapore", but there are also numerous reasons "Why Not", and this list could go on and on. We have narrowed it down to 5 crucial facades, which are in one way or another similar, and dived deeper into these particular 5. Hence, this paper proves to be crucial for us to truly understand what makes a country objectively "Good", and whether Singapore is a good place to live in.

## Shared Methodology

Our primary data was collected using a Google Form survey, conducted over a period of 6 days. We asked three to four questions for each of our five aspects. Most of our questions were asked using Likert Scale. This allows respondents to choose the option that is closest to their opinion. Furthermore, it is also a universal collection method, which makes it easy for respondents to understand, hence providing us with accurate data to work with. We received 120 responses from residents aged between 13 and 59, the majority are between the age of 13 and 18 (70.8%). Most of them reflect positively on Singapore, especially on the healthcare and safety aspects. Due to limited time and

resources, we did not sample randomly, but conveniently instead, which explains for the high number of respondents aged between 13 and 18. This has to be taken into account when determining the credibility of our survey. Some of our survey questions to be used for statistical testing will be under our individual aspects.

## Singapore has one of the Best Education System in the World

### Introduction

Singapore's education system is currently known to be one of the best in the world due to its consistency and ability to educate students, who are rated among the best in literacy, mathematics and science. (Singapore-Education, 2022) According to the Strait Times, Singapore's 15 years old students topped the OECD's Pisa global competence test in 2018, with an average of 576 marks. (Davie, 2020)

To further support the claim that "Singapore has one of the Best Education Systems in the World", we compared the percentage of population in Singapore having a tertiary education with the average of the percentage of every country's population having a tertiary education, from 2001 to 2015. Tertiary education equips students with knowledge and skills imperative to the workforce. (Higher Education in Singapore, n.d) However, a student will have to first complete primary and secondary education (and post-secondary education) to prepare for tertiary education. Hence, the number of students qualified to receive a tertiary education is greatly influenced by the quality of education of a country.

### Methodology

To conduct statistical testing, we used secondary data from the Department of Statistics in Singapore<sup>1</sup> (Singstat). The data provides the highest qualification attained by approximately 2.5 millions Singaporean aged 25 and above, from 1990 to 2021. From this data, we derived the percentage of the population in Singapore having a tertiary education, from 2001 to 2015. (Fig.1.1) Since every sample size, from 2001 to 2015, is approximately 2.5 millions Singaporeans aged 25 and above, it is sufficient to represent the entire population in Singapore. (We did not take into account Singaporeans aged below 25, because they likely have not completed their education. Therefore, we are unable to determine their highest qualification attained.)

To obtain the average of the percentage of every country's population having a tertiary education, from 2001 to 2015 (Fig.1.1), we subjected to using another secondary data from Our World In Data<sup>2</sup>. It provides the percentage of every country's population having a tertiary education, from 1970 to 2016. To simplify the average of the percentage of every country's population having a tertiary education, we named it as the benchmark percentage of population having a tertiary education.

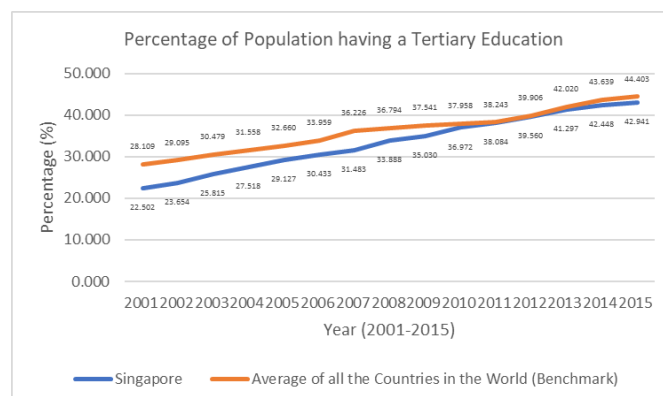


Fig.1.1 Graph of Percentage of Population having a Tertiary Education

## Data Analysis

### Hypothesis Testing

We claimed that on average over the years, the percentage of population in Singapore having a tertiary education is higher than the benchmark percentage of population having a tertiary education, supporting "Singapore has one of the best Education System in the World". We let dependent variable  $X_1$  be the percentage of population in

<sup>1</sup>Singapore Department of Statistics. (2022, February 4). *Singapore Residents Aged 25 Years &amp; Over By Highest Qualification Attained, Sex And Age Group*. Tablebuilder.singstat.gov.sg. Retrieved July 29, 2022, from <https://tablebuilder.singstat.gov.sg/table/TSM850581>

<sup>2</sup>Roser, M., & Ortiz-Ospina, E. (2013, July 17). *Tertiary education*. Our World in Data. Retrieved July 29, 2022, from <https://ourworldindata.org/tertiary-education#citation>

Singapore having a tertiary education of a year, and dependent variable  $X_2$  be the benchmark percentage of population having a tertiary education of a year. The independent variable would be the year, when both  $X_1$  and  $X_2$  are collected. These are our null hypothesis and alternative hypothesis:

$$H_0: \mu_{x_1} \leq \mu_{x_2}$$

$$H_a: \mu_{x_1} > \mu_{x_2} \text{ (claim)}$$

Assuming it is a normal distribution, we conducted a right-tailed, paired t-test of 95% confidence level, as our sample size is 15, and both  $X_1$  and  $X_2$  are related by year. (Fig.1.2)

t-Test: Paired Two Sample for Means		
	Singapore	Benchmark
Mean	33.38342175	36.1726689
Variance	46.24304125	26.2434481
Observations	15	15
Pearson Correlation	0.989351694	
Hypothesized Mean Difference	0	
df	14	
t Stat	-5.7290236	
P(T<=t) one-tail	2.60637E-05	
t Critical one-tail	1.761310136	

Fig.1.2 Paired t-Test

As the t-test value(t Stat) of -5.729 is less than t critical value(t Critical) of 1.761, it does not fall in the rejection region, so we cannot reject the null hypothesis. Therefore, we are 95% confident that we do not have enough evidence to support our claim that on average over the years, the percentage of population in Singapore having a tertiary education is higher than the benchmark percentage of population having a tertiary education, resulting in our claim to be statistically insignificant.

#### Confidence Interval

In order to find out where the true average difference over the years lies, between the percentage of population in Singapore having a tertiary education and the benchmark percentage of population having a tertiary education, we conducted a confidence interval test at a 95% confidence level. (Fig.1.3)

Year	Singapore	Average of all the Countries in the World (Benchmark)	Difference (Singapore - Benchmark)
2001	22.502	28.109	-5.606956703
2002	23.654	29.095	-5.441
2003	25.815	30.479	-4.664
2004	27.518	31.558	-4.040
2005	29.127	32.660	-3.533
2006	30.433	33.959	-3.527
2007	31.483	36.226	-4.743
2008	33.888	36.794	-2.906
2009	35.030	37.541	-2.511
2010	36.972	37.958	-0.986
2011	38.084	38.243	-0.159
2012	39.560	39.906	-0.346
2013	41.297	42.020	-0.723
2014	42.448	43.639	-1.190
2015	42.941	44.403	-1.462
Difference's Sample Mean			-2.789247127
Difference's Sample Standard Deviation			1.885610606
Difference's Number of Samples			15
t Critical two-tailed (95% confidence level)			2.144786688
Difference's Margin of Error (E)			1.044216348
Difference's Confidence Interval			[-1.745, -3.833]

Fig.1.3 Confidence Interval with Derived Data

From the test, we are 95% confident that the true average difference over the years lies between -1.745% and -3.833% inclusive. Therefore, the percentage of the population in Singapore having a tertiary education of any year is more likely to be lower than the benchmark percentage. This further opposes our claim in hypothesis testing, and thus also contradicts the statement of "Singapore has one of the Best Education Systems in the World".

