About-SG

Economy of Singapore and Well-Being of Singaporeans

In this project, we recount the progress of Singapore through the GDP per capita indicator and the well-being of Singaporeans through the Life Expectancy indicator.

This project is carried out in two parts.

Part I

In the first part, Python's ***matplotlib*** library is used to visually describe and compare Singapore's GDP in 1960 vs 2018. We map Singapore's GDP against all countries in both time periods, and also against OECD countries. In addition, we take a peek at the current component sectors of the economy.

We repeat the methodology for Singapore's Life Expectancy, vis-à-vis all countries in 1960 and 2018, and also with OECD countries.

Finally, we graph the trend of Singapore's GDP with Life Expectancy from 1960 to 2018 to observe any patterns in the indicators.

Part II

In the second part, we employ Python's ***sklearn.linear_model.LinearRegression*** to fit a multilinear model of possible determinants to Life Expectancy in Singapore. A subsequent model of splitting the data into training and testing sets was also fitted.

The determinants used for the model were pared down from an original 5 indicators to 3 indicators, due to large numbers of missing values.

Insights

From 1960 to 2018, the growth of Singapore's GDP per capita and life expectancy, as compared to the rest of world, are as follows:

	GDP Per Capita		**Life Expectancy**	
	1960	**2018**	**1960**	**2018**
All Countries (Percentile)	**67%** (3rd quartile)	**86%** (4th quartile)	**77%** (4th quartile)	**96%** (4th quartile)
OECD (Percentile)	**16%** (1st quartile)	**95%** (4th quartile)	**15%** (1st quartile)	**93%** (4th quartile)

Based on the graph of GDP per capita with Life Expectancy from 1960 to 2018, we observe that :

- Life Expectancy appears to have steady increase through the decades.
- GDP per capita is also on the upward trend.
- Rate of growth for GDP per capita appears to be more gradual in the first 30 years from 1960 to 1990s, and later picking up its acceleration from the 1990s to present.

The Linear Regression model on the full data yielded an R^2 score of 0.976, and the coefficients yielded the following results:

Independent Variables	Magnitude	Rank	Direction of Impact
GDP Per Capita	-0.000018	3	Negligible
Labour Force (Male)	-0.955	1	-ve
Labour Force (Female)	0.567	2	+ve

The subsequent model of training on 80% of data yielded similar R^2 and coefficient results.

Next Steps

Further statistical analysis could be carried out on Life Expectancy using other determinants such as proportion of Singapore's population housed in public housing, and park spaces in Singapore.

Data Sources

Data for this project was largely retrieved from the World Bank Indicators API via Python's ***pandas_datareader.wb***.

Additional data was also retrieved from Singapore's Department of Statistics website at https://www.singstat.gov.sg/modules/infographics/economy.