#### Correlation and Linear Regression

We used correlation and linear regression to help us understand the relationship between the percentage of population in Singapore having a tertiary education and time (in year). (Fig.1.4)

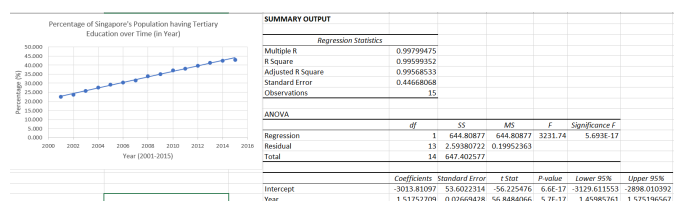


Fig.1.4 Linear Model

There is a near perfect, positive linear relationship between the percentage of population in Singapore having a tertiary education and time, as correlation coefficient (Multiple R) is 0.998 (very close to 1). The adjusted coefficient of determination (Adjusted R Square) is 0.996 (very close to 1 too) indicating that the line of regression equation is almost a perfect fit for all the percentages over time.

The regression equation of this relationship:

$$Y = 1.5175X - 3013.811$$

$Y$  represents the percentage of population in Singapore having a tertiary education, whereas  $X$  represents the time (in year).

Therefore, the percentage of the population in Singapore having a tertiary education constantly increases overtime. This can be due to more and more opportunities provided by Singapore to students to take tertiary education (Polytechnic, ITE etc.) or Singapore prepares students better and better for tertiary education. Both imply that Singapore's education system is constantly improving, which supports the statement of "Singapore has one of the Best Education Systems in the World". However, other countries' education are improving too, as Figure 1 shows an upward trend in the average of the percentage of every country's population having a tertiary education over time.

#### Conclusion and Limitations

In conclusion, our statistical testing is unable to support the claim that "Singapore has one of the Best Education Systems in the World" even though it is a widely known fact. It is only able to give evidence that Singapore's education system is constantly improving.

However, the claim that "Singapore has one of the Best Education System in the World" can still be held true, as due to limited time and resources, we were only able to look into one aspect in defining the quality of education of a country: the percentage of a country's population having a tertiary education. There are other aspects, which we could have looked into to test the claim holistically if we had time, such as literacy rate, government's expenditure on education and number of educators in a country etc.

Moreover, our statistical testing on just a single aspect (the percentage of a country's population having a tertiary education) may still be flawed. We compared two different secondary data of different collection methods and intentions. Singstat's data is collected from adults aged 25 and above, whereas Our World in Data's data is collected from students within 5 years of graduating from secondary school. Singstat is used to store Singapore's official statistics, which is created by the Singapore Department of Statistics. Our World in Data is used to store easily accessible worldwide data, which is made by a non-profit organization based in the UK, hence lacking credibility. Even so, we compared them, because we were only able to find these two similar data to conduct statistical testing within limited time and resources, and thus becoming a limitation of our statistical report.

## Singapore has one of the Best Healthcare System in the World

#### Introduction

"A good system is one that organized in a way to ensure timely access to the highest attainable standard of care to all its citizens; one that has the right programs managed by competent professionals; one in which clinics provide preventive and curative care for the most common conditions, i.e. primary health care in facilities or in the community where people live. All this is done in accordance with the respective program norms and standards. A good system is one where hospitals to which patients are referred, deliver secondary or tertiary level of care as defined in the country's programs."<sup>3</sup> A good healthcare system will have more healthcare facilities, more highly skilled healthcare workers that can treat patients more efficiently, and more up to date resources so that they can readily treat patients, regardless of the complexity of treatment, prolonging their residents' life expectancy. Hence, life expectancy is used as a measure of healthcare quality.

#### Methodology

To conduct statistical testing for the price of healthcare in Singapore, we used secondary data from Singapore Department of Statistics<sup>4</sup> (SingStat). The data provides the Consumer Price Index of all goods from 1961 to 2021. The CPI was derived from the 2017/18 Household Expenditure Survey (HES) and updated to 2019 values by accounting for the price changes between 2017/18 and 2019. Only the data on CPI of Healthcare was used to derive Fig. 2.5. To compare the increase of CPI on healthcare to the increase of wages adjusted for inflation, another secondary data from the Ministry of Manpower was used. The real wage determines if nominal wages rise faster than the rate of inflation. The data provides the summary of income from the working population, which was approximately 3568.8 workers per year. We computed the average annual real wage growth from total wage change including employer CPF contributions each year.

We used secondary data from The World Bank<sup>5</sup> to conduct the hypothesis testing. The data provides the average annual life expectancy of each country, income level and continent, which was sourced from multiple sources including the United Nations Population Division. World Population Prospects: 2019 Revision<sup>6</sup>, where they had a random sample of 1758 residents per country. The global life expectancy was computed from the sum of low, lower middle, middle, upper middle and high income countries' life expectancy each year divided by 5. The global life expectancy is computed from income level instead of an average of all the countries as some countries have missing data.

<sup>3</sup> Beracoechea, A. E. (2017, May 22). *What is a good health system?* Realizing Global Health. Retrieved July 30, 2022, from <https://www.realizingglobalhealth.com/what-is-a-good-health-system/>

<sup>4</sup> Singapore Department of Statistics. (2022, July 25). *(DOS) | SingStat TableBuilder - Consumer Price Index (CPI), 2019 As Base Year*. Tablebuilder.singstat.gov.sg. Retrieved July 30, 2022, from <https://tablebuilder.singstat.gov.sg/table/TS/M212881>

<sup>5</sup> The World Bank. (2022, July 20). *Life expectancy at birth, total (years) | Data*. Data.Worldbank.Org. Retrieved July 30, 2022, from <https://data.worldbank.org/indicator/SP.DYN.LE00.IN>

<sup>6</sup> United Nations. (n.d.). *World Population Prospects - Population Division - United Nations*. Un.Org. Retrieved July 30, 2022, from <https://population.un.org/wpp/Methodology/>

## The Most Efficient Healthcare System

In 2020, Singapore was ranked first in the world for having the most effective healthcare system, according to the Bloomberg Health-Efficiency Index, which compared the Covid-19 mortality rate, life expectancy and medical spending to determine the healthcare systems that produce the best results. The Singaporean healthcare system was able to quickly adapt to the current, upcoming situation, transforming our normal healthcare facilities to cater to the new Covid-19 virus that quickly grappled Singapore.

How long do you take to travel from home to the nearest clinic, polyclinic or hospital?  
120 responses

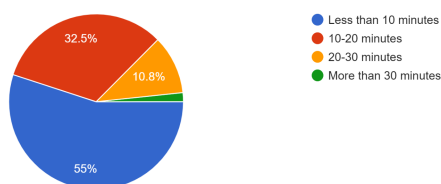


Fig.2.1 Pie chart of survey response on proximity to a healthcare facility

From our survey on waiting times at a healthcare facility, we found that the majority of the respondents (95%) spent at most 1.5 hours waiting for a medical practitioner. This means that patients are quickly attended to upon seeking medical attention. As of 2021, Singapore has a total of 22 hospitals, 23 polyclinics, 1800 General Practitioner (GP) clinics<sup>7</sup> and 85,126 active medical practitioners<sup>8</sup> (including GP doctors, surgeons, nurses etc) in public and private healthcare facilities catering to its 5.4 million residents. Primary healthcare services like GP clinics and polyclinics allow residents to consult for less serious injuries with lesser waiting time and cost, making healthcare more efficient as the hospitals will be less likely to be flooded with patients as there are various other facilities people can seek and only go to hospitals for serious injuries. Having this many medical practitioners means that there are sufficient staff to care and rehabilitate the patients.

## Affordable Healthcare

Singapore offered many healthcare schemes and subsidies like MediShield, MediFund and MediSave to help lessen the financial burden on its residents. According to age, financial status and the ward stayed in at the public hospital, the patient can get subsidies of up to 80% of their hospitalisation bill. The cost of major surgeries like heart bypass in Singapore is also more affordable than overseas. A heart bypass surgery done in Singapore will cost approximately ((123000-17200)/172) 615% and (27000-17200/172) 57% less than one done in the United States of America and Mexico respectively.<sup>9</sup> (Prices in USD as of 2019)

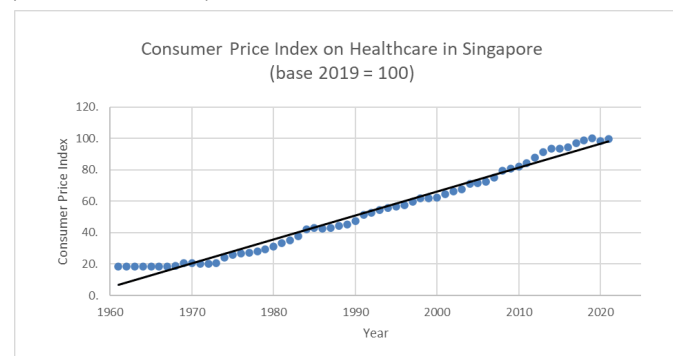


Fig.2.2 Graph on Percentage Increase Index of Consumer Spending on Healthcare in Singapore

SUMMARY OUTPUT									
Regression Statistics									
Multiple R	0.989266605								
R Square	0.978648416								
Adjusted R Square	0.978286525								
Standard Error	4.020567051								
Observations	61								
ANOVA									
	df	SS	MS	F	Significance F				
Regression	1	43714.27018	43714.27	2704.261054	5.4625E-51				
Residual	59	953.7326055	16.164959						
Total	60	44668.00279							
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	-2974.696655	58.21431421	-51.09906	1.5027E-50	-3091.18323	-2858.21	-3091.1832	-2858.2101	
Year	1.520427975	0.029237588	52.00251	5.46252E-51	1.4619237	1.578932	1.4619237	1.5789323	

Fig.2.3 Linear Model

The regression equation of this relationship:

$$Y = 1.520X - 2974.697$$

*Y represents the Consumer Price Index (CPI) on healthcare in Singapore, whereas X represents the time (in year).*

From Fig.2.2 and 2.3, there is a very strong, positive and linear trend for the relationship between the Consumer Price Index (CPI) on healthcare in Singapore (base 2019=100) and the year (Fig. 2.1) as the correlation coefficient (Multiple R) is +0.989 (very close to 1). The adjusted coefficient of determination (Adjusted R Square) is 0.978 (very close to 1) which indicates that the model is a good fit for all the percentage increase index of consumer spending on healthcare in Singapore over time. This implies that there will be a constant upward trend in CPI on healthcare.

Furthermore, from Fig.2.1 and 2.2, the gradient of the increase is low at 1.520, and since the average real wage growth is rated at 2.73% (2011-2021)<sup>3</sup>, it means that the increase in CPI on healthcare each year will be compensated by the increase in salary and the net increase in healthcare spending will be negligible.

## Data Analysis

### Hypothesis Testing

We claimed that the average life expectancy in Singapore over the years is higher than the average global life expectancy over the years, supporting the sub-hypothesis that "Singapore has one of the best healthcare systems in the world". Let dependent variable  $X_1$  be the life expectancy in Singapore over the years and let dependent  $X_2$  be the global life expectancy over the years. The independent variable will be the year, in which both  $X_1$  and  $X_2$  are collected. These are our null hypothesis and alternate hypothesis:

$$H_0: \mu_{X_1} \leq \mu_{X_2}$$

$$H_a: \mu_{X_1} > \mu_{X_2} \text{ (claim)}$$

We conducted a right-tailed z-test of 95% confidence level as both  $X_1$  and  $X_2$  are related by year and the sample size is greater than 30. (Fig. 2.4)

z-Test: Two Sample for Means		
	Singapore Residents	Globally
Mean	78.17376562	66.53636173
Known Variance	13.07943962	12.81082742
Observations	41	41
Hypothesized Mean Difference	0	
z	14.64467609	
P(Z<=z) one-tail	0	
z Critical one-tail	1.644853627	
P(Z<=z) two-tail	0	
z Critical two-tail	1.959963985	

Fig. 2.4 z-Test Results

Since the test statistic,  $z = 14.64$ , is greater than the z critical ( $Z_c$ ), 1.645, on a right-tailed test, the test statistic ( $z$ ) falls in the rejection region so, we have enough evidence to reject the null hypothesis. This means that we are 95% confident that the mean of the life expectancy in Singapore over the years is not lesser than or equal to the mean of the global life expectancy over the years, making our claim more statistically significant.

### Confidence Interval

	Singapore Residents	Globally
Sample Size	41	
Confidence Level, c	95%	
Zc	1.959963985	
Sample Standard Deviation	3.579	3.617
Sample Mean	78.174	66.536
Margin of Error, E	1.096	1.107
Lower limit	77.078	65.429
Upper limit	79.269	67.643
Confidence Interval	(77.078, 79.269)	(65.429, 67.643)

Fig. 2.5 Confidence Interval

We are 95% confident that the mean of the global life expectancy over the years is between 65.429 and 67.643. We are also 95% confident that the mean of the Singapore resident life expectancy over the years is between 77.078 and 79.269. As the confidence interval of the mean of the global life expectancy over the years is lower than the confidence interval of the mean of the Singapore resident life expectancy over the years, it means that Singapore residents have a higher life expectancy than the world, which supports our claim that "Singapore has one of the Best Healthcare Systems in the World".

## Conclusion and Limitations

In conclusion, our statistical testing is able to support the claim that "Singapore has one of the Best Healthcare Systems in the World". However, the claim that "Singapore has one of the Best Healthcare Systems in the World" could be false, as due to limited time and resources, the hypothesis testing was only done on two aspects that are influenced by the quality of healthcare: the life expectancy of a country's population and the affordability of healthcare. If other aspects that determine the quality of healthcare like the clinical quality performance measures and patient experience and perceptions on healthcare were used to test the hypothesis too, the validity of our claim may be different.

7 Ministry of Health. (2022, May 31). MOH | Primary Healthcare Services. Moh.Gov.Sg. Retrieved July 30, 2022, from <https://www.moh.gov.sg/home/our-healthcare-system/healthcare-services-and-facilities/primary-healthcare-services>

8 Singapore Department of Statistics. (2022, June 28). (DOS) | SingStat Table Builder - Registered Health Personnel (End Of Period). Tablebuilder.singstat.gov.sg. Retrieved July 30, 2022, from <https://tablebuilder.singstat.gov.sg/table/TSM870011>

9 Steward, C. (2021, June 21). Cost of a heart bypass in various countries 2019. Statista. Retrieved July 30, 2022, from <https://www.statista.com/statistics/189966/cost-of-a-heart-bypass-in-various-countries/>



Furthermore, the hypothesis testing is flawed as the aspect of life expectancy can be affected by other factors such as food intake, physical activity level and stress level of individuals, just to list a few. Therefore, even though healthcare affects life expectancy, we cannot base the quality of healthcare on life expectancy alone.

## The Cost of Living in Singapore is Getting More Expensive

### Introduction

Singapore is known to be one of the most expensive countries to live in especially in Southeast Asia (SEA). This is because Singapore stands out from the rest of SEA where it is known to be cheap to vacation there. Some reasons why Singapore stands out is due to its size. Singapore is just a tiny red dot on the world map. Due to its size, Singapore lacks natural resources and relies on other countries for resources like food, water, oil and so on. As we rely on the countries for resources we are so bound to face inflation and shaky markets as the supply and demand fluctuate. Through the years the Singapore government has been working hard to keep costs low, by creating or implementing new technology to improve systems to help us grow our own natural resources, filter our water and many more. But is life in Singapore still too expensive and why?

### Methodology

To conduct statistical testing for Singapore Food Prices, we need to use secondary data from the Department of Statistics in Singapore (SingStat). The data provides the Consumer Price Index (CPI) By household income group annual. The data for Consumer Price index provides data from 2021 to 1993 which shows the different categories like food , household expenditure and so on. The data provides the latest and shows that the price generally increases. From this data, we derived the price changes from 2021 to 1993 (Fig. 3.1). On average, the consumer price index is 79.4 and has a median of 74.7. The highest CPI is 103.2 and lowest is 60.2.

To conduct statistical testing for Singapore housing prices, we need to use the secondary data from Gov.sg. The data provides on the HDB rental index price and Private Residential Private Index Price. From the data, the quarterly price changed from 2000 Q1 to 2021 Q1 for the HDB rental index price and from 2000 to 2022 Q2 for the Private Residential Property Index. From the data, the HDB rental peaked in 2013 Q2 (149.4) and dropped to the lowest in 2002 Q1 (69.1). From the data, the highest Private Residential Property index is 180.9 in 2022 Q2 and the lowest is 80.3 in 2004 Q1.

Consumer Price Index (CPI) measures the average change in prices paid by consumers over a period of time for a unit of goods and services. It is a common measure for inflation, indicating the health and direction of the economy. To calculate the percentage increase for the index, you can either calculate by intervals of years or months. If the calculated percentage increase is positive, it means the price is inflated vice versa.

### Singapore's Food Prices

"With more than 90% of food imported, diversification is a key strategy to ensure Singapore's food security.<sup>10</sup>" Singapore imports food but through many different channels and a variety of countries, mainly Malaysia, our neighbouring country. Although we rely heavily on imports for food, Singapore has implemented strategies to ensure a steady, uninterrupted amount of food in Singapore, with Plans like the "30 by 30" plan. However prices are still vulnerable and prices may increase sharply due to inflation, shortage or any circumstances that could affect the import of food.

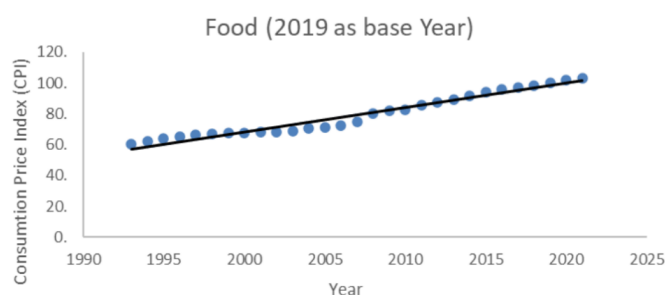


Fig.3.1 CPI of Food over Time

Regression Statistics									
Multiple R	0.980469348								
R Square	0.961320143								
Adjusted R Square	0.959887555								
Standard Error	2.753235114								
Observations	29								
ANOVA									
	df	SS	MS	F	Significance F				
Regression	1	5086.669734	5086.67	671.0377323	1.32205E-20				
Residual	27	204.668197	7.580304						
Total	28	5291.337931							
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	-3097.564433	122.644034	-25.2565	2.55194E-20	-3349.209205	-2845.9197	-3349.209205	-2845.9197	
Data Series	1.582955665	0.061107608	25.9044	1.32205E-20	1.457573211	1.7083381	1.457573211	1.70833812	

Fig.3.2 Linear Model

From 1993 to 2021, the prices of food have increased. From the summary output, the correlation coefficient is +0.980. Between the Consumer Price Index (CPI) and year it has a very strong positive linear relationship and near perfect correlation coefficient

(Multiple R) is 0.980 (very close to 1). The adjusted coefficient of determination is 0.959 (very close to 1) indicates that the line of regression equation is almost perfect fit for all the consumer price index over time. People living in Singapore should be more cautious with their spending on food since there is a very strong and positive co relationship between the year and CPI. In addition, 96.1% of the CPI is explained by the variation in the Year.

The regression equation of this relationship:

$$Y = 1.583 X - 3097.564$$

Y represents the consumption price index for food and X represents the time (in year)

Overall, the food consumption price index increased by 1.4 points from 101.8 in 2020 and 103.2 in 2021. This represents an increase of 1.4%, compared to the 1.8% increase in the previous year. The past data has demonstrated that the price yearly changes. This means that when buying food people need to be more cautious of what they are getting and ensure they are only buying what they need. Some reasons that could be causing food prices to increase and decrease are due to climate change and current stock of food around the world. Therefore this supports the statement that "Cost of living in Singapore is getting more expensive".

### Cost of Housing

As of 2021, 78.3% of the residents in Singapore stay in HDB Dwellings and a minority of the people live in Condominiums & other apartments and landed properties. Prices of housing in Singapore HDB Resale price have been generally increasing from 2000. The current base period is the 1st quarter of 2009-which means 1Q2009 has an RPI of 100.

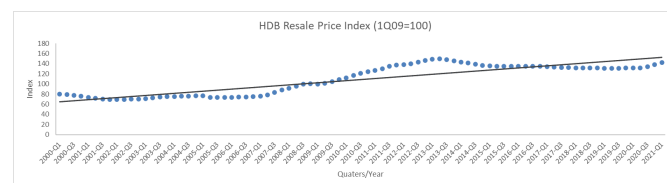


Fig.3.3 Graph of HDB Resale Price Index over Time<sup>11</sup>

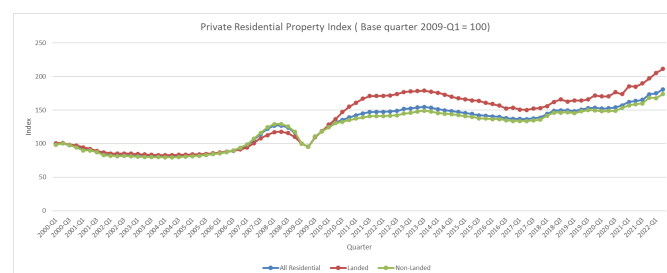


Fig.3.4 Private Residential Property Index over Time<sup>12</sup>

SUMMARY OUTPUT									
Regression Statistics									
Multiple R	0.88470847								
R Square	0.782709077								
Adjusted R Square	0.780091114								
Standard Error	2.894196363								
Observations	85								
ANOVA									
	df	SS	MS	F	Significance F				
Regression	1	2504.337546	2504.337546	298.9763789	3.02073E-29				
Residual	83	695.238925	8.37637259						
Total	84	3199.576471							
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	1989.696049	1.222723037	1627.266347	1.0745E-188	1987.264102	1992.127996	1987.264102	1992.127996	
index	0.187524791	0.010845267	17.29093343	3.02073E-29	0.165953991	0.209095591	0.165953991	0.209095591	

Fig.3.5 HDB Linear model

The HDB Resale Price Index (Fig. 3.3) for the 1st quarter of 2021 and 2020 Q4 is 142.2 138.1 respectively, which is a 4.1 points increase. This represents an increase of 3.0%, compared to the 3.1% increase in the previous quarter. There is a strong positive linear relationship between the HDB resale price index and time, as the correlation coefficient is 0.783. The regression equation of this relationship:

$$Y = 0.187 X + 1.989.696$$

Y represents the HDB resale price index and X represents the time (in year)

Therefore, the HDB resale price will increase almost constantly over time. This means people in Singapore who buys resale HDB will experience that there is price increase and which means they are unable to spend the money on other things as with the price increasing this means cost for purchasing a house in Singapore is just gonna get more and more costly especially since 2019 to 2021 there has been an inflation in the price of housing. Thus, it supports the statement "Singapore cost of living is getting more expensive".

Private property (Fig. 3.4) similarly has been experiencing a price increase in cost. The private residential price index for the 1st quarter of 2022 is 174.8 and 180.9 for the 2nd quarter of 2022. Overall the private residential index increased by 6.1 points from 174.8 in the 2nd quarter of 2022. This represents an increase of 3.9%, compared to the 0.7% increase in the previous quarter. For the whole of 2021, prices increased by 10.6%, compared to the 2.2% increase in 2020. For private landed properties the price index for

<sup>10</sup> Singapore Food Agency (2022). Singapore Food Statistics 2021. Singapore Food Statistics 2021; Retrieved July 27, 2022  
<https://www.sfa.gov.sg/docs/default-source/publication/sg-food-statistics/singapore-food-statistics-2021.pdf>

<sup>11</sup> The Government of Singapore. (2022, January 27). HDB Resale Price Index. Data.Gov.Sg. Retrieved July 31, 2022, from <https://data.gov.sg/dataset/hdb-resale-price-index>

<sup>12</sup> The Government of Singapore. (2022, July 25). Private Residential Property Price Index. Data.Gov.Sg. Retrieved July 31, 2022, from <https://data.gov.sg/dataset/private-residential-property-price-index-by-type-of-property>

the 1st quarter of 2022 is 205.3 and 211.3 for the 2nd quarter of 2022. This represents an increase of 2.9%, compared to the 4.22 increase in the previous quarter. (see Fig. 3.4) For private non-landed residential property index for 1st quarter of 2022 is 167.9 and 173.9 for 2nd quarter of 2022, this means that 3.5% increase compared to the decrease of 0.3% in the previous quarter. For the whole of 2021 the prices of landed property rose by 13.3% and non-landed properties rose by 9.8%.

Therefore, this shows that Singapore housing is getting more and more expensive over the year as compared to base year 2009, inflation of the prices has increased and this would affect the people in Singapore. Cost of houses increases and this means that many people staying in Singapore would have to reduce their spending on other things as they have to spend more on housing. The past data has demonstrated that quarterly price changes, as predicted by the flash estimate, and actual price changes, even when tiny, can have a big impact. It is urged that those looking to purchase a home in Singapore interpret the flash estimates carefully.

## Data Analysis

### Hypothesis Testing

Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. We claimed that the average inflation in Singapore over the years is higher than the average global inflation over the years, supporting the sub-hypothesis that "Singapore is one of the most expensive countries to live in". Let dependent  $X_1$  be the inflation in Singapore over the years and let dependent variable  $X_2$  be the global inflation over the years. The independent variable will be the year, which both  $X_1$  and  $X_2$  are collected. These are our null hypothesis and alternate hypothesis:

$$H_0: \mu_{x_1} \leq \mu_{x_2}$$

$$H_a: \mu_{x_1} > \mu_{x_2} \text{ (claim)}$$

We conducted a right-tailed z-test of 95% confidence level as both  $X_1$  and  $X_2$  are related by year and the sample size is greater than 30. The global inflation is derived from the sum of low, lower middle, middle, upper middle and high income countries' inflation each year divided by 5. (Fig.3.6)

z-Test: Two Sample for Means		
	Singapore	Global
Mean	1.65405128	5.78878525
Known Variance	2.927469428	10.1280194
Observations	32	32
Hypothesized Mean Difference	0	
z	-6.473303855	
P(Z<=z) one-tail	4.79414E-11	
z Critical one-tail	1.644853627	
P(Z<=z) two-tail	9.58829E-11	
z Critical two-tail	1.959963985	

Fig.3.6 z-Test Results<sup>13</sup>

From Fig. 3.6, the test statistics(z) is -6.473 and the z critical is 1.645 on a right-tailed test, the test statistics (z) does not fall within the rejection region, so the null hypothesis can't be rejected. Therefore, we are 95% confident that we do not have enough evidence to support the null hypothesis that the average inflation in Singapore over the years is lesser than the average global inflation over the years, resulting in our claim to be statistically insignificant.

### Confidence Interval

	Singapore	Global
Sample Size	32	
Confidence Level, c	95%	
Zc	1.959963985	
Sample Standard Deviation	1.711	3.182
Sample Mean	1.654	5.789
Margin of Error, E	0.593	1.103
Lower limit	1.061	4.686
Upper limit	2.247	6.891
Confidence Interval	(1.061,2.247)	(4.686, 6.891)

Fig.3.7 Confidence Interval

We are 95% confident that the mean of the inflation rate in Singapore over the years is between 1.061 and 2.247, and that the mean of global inflation rate over the years is between 4.686 and 6.891. Hence, the global inflation rate over the years is higher than the inflation rate in Singapore over the years

## Conclusion and limitations:

In conclusion, our statistical testing is unable to support the claim that "The Cost of Living in Singapore is Getting More Expensive", even though the majority of us are already experiencing an increase in prices in our daily lives. It is only able to give evidence that the inflation rate is increasing in Singapore.

However, the claim "The Cost of Living in Singapore is Getting More Expensive" could still be true, as due to limited time and resources, we were only able to do one hypothesis testing, through the inflation in Singapore as compared to other countries. If we had more time, we could look at more aspects like the country's gross domestic product (GDP), Inflation consumer price index(2019=100), the income group gap comparing how much price increases for each and how it affects them etc.

Furthermore, our statistical testing is flawed as the inflation is based on annual percentage cost in the average consumer of acquiring at specific intervals. If there is a base like (2019=100) the data may be more reliable as it uses the same base to calculate. We compare two different secondary data of different collection methods and intentions. Singstat's data is used to store Singapore's official statistics, which is created by the Singapore Department of statistics. The world bank IBRD.IDA, uses different sources for the data which makes it not so credible as different data from different sources might have used different base index to calculate the index. Even so, we compared them because our statistical report was limited by the fact that we could only conduct statistical tests on these two sets of comparable data due to time and resource constraints.

## Singapore is one of the Safest Countries in the World

### Introduction

Singapore is considered to be one of the safest countries in the world. To prove this claim, we will undergo statistical testing to verify if Singapore still upholds that rank of being the 2nd safest country in the world. (A Great Place to Live, 2022) We will be looking into one aspect of safety in Singapore, 'Crime Rate'. We have asked residents in Singapore about their thoughts on Singapore's safety via our survey to get to know their opinions on it.

### Survey analysis

On a scale of 1 to 5, how safe do you think is Singapore?  
120 responses

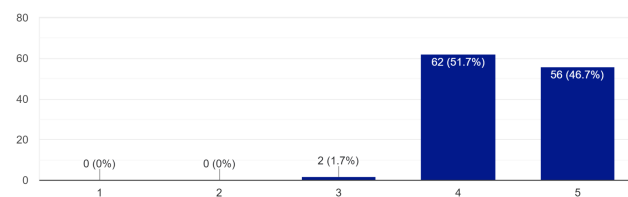


Fig.4.1 Bar Chart on Safety in Singapore

1 is defined as the individual feeling the least confident in answering 'Singapore is safe' and 5 being feeling extremely confident 'Singapore itself is a relatively safe country to be in'.

As there were no respondents that had shared any lower confidence level than 3, out of 120 respondents, we can conclude that the majority of the responses were quite positive in the stance of agreeing that Singapore is safe.

### Increase in crime rate in Singapore over the years (from Singstat<sup>14</sup>)

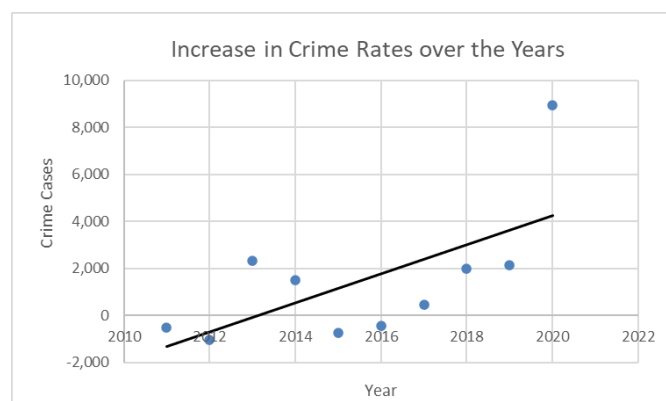


Fig.4.2 Graph of Increase in crime rate in Singapore over the years

<sup>13</sup>The World Bank. (2022, July 30). Inflation, consumer prices (annual %) | Data. Data.Worldbank.Org. Retrieved July 30, 2022, from <https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG>

<sup>14</sup> Department of Statistics. (2022, March 18). Crime Case Recorded. DOS. Retrieved July 30, 2022, from <https://www.singstat.gov.sg/find-data/search-by-theme/society/public-safety/latest-data>

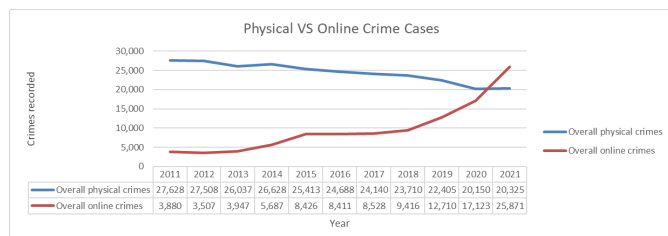


Fig.4.3 Graph of number of Physical Cases VS Online Cases over the years

## Data Analysis

### Hypothesis Testing

We claimed that the mean increase in crime rate over the year in Singapore is less than or equal to 0, reinforcing the notion that Singapore is becoming safer over time. Let  $x$  be the increase in crime rate over the year in Singapore.

$$H_0: \mu_x \leq 0 \text{ (Claim)}$$

$$H_a: \mu_x > 0$$

Assuming it is a normal distribution, we will be using a right tailed t-test with a confidence level of 95%. (refer to data in Fig.4.2 and 4.4)

## One Sample T-test

	Increase in Cases
Mean	1468.8
Variance	8518283.511
Observations	10
Hypothesized Mean Difference	0
df	9
t Stat	1.591426621
P(T<=t) one-tail	0.072988644
t Critical one-tail	1.833112933
P(T<=t) two-tail	0.145977288
t Critical two-tail	2.262157163

Fig.4.4 t-Test Results

Since t test value (t Stat), 1.591, is less than t critical value for one tail, 1.833, it does not fall into the rejection region, hence, we are unable to reject our null hypothesis. Therefore, we have enough evidence to support our claim that the mean increase in crime rate over the year in Singapore is less than or equal to 0, proving Singapore is getting safer over the years.

## Correlation and Linear Regression

Regression Statistics						
Multiple R	0.64421968					
R Square	0.415019					
Adjusted R Square	0.34189637					
Standard Error	2367.68099					
Observations	10					
ANOVA						
	df	SS	MS	F	gnificance F	
Regression	1	3.2E+07	3.2E+07	5.67566	0.04438	
Residual	8	4.5E+07	5605913			
Total	9	7.7E+07				
		Coefficients	Standard Err	t Stat	P-value	Lower 95%Upper 95%
Intercept		-1250193.3	525387	-2.3796	0.04458	-2E+06-38648
Increase in number of cases		621.018182	260.673	2.38236	0.04438	19.90491222.13

Fig.4.4 Correlation and Linear Regression

As the correlation coefficient is 0.644, there is a strong linear positive relationship between the increase in the number of cases and time in a year. However, the adjusted coefficient of determination, Adjusted R Square is only 0.342, the data points of increase in crime rate over the years in Singapore are all far from the line of regression equation, which indicates the line is a poor fit for the data points. Therefore, over the years, crime rate in Singapore does increase, which opposes our claim that "Singapore is one of the safest countries in the world".

## Conclusion and Limitation

In conclusion, our statistical testing is unable to support the claim that "Singapore is one of the safest countries in the world", despite the fact that Singapore is recognised as one of them. As shown on Fig.4.2 and Fig.4.4, the crime rates are indeed increasing over the years, but this does not mean Singapore is becoming less safe over the years. As we are in the digital era, technology itself is constantly advancing at a rapid rate, causing an increase in new online crimes appearing overtime, which leads to a rise in the total number of crimes over the years. (Fig.4.3) On the other hand, physical crimes have been steadily decreasing over the years. This implies that we are unable to base the safety of Singapore solely on its total crime rate, as it tends to fluctuate especially when the society becomes more vulnerable due to the introduction of new technology, which opened the door for more ways to target residents in the digital era. Therefore we have to

look into other aspects such as the number of repeated crime and the number of trained police in Singapore etc, to reach a better conclusion for this sub-hypothesis.

## Singapore's Fast-Paced Lifestyle is resulting in an Increase in Stress and Mental Health Problems

### Introduction

Singapore is well-known for its exceptional economy, booming work opportunities, prestigious education system and many more. However, maintaining such astounding levels and standards surely has taken a toll on the population, has it? In this portion of the report, we will dive into what defines a healthy lifestyle, whether Singaporeans are experiencing that or the latter, and what may be hindering Singaporeans from attaining that.

### Methodology

To do statistical testing, we used secondary data sourced from the Ministry of Health's "National Population Health Survey". (Fig.5.1) The data provides the crude prevalence (%) of poor mental health among Singapore residents aged 18 to 74 years by age group, gender, highest education attained and ethnic group, for the years 2017 and 2020. For our hypothesis testing, we will use only the data on "age-banded" results of the survey. The sample size is approximately 6250, which makes up 67% of the response rate for the NPHS 2020, which proves to be somewhat representative of the Singapore population as its respondents cover a large age demographic.

Table 14.2: Crude prevalence (%) of poor mental health among Singapore residents aged 18 to 74 years by age group, gender, highest education attained and ethnic group, 2017 and 2020

	NPHS 2017	NPHS 2020
Total	12.5 (10.9, 14.0)	13.4 (12.4, 14.5)
ASR	12.6	13.8
18-29	16.5 (12.7, 20.3)	21.5 (18.4, 24.6)
30-39	12.8 (9.8, 15.7)	12.6 (10.5, 14.8)
40-49	10.9 (8.1, 13.6)	12.4 (10.2, 14.6)
50-59	10.6 (7.8, 13.5)	11.4 (9.2, 13.7)
60-74	11.4 (8.8, 13.9)	9.4 (7.8, 11.1)

Fig.5.1 MOH's survey on poor mental health

### What is a Healthy Lifestyle?

A healthy lifestyle, by definition, is a way of living that lowers the risk of being seriously ill or dying early.

However in modern times such as this, health is far more than just the physical aspect. Ideas of "mental wellbeing" and "work-life balance" come into play, and rightly so. According to the 30-country Ipsos survey conducted from 20 August to 3 September marking World Mental Health 2021, 8 in 10 Singaporeans say their mental and physical health are of equal importance. And after Coronavirus became the top health concern, 41% of Singaporeans believed Mental health was the most important health problem facing its people, more so than cancer (33%).

There is an astounding importance tied to the topic of mental well-being. However, why do Singaporeans face this constant tussle with it? Is it due to external factors, or an innate belief instilled in us since young?

### What is the Singaporean Lifestyle?

The "great rat race" has been dubbed the typical Singaporean lifestyle, usually fast-paced, governed by studies and work, depending on age. This encompasses the unhappy existence of those who work in jobs that demand long hours in order to compete with others for resources such as money, power, status, etc. It often also causes people to use more energy than the reward is worth, which in the long run is detrimental to one's health. According to the Ipsos Survey in 2021, 30% of Singaporeans claimed they had felt stressed up to the point it affected their day to day life and 26% said that it came to a point where they were unable to cope with things.

By default, studies or work come first before personal time and rest. Singapore is the 2nd-most overworked city, according to a 2019 survey by the software startup Kisi. According to our survey, more than 90% of our respondents indicated that they feel moderately to extremely stressed.

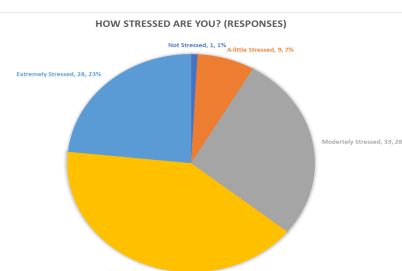


Fig.5.2 Pie Chart on How Stressed Singaporeans were

## Reasons for the Stark Difference

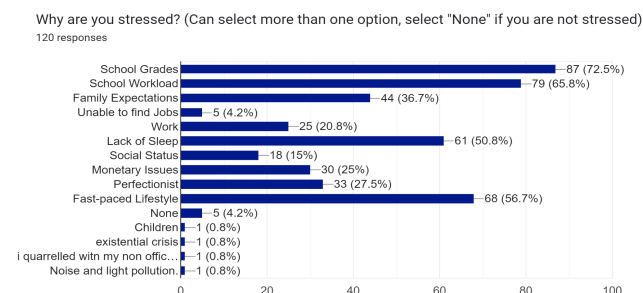


Fig.5.3 Graph on What Causes Stress in Singapore

### Competitiveness

We are bred to be competitive and strive to be the best, in all facades in life. Why? Because our education system and qualifications are our country's greatest asset. Singapore has made it such that good grades eventually equate to a ticket to financial freedom. However, that also instills a tremendous amount of stress. According to Fig.5.2 and Fig.5.3, approximately 92% of our respondents indicated that they are moderately to extremely stressed. 72.5% of them relate their stress to "School Grades", and "School Workload" comes in a close second at 65.8%. Furthermore, around 1 in every 3 people are stressed due to "Family expectations" that they desire to meet. And this constant desire to do better results in another issue, the lack of sleep due to overworking the body, which 50.8% of our respondents identified as another key factor in inducing stress.

### Work Culture

In a 2019 Cigna 360 Well-Being Survey, it was found that a startling 92% of working Singaporeans experience stress, which is 8% more than the average for the world (82%). Another factor in work-stress is the 'always on' corporate culture that is common in Singapore; 71 percent of women reported working in this culture, compared to 66 percent of males. This 'always on' culture, paired with a hectic work life, proves to be negatively impacting the mental health of adults.

The constant desire to get a better pay, a more secure job and eventually financial freedom pushes the working population to stay faithful to the "rat race". According to figure 1.1, "monetary issues" and "work" also make up a fair portion of concern for the working adult population, 25% and 20.8% respectively.

With reference to the same study by software startup Kisi, Singapore ranks 32nd out of 40 countries in terms of work-life balance, and this is a result of long working hours (23% of Singaporean working adults worked more than 48 hours per week), or unrealistic expectations of productivity.

### What can be/has been done?

With the very evident presence of mental health issues and stress-related problems, both schools and workplaces have adopted them. And furthermore, everyone has their own personal way to de-stress and recuperate.

Coping mechanisms come in all ways and means. With reference from Fig 5.3, there is a wide array of coping methods that our respondents use, the majority being "listening to music", "eating" and "partaking in hobbies", coming in at 70%, 59.2%, and 50.8% respectively.

Despite workplaces and schools implementing initiatives such as \_\_\_, the main crux of the issue is that people are scared to seek help when they face mental health issues. It's been a problem for many years. According to a Singapore Mental Health Study conducted in 2016, while one in seven in Singapore has experienced a mental disorder in their lifetime, more than three-quarters did not seek any professional help. This is because of the judgement and ridicule a student might get, for example. This indicates that there is definitely room for improvement in the aspect of approachability to seek help, which we are certain will come in the near future.

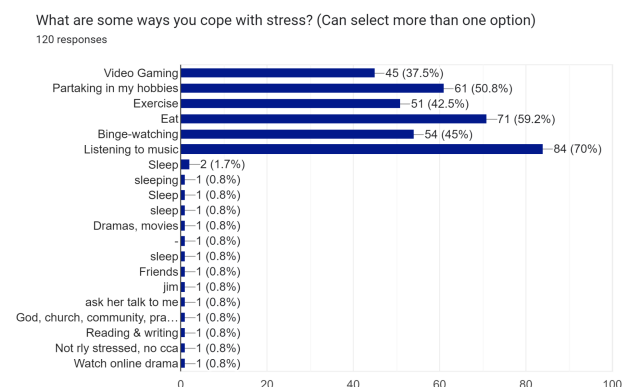


Fig.5.3 How Singaporeans Cope with Stress

## Data Analysis

### Hypothesis Testing

We claimed that the mean difference in poor mental health percentage of different age groups between 2 years (2017 and 2020) is more than 0, supporting the sub-hypothesis that "Singapore's Fast-Paced Lifestyle is resulting in an Increase in Stress and Mental Health Problems". The reason for using this as an indicator is because the ability to identify one's mental health state reflects the evidence of external factors that induce this prevalent poor mental health, which directly coincides with the hypothesis that the Singapore lifestyle leads to an increase in stress/mental health issues. We let dependent variable  $x$  be the differences between the poor mental health percentage of different age groups in 2017 and 2020. These are our null hypothesis and alternate hypothesis:

$$H_0: \mu_x \leq 0$$

$$H_a: \mu_x > 0 \text{ (Claim)}$$

Assuming it is a normal distribution, we conducted a right-tailed, paired t-test of a confidence level of 95%, as our sample size is 5.

t-Test: Paired Two Sample for Means		
	Year 2020	Year 2017
Mean	13.46	12.44
Variance	21.808	5.863
Observations	5	5
Pearson Correlation	0.9280981	
Hypothesized Mean Difference	0	
df	4	
t Stat	0.88233181	
P(T<=t) one-tail	0.21371574	
t Critical one-tail	2.13184679	
P(T<=t) two-tail	0.42743147	
t Critical two-tail	2.77644511	

Fig.5.4 Paired t-Test

As the t Stat of 0.8823 is less than the (t Critical) of 2.1318, it does not fall in the rejection region, hence we cannot reject the null hypothesis. Furthermore, the "P(T<=t) one-tail" value is 0.21371, which is  $>0.05$ , hence there is insufficient evidence to reject the null hypothesis. Therefore, we are 95% confident that we do not have sufficient evidence to support that Singaporeans of all age groups are getting stressed over the years ( $H_a$ ) (2017-2020), resulting in our claim to be statistically insignificant.

### Confidence Interval

Age group	2017	2020	Difference (2020 - 2017)
18-29	16.5	21.5	5
30-39	12.8	12.6	-0.2
40-49	10.9	12.4	1.5
50-59	10.6	11.4	0.8
60-74	11.4	9.4	-2

Difference's Sample Mean	1.02
Difference's Sample Standard Deviation	2.584956479
Difference's Number of Samples	5
t Critical two-tailed (95% confidence level)	2.776445105
Difference's Margin of Error (E)	3.209647397
lower limit	-2.189647397
upper limit	4.229647397
Difference's Confidence Interval	(-2.190, 4.230)

Fig.5.5 Confidence Interval and Derived Data

We are 95% confident that the true mean difference of every age group's poor mental health percentage between 2017 and 2020 lies within the range of -2.190% and 4.230% inclusive. Therefore, we do not have enough evidence to conclude that there is a mean increase in every age group's poor mental health percentage between 2017 and 2020, because the true mean difference's percentage may fall below 0% till -2.190% inclusive, at a 95% confidence level. This suggests that there might be a drop in poor mental health percentage, hence proving our results from hypothesis testing. In a nutshell, we are unable to support the claim that all Singaporeans are getting stressed over the years.

### Conclusion and Limitations

In conclusion, according to Fig.5.1 and 5.2 derived from our google form survey, the main idea that comes across is that Singaporeans are indeed getting more stressed due to numerous external factors. However, after doing the statistical testing using secondary data from the Ministry of Health, we find that it states otherwise, as the statistical testing indicates that we have insufficient evidence to support the idea that Singaporeans of various age groups are getting stressed over the years.

However, there are several limitations that have led to this particular finding. Firstly, the secondary data only has crude prevalence (%) of poor mental health among Singaporeans for only 2 years, which is not a very long period of time and hence is not very representative to provide a reliable trend over the years. It proved extremely challenging to find a dataset that had representative data for stress levels/poor mental health over an extended period of time, hence we had to settle for this. Nonetheless, this dataset from MOH was rather valid as a legitimate research company was appointed to conduct the study, and the data received were verified and checked for consistency.



Secondly, the sample size is not extremely large per set, and hence may not have been fully representative of the entire Singapore population. However, it is sufficient enough due to the larger age demographic.

Our claim “Singapore’s Fast-Paced Lifestyle is resulting in an Increase in Stress and Mental Health Problems” can still be supported however. This is because due to the lack of time, a perfect dataset was unable to be found, nonetheless in real-life situations there will never be a perfect dataset. Our survey does hold some important data on what are the main reasons for stress, and gives a very unfiltered version of what our respondents are going through, as this survey was rather casual and not so serious. This shows that everyone is subjective to their own scale, and that stress in its entirety is not always able to be quantified, as it covers a broad spectrum.

But generally, we do see that the student population are subjected to increased stress levels, while the working adult population are slightly more individualistic of each other.

All in all, our statistical testing concludes that we do not have sufficient evidence to support our claim, but that doesn’t mean that the claim is proven entirely false. If given a wider spread of time, a different trend may have been spotted.

## Conclusion

In conclusion, according to most online findings, Singapore is considered to be one of the better places in the world to live in, because it is ranked as the second safest country, and has one of the best education and healthcare systems in the world. Even with a higher cost of living and a more stressful lifestyle, many people would still consider Singapore to be a good country to reside in.

However, some of our statistical findings do not support the online findings, such as discovering that there is a lesser number of tertiary education holders in Singapore than the world’s average in almost every year, which concludes Singapore does not have the best education system in the world. Therefore, from our statistical findings, we realise we do not have enough evidence to support the claim that “Singapore is a good country to live in” despite the fact that it is widely known to be. Our claim is held False at the moment due to the limited amount of evidence we have. Only more statistical testing on every aspect affecting the quality of life in Singapore will allow us to reach a true conclusion. For this assignment, we only have limited time and resources. Furthermore, we were not able to take into account the data collection methods, sample size and domain of the data we used, resulting in our findings to be flawed, and thus leading to a false conclusion.

Furthermore, the claim that “Singapore is a good country to live in” is not a perfect claim to test statistically. Everyone has a different standard on what a good country should be, so the claim is subjective. We were only able to test by standardizing a good country to provide good education and healthcare, and its residents to live a safe, low cost, stress-free life. However in the real world, this standard is different for everyone.

## Recommendations

After finding out whether Singapore truly is a good country to live in, residents and foreigners are then able to make informed decisions on whether or not they should reside in Singapore or migrate away to live a better life. Since everyone has a different standard on what a good country should have, they should decide their stay based on their personal standards, which is related to another point we hoped to inform the public on: Do not make decisions based on just the data you found online, especially important ones. Every single finding online is based on its own data collection method on its own sample following its own standard. Before utilising them, we have to first understand how they came about to determine their relevance and credibility. Everything is subjective and we have to make the most out of what we have.

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## Survey Results

<https://docs.google.com/forms/d/1cRnUmPdTE8RITI V9I0pphuUcw2hLJF55L37MzLeJtLM/edit?usp=sharing>

